Insurance and Technology

Evolution and Revolution in a Digital World

The insurance industry is on the brink of major technology-driven change. This creates exciting opportunities for insurers that are keen to embrace it, but significant risks for the laggards. While some aspects of technological change are common to many industries, several challenges are specific to insurance.

A step change in consumer engagement is needed. Our global survey suggests that consumers are less satisfied with their digital insurance experience than with other industries. They would like a simpler, more direct relationship with their insurer.

Digitisation of distribution and operations is vital for insurers to stay competitive. ‘Digitally born’ insurance models can gain an advantage over traditional models, reducing expenses (by ~10% of premiums) and claims (by ~8%).

We could see disruptive models emerge, enabled by the Internet of Things, Big Data and the ability to access broader ecosystems than before. These could have a dramatic impact on the insurance industry all along the value chain, changing the nature of risk assessment and management, as well as the consumer engagement model.

We also see opportunities for technology players as insurers invest in digitisation. The major challenges, we think, will be in consumer channels and new data sources (Internet of Things, Big Data). Investment will also be needed in core systems to enable digitisation and cut costs. Vendors exposed to these areas should see strong growth.
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The insurance industry is on the brink of technology-driven change

Exhibit 1
Up until now, consumers have interacted less with insurers than with any other industry...

% of respondents

Exhibit 2
...so the consumer experience with insurers tends to lag behind others...

% of respondents which indicated they are satisfied with their interaction with service provider

Exhibit 3
...especially at the claims stage

% of respondents

Exhibit 4
However, the Internet of Things and Big Data could drive fundamental change...

Source: Company Data, BCG Analysis, Morgan Stanley Research

Exhibit 5
...such as multi-product ecosystems, which insurers may not be able to keep up with

Ecosystems

Worst Case Scenario

Adjacent entrants

Source: BCG Analysis, Morgan Stanley Research

Exhibit 6
We estimate technology could reduce the combined ratio by as much as 21% ...

Combined Ratio (%)

Source: BCG Analysis, Morgan Stanley Research. Numbers may not add due to rounding.
Exhibit 7

…and we also see technology reducing risk pools over time…

<table>
<thead>
<tr>
<th>Cause of claims</th>
<th>Connected devices available</th>
<th>Prevention potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home:</td>
<td>Connected meters</td>
<td>~20-30%</td>
</tr>
<tr>
<td>Water Leakage</td>
<td>Active leakage detection devices</td>
<td>~70%</td>
</tr>
<tr>
<td>Fire</td>
<td>Smart smoke detector</td>
<td>~70%</td>
</tr>
<tr>
<td>Theft</td>
<td>Advanced alarm systems</td>
<td>~10-80%</td>
</tr>
</tbody>
</table>

Current risk / losses

Future potential home risks / losses

Source: BCG case experience, smart systems suppliers; BCG Analysis, Morgan Stanley Research

Exhibit 8

...which begs the question: how well placed are insurers to deal with the changing technology environment?

Insurer

Strengths
- Established brands
- Expertise in pricing risk
- Detailed understanding of claims patterns
- Large existing consumer base
- Ownership of face-to-face distribution
- High degree of consumer trust

Weaknesses
- Limited frequency of consumer interaction
- Legacy IT systems, operational complexity
- Lagging other industries in the ‘digital’ consumer experience – especially in claims
- Channel conflict

Opportunities
- Development of new flexible products – meeting unmet consumer needs
- Increased cross-selling potential
- New emerging risk types – e.g. cyber risk
- Step change in operational efficiency
- Improve service offer to clients

Threats
- Risk of adjacent entrants into insurance
- Disruptive models – e.g. peer-to-peer
- Industry is not a natural ecosystem host
- Smaller risk pools given IoT/telematics
- Anti-selection if late adopter of technology

Source: BCG analysis, Morgan Stanley Research
Executive summary

A collaborative global report

This Blue Paper was prepared jointly by Morgan Stanley Research and Boston Consulting Group (BCG). We have collaborated globally, involving the insurance and technology groups at each organisation.

Deep dive on the subject

In researching this report, we conducted 56 interviews with senior executives of insurers and technology providers globally. In addition, we commissioned a proprietary global insurance consumer survey in 12 countries in order to gauge perceptions about technology.

Overview

We believe that the insurance industry is on the brink of major technology-driven change; this creates major opportunities for insurers that are looking to embrace it, but it poses significant risks for the laggards.

While some aspects of technological change – such as better operating efficiency, the need to engage creatively with consumers digitally and increased disintermediation – are common to many industries, others are specific to insurance.

Fundamentally, insurance is about the pricing and selection of risk. We believe that the Internet of Things (IoT) and Big Data will change the type of data that insurers use to assess risk, the way in which information is analysed and ultimately the size of the actual risk pools.

Our aim is not to identify relative winners or losers in the insurance industry, but to provide insights into the impact of technology on the industry as a whole.

Step-change in consumer engagement needed

Players that are slow to implement new technology run the risk of anti-selection – we note that the worst quintile of risks in a market can produce 9x more losses than the best quintile.

Today, mobile is key, even more than the web, and this requires an engagement model specifically conceived for a digital world – we believe that insurers are not yet there. Overall, consumers are far less satisfied with their digital insurance experience than with other industries (Exhibit 9) – particularly when it comes to ‘moments of truth’ such as paying claims. Consumers have significant unmet needs, with many products perceived to be expensive and inflexible.

Encouragingly, our research also shows that consumers are willing to consider innovative products, with younger and more affluent consumers showing the greatest propensity.

‘Digital natives’ could threaten incumbents

Companies born in the digital age can operate at substantially lower cost – due to automation, self-service and efficient distribution models – with substantially lower loss ratios driven by better risk selection thanks to new data sources, claims management and loss prevention techniques.

Business models with sufficient scale to support the fixed costs of building the infrastructure as well as marketing investment are proving highly competitive. This is shown by the success of GEICO in the US (see case study on pages 62-63).

Risk pools are likely to shift and shrink

We expect current technological trends to drive a profound shift in risk pools.

New risks are emerging – for example, cyber risk is growing, with the market set to grow by on average 10-15% per year, according to Swiss Re, potentially surpassing the size of the aviation market within 10 years.

In parallel, we see greater loss prevention, especially in traditional business lines, which could lead to a sharp contraction in non-life premiums (10-20%).

We believe technology has the potential to reduce risk pools materially. We have analysed the risk pools for the personal home and motor segments and tentatively calculated that they could shrink by $62-102 billion in today’s terms. This is
equivalent to 5-9% of global non-life premiums (excluding health). A similar argument can be made, we think, for commercial lines, although we have not quantified this.

New digital models for consumer engagement, as well as more flexible, on-demand types of insurance cover, could also boost demand and accelerate penetration in emerging markets.

**New entrants can cause disruption**

We see a risk that new entrants will disrupt existing equilibriums.

Companies with strong customer relationships and hence a deep knowledge of their needs may be able proactively to identify and meet their specific insurance requirements.

Rakuten – the Japanese online marketplace – has moved into insurance (acquiring an underwriter) and is using its broad set of consumer interactions as a platform to identify sales leads and as an extensive source of data.

Such ‘adjacent’ players (operating in industries with high degrees of customer engagement) are well positioned to embed the insurance cover in the product and services they sell.

**Ecosystems drive the need for partnerships**

Cheap, connected sensors have the potential to transform the insurance offering – be it in motor, home or health insurance, or industrial settings.

Those devices enable insurers to collect new datasets, gain a much better understanding of their customers and assess risk in a completely different way.

However, we believe insurers will need to orchestrate or join ‘ecosystems’ (networks of companies, individuals and institutions that interact and provide services) in order to promote supply, installation and service of those devices – see Exhibit 10. They will also need to ensure harmonious development of insurance offers, together with new applications and services to link in with those devices. An example of this trend is the partnership between State Farm and ADT for protected, connected homes.

Technology companies are moving in this direction to build connected-home offerings – for example, Google has acquired smart-home device maker Nest Labs and Samsung recently purchased home-automation company SmartThings. Insurers need to move quickly to form partnerships, as there are a finite number of relevant potential partners.

The shift towards ecosystem-based insurance also reinforces the risk of adjacent entrants, where non-insurers with key consumer insights from their own core operations seek to leverage that competitive advantage and offer their own insurance products.

Exhibit 11 summarises this scenario compared with the current situation.

**Exhibit 10**

An example of a digital ecosystem – we believe these will become increasingly important for delivery of insurance products

Source: BCG Analysis, Morgan Stanley Research

**Exhibit 11**

Ecosystems and the risk of adjacent entrants

Source: BCG Analysis, Morgan Stanley Research
Pace of change should leave time to adapt

The pace of change is hard to predict given that some of the technology is in its infancy.

Taking telematics in motor insurance as an example, while several pilots are in progress globally, the product has only made a significant impact in two discrete markets: UK young drivers (where premiums for traditional cover are very high) and Italy (where claims fraud is an issue).

At the core, the digital transformation is likely to take time. Insurance is largely a stock business and replacing the portfolios will not be quick.

The frequency of interaction is low, slowing down consumer push for a change. Key disrupters have yet to take the necessary steps toward targeting a business that is partially protected by a complex regulatory environment (which is often highly local in nature).

Which parts of the industry will be affected?

Risk segments (property & casualty, protection and health) are likely to see the greatest long-run impact from technology, we believe, as the industry moves from actuarial risk assessment (statistical techniques) to include new sources of data, Big Data techniques and new datasets from connected devices (potentially real-time risk observation and modelling).

Savings business is also likely to be significantly affected by technology, but in a similar way to many other industries – with digital channels driving greater price transparency and competing away frictional costs.

As for consumer journeys, our research shows high expectations for research, purchase and claim experiences.

Implications for insurance companies

- Their legacy IT systems are complex, which limits insurers’ agility.
- A bias toward largely intermediated distribution and the technical nature of products hinder a shift towards greater consumer orientation.
- Complex insurers, often siloed by branch as well as long-term orientation within the industry, tend to have a limited focus on innovation.
- In many countries, the economic environment creates significant pressure in terms of investment capability, increasing the short-term focus of insurance companies.

Facing these challenges, insurers need to focus on:

- Consumer centricity: insurers will need to tailor their offers and services to the real needs of their customers. For many, this will entail a radical shift in their core processes, such as new product development, customer contact and claims process design.
- Cutting across silos: the new digital paradigm requires that silos between branches and functions be broken.
- Partnerships: insurers need to identify/sign up suitable partners to develop more immersive ecosystem offerings.
- IT evolution: digital technology needs IT systems to operate at a different level. Consumer data must be simply accessible; operations need to happen in real time. Consequently, IT systems have to find a way to manage the evolution of insurers’ core systems at a measured pace while enabling rapid absorption of technological innovation. In short, they need to manage ‘two-speed IT’.
- Innovation: adapting to the digital world requires a sound knowledge of the technology on offer; ability to develop, test and pilot at the right pace; readiness to fail in an entrepreneurial spirit; and capacity to do all that without jeopardising the core business. Insurers will also have to scan the horizon for new, game-changing technology that may be too far ahead to commercialise now, but could have a significant long-term impact on the industry.
- Data analytics: new capabilities offered by Big Data technologies need to be embedded within insurance and to support most of the underlying changes.

Implications for technology companies

We expect overall insurance technology spending to grow modestly (mid-single digits), with most insurers looking to reallocate spend from legacy areas. However, technology vendors exposed to priority spending areas should see double-digit growth. The main priority areas, we think, will be interaction/distribution channels and analytics – particularly in contextualising data from telematics/IoT devices. However, we believe insurers will also have to invest in core systems (policy, claims, billings) and middleware solutions (wrapping the legacy systems so they integrate with state-of-the-art capabilities) to benefit fully from the channels/analytics spend. We expect spending here to increase, albeit not at the same pace as the key priority areas. The technology landscape for insurers is fragmented, with many specialist products but no established all-encompassing solution that insurers are willing to migrate completely to today. We estimate the top 10 providers have only a 25% market share today, so we would expect some consolidation in the market.
Setting the scene

The increasing pace of technological change is a major challenge for insurers. While the industry has some good examples of adoption of technology, in general it has lagged other industries in its response.

Consumer expectations have changed much faster than the industry. In most cases, expectations that stem from existing online and digital experiences in other industries are not fulfilled by insurers. Key insights from our global consumer survey, carried out in 12 countries, confirm that insurance consumers worldwide are ready for and expecting a very different digital experience.

The insurance industry is undergoing a period of unprecedented change on other fronts too. Significant changes to prudential regulation (Solvency 2, the global BCR/ICS initiative), conduct regulation (IMD2, PRIIPS), and business models are occurring simultaneously.

In this section we provide some broader context for the challenges that are facing the industry.

We consider three major challenges for the insurers:

- Evolving technology;
- New consumer behaviour and expectations; and
- Changes in regulation.

1. Major technology changes

A series of technology changes and adoptions is having a significant impact on the insurance sector. We would group these changes around:

- **Consumer/channels:** many new technologies are evolving, offering new options for consumer interaction.
- **IoT/Big Data analytics:** technologies open the door to new ways of assessing and managing risk and claims.
- **Core systems:** requirements for new digital solutions are challenging legacy systems and new technologies are offering new options for system infrastructure.

Many of the changes are interlinked, so have an even greater impact on the sector.

In consumer/channels we see four main drivers of change that challenge insurers’ consumer-facing set-up:

- Internet adoption and broadening usage;
- Smartphone and mobile device penetration;
- Frequency and characteristics of internet mobile usage;
- Increasing use and evolving role of social media.

Our interviews with insurers in researching this report revealed that many are waking up to the fact that their consumers want to engage with them in very different ways from before. Consumers demand an online experience and, with internet penetration and usage increasing globally, these demands will only increase.

However, the web is only part of the equation when it comes to changing consumer interactions. Consumers are increasingly interacting with companies via mobile devices. In the banking sector, for instance, players now provide a mobile app to support most consumer needs. In the insurance sector, consumers increasingly expect this from insurers – say, when changing address or submitting a claim. In fact, in some countries the market is ‘mobile first’ as consumers skip fixed broadband and move straight to mobile (see Exhibit 12). Insurers need to find ways to connect with consumers using this medium.

To succeed in the transition to mobile, insurers will need to overcome a structural challenge: frequency of interactions.

Exhibit 12

**Smartphones are the most viewed/used medium in many countries**

On average, insurers have a very low number of interactions per consumer. Depending on the geography, the number of yearly interactions varies between 1 and 3.

However, to get consumers to open and use a web account, or to download and use a mobile application, interaction frequency must be significantly higher, reaching multiple interactions per month. Insurance as currently delivered through product lines does not require as frequent consumer engagement as, say, a banking product – which increases the risk that insurers are not ‘top-of-mind’ for consumers and consequently could be squeezed by others.

Social media usage has increased dramatically; consumers are using social networks in more and more ways. It becomes a place to research purchases – over time, these sites may become a place where the purchases are actually made – and to discuss consumers’ core needs and expectations. Their importance of social media is likely to increase and evolve, making it essential that insurers develop a clear strategy on how to manage them.

A few figures illustrate the importance of social media today in the insurance industry. Our global insurance consumer survey shows that, on average, 26% of respondents across 12 countries have already shared recommendations of insurers through social media; 28% have not yet but are likely to do so in the future.

Similarly, 21% of respondents already use friends and family posts on social media as a very important source of information for their insurance choice; 40% do not yet but are likely to do so in the future. Social media usage tends to be higher in Asia and lower in Europe – for example, ~50% of respondents shared recommendations through social media in India and China versus 16% in the UK and 18% in Germany.

Insurers are aware of this trend, as demonstrated by their level of activity on social media: each of the top 16 insurers in the UK and US has an official account on Facebook or Twitter. Twitter accounts are more prevalent: 100% of the 32 insurers have one, but just 69% have a Facebook account.

However, few insurers have demonstrated that they have a social media management strategy that engages consumers through making an active contribution.

In IoT/Big Data analytics we see two opportunities for insurers:

- **IoT and connected sensors** could revolutionise how car insurance (telematics), home insurance and even life insurance are sold and serviced.

- **Big Data analytics** – there has been a revolution in how companies can analyse data. That, combined with the new datasets from connected devices – and potentially even from social media – should enable insurers to price risk better and in different ways.

IoT could have a profound impact on the insurance market (we expect significant growth in devices, as shown in Exhibit 14) – using data from sensors for risk avoidance.

The multiplication of connected devices opens the door for new ways of selling and servicing insurance products.

Telematics in car insurance is an obvious use case here. However, there are other examples of using intelligent sensors to reduce insurance risk:

- Water sensors could detect a leak in the home, alert the consumer’s smartphone and contact the insurer’s emergency response team.

- A commercial insurer offers moisture sensors to detect potential damage in shipping containers.
• Fire risk also lends itself to mitigation by an IoT approach, leveraging connected fire and CO₂ detectors – in both a commercial and retail lines context.

• In time, wearable sensors could be applicable to risk measurement and monitoring in life insurance.

The evolution of Big Data analytics is closely linked to the rise in the IoT. Dramatic improvements here should enable insurers to develop new approaches to assess risk, and to invent new business models, product offerings to set new partnerships. A previous Morgan Stanley Blue Paper Key Secular Themes in IT: Monetizing Big (Any) Data (4 September 2012) discusses the impact of big data for technology providers in further detail.

While we acknowledge these changes can sometimes take longer than we might expect from the initial hype, equally we believe technology adoption will accelerate over time, as we show in Exhibit 16.

Changes in core systems

We are also seeing a change in the core systems used in policy administration, claims management, and billings and payments. Change here is likely to be in the way of on-premise modernisation, but software as a service (SaaS) and Cloud infrastructure could also play a role.

Digital trends are putting a lot of pressure on core systems IT. Multichannel integration, the need for real-time capability, cross-branch offerings, and a central data repository are mandatory adjustments to existing legacy systems – which are often require a high cost in addition to flexibility.

For example, one insurer told us that it takes more than 180 days to change a simple field on the internet front-end – and the signature of 35 people to approve the change (although we acknowledge that this is unlikely to be a pure technology problem – governance also plays a part).

We are seeing an emergence of new offers in the market, and new technologies that could encourage insurers to change the way they involve suppliers, as well as the way they address their core IT challenges.

Cloud computing in the long run could play a role in this. Cloud infrastructure could be a way for insurers to lower their IT running costs to free up money for investment/innovation. In an ideal world, insurers could migrate to a fully Cloud-based core system (but we see no evidence of this at the moment).

However, in the shorter term, we think it is more likely that Cloud could help to level the playing-field between the largest insurers and small/mid-sized players.

In the past, the cost of technology meant that very large companies had an advantage. For example, only they could afford the best-in-class systems needed to perform the most complicated analysis.

They also benefited from economies of scale. The Cloud could change this paradigm as it democratises computing – now high-end computing systems are available to everyone on a pay-per-use model. An example would be in complex risk analysis, which will no longer be the exclusive reserve of the largest insurers.

Exhibit 14

The number of connected devices is set to soar through the Internet of Things

Device / users (MM in Log Scale)

Source: BCG Analysis, Morgan Stanley Research

Exhibit 15

Over 1990-2013, computer costs declined on average by 33% per year

$ per Gigabyte

Ever-increasing speed of technological change

Technological change is accelerating at an astounding pace. Adoption curves are speeding up rapidly. For example, the time taken to reach 1 billion users is being halved for each new technology produced. It took 110 years for fixed-line telephones to achieve 1 billion users, yet only 49 years for televisions to reach the same level of population penetration. Examining more recent technology disruptions, mobile phones took 22 years while the internet achieved the same in 14 years. More recently, smartphones and Facebook have both reached the 1 billion users mark in just 8 years. While this is partly attributable to population growth, we believe the speed of change is fundamentally increasing (source: Insurance @ Digital-20X by 2020, BCG, Google http://www.bcgindia.com/documents/file156453.pdf).

It is likely that the speed of adoption of even newer technologies, such as IoT, and continuing adoption of current technologies (as the whole world will be ‘going mobile’), will continue to accelerate.

This gives insurers less time to react to changes, requiring would-be leaders to respond to technological improvements ever more quickly.

For example, if a new hypothetical technology were to launch in 2017, it could take only 5.5 years to reach 1 billion users (BCG Analysis, projection based on adoption rates for Internet, Facebook and Smartphones).

2. Changes in consumer expectations and behaviour

Consumer expectations are also dramatically changing; it is increasingly important to track, respond to and if possible anticipate consumer expectations and behaviour. A static approach to products and distribution channels is likely to become increasingly outmoded.

Travel industry is a leading-edge example

The travel industry is a good example of how digitalisation is now part of consumers’ expectations:

In travel, there are high utilisation levels of digital channels throughout the consumer journey; over 90% of consumers rely on digital channels when searching for information throughout their journey, visiting 17 websites on average from the ‘planning’ to the ‘sharing’ stage. In addition, 96% of users rely on digital channels when booking (or purchasing) their travel products (source: BCG, Travelling in a Digital World: How to Keep Up with Consumer Needs, November 2013).

This multitude of channels has driven potential industry evolution into a unified platform approach, with Google now developing capabilities to build a complete travel and tourism ecosystem (source: Supra).

As of 2013, consumers globally have moved 27% of their total travel and tourism spend to online channels. Online channels are growing faster than the total market, and are expected by Euromonitor to make up 32% of the total market by 2018. Air travel has seen the most significant penetration of online channels, with online bookings representing 47% of the total air travel market in 2013, while 25% of hotel bookings are now made online (source: Euromonitor, The New Online Travel Consumer, July 2014). As a consequence, airlines can no longer afford to have printed tickets mailed to consumers as the only way to deliver tickets.

These usage levels have pushed consumer experience in online travel to improve, with the booking process now taking consumers 30 minutes on average to complete (source: Supra).

Consumers are using online channels not only to purchase products, but also to research reviews of travel destinations and providers and to update their social network about their experiences in real time. The travel website TripAdvisor makes up the largest travel community in the world, which according to the company in 2014 was active in 42 countries, generated nearly 260 million unique monthly visitors and more than 150 million reviews and opinions covering more than 4 million destinations/lodgings.

Consumers’ move to online has also generated new, consumer-centric business models. Online aggregators now play a big role in this market, allowing users to compare prices for travel products by searching a number of direct suppliers and/or online travel agencies simultaneously. KAYAK, one of the most prominent aggregators, purchased by Priceline in 2012 for $1.8 billion, is active in 31 countries and 17 languages, processing over 1 billion queries for travel information annually; its mobile app has been downloaded over 35 million times.

An additional consumer-oriented trend has been the emergence of peer-to-peer (P2P) travel websites, which allow users to rent lodging directly from other private users around the world.
Airbnb, a leading P2P lodging site, displays over 800,000 properties in 190 countries, and has enabled over 15 million guests to use its services. Bookings made by travellers through Airbnb increased by 276% from 2009 to 2013 (source: Euromonitor).

Google has also started playing as an aggregator in a way, as an adjacent player in the area; if you Google “flight from London to Paris”, for example, you get all the available options quicker and easier way than in other websites.

**Insurers need to become more consumer-centric**

The growing consumer expectation across other industries, therefore, has affected the insurance industry. In the past, insurers did not really improve their digital capabilities and offerings, creating a gap with consumer expectations. The result is that today, they are well behind other industries in terms of their digital offering, and consumers consider it as one of the lower performing industries on this dimension.

While online insurance interactions are well established globally – and have been for some time – from a consumer perspective there are many areas of online service with which consumers are dissatisfied. One CIO from a leading insurance company put it well: “for years insurers have talked about being consumer-centric. They are now really beginning to mean it”.

**Insights from our global insurance consumer survey**

As part of this research report, we commissioned a global consumer survey in 12 countries to assess how insurers’ online position was used and viewed.

Today, direct and non-direct online channels are broadly used in insurance, with 88% of respondents using two or more online channels when communicating with insurers. Online channel penetration is not only wide, but deep, accounting on average for 31% of total channels used when submitting claims, and up to 42% when researching for new policies. In comparison, only 8% of consumers do not use any online channel during their consumer journey, the so-called ‘offline consumers’.

However, even these offline consumers expect to move more than 25% of their interactions with insurers to online channels, if insurers were to improve their online offer.

**Exhibit 16**

**Adoption of digital technology is set to accelerate**

![Graph showing adoption of digital technology](source: Secondary Research, BCG Analysis (BCG, Google, Insurance @ Digital-20X by 2020), Morgan Stanley Research)
Consumers are turning to online channels…

Breakdown of consumer's use of channel of interaction with insurers

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey”. See Appendix 2 for channel breakdown.

…and unwilling to pay for face-to-face services

Not willing to pay for face-to-face service  % premium consumers willing to pay

% of respondents not willing to pay to have face to face service
% of premium consumers would be willing to pay for face-to-face (F2F) service (willing to pay consumers only)

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “How much more would you be willing to pay to have face-to-face service?” Outliers over 75% disregarded.

Insurance online experience lags other industries

Consumer satisfaction with online experience, by industry

Relative satisfaction utility score

Source: BCG digital satisfaction survey March 2013, Morgan Stanley Research. Note: Relative satisfaction utility score based on MaxDiff technique: consumers distributed 100 utility points across segments according to how positive they felt their online experiences were.

These trends are also reflected in consumers’ demand for face-to-face services. Compared to online channels, face-to-face channels account on average for 15% of total channels used to research new policies, and up to 24% when purchasing policies across countries; 15% of consumers do not use of face-to-face channels at all when interacting with their insurers, including through brokers or agents.

Over half of respondents would not be willing to pay for face-to-face services, across motor, home and life insurance lines, while those who do wouldn’t pay more than ~10% of their premiums for these services. Demand for face-to-face services is significantly higher in Asia, with ~50% showing willingness to pay for the service across these insurance lines, compared to 1 in 3 respondents, on average, in Europe and North America in home, life and motor. The demand for face-to-face channels decreases as markets’ level of internet maturity grows (the BCG ‘e-intensity index’), with more internet-intensive countries showing a lower percentage of consumers using face-to-face channels.

Consumers’ satisfaction with online insurance is still lagging behind that of other industries (for example, in the US, insurance ranks third last among 16 service providers in online satisfaction). The level of consumer satisfaction with online interaction decreases as consumers advance in their insurance journey, being higher when researching and purchasing policies, and declining when managing policies and claims. Dissatisfaction with the online journey reaches its peak at the claims management stage (with only 38% of consumers satisfied), down from 69% satisfied consumers during research process. This trend is exacerbated with insurers’ mobile offer, which lags behind their current website offer across each step of the consumer journey.

Small and medium enterprises (SMEs) are also changing their preferences when purchasing insurance, see Exhibit 21.

SMEs are a heavily intermediated sector, with relatively low direct channel penetration (whether through online channels or call centres) and high broker/agent presence. From the six national markets covered, the level of direct channel use ranges from 3% in France and 4% in the US to 18% in the UK (source: BCG, Future of the Commercial SME Market, Sept. 2013. Covering US, UK, France, Germany, Italy and Japan).

However, SMEs are willing to consider purchasing their policies through direct (online/call centre) channels, mainly to gain price benefits. Some 20-25% of SMEs surveyed in 2013 were likely to consider purchasing their insurance coverage
through direct channels. The main advantage of direct channels is cited as reduced prices for their policies, as acknowledged by 60-76% of SMEs across countries, while 11-24% consider convenience or a better product offering as the advantages of direct channels.

Although SMEs’ use of direct channels is not prominent, these businesses noted specific aspects of direct channels that are attractive to them in the context of maintaining their insurance relationship through direct channels. Access to online resources and documents was noted as attractive by 44% overall – 67% of SMEs in the US, the UK and France – while online chat assistance was attractive to 37-69% of SMEs in these countries. The most attractive option for SMEs, however, was having a dedicated representative who would escort them through their insurance journey.

Although willing to go online, across all countries SMEs’ dependence on their agent/broker, and the value they see in the advice received from them, was cited as the main reason preventing them from using direct channels.

3. Regulatory changes

Insurers are facing an unprecedented level of regulatory change. While we do not expect this to have the same degree of impact on business models as for the banks, it is creating significant operational challenges and driving uncertainty.

Many of these regulatory changes will affect insurers’ IT systems, which will result in mandatory change spending.

### Prudential solvency

For the European insurers, the near-certain introduction of Solvency 2 on 1 January 2016 is the main concern. While many of the rules are now clear, we are still awaiting final details this autumn, with internal model approvals for the larger players unlikely to be achieved until 2H15.

Solvency 2 will be a risk-sensitive framework and has required a substantial investment by the industry in improving systems and processes. It is also likely to accelerate the move away from poorly matched interest rate sensitive products.

While Solvency 2 is a European initiative, similar enhancements to local solvency regimes are being made in other territories.

In addition to Solvency 2 there is also an increasingly active global agenda for insurance capital.

The International Association of Insurance Supervisors (the IAIS) has named several global insurers as potentially being globally systemic – i.e., as Globally Systemic Insurers or G-SII – and in time will require additional capital buffers to be held for these companies.

Additionally, last year the IAIS indicated that it would work towards introducing the first ever global economic capital standard for insurers – the Insurance Capital Standard (ICS). As an interim measure, the Backstop Capital Requirement (BCR) is being developed – the design of which should become clearer in November this year.

Given the 2019 target date for the ICS – which we believe is ambitious – uncertainty looks likely to persist for some time.

### Conduct of business

In several markets we are seeing a trend towards enhanced consumer protection.

Regulators are concerned with several aspects of consumer protection: bans on commissions and increased requirements on advisory services; data privacy and protection legislation; and anti-discrimination requirements.

Sales regulations affecting the level of advisory payments are already prevalent in Asia, while initiatives are being implemented in Europe (IMD2 Insurance Mediation Directive; and PRIIP Packaged retail and insurance-based investment products), with specific countries, such as the UK (Retail
Distribution Review) and the Netherlands, already putting stringent requirements in place.

In some markets where commission payments have been banned by the regulator—the UK and the Netherlands—the impact on the distribution landscape has been dramatic.

The UK has seen many providers (in particular retail banks) withdraw from the advisory market, with wealth managers (such as St. James’s Place) servicing affluent consumers and increasing adoption of B2C offerings (such as Hargreaves Lansdown) filling the gap in provision for the mass-market or self-directed investor.

Data protection

Data protection regulation is being heavily promoted in Europe, with the approval of the EU General Data Protection Regulation.

This sets principles for increased consumer rights and insurer liability for data protection and privacy. Specifically, it complicates the use of data on personal preferences, behaviours and attitudes (such as data from social media, through profiling or use of cookies and other tracking methods); under proposed regulation, use of Big Data will be permitted, but exactly what data and for what purpose remains to be seen, as regulation will be implemented on a national level.

Additionally, EU regulation calls for the right of erasure for consumers, potentially threatening insurers’ ability to rely unconditionally on data subject to these rights. Moreover, EU principles will apply to the transfer of data to countries with lower data protection standards, complicating further the flow of data from EU to Asian countries, hampering the use of Asian data-related service providers (Cloud services, registries and analysis tools), and affecting multi-regional and global insurers.

In Asia, trends differ between markets, as more mature markets such as South Korea move to a more stringent regulatory environment, while protection standards are widely expected to remain low in developing markets, especially China and India.

In the US, current privacy regulation is managed on a national level or with ad hoc federal legislation, and currently no significant data protection regulation is under way.

Exhibit 21

Penetration of direct channels for SMEs varies across developed markets with UK leading the charge

![Bar chart showing penetration of direct channels for SMEs across different countries.](image-url)

Source: BCG Commercial Insurance Survey 2013; Morgan Stanley Research. Question: "Please indicate how you purchase insurance".
Implications for insurers

Insurance has lagged many industries in its adoption of new technology; however, this is beginning to change. An increasing number of insurers are making technology a key strategic priority – which is critical, in our view, given that the industry is failing to meet consumers’ digital expectations.

All aspects of the insurance value chain could be affected – from administration to pricing/underwriting and distribution. While some of this change is arguably common to all industries, we believe that insurance may be disproportionately affected within financial services given the potential for the Internet of Things to reshape the product proposition and reduce the size of global risk pools. However, we also see opportunities for new, more flexible products to emerge.

We believe the industry needs to seize the opportunity to build business models that drive more frequent consumer interaction – otherwise, we see a danger of new entrants with a strong understanding of consumers entering the space.

Ecosystems are likely to become increasingly important – we think insurers should prioritise finding appropriate partners in order to secure access. We do not see insurers as natural ecosystem hosts for products such as home and motor.

The shape and pace of change are hard to predict – we think that, near term, the focus is likely to be on operational improvements.

Industry has been lagging peers

The insurance industry has been a relative laggard in its adoption of new digital technology – a view supported by our recent survey, which revealed that consumers’ satisfaction with online insurer interactions lags most other industries.

We feel we are now reaching a tipping point where technology will begin to have a broader and more fundamental impact on the insurance industry than it has to date.

Indeed, as we highlight in Exhibit 27, we believe that technology is driving – and will continue to drive – change across the entire value chain.

How well positioned are the insurers?

Although the insurance industry has been slow to react to emerging technologies, as we illustrate in Exhibit 23 we believe existing players have some inherent strengths – for example, strong brands, ownership of distribution and accumulated expertise in pricing and underwriting.

We also see some clear opportunities, such as the ability to use technology to create more engaging and compelling consumer offers, which could increase cross-selling and the insurance risk pool. In the short run, application of technology to the existing business model can improve returns – although over time we presume this will be competed away.

However, insurers are weighed down by cumbersome legacy technology, which limit their ability rapidly to launch new products and react to the change. The current model also typically delivers infrequent consumer interactions and often has inherent channel conflict (for example, agency versus direct).

We believe technology increases the risk of new entrants coming into insurance – potentially leveraging far more detailed consumer insights than are currently available to insurers. We do not see insurers as natural ecosystem hosts, and in the long run this could result in lower returns as insurers lose control of the consumer and become more marginalised providers of capital. Please refer to the grey box on page 19 for a detailed definition of digital ecosystems.

Exhibit 22 explores these last two points – an argument we develop in more detail on pages 32-36. On the x-axis we look at the degree to which adjacent entrants write insurance and on the y-axis at the extent to which ecosystems develop.

At present we believe the industry is broadly in the bottom-left; however, technological change raises the risk that insurers will end up in the top-right box, resulting in lower revenues and weaker returns on capital.
However, if insurers form appropriate partnerships, improve customer centricity and invest in data analytics, we believe this outcome will be avoidable.

Furthermore, we believe the threat will materialise over a long enough time period for insurers to have the opportunity to adjust. In our view, the long-run winners will be those that make the right choices to adapt their business models.

The timing and shape of this change are very hard to predict. We expect to see an increasing number of insurers entering into partnerships in order to ensure access to the most promising ecosystems.

We also believe that, overall, technology is likely to reduce the size of the global insurance risk pool (as technology helps drive reductions in claims frequency and potentially severity). However, the shape of the risk pool is also likely to change – with new risks emerging (cyber insurance, for example) and as more engaging digital products help drive up insurance sales in less penetrated segments or territories.

Which types of insurers are most affected?

All types of insurers are likely to be affected by technology. As Exhibit 27 highlights, we see a broad impact across the value chain, many elements of which are as relevant for life as non-life insurance. However, we do see some differences:

- **Retail non-life:** IoT/telematics are likely to drive radical long-term change. This is the insurance segment that we believe will be most affected.
- **Commercial non-life:** Many of the changes are similar to those seen for retail non-life, but the adoption rate for connected devices is likely to be faster given large premium sizes.
- **Life/health:** Connected health products are likely to become prevalent, leading to long-run changes to the underwriting of life business.
- **Savings:** We expect a continuation of existing technological trends – for example, more online distribution, price transparency and margin erosion.

Exhibit 23
How well positioned are insurers to deal with the changing technology environment?

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established brands</td>
<td>Limited frequency of consumer interaction</td>
</tr>
<tr>
<td>Expertise in pricing risk</td>
<td>Legacy IT systems, operational complexity</td>
</tr>
<tr>
<td>Detailed understanding of claims patterns</td>
<td>Lagging other industries in the ‘digital’ consumer experience – especially in claims</td>
</tr>
<tr>
<td>Large existing consumer base</td>
<td>Channel conflict</td>
</tr>
<tr>
<td>Ownership of face-to-face distribution</td>
<td></td>
</tr>
<tr>
<td>High degree of consumer trust</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of new flexible products – meeting unmet consumer needs</td>
<td>Risk of adjacent entrants into insurance</td>
</tr>
<tr>
<td>Increased cross-selling potential</td>
<td>Disruptive models – e.g. peer-to-peer</td>
</tr>
<tr>
<td>New emerging risk types – e.g. cyber risk</td>
<td>Industry is not a natural ecosystem host</td>
</tr>
<tr>
<td>Step change in operational efficiency</td>
<td>Smaller risk pools given IoT/telematics</td>
</tr>
<tr>
<td>Improve service offer to clients</td>
<td>Anti-selection if late adopter of technology</td>
</tr>
</tbody>
</table>

Source: BCG Analysis, Morgan Stanley Research
How should insurers respond?

Insurers need to make addressing technological change a key strategic priority, we believe – and an increasing number are already doing so. There are several key strands:

- Harnessing best-in-class technology to improve operating efficiency;
- Exploring ways to use technology to achieve a step-change in consumer engagement;
- Developing new more flexible products;
- Forming partnerships to secure access to emerging ecosystems; and
- Transform operating model to foster innovation.

Our key findings

1) Insurance is lagging other industries

Insurers are lagging other industries in terms of online consumer experience and frequency of interaction.

We think the industry has been slow to embrace new technology, and growing consumer expectations from other online experiences are not being fulfilled by insurers.

2) Consumers are willing to hear about new offers

Our global consumer survey suggests that consumers have a high degree of trust in insurers (in relation to handling sensor and other personal data) and are willing to consider novel product offers.

This suggests there is a significant opportunity for insurers to offer more flexible products that meet needs that, at present, are not being met by existing products.

Consumers in Asia appear particularly keen to consider new technology-led product offers.

3) Evolutionary change

While we have identified many examples of technological innovation from insurers, we believe these are generally evolutionary rather than revolutionary.

No scale insurer has yet fully transformed its business model to embrace what is possible with the latest technology.

4) ‘Digitally born’ insurer

We explore in detail what is possible to achieve if one were to apply state-of-the-art systems and processes to a traditional business model. What is the opportunity from a ground-up systems rebuild?

The rise of digital ecosystems

A digital ecosystem is a network of companies, individual contributors, institutions and consumers that interact to create combined services. In consumer-oriented digital markets, ecosystems are enabled by a standard technical platform (say, an operating system or an app store) that connects devices, applications, data, products and services across the value chain – see Exhibit 24.

The platform allows components in the ecosystem to work together more easily than if the individual products operated alone – this can create a new market for products and services that do not yet exist.

For example, insurance companies can collaborate with telecommunications companies to provide new pay-per-use insurance products based on shared data.
Our work suggests that it is possible to take a typical European motor writer distributing through agents, which reports a combined operating ratio of 99%, and transform it into a direct-only business with a combined ratio of around 80% - see Exhibit 25.

This could be achieved through systems and process automation, use of Big Data to improve pricing, transformation of the distribution process and optimisation of support functions.

We see significant opportunities for insurers to improve operational efficiency through use of technology; however, the impact is likely to be temporary as the benefits will presumably be competed away over time.

5) Disruptive threats

We see many potentially disruptive business models that could change the insurance landscape – we discuss the IoT and telematics separately.

Aside from these, we see a risk of adjacent entrants in insurance – for example, companies that have strong consumer insights that could be leveraged to offer insurance products.

New models such as peer-to-peer insurance could also have an impact.

6) Internet of Things

We see a significant number of applications for the IoT in insurance – more so than in any other area of financial services.

Exhibit 25

We estimate technology could reduce the combined ratio to around 80% ...

<table>
<thead>
<tr>
<th>Claims expenses</th>
<th>Non Claims expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>67%</td>
<td>32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Baseline insurer</th>
<th>Automating processes (admin, policy servicing, claims mgmt)</th>
<th>Digital &amp; online sales</th>
<th>Big data (pricing &amp; fraud detection)</th>
<th>Digitally born insurer</th>
</tr>
</thead>
<tbody>
<tr>
<td>99%</td>
<td>4-5%</td>
<td>6-7%</td>
<td>6-10%</td>
<td>78-82%</td>
</tr>
</tbody>
</table>

Connected devices have the potential to transform the insurance offer in the home, while wearable devices could have a similar impact in health insurance.

We believe the adoption of the IoT will be faster in commercial lines given the higher premium size and the existing focus on risk mitigation.

IoT products could dramatically improve the degree of consumer interaction that insurers experience – for example, through the development of broader service-based product offerings.

7) Telematics

Telematics is the most developed application of the IoT in insurance; however, it is still in its infancy.

To date, telematics has only been making real inroads into two segments globally: Italian motor (where claims fraud has been an issue) and UK young drivers (where premium costs are prohibitively high).

In the long run we believe telematics can deliver benefits for insurers and consumers, but mass-market adoption has been slow to take off.

For average premium sizes, the cost of the technology (box or dongle), ongoing analytics cost and the need to offer an upfront discount make the economics difficult – a problem exacerbated by the challenge in mapping driver behaviour data to the likelihood of future claims.

However, over time we see technology costs falling and data analytics improving. Furthermore, we think marketing telematics as a service-led (for example, theft recovery) rather than price-led proposition, could negate the need for a discount and drive cross-selling revenues.

8) Ecosystems

Many of the emerging technology-led products in insurance – such as connected homes and telematics – lend themselves to an ecosystem approach.

However, insurers are not necessarily the natural host of these ecosystems – for example, several technology companies are developing connected-home solutions. Google recently acquired connected-home business Nest, Samsung bought start-up SmartThings and Apple has a solution that links with third-party vendors.
We see a risk that insurers will become disintermediated if they move too rapidly to build partnerships. State Farm, for example, has a partnership with home security player ADT.

9) Insurable risk pools

We believe that insurable risk pools are likely to shrink as remote devices allow insurers to assess risk in real time (Exhibit 26 shows an example in home insurance).

Our high-level estimates suggest that applying telematics to motor insurance globally and connected devices to home insurance could reduce premiums by $30-54 billion.

However, offsetting this we see new classes of risk emerging, such as cyber risk. In the past, the insurance industry has always been able to adapt to the reduction of some risks and the growth of others.

10) Implications for risk selection

As technology enables more informed risk selection, we see a risk that late adopters will be disadvantaged and selected against.

In a typical selection of risks, the risk of the best quintile is 9x less costly in terms of claims than the worst quintile. (See page 114 for a discussion on the risk of anti-selection.)

Exhibit 26
Risk pools could shrink over time – Smart-home devices may reduce risks per policy by 40-60%

Source: BCG case experience, smart systems suppliers, Morgan Stanley Research
**Exhibit 27**

**Impact of technology along the insurance value chain**

**Admin**

- Legacy IT systems are a constraint and reduce flexibility. However, solutions now exist to ‘wrap’ legacy and improve functionality (for example, single consumer view) but increase complexity.
- Application of state-of-the-art systems could materially reduce costs, even applied to a traditional model.
- Core systems at present are unable to adapt easily to new distribution channels and data sources. For example, it is often difficult to incorporate mobile solutions or deal with data from IoT sensors.

**Product Design**

- Ability to design new flexible products that meet consumer needs. For example, on-demand or modular insurance products. Opportunity to increase penetration.
- Internet of Things opens up many new product opportunities. For example, connected home and connected health solutions.
- Potentially smaller risk pools for core insurance products such as motor and home.
- Emergent new risks that will need insuring – for example cyber risk, liability for autonomous vehicles.
- Need to work with a broader range of partners than in past – ability seamlessly to integrate insurance into a third-party ecosystem.

**Pricing/Underwriting**

- Use of Big Data/ analytics offers the ability to identify new claims drivers – for example through the incorporation of novel third-party data sources.
- Shift to structural risk modelling rather than using actuarial techniques – for example, direct real-time monitoring of insured risks.
- Incorporating data from IoT/telematics. Rich datasets, but challenge of contextualising datasets such as driver behaviour and mapping to claims data yet to be solved.

**Marketing**

- Positioning insurance as a more service-led proposition – for example, attempting to cross-sell value-added non-insurance products.
- Increasing the frequency of consumer interaction, which lags other industries.

**Distribution**

- Consumers demand multi-channel interaction, with more online support. Mobile solutions are a key capability.
- Trends toward less use of face-to-face distribution in more sophisticated internet markets.
- Likely formation of ecosystems, which could threaten insurers – in the long run, for example, Google/Nest’s connected home offer in the US.
- Improving efficiency of traditional distribution through digitisation. For example, online sales and servicing capability, plus ability to offer novel value-added products.

**Claims Management**

- Use of telematics data to reduce fraud and improve claims processes in motor.
- Application of self-service to improve consumer experience when making a claim.

Source: BCG analysis, Morgan Stanley Research
Implications for technology providers

The insurance sector accounts for some 7% of all global IT spending – so is relevant when considering the outlook for software and hardware vendors. We believe that IT spending is likely to increase as insurers adapt to changing consumer demands, the need to improve core systems and the availability of new datasets. However, several insurers have indicated that they are reallocating spending to critical areas.

Integration remains a major issue for the insurers, as we expect the industry to continue to run a variety of modern and legacy systems in the short-to-medium term. To date, there is not a single enterprise-wide solution for insurers to adopt – although SAP is looking to develop one. We also note that insurers remain nervous about replacing core systems given these are mission critical.

We would expect to see consolidation among the more specialist insurance technology vendors over time. We see a fragmented market for core insurance systems, with the top 10 vendors having just a 25% combined market share – this compares to a more mature and regulated market such as ERP (enterprise resource planning) software, where the top five players control more than half of the market.

From a software point of view, we see opportunities in client interactions/channels and core systems. We see the major consumer relationship management (CRM) vendors such as SAP, Salesforce.com, Microsoft and Oracle as having opportunities here. In core systems, we see upside for the broad players (SAP, Accenture, Sapiens, CSC and Oracle) as well as more specialist vendors such as Guidewire, eBaoTech, Fineos, OneShield and The Innovation Group.

Insurance is likely to become a key end-market for the Internet of Things, where connected devices generate data to be analysed. Telematics is the most relevant current example here; however, there are still major opportunities for vendors to improve the data analysis – particularly in terms of contextualising it (combining with location, weather information, etc.) and combining it with claims data.

From a hardware point of view, technology used to help insurance companies better understand their consumers includes telematics (trackers in moving vehicles from cars to trucks, but also include ships, (containers and planes), and connected homes (set-top boxes, fire alarms) and wearables (which could include health monitors).

Why are insurers relevant for tech providers?

The insurance industry is already spending fairly heavily on technology and, in fact, is the highest spending industry of all in terms of costs per employee – see Exhibit 29. While changes in technology spending in this sector alone will not change the overall global spending outlook, at 7% of total IT spend it represents a large enough portion to be meaningful.

Exhibit 28
Relative to revenues, insurers are mid-table spenders on IT...

<table>
<thead>
<tr>
<th>IT Spending as a Percent of Revenue (%)</th>
<th>Cross-Industry Average</th>
<th>3.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Publishing and Internet Services</td>
<td>6.7%</td>
<td></td>
</tr>
<tr>
<td>Banking and Financial Services</td>
<td>5.0%</td>
<td></td>
</tr>
<tr>
<td>Media and Entertainment</td>
<td>4.7%</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>4.2%</td>
<td></td>
</tr>
<tr>
<td>Professional Services</td>
<td>4.2%</td>
<td></td>
</tr>
<tr>
<td>Healthcare Providers</td>
<td>3.8%</td>
<td></td>
</tr>
<tr>
<td>Telecommunications</td>
<td>3.2%</td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td>2.8%</td>
<td></td>
</tr>
<tr>
<td>Pharmaceuticals, Life Sciences and Medical Products</td>
<td>2.8%</td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>2.6%</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Industrial Electronics and Electrical Equipment</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Consumer Products</td>
<td>1.9%</td>
<td></td>
</tr>
<tr>
<td>Industrial Manufacturing</td>
<td>1.7%</td>
<td></td>
</tr>
<tr>
<td>Retail and Wholesale</td>
<td>1.7%</td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td>Food and Beverage Processing</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>1.1%</td>
<td></td>
</tr>
<tr>
<td>Construction, Materials and Natural Resources</td>
<td>1.0%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Gartner (as of December 2013)

We believe that changing consumer demands, the need to improve core systems and availability of new datasets – together with improved technical ability to process them effectively – will drive a new wave of technology investment in the industry.

Exhibit 29
...however, on a per employee basis insurers’ IT spending is the highest of all industries

<table>
<thead>
<tr>
<th>IT Spending per Employee (USD)</th>
<th>Cross-Industry Average</th>
<th>12,896</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking and Financial Services</td>
<td>27,638</td>
<td></td>
</tr>
<tr>
<td>Media and Entertainment</td>
<td>20,407</td>
<td></td>
</tr>
<tr>
<td>Software Publishing and Internet Services</td>
<td>18,774</td>
<td></td>
</tr>
<tr>
<td>Telecommunications</td>
<td>16,290</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>16,032</td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td>15,861</td>
<td></td>
</tr>
<tr>
<td>Professional Services</td>
<td>15,779</td>
<td></td>
</tr>
<tr>
<td>Pharmaceuticals, Life Sciences and Medical Products</td>
<td>12,406</td>
<td></td>
</tr>
<tr>
<td>Government - State/Local</td>
<td>12,250</td>
<td></td>
</tr>
<tr>
<td>Industrial Electronics and Electrical Equipment</td>
<td>8,581</td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td>8,358</td>
<td></td>
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<tr>
<td>Construction, Materials and Natural Resources</td>
<td>8,153</td>
<td></td>
</tr>
<tr>
<td>Consumer Products</td>
<td>8,135</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>7,796</td>
<td></td>
</tr>
<tr>
<td>Healthcare Providers</td>
<td>7,711</td>
<td></td>
</tr>
<tr>
<td>Retail and Wholesale</td>
<td>6,653</td>
<td></td>
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<tr>
<td>Food and Beverage Processing</td>
<td>6,540</td>
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<tr>
<td>Industrial Manufacturing</td>
<td>5,574</td>
<td></td>
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<tr>
<td>Food and Beverage Processing</td>
<td>5,378</td>
<td></td>
</tr>
<tr>
<td>Construction, Materials and Natural Resources</td>
<td>4,347</td>
<td></td>
</tr>
</tbody>
</table>

Source: Gartner (as of December 2013)
Our conversations with insurance technology providers and the insurers they serve suggest that this new wave of investment has already started. Most vendors reported an increase in their business over the last 2-3 years – a trend that the majority expects to continue, or even accelerate.

For technology investors, we would highlight three main areas of opportunity:

- Publicly listed pure-play insurance technology companies;
- Publicly listed companies with strong insurance technology; and
- Private pure-play insurance technology companies.

There are not many listed pure-play technologies vendors in insurance. We would highlight Guidewire (core processing suite for P&C insurers), Sapiens (core processing suite for P&C and Life) and The Innovation Group (software & BPO for P&C insurers, with a strong focus on claims management) as the key companies in this group.

After these companies, we see another group of broader technology players that have strong offerings within the insurance space. These all stand to benefit from increasing insurance technology spend but, given the mix of their businesses, there will be other factors at play in the investment decision.

Hardware plays on insurance

The hardware companies are usually the first to benefit from a new product cycle. We would highlight:

- Telematics components including wireless and positioning modules. By providing real-time positioning of assets to the wireless network (2G, 3G, 4G, etc.), insurers can track more precisely the use of assets – for instance how many miles a car is driven and also how it is driven. Examples of providers include Cobra, Gemalto, Metasystem, Sierra Wireless, Telit, TomTom and U-blox. There is nothing new technologically here, and tracking devices have been used for expensive cars for more than ten years now. Those modules can also be used to track other assets such as trucks and containers, but they rely on the cellular network. The barriers for adoption here are a) consumers’ attitude towards being tracked and b) the cost of installation if rolled out in mass.
- Connected-home components such as set-top boxes from cable companies in the US (for example, manufactured by Pace for Xfinity offering by cable provider Comcast) but also connected fire alarms (from Google Nest). We would also mention French insurer MAAF’s trial to connect fire detectors and alarms through custom IoT network provider Sigfox (that is, not using the usual cellular network).

- Wearables – this is a sensitive issue, even more so perhaps than tracking devices on cars, but we believe that there is a potential opportunity for insurance products that can take into account personal data such as sugar levels or activity levels. Even though the insurers and consumers may be reluctant to use such data, technology such as Cloud infrastructure and Big Data makes it available.

Software plays on insurance

We would split the software companies exposed to the insurance industry into five distinct groups.

1. End-to-end software: There are software vendors such as SAP that offer an end-to-end solution for property and casualty (P&C) and life insurance companies using almost exclusively their own technology (developed internally and/or via M&A). The solutions include front-end CRM, core processing and Big Data/analytics. Oracle is also building such an end-to-end offering.

2. Software & services mix: Then there are IT services vendors such as Accenture, CSC and Capgemini. These companies also aim to deliver a complete solution to insurers – but the technology is a mix of their own and an integration of partner software. For example, Accenture can deliver its own Duck Creek software (on-premise or as a service) and then use its integration expertise with partner software to complete the portfolio. CSC would fit more closely with Accenture in that it also has its own software offering, with particular strength in Asia. Capgemini is more focused on partnerships with software vendors like Guidewire and SAP than on its own software. It can also deliver the software as a service (SaaS) to consumers.

3. Horizontal & infrastructure software with a vertical flavour: A number of technology companies have strong offerings in areas like consumer relationship management or channel software, Big Data/analytics and, in addition, offer infrastructure services – either on-premise or in the Cloud. Given the importance of insurance sector spending, several of these companies have a specific focus on this vertical and tailor their offerings. We would highlight salesforce.com
(CRM/channels), Microsoft (CRM, Big Data, infrastructure) and IBM (Big Data, infrastructure) in this area.

4. Integration (middleware) and business process management (BPM) software: One option for insurance companies is to use integration software to integrate legacy systems with modern software that addresses some of the issues we have highlighted, reducing the need for legacy replacement. These companies often also offer BPM tools, so business processes can be visually mapped and optimised. Vendors in this area include Pegasystems, Software AG, Tibco and IBM.

5. Companies with an insurance offering: On the public company side, we would highlight Reed Elsevier’s Lexis Nexis business. Lexis Nexis is active in telematics via the acquisition of Wunelli but also offers data modelling and analytics solutions for insurers.

Among the publicly listed companies we also have IT services & outsourcing companies that either offer to take over existing technology infrastructure (outsourcing) or run entire business processes (for example, claims management) for insurers. We would include Wipro, Capita, TCS and Xchanging in this group – although we do not expect these to be major beneficiaries of the refresh of technology systems we outline in this report.

Finally, there are a large number of private companies active in the insurance space – primarily involved in more specific core processing software or in telematics. In insurance core processing we’d highlight eBaoTech (core processing suite in P&C and life with a strong focus on emerging markets and especially strong in China), Fineos (Life & Health with a focus on claims management) and OneShield (P&C policy management with a US focus).

Covering core processing for brokers/agents, there are companies like Applied Systems, Vertafore and Acturis.

In telematics we would highlight companies with complete telematics solutions (integrated hardware & software) such as Wunelli (part of Lexis Nexis), Cobra (being acquired by Vodafone) and TomTom. Then there are telematics vendors that focus more on hardware (black boxes and dongles) like Metasystem, as well as companies more focused on data analytics/software, such as Telematicus, The Floow and Octo Telematics (acquired by Renova Group).

What do technology providers need to win with insurers?

Our conversations suggest that insurers are looking for their technology providers to cover more of their requirements so that they have to do less integration. However, we do not believe they are ready to migrate all their systems – partly due to the risk of doing this, and partly because of the perception that no one vendor can cover everything effectively. In some cases, such as life insurance, we do not see a business case for doing so.

However, we believe insurers will consider the vendors’ ability to maintain and expand their offerings in the medium term. Given the complexity of the industry and the likely investments required, we would expect this to drive greater consolidation of a fragmented industry as the larger players may be better placed.

We do not see widespread Cloud adoption in insurance but companies are looking to lower infrastructure costs by using Cloud infrastructures, and we see this also potentially helping to level the playing-field between smaller and larger insurers when we consider Big Data analytics. What is the current insurance IT spend?

Gartner estimates that insurers will spend $187 billion on IT in 2014, growing 4% versus 2013. This represents 7% of total global IT spend – Exhibit 30 shows the estimated split of insurance IT expenditure.

This is roughly in line with the average enterprise IT spending (see Exhibit 31), with the main difference being the slightly higher proportion that insurers spend on ‘internal’ systems.

However, when we look at spend per employee, the insurance industry actually spends the most (Exhibit 29) – ahead of Banking & Financial Services.

Exhibit 30
Analysis of IT spending by type for insurers

<table>
<thead>
<tr>
<th>Total Insurance IT Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Services</td>
</tr>
<tr>
<td>22%</td>
</tr>
</tbody>
</table>

Source: Gartner (as of February 2013)
We expect insurer spending to increase from here

Our conversations with insurers and technology companies that provide software and IT services to the sector suggest there has been an uptick in demand over the last 2-3 years – both sides also see a very significant opportunity for vendors as insurers seek to transform their systems.

The technology providers we spoke to generally expected their businesses to accelerate over the next 2-3 years as insurers are forced to change their systems to respond to the changes and threats we have outlined.

What do insurance companies need?

Elsewhere in this report we highlight the key capabilities that an insurer needs its IT infrastructure to be able to deliver at a high level:

- **Client interaction and channels** – with a single view of the consumer;
- **Flexible, low-cost core policy management and claims processing** systems, which also need to be fast in facilitating new business and error-free throughout the process; and
- **Ability to integrate, manage and analyse data from various sources** – including IoT/telematics.

Drilling down further, we believe that insurers need to see some of the following offers and attributes from their technology providers – this is certainly not an exhaustive list:

- Modular products so that migration can be gradual rather than a big bang;
- A single version for consumer data that is consistent across multiple systems, so this can be easily shared and also analysed – Big Data make this easier to achieve across multi-policy admin environments;
- The ability to add new channels and ways to interact with consumers easily to back-end systems (so channel systems can be changed without affecting the back end);
- Ability to integrate and deal with many (and an increasing number of) data sources. This must include the sensor data that will come from the IoT;
- Flexible product development and implementation systems so that new products can be launched cheaply and quickly;
- Willingness to work with the insurer on innovation and from a business point of view – not just documenting processes and requirement; and
- Future proof systems so that adoption of Cloud infrastructure is seamless and the move to running the software as a service is possible versus on-premise.

Technology vendors that can deliver solutions that meet these criteria are well positioned, in our view.

Exhibit 32 shows where the various players fit into the insurance technology landscape.

Where are the biggest opportunities?

1) **Client interaction and channels**

We see the major consumer relationship management (CRM) vendors as potential beneficiaries of the insurance industry’s need to modernise its consumer-facing systems.

With this group we would highlight SAP, salesforce.com, Microsoft and Oracle. SAP already has a strong presence in the insurance sector and, by internal development and M&A, has been working to build a complete solution for the industry including front-end systems, policy, claims and billing systems built on the HANA platform for Big Data/analytics. We believe this broad approach to the insurance sector should position SAP well in the front end given its ability to integrate tightly to the core processing systems and to deliver analytics integrated into this.

Salesforce.com should also benefit from increasing insurance IT spending, especially if vendors look to SaaS solutions for their CRM needs. Salesforce.com should be able to host
insurance-specific applications (whether they are dedicated front-end systems or core processing systems) on its salesforce1 platform.

Microsoft also has a strong focus on the insurance industry and is looking to drive adoption of its infrastructure technologies (including Microsoft Azure) in this vertical. Microsoft Dynamics CRM could benefit from this spending trend.

2) Core systems – in insurers and broker/agents

We still see a very fragmented market for core insurance systems, with the top 10 vendors having just a 25% market share. This compares to a more mature and regulated market such as ERP software, where just the top five players control over half the market.

This means there are still many smaller companies and the lack of consolidation so far means that these companies tend to be specialists in a niche area of insurance processing or geography. There also tends to be a focus on either the life & health market or P&C. Consequently, one software vendor may have an offering that is very well suited to claims management, with a focus in Asia and on P&C insurance; while another company may have the majority of its business in North America focused on life and health policy administration.

However, a frequent theme from almost all the vendors we spoke to was that they are being pushed to cover more of the market, so are generally expanding the coverage of their solutions.

The most common situation is that a company that is strong in policy administration will look to strengthen its offering in claims and billings, but we also see companies looking to broaden their geographical reach – and finally to add life & health along with their original P&C proposition.

In addition to the software vendors that focus primarily on the insurers’ core systems, we also have a group that focus on software solutions for the insurance brokers or agents. Interestingly, it is in this area that we have seen the strongest Cloud-based offerings.

When we think about the core systems market, we would split the vendors into three main groups:

- Larger software & IT services companies that have a broad coverage of the market – companies in this space include SAP, Accenture, Sapiens, CSC and Oracle.
- Software vendors focused on more specific areas of the market – including Guidewire (whose coverage is expanding), eBaoTech, Fineos, OneShield and The Innovation Group.
- Broker/agent focused vendors include Applied Systems, Vertafore and Acturis.

We do not expect many, if any, ‘big bang’ replacements of core systems, given that these changes are so high risk for insurers. We see change being more evolutionary than revolutionary.

With this trend in mind, we believe insurers will consider not only the solution in place today from the software vendor, but also the vendor’s ability to invest and innovate in its own and adjacent areas in future. This could favour the larger groups that have the will and means to invest for the longer term, and we think this may drive consolidation in a market that is highly fragmented.

Integration remains a major challenge

Insurers look likely to continue to run a variety of modern and legacy systems in the short-to-medium term. Given this, integration (middleware) software vendors and IT services companies will remain extremely relevant in the industry.

We believe that this is a bigger issue for life insurers. For example, South Korea’s Samsung Life Insurance is working to implement SAP ERP for launch in 2017, which will cover around ~50% of its business. However, owing to the nature of its long-term contracts, Samsung Life will need to keep its remaining 50% legacy system for business maintenance. On the other hand, Samsung Fire & Marine (a P&C carrier) aims to fully migrate all data to a new system, given the short duration of its contracts.

Middleware and business process management vendors like Pegasystems, Software AG, IBM and Tibco have a strong focus on the insurance industry. These companies offer a combination of business process modelling, and optimisation and integration technology to link different software solutions.

Meanwhile, IT Services companies can offer a combination of their own software solutions (Accenture and CSC) and strong integration capabilities (Capgemini). Accenture and...
Capgemini will also offer to run these systems in the Cloud in a platform-as-a-service (PaaS) model.

Accenture’s traditional target market has tended to be Tier 1 insurance and it has products that cover core processes in P&C and life & health. The acquisition of Duck Creek has helped Accenture make inroads into the mid-market of insurers (especially in P&C, initially in policy admin but then also in claims).

CSC has a very broad offering in software, consulting and outsourcing. The company has a strong presence in Asia with its insurance software assets. While CSC has one of the largest installed bases in the market, a large part of this is for its older products.

**Data challenges – Big Data, analytics and IoT**

We believe that all companies have been struggling to get business value out of the transactional data that they create and store. For many manufacturing and consumer goods companies, the challenge is to get the data out of the transactional ERP and other legacy systems they have. Existing database structures and hardware limitations have made the systems used for this (often called data warehouses) slow and inflexible.

The challenge could be more complex for insurers. The fragmented nature of their core systems and the consumer information silos that have been created mean there is even more integration and data cleansing to be done than for an average enterprise. This challenge covers everything from analysing consumer interactions (make the right product offer at the right time through the right channel) to improving the actual underwriting decisions by using a larger, more varied dataset. So insurers need to increase the amount of data they analyse and do this more quickly and more accurately.

However, the goalposts are constantly moving – or more accurately, widening as new datasets emerge. For example, the analysis of social media interactions may be added to that of call-centre interactions. Motor insurers are starting to think about how they integrate telematics data – this adds another layer of complexity before we even think about how telematics might serve as a new way to engage with consumers or how the IoT could be more broadly applicable. The IoT expands the datasets to ‘connected’ home insurance (fire, intruder and other sensors in the home) and even life & health (sensors tracking fitness metrics). In time, insurers may wish to be able to input social network data – or even consumer shopping data (what type of food do you buy?) into their underwriting calculations.

Microsoft brings strong industry knowledge, business intelligence and analytics capability and the Microsoft Azure Cloud computing platform. We see platforms like Azure as having the potential to level the playing-field between large and mid-sized insurers that can now afford to perform the same complex analysis using that platform.

We would also highlight Lexis Nexis, which brings strong analytics and databases of claims and other information to help insurers measure claims and prevent fraud more effectively.

SAP’s propositions in this space (including all the core processing systems) will be based on the SAP HANA platform, which SAP believes delivers dramatic improvements in response times and flexibility. The integration of the core processing and analytical platforms also means that analysis can be done in real time on live transactional data.

Finally, IBM and Oracle offer a combination of strong business intelligence and database capabilities.

Turning specifically to telematics, some technology vendors focus exclusively on telematic data analytics, such as Telematicus and The Floow, and others combine a hardware offering with data analytics and other services, such as Octo Telematics, Cobra, Wunelli and TomTom.

While telematics solutions bring insurers a whole new dataset that should help improve risk calculations and lower loss ratios, we believe they are still a challenge for insurers. To date, the insurers with large volumes of claims data that have been linked to relatively simple data collected from consumers – where you live, your age, how long you have been driving, which car you are driving and your claims history. Now they can collect a large new set of data – where you drive, when, how quickly, how aggressively and so on. The big challenge is to correlate that new information with the claims data that are linked to other information. We see a significant opportunity for the technology providers and insurers that can deliver that.
Outsourcing/business process outsourcing (BPO)

While we believe core system modernisation will become increasingly important for the insurers – and will likely lead to greater differentiation in the industry – we still expect to see insurers outsource more technology and processes. In some cases this will be purely cost-driven; in others it could be that an ‘oldco’ book of business is outsourced as it is run off, while a modern system is used for new business. It is even easier to envisage ‘closed’ books of business being outsourced to lower costs while the IT for current business is modernised.

However, we also expect some of the outsourcing companies to offer to take on the existing infrastructure and modernise it while running the existing systems. We believe this type of transformational outsourcing offering will prove more attractive over time to insurers, provided that the promise of modernisation and transformation is delivered.

As another style of outsourcing, we would highlight Capgemini and Accenture’s PaaS offerings, where these companies host insurance core processing software and deliver it as a service to the insurers. We believe this targets mainly small and mid-sized insurers today but could move up the market. Accenture tends to host its own Duck Creek and other software on the platform while Capgemini has a partnership with Guidewire software.

Most of the global IT services companies will offer technology outsourcing to insurers, but we would highlight Capgemini, Accenture, Wipro, TCS, Capita, Xchanging and The Innovation Group as having a strong insurance focus.

Could there be a one-stop-shop?

The history of software is one of consolidation and economies of scale. Innovation has traditionally happened with point solutions but, over time, these are integrated to form a more coherent suite of solutions. The economies of scale work in favour of third-party software adoption: when a software company only has one consumer, a large insurer will likely be able to outspend its software provider, but when the software company has 100 consumers, no one insurer will be able to invest as much.

This also means that the software industry tends to consolidate, as the vendor with 100 consumers can also outspend (all other things being equal) the vendor with 10 consumers – and so tends to gain more and more market share over time. We believe there is a significant opportunity for the vendor(s) that can provide such a suite of solutions to the insurance industry.

However, a complete suite is unlikely to be enough to ensure adoption. Core insurance processing systems are by their nature ‘mission critical’, so insurers are naturally very reluctant to engage in higher-risk ‘big-bang’ changes. As a result, we believe the solutions must be flexible and modular in order for insurers to migrate over time.

Who has the potential to deliver such a solution?

Insurance is a complex industry – and there is a huge breadth of solutions needed to deliver a suite (from consumer interaction, through multiple core processing systems to Big Data/analytics). We believe SAP’s own vision is to deliver an SAP for insurance in the same way it has delivered a broad extended ERP solution for other industries. However, it will have to overcome the challenges of complex integration from its earlier ERP days, but clearly has the breadth of technology and ability to invest to deliver such a platform. Oracle would also be in a position to invest in this way.

CSC also has a broad offering in core insurance processing but, we believe, will need to drive adoption of its newer offerings and will have to partner to cover other areas of the solution.

We believe that the IT services companies – like Capgemini and Accenture – that have focused heavily on insurance could also construct an offering. This would likely be Cloud-based and the companies would package their own solutions and third-party software.

In a slightly different way to the IT services players, companies that can deliver software platforms (PaaS) in the Cloud could also assemble an offering. Salesforce.com already has the consumer/channels element but could persuade third parties to develop on its salesforce1 platform. We believe Microsoft could also work on this with its Azure Cloud computing platform.
Is Cloud the answer?

Insurer CIOs cite several reasons for not yet fully adopting Cloud usage, but many among those we interviewed believe that, ultimately, this will be the future state.

We believe that two main fears hold back greater Cloud adoption today:

- Data regulation (and privacy considerations); and
- The critical nature of the systems to an insurer (and whether this can be trusted to a third party).

From both perspectives we expect medium-term resolutions.

Within regulation, Cloud providers are rapidly gaining regulatory accreditation such as “Article 29” compliance in European countries. This holds back several Cloud providers and is critical for them if they are to gain share.

From a trust perspective, the greatest systems failures and breaches have been of in-house IT over the last decade, not from Cloud providers.

With a longer baseline of stability, trust will increasingly be built with insurance executives.

Three further reasons will drive Cloud adoption, in our view:

1. **Cost and efficiency.** The costs of Cloud storage continue to trend downwards, and several in the industry speculate that storage will eventually become free, with the business model switching to services. In such a scenario, it will be increasingly attractive from a cost/efficiency perspective to use Cloud infrastructure over in-house infrastructure.

2. **Cyber-attack risk** – Cloud providers will increasingly have unique capabilities to defend against cyber-attack, which will not be able to be matched by insurers. We believe that cyber-attacks will come more and more frequent.

3. **Flexibility to create new environments and scale.**

Exhibit 32

Mapping the technology providers that interact with the insurance industry

<table>
<thead>
<tr>
<th>Internet / Social</th>
<th>Front End</th>
<th>Business Outsourcing</th>
<th>Middleware / BPM</th>
<th>Big Data/Analytics</th>
<th>Telematics</th>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google</td>
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Source: Gartner, BCG Analysis, Morgan Stanley Research
What role does Cloud computing have?

First, we would split Cloud computing into two main parts – the provision of IT infrastructure (Infrastructure as a Service – IaaS) and the provision of complete software applications – Software as a Service (SaaS). As in other industries, we believe IaaS has been more broadly adopted than SaaS and we see an opportunity for insurers to lower their IT hardware run costs by taking advantage of some of this infrastructure, where possible (some legacy applications will likely have to be run on specific hardware). For example, we see Microsoft working closely in the insurance industry to drive adoption of its Azure platform.

We also see insurers as adopting SaaS for common business processes – as has happened in other industries. SaaS has been able to penetrate areas such as consumer relationship management (CRM) and some internal processes like human capital management (HCM) and travel & expense management – processes that are not insurance industry-specific.

We have come across some examples of more core processes being made available as a service. For example, the software provided into insurance brokers/agents is sometimes delivered as a service. In the insurance space Accenture has agreed to deploy its Duck Creek suite in a SaaS model to Berkshire Hathaway for policy, claims and billings.

However, overall we believe there is still a reluctance to adopt core systems on a SaaS model. Part of this is likely regulatory driven – there is often data protection regulation (EU) demanding insurers implement data security measures (and apply regulation when taking data outside regulated countries). However, we also believe there is not yet an ‘insurance company in a box’ software solution that can be delivered as a Service. As a result, we still expect the majority of core systems for insurers to be run on-premise in the short-to-medium term.

On the other hand, we see a significant role for Cloud computing in the analytics and IoT/telematics areas of insurance. Computing platforms like Microsoft Azure and Amazon Web Services can help to level the playing-field for small and mid-sized insurers as they give these companies access to large-scale computing infrastructure at a low cost based on usage. As a result these companies can in theory perform data analysis that in the past was only available to insurers operating IT on a very large scale. For the larger insurance companies, these platforms offer greater flexibility and lower cost than would be the case if they maintained their own infrastructure.

Could tech companies compete with insurers?

We believe that internet and social network companies have very rich datasets about consumers that could be of huge value when making underwriting decisions – indeed, the data will often be a lot richer than the information an insurance company has to work with.

Over the last 10-15 years we have also seen technology companies increase their value by solving problems that industrial companies have been reluctant to solve. We expect there will be gaps for technology companies if the traditional players are slow to react, and we already have examples, for example in Japan, of internet companies starting to offer insurance.

We believe the major barrier that technology companies face is claims data. If the rich dataset from the internet and social networking can be correlated with claims records, there could be a compelling value proposition. This issue also has a bearing on telematics directly as technology companies generate huge datasets around driver behaviour and insurers struggle to reconcile this with historical claims data – simply put, does a particular driving style imply a higher claims probability?

Vendor profiles

We show the profiles of the various vendors that we have discussed in Appendix 1.
Exploring scenarios for insurers

Given the degree of potential change facing the insurance industry, it is impossible to be certain about the outcome. While we can identify many issues that are likely to affect the industry, it is much harder to be precise about the impact and the timing.

To address this, we have developed seven scenarios to assess how the industry may develop. We explore 14 trends that are likely to shape the industry and categorise them according to their potential impact and the degree of uncertainty.

Our base case is developed by looking at high-impact trends that have a high degree of certainty. Examples include changes in distribution, regulation, demographics, greater penetration of mobile solutions, data analytics and the Internet of Things.

We also analyse scenarios along two dimensions: 1) the extent of development of ecosystem-based business models and 2) the level of presence of adjacent entrants. Although uncertain, these two trends could fundamentally alter the extent to which insurers continue to own the value chain – unless they innovate and adapt.

A key debate is how well placed insurers are to develop ecosystems – arguably, other players have a natural advantage: for example, original equipment manufacturers (OEMs) in motor insurance and potentially utilities for connected-home solutions. With the exception of Ping An in China, most insurers have not yet developed proper ecosystems.

Experiences from bancassurance globally and UK life illustrate the risks for the industry. Absent the impact of technology, we have already seen examples of insurers losing control over key aspects of the value chain and financial returns declining as a consequence.

1) The changing face of distribution
Technology is changing how consumers want to engage with their insurers across the different distribution channels.

Consumer segments with different preferences are emerging: for example, some want rich advice but others, so-called ‘self-directed’ consumers, are seeking simplicity, convenience and speed.

2) Developing regulation
Consumer-focused regulation is increasingly prevalent – in particular, scrutiny of commissions and other incentives paid to distributors. There is an increasing need for a high degree of alignment between distributors and consumer outcomes.

We note growing concern about the sharing and use of consumer data – for example, the European Union’s General Data Protection Regulation. Stricter prudential solvency requirements are also changing the relative attractiveness of products for insurers.

3) Changing demographics
A combination of higher life expectancy and low birth rates has resulted in an increasing average age in the population in many different countries. This creates greater demand for products related to retirement income and care.

4) Greater mobile usage
Consumers are increasingly turning online and remaining connected to the internet via mobile phones and tablets – and are therefore demanding online/mobile presence from product providers.

5) Rise of platform-based models
Platform-based models offer all product/service needs in one place. This should eventually result in value migrating from manufacturers to distributors.

6) New data analytics
Dynamic gathering, intelligently combining and analysing large amounts of data combined enable better and real-time risk assessment. We are seeing the use of non-traditional sources of information in order to price risk.

7) New data sources – Internet of Things
The IoT provides a wealth of information on homes, automobiles and people.
Exhibit 33
We see 14 key trends in the insurance industry, with various levels of impact and uncertainty

<table>
<thead>
<tr>
<th>High Impact</th>
<th>Low Impact</th>
</tr>
</thead>
</table>
| - Changing face of distribution
- Developing regulation
- Changing demographics
- Greater mobile usage
- Rise of platform-based models
- New data analytics
- New data – Internet of Things |
| - Agents digitized
- Drive towards efficiency
- Analytics optimisation
- Reduced government and employer provision |
| - Adjacent entrants
- Integration of insurance into wider ecosystems |
| - New categories for insurance
- Autonomous vehicles
- Automated trading of risk on capital markets |

Source: BCG scenario methodology, Morgan Stanley Research

Exhibit 34
We see several scenarios for future insurers, each with very different implications for the industry

- **Insurers advance the value chain to create ecosystems through own technology and services**
  - **Ping An**
  - **Current traditional insurers**

- **Insurers partner with adjacent entrants to offer complementary services in joint ecosystems**
  - **State Farm & ADT partnership**

- **Adjacent players own the ecosystem and are independent from insurers, offering their own insurance**
  - **Rakuten**

- **Insurers continue to provide the whole value chain, as they do today**
  - **Current traditional insurers**

- **Insurers partner with adjacent entrants to enhance specific elements of the value chain**
  - **Insurers selling through aggregators and bancassurance**

- **Adjacent entrants exclude insurers from parts of the value chain such as pricing and distribution**
  - **In road assistance companies compete only on cost**

- **Adjacent entrants compete directly with insurers by offering products and services largely as they are, pure insurance**

Source: BCG scenario methodology, Morgan Stanley Research
8) Digitisation of agents
Agents offer increased services and efficiency to consumers based on full integration with insurer’s digital platform. Here, consumers can combine the agency service with online offers.

9) Analytics optimisation
We are seeing a trend whereby existing analysis of static data is refined – in particular, developing more predictive models rather than using traditional statistical actuarial approaches.

10) Reduced government and employer provision
There is a growing trend towards lower retirement contributions and a significant transfer of risk to individuals.

11) Adjacent entrants coming into insurance
For example, car manufacturers (OEMs) or retailers could conceivably enter the insurance market.

12) Integration of insurance into wider ecosystems
Insurance becomes just one product offer within a much broader suite, which could in theory undermine the position of insurers (depending on how it controls the ecosystem).

13) New categories for insurance
Examples here include the insurance of autonomous vehicles and cyber insurance.

14) Automated trading of risk on capital markets
This could challenge insurers’ traditional role as ‘warehouses’ of risk.

Forming our scenarios
Underlying our scenarios, the two most important trends – both of which could have a high impact and are highly uncertain – revolve around the extent to which:

- Adjacent companies enter the insurance market; and
- Insurance is integrated into wider ecosystem models.

From there, we have created seven scenarios for the insurance industry over the next 10-15 years. Each leads to a very different end state for the industry, and different insurer and technology provider strategies.

What do we mean by an ‘ecosystem’?
By ecosystem we mean a grouping of different products or services – which may or may not be provided by one provider.

One could imagine an in-car ecosystem where the IT system combines on-demand music, video, geographic location, assistance services and allows insurance to be purchased. A similar construct could be imagined in the home. The host of such an ecosystem may or may not be an insurer.

What do we mean by ‘adjacent entrants’?
Adjacent entrants are new competitors coming into insurance using key insights or advantages that they have gained from their core operations. Examples include OEMs and digital players such as Google.

Scenario A – the starting point
This is the status quo, where most industry players are now – there are only a few adjacent entrants into insurance and ecosystems offering insurance.

Scenario B – Ecosystems developed by insurers
This probably the most optimistic scenario for insurers – ecosystems become well developed, but there are no new entrants from adjacent industries.

An example of a company that is trying to achieve this now is Ping An, which is developing an ecosystem to attract and retain consumers while driving cross-sales. It positions itself as a financial services supermarket where consumers find all their financial needs through one account. Consumers are attracted by new business lines (for example, peer-to-peer lending through Lufax) that drive interaction and convenience; they are then cross-sold more traditional products.

Insurers here also have the potential to boost revenues by cross-selling not only traditional insurance products but also related service-led propositions.

Scenario C – more traditional partnering
This scenario is quite commonplace today – where an insurer and an adjacent entrant jointly sell insurance.

Traditional bancassurance would fit into this space – the adjacent entrant – the bank – partners with an insurer to offer additional products to its consumers.
Scenario D – opportunities for insurers

We think this is an interesting model: insurers proactively seek partnerships in order to become embedded within broader ecosystems. Under this approach, the insurer may not control the ecosystem but is likely to derive significant benefit from being part of it.

A good early example here is the US property and casualty (P&C) company State Farm, which has formed a partnership with security and alarm company ADT; the aim is to offer connected-home and insurance solutions. For State Farm, installing and servicing dedicated boxes for a connected-home insurance offering would likely be prohibitively expensive, but by partnering with ADT, which already carries out these roles, the economics could be transformed.

Allianz has partnered with Deutsche Telekom, aiming to take a similar approach: to create an ecosystem combining information, communication, insurance and service offerings.

Scenario E – insurers lose parts of value chain

Under this scenario, insurers work with partners but progressively lose elements of the value chain owing to the strength of the partner’s consumer relationships.

We can envisage a scenario in which the partner not only ‘owns’ the consumer (as does a bank) but also has so much insight into consumer behaviour that it also takes on the role of pricing risk. In this scenario an insurer could be significantly squeezed.

An example here could be an automotive OEM, where initially the insurer is required to price the risk, but as the OEM builds capability the insurer becomes less relevant. In this scenario, we believe insurers than can partner globally with OEMs would be best placed, as the OEMs would presumably be looking to develop a telematics solution (for example) in all major markets.

Scenario F – threat to insurers

Here, we assume new entrants come into the insurance market not only through ecosystems but also by leveraging their existing knowledge of their own consumers.

While we have included this as one of our scenarios for technology-driven change, it is already a feature of traditional insurance markets.

At the simplest level, we could argue that this includes affinity groups that may partner with an insurer but on a white-label basis (rebranded to appear as if it is made by the affinity group).

There are some good existing examples in the UK:

- Over-50s business Saga did not start out as an insurer but now derives most of its revenue from insurance.
- The AA used the strength of its brand and knowledge of its consumer base to move into general insurance.

Saga largely manufactures its own insurance product - with the motor underwriting platform in-house.

We may see more entrants of this type, perhaps initially partnering with an insurer, but over time bringing more activities in-house.

An example of this working in reverse is HUK-Coburg in Germany, where the business has used its roots in insurance to build one of the country’s largest car servicing networks.

Scenario G – worst-case scenario

Under this scenario, ecosystems become widespread and there are a significant number of adjacent entrants, such that insurers are squeezed out of significant parts of the market and lose scale.

An example of an adjacent company already moving into the insurance space is Rakuten, Japan’s largest internet company, which in 2009 bought a life insurer subsequently rebranded as Rakuten Insurance. Rakuten has strong cross-selling skills and a high degree of penetration of Japanese consumers.

A strong roadmap already exists

While we are considering future scenarios for the industry driven by technology, we note that similar impacts have already been felt in the past from changes in more traditional business models. There are many instances, for instance, of insurers losing control of elements of the value chain.

Losing control of distribution has been highly detrimental to insurers in several jurisdictions globally.

The UK life industry is a good example here: a combination of regulation, poor risk management and mis-selling has led the
industry to move from being vertically integrated to principally offering unit-linked wrappers with third-party asset management through brokers. Recently, even the wrappers have been challenged by non-traditional competitors such as platform provider Hargreaves Lansdown.

Bancassurance is another example. Although strategically sensible for many insurance players – offering cost/capital efficient access to new markets, new consumers and leveraging existing back offices – bancassurance has weakened insurers’ control over the consumer.

While overall financial returns may have been enhanced (owing to the incremental nature of the business), in most cases the margins for bancassurance business are less attractive than for sales through proprietary salesforces.

These examples demonstrate clearly how important developing an ecosystem could be, as, without owning the consumer relationship, the economics for the insurance industry are likely to be less attractive.

**Variances by business line and geography**

Although the development of insurance within ecosystems is in its infancy, we are seeing early signs of some trends by business line.

**Some variations in business line exist...**

- A shift towards the development of ecosystems is more frequent in consumer product lines than in business lines.
- Adjacent entrants have only come into insurance where they have clear advantage. In Japan, for example, Rakuten offers exclusively personal lines, whereas the Allianz/DT partnership includes both personal and commercial lines.

**...but the geographical variations are greater at this stage**

There is much variation in the extent to which ecosystems have been adopted in Asia, Europe and North America.

- Asian insurers such as Ping An and Rakuten have embraced the ecosystem model. These companies own their own ecosystems and provide insurance as one of many products/services from a single account.
- In Europe, the idea of ecosystems is catching on, with insurers making noises around building relationships with consumers and offering advanced services.
- In North America, we have seen adjacent entrants move in, such as Overstock.com and home ecosystem plays such as the State Farm/ADT partnership.
The consumer view today

Our global survey results show that online channels are widely used by consumers in their insurance journey. On average, 88% of consumers surveyed worldwide use more than one online channel.

Social media are also broadly used, with usage far more prevalent in Asia. 21% of consumers already use friends and family posts on social media as a very important source of information for their insurance choice; 40% do not yet but are likely to do so in the future.

Face-to-face interactions are still important. Over 80% of consumers use face-to-face channels in their journey, but in markets with higher internet maturity we found lower use of face-to-face interactions.

However, more than 50% of our respondents on average were unwilling to pay for face-to-face interactions with life, motor and home insurers. Those who were willing did not want to pay more than ~10% of premiums for the service. The propensity to pay varied between countries, with Asia the highest.

Although insurers' overall interactions with consumers rank as average, the level of satisfaction with online interactions significantly lags other industries – with a notably large gap to banks.

Furthermore, we found that online satisfaction with insurers decreases along the value chain, with the lowest satisfaction seen at the claims stage, where the net promoter score was minus 49.

We believe the factors driving the weak scores are generally within insurers' control – for example, a lack of better online chat and support; along with simpler processes and personalised offerings.

A better online experience may translate into brand advocacy. We found that consumers who were more satisfied with their online insurance experience increased their support for insurers by as much as 47%.

In this section, we discuss the key insights from our global consumer survey. We focus on the way in which consumers interact with their insurers, and on their consumer satisfaction with the insurance journey.

Our survey was conducted in 12 countries globally and was specially commissioned for this report. For a more detailed methodology, please see Appendix 2.

Our two principal findings are:

- Consumers are willing to increase the usage of direct online channels. Demand for face-to-face channels is likely to remain, but is challenged by consumers' low willingness to pay for such services.

- Insurers stand to benefit from higher brand advocacy and a larger share of 'switching consumers' if the online experience is improved.

Increasing interaction with insurers online

The results of our survey show that both direct online channels and social media are widely used by consumers in their insurance journey.

This is demonstrated in Exhibit 35: the y-axis shows the proportion of respondents that use more than one online channel in each step of their insurance journey ('Research', 'Purchase', 'Modify', 'Claim' and 'Renew'). On the x-axis, we show the BCG "e-intensity index score", which measures the relative maturity of the internet in each economy. We can see that, on average, 88% of consumers surveyed globally use at least one online direct channel.

Exhibit 36 shows a breakdown of interactions with insurers by stage of the insurance journey – it shows that online channels account on average for 31% of total channels used when submitting claims and up to 42% when researching for new policies. By contrast, only 8% of consumers do not use any online channel during their consumer journey – so-called 'offline consumers'.

Social media are also broadly used by consumers. On average, 26% of respondents across the 12 countries have already shared recommendations of insurers through social media; 28% have not yet but are likely to do so in the future.

Similarly, 21% of respondents already use friends and family posts on social media as an important source of information for their insurance choice; 40% do not yet but are likely to do so in the future. Social media usage tends to be higher in Asia and lower in Europe – for example, ~50% of respondents had shared recommendations through social media in India and China versus 16% in the UK and 18% in Germany – see Exhibit 38.

Furthermore, we expect usage of direct online channels to increase as insurers improve the quality of their online experience. Consumers who are currently 'offline' are willing to move ~25% of their interactions with insurers to online direct channels, with phone/email channels being hurt more than face-to-face. We show this in Exhibit 39.
Exhibit 35

**Use of direct/non-direct online channels vs. e-intensity index (a measure of relative internet maturity): direct online channels are broadly used in insurance across all countries**

% of respondents in each country which indicated use of more than one Direct/Non Direct Online Channel across the insurance client journey

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey”. See Appendix 2 for channel breakdown.

Exhibit 36

**Between 31% and 42% of consumers' insurance journeys are done via direct and non-direct online channels**

Breakdown of customers' use of channel of interaction with insurers

% respondents

<table>
<thead>
<tr>
<th>Channel</th>
<th>Direct online channels</th>
<th>Non direct online channels</th>
<th>Insurer/Bank - Phone</th>
<th>Broker - Phone/email</th>
<th>Agent - Phone/email</th>
<th>Broker - Face to Face</th>
<th>Agent - Face to Face</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>22%</td>
<td>20%</td>
<td>7%</td>
<td>17%</td>
<td>9%</td>
<td>7%</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>Purchase</td>
<td>21%</td>
<td>13%</td>
<td>10%</td>
<td>12%</td>
<td>11%</td>
<td>8%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Modify</td>
<td>22%</td>
<td>11%</td>
<td>12%</td>
<td>14%</td>
<td>13%</td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Access</td>
<td>25%</td>
<td>14%</td>
<td>10%</td>
<td>10%</td>
<td>13%</td>
<td>8%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Claim</td>
<td>20%</td>
<td>11%</td>
<td>15%</td>
<td>11%</td>
<td>14%</td>
<td>8%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Renew</td>
<td>23%</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
<td>15%</td>
<td>8%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Straight Sample Avg.</td>
<td>22%</td>
<td>13%</td>
<td>11%</td>
<td>13%</td>
<td>13%</td>
<td>8%</td>
<td>6%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey”. See Appendix 2 for channel breakdown.
Exhibit 37
Online channels are widely adopted across countries

Breakdown of customers’ use of channel of interaction with insurers, average across consumer journey

<table>
<thead>
<tr>
<th>Country</th>
<th>Direct online channels</th>
<th>Non direct online channels</th>
<th>Insurer/Bank - Phone</th>
<th>Insurer/Bank - Face to Face</th>
<th>Broker - Phone/Email</th>
<th>Broker - Face to Face</th>
<th>Agent- Phone/email</th>
<th>Agent - Face to Face</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>28%</td>
<td>12%</td>
<td>11%</td>
<td>10%</td>
<td>14%</td>
<td>14%</td>
<td>10%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Australia</td>
<td>26%</td>
<td>11%</td>
<td>12%</td>
<td>12%</td>
<td>13%</td>
<td>13%</td>
<td>7%</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>United States</td>
<td>25%</td>
<td>11%</td>
<td>12%</td>
<td>12%</td>
<td>13%</td>
<td>13%</td>
<td>7%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Japan</td>
<td>23%</td>
<td>11%</td>
<td>12%</td>
<td>14%</td>
<td>13%</td>
<td>9%</td>
<td>5%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Italy</td>
<td>23%</td>
<td>16%</td>
<td>9%</td>
<td>11%</td>
<td>13%</td>
<td>9%</td>
<td>5%</td>
<td>6%</td>
<td>11%</td>
</tr>
<tr>
<td>Straight Sample Avg.</td>
<td>22%</td>
<td>13%</td>
<td>11%</td>
<td>13%</td>
<td>13%</td>
<td>9%</td>
<td>5%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>India</td>
<td>22%</td>
<td>16%</td>
<td>9%</td>
<td>11%</td>
<td>13%</td>
<td>9%</td>
<td>5%</td>
<td>6%</td>
<td>11%</td>
</tr>
<tr>
<td>China</td>
<td>21%</td>
<td>13%</td>
<td>10%</td>
<td>16%</td>
<td>14%</td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>South Korea</td>
<td>21%</td>
<td>14%</td>
<td>12%</td>
<td>12%</td>
<td>13%</td>
<td>9%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Canada</td>
<td>20%</td>
<td>11%</td>
<td>10%</td>
<td>14%</td>
<td>9%</td>
<td>5%</td>
<td>8%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>20%</td>
<td>14%</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
<td>9%</td>
<td>5%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Germany</td>
<td>19%</td>
<td>13%</td>
<td>9%</td>
<td>13%</td>
<td>13%</td>
<td>9%</td>
<td>6%</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>19%</td>
<td>12%</td>
<td>11%</td>
<td>14%</td>
<td>15%</td>
<td>7%</td>
<td>5%</td>
<td>8%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey.” See Appendix 2 for channel breakdown.

Exhibit 38
Consumers are keen to use social media to share and research reviews of insurers, particularly in Asia

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Which of the activities have you already performed or would be willing to perform in the future regarding your insurer?” Note: Sample, Asia, North America and Europe refer only to countries covered in our survey.
Exhibit 39
Consumers who are currently offline are keen to use online channels if insurers improve their online offering

Channel preference for “Offline Clients”

<table>
<thead>
<tr>
<th>Channel</th>
<th>With insurers’ current channel</th>
<th>With insurers’ improved online channel offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>% respondents (straight sample average)</td>
<td>% respondents (straight sample average)</td>
</tr>
<tr>
<td>Purchase</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>Modify</td>
<td>23%</td>
<td>22%</td>
</tr>
<tr>
<td>Access</td>
<td>24%</td>
<td>23%</td>
</tr>
<tr>
<td>Claim</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td>Renew</td>
<td>19%</td>
<td>18%</td>
</tr>
<tr>
<td>Avg</td>
<td>23%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “How would you most like to interact with insurers who have improved their online services to the best online experience you can imagine.” 2. Top chart shows actual channel use for offline clients, and bottom chart indicates how these consumers would like to interact with insurers who improved their online offer.

Exhibit 40
There is a negative correlation between e-intensity index and the use of face-to-face channels

% of respondents in each country which indicated use of face to face channel

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index. Question: “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey.” See Appendix 2 for channel breakdown.
More than half of consumers are not willing to pay for face-to-face interactions with insurers – those who would were typically only willing to pay 10% of their premium for the service

**Value attributed to face-to-face services**

<table>
<thead>
<tr>
<th>% of respondents not willing to pay to have face to face service</th>
<th>Home</th>
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Average $ amount of current premiums consumers are paying (willing to pay consumers only)

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Willingness to pay for face-to-face varies across countries, and is highest in Asia

**% of respondents not willing to pay to have face to face service**

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Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Note: Straight sample average. Question: “How much more would you be willing to pay to have face-to-face service?” Disregarded outliers over 75%. Average is a straight sample average.

**Willingness to pay for face-to-face varies across countries, and is highest in Asia**

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</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Note: Straight sample average. Question: “How much more would you be willing to pay to have face-to-face service?” Disregarded outliers over 75%. *Only consumers who are willing to pay.
As such, face-to-face interaction is still important on a consumer’s insurance journey – over 80% of consumers use face-to-face channels in their journey (Exhibit 40 shows the percentage of respondents using face-to-face channels versus BCG’s e-intensity index score). These channels account on average for 15% of total channels used to research new policies, up to 24% when purchasing policies across countries. On average 15% of consumers do not use face-to-face channels at all. In markets with higher internet maturity, we found lower use of face-to-face interaction.

However, in home, motor and life insurance, more than 50% of our respondents were not willing to pay for face-to-face interaction with insurers (Exhibit 41), and those who were willing did not want to pay more than ~10% of their premiums for the service. The propensity to pay varied between countries, with Asia the highest – see Exhibit 42. In Germany, willingness to pay is higher among the young and wealthier demographic groups.

Consumer satisfaction with insurers

Our survey results show that, although consumers rank their overall interactions with insurance companies on a par with other industries (see Exhibit 43), the level of satisfaction for online interactions was below average (ranked third to last, see Exhibit 45).

Insurers lagged materially behind banks in online satisfaction levels – which ranked highest in our survey.

Levels of satisfaction were highest in the US and China, but lowest in Japan. This is demonstrated in Exhibit 44, which shows the percentage of respondents that classified their insurance online experience as “excellent” in each country across motor, home and life insurance.

Relatively little difference is seen by product category – although at the margin, satisfaction with the online experience for motor insurance was higher than the other product categories. In seven out of 12 countries, motor had greatest proportion of “excellent” ranks, compared with 3/12 for life and 2/12 for home.

Furthermore, online satisfaction with insurers decreases along the value chain (at the claims and renewal stages) – see Exhibit 46. These stages received a ‘net promoter score’ of -49 and -28 respectively – that is, the difference between the percentage of consumers who were satisfied and those who were not. Satisfaction was highest at the research stage, which produced a positive net promoter score of +4.

Exhibit 43

*Overall* interactions with insurers generate satisfaction levels close to average with other industries…

% of respondents which indicated they are satisfied with their interaction with service provider

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>% of Respondents Satisfied</th>
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<tbody>
<tr>
<td>Search</td>
<td>80%</td>
</tr>
<tr>
<td>Bank</td>
<td>60%</td>
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<tr>
<td>Retailer</td>
<td>40%</td>
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<tr>
<td>Social Media</td>
<td>60%</td>
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<tr>
<td>Insurance</td>
<td>80%</td>
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<tr>
<td>Mobile</td>
<td>60%</td>
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<tr>
<td>Energy</td>
<td>80%</td>
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Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research; Question: “How satisfied are you with the interaction with each of the following companies? Examples of this could be you calling them, visiting them, using their website or using a mobile app they have provided: Very satisfied; Satisfied; Neither satisfied of dissatisfied; Dissatisfied; Very dissatisfied.”

Exhibit 44

…and 50% of consumers do not characterise their *online* experience with insurers as “excellent”…

% of respondents which indicated they are satisfied with their online experience with insurers

<table>
<thead>
<tr>
<th>Product Category</th>
<th>% of Respondents Satisfied</th>
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<tbody>
<tr>
<td>Motor (M)</td>
<td>80%</td>
</tr>
<tr>
<td>Home (H)</td>
<td>60%</td>
</tr>
<tr>
<td>Life (L)</td>
<td>40%</td>
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Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research; Question: “How satisfied are you with the interaction with each of the following companies? Examples of this could be you calling them, visiting them, using their website or using a mobile app they have provided: Very satisfied; Satisfied; Neither satisfied of dissatisfied; Dissatisfied; Very dissatisfied.”

Exhibit 45

…but still the insurance digital experience lags behind other industries – particularly banks

Relative satisfaction utility score

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Note: Based on MaxDiff technique: consumers distributed 100 utility points across segments according to how positive they felt their online experiences are.
However, we believe that these negative experiences are typically due to things within the insurers’ control.

As Exhibit 47 shows, the principal reason for not using online was due to the depth of existing consumer relationships in traditional channels. However, there are also online factors that affected the decision – where consumers are looking for more online support chat and advice, as well as simpler processes and personalised offerings (Exhibit 48). Additionally, consumers felt that mobile/tablet apps lagged behind website offers across similar products.

Finally, we believe that a better online experience may translate into brand advocacy.

We found that consumers who were more satisfied with their online insurance experience increased their support for insurers by as much as 47%. A better online offer would also attract 63% of “switcher” consumers (compared to 53% with more persistent clients), and switching rates increased with higher online channel usage – see Exhibit 52.

Exhibit 46
Consumers’ satisfaction with insurers’ online offering decreases past the acquisition stage; the ‘net promoter score’ decreases from +4 in the research stage to -49 when navigating making a claim

Exhibit 47
Although many consumers highlighted a trusted relationship with an agent or broker, most of the reasons that hold people back from using more online channels are factors that can be influenced by insurers.
Exhibit 48

Consumers seek simpler processes and personalised offerings rather than mobile/tablet apps

Improvements consumers would like to see in insurance

% of respondents

- Simpler, easier to use websites: 44%
- Personalized services/products: 43%
- Simpler explanations about products: 34%
- Reassurance on privacy: 32%
- Tools for personalizing purchase: 22%
- Info on risk mgmnt/prevention: 21%
- Simpler claims processes: 19%
- Going to online correspondence: 17%
- Live chat assistance: 16%
- Access to consumer reviews: 15%
- Better mobile apps: 14%
- Video Tutorials: 11%
- Better tablet apps: 9%

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Please select three types of improvements you would like to see on insurer’s offers and interactions.”

Exhibit 49

Across countries, consumers who are more satisfied with insurers’ online offer use more online channels

% of respondents which agree their online experience with their insurer is “Excellent” (average of Home, Motor and Life)

- China
- US
- Australia
- France
- Canada
- HK
- Germany
- Italy
- S.Korea
- Japan
- India
- UK

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey.” “Please indicate below to what extent you agree or disagree with each of the statements: My online experience with my insurer is excellent”. See Appendix 2 for channel breakdown.
Exhibit 50

Correlation of BAI score*and level of online experience – consumers that have a positive online experience exhibited higher level of advocacy for their insurers

Exhibit 51

A better online proposal would also attract 63% of non-persistent consumers to switch insurers

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Did you recommend your current insurer to your friends and family during the last 12 months, and how would this change if the insurer had superb online services which you could use: Recommend it spontaneously; Recommend it when asked about it; not recommend or criticise it; criticise it when asked about it; criticise it spontaneously”** BAI score is calculated as (recommend it spontaneously)+(0.5* recommend it when asked about it) – (criticise it when asked about it) – (criticise it spontaneously)*2.

Exhibit 51

A better online proposal would also attract 63% of non-persistent consumers to switch insurers

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “Would you be willing to switch to another insurer to have a better online/self-service interaction and the flexibility that comes with it?” ** Persistent consumers had 1 or more policies (Motor/Home/Life) during last year, and did not change insurers for any policies. Non-persistent consumers changed at least one policy during the year.
As e-intensity index (relative internet maturity) increases, the percentage of persistent consumers falls; therefore, we are seeing higher switching rates as online adoption increases.


* Persistent consumers had 1 or more policies (Motor/Home/Life) during last year, and did not change insurers for any policies.
Significant evolutionary change under way

Across the insurance industry there are a growing number of interesting examples of the creative adoption of technology. In this section we highlight some of the best examples affecting the various aspects of the value chain.

Insurers are developing more consumer-centric products using technology, Big Data and analytics for pricing, automating underwriting, boosting levels of consumer engagement, reducing admin costs and improving claims management processes.

However, we believe that this change is evolutionary – with no insurer yet having transformed its business at scale across all aspects of the value chain. As we discuss in a later section, there are practical constraints in achieving faster change (for example organisational structure, legacy systems).

The relatively slow pace of change has left the industry lagging others in terms of the quality of its online offer. Our consumer survey suggests that consumer dissatisfaction increases along each step of the value chain – reaching a maximum at the claims management stage.

Breaking down the value chain

We have identified some particularly interesting examples of technological advances across the following elements of the value chain:

- Product design
- Pricing/underwriting
- Sales/distribution
- Policy administration and servicing
- Claims management

Product design – improving consumer engagement

As an industry, insurance has significantly lagged behind others in terms of its ability to use technology to engage with consumers – this was a clear message from our consumer survey.

Also, absent the technology debate, consumers generally have a lower level of engagement with insurers than product providers from other sectors. We believe this is driven in part by the intangible nature of the product and in part by the compulsory nature of some of the basic products.

However, we have identified two interesting examples where insurers are creating new products specifically designed to meet consumers’ needs and expectations. They give an idea of the types of product approaches that are possible if technology is used creatively.

Oscar – a novel approach to health insurance

Oscar is a health insurance provider launched in 2013 and operating solely in New York State (Exhibit 53). It offers an insurance platform that is entirely online, and highly consumer-centric:

- Easy purchase and use journey – for example, it offers a quote through 1-5 clicks within a few seconds.
- Advanced online enabled features – for example, one click to set up free phone calls to Oscar’s doctors any time of day; Google Map-style doctor-finder; price comparison tool.
- Within months of launch, Oscar had raised $80 million of capital funding and generated over $70 million in annual gross written premiums.

Allianz1 – new Italian protection offering

“Allianz 1” is a ‘protection umbrella’ launched in Italy in 2014 that covers consumers and their families against serious risks in a single contract, self-styled as a “subscription to serenity” (http://allianz1.allianz.it/) – see Exhibit 54.
• Bundled offer that allows users to customise their cover by selecting from 13 different modules, including cover against accidents, illness or death, home and motor emergency management. The contract can be changed at any time to reflect the consumer’s lifecycle.

• Very consumer-centric based on needs. Prices are shown for different styles of policy, with more emphasis on family or personal cover for example.

• Online FastQuote system allows consumers to know the price of their single monthly payment based on three data points: date of birth, occupation and the province in which they live.

Pricing and underwriting

While technology will have an impact on all aspects of the value chain of insurers, arguably one of the most significant effects is on pricing and underwriting.

Our interviews with insurers showed that Big Data is consistently cited as a key area in which companies have been investing, recognising the value that it drives in pricing and indeed insight for product design.

Traditional actuarial techniques have often used analysis of various proxies in order to assess risk – for example, accident history, home address and type of vehicle for motor insurance risk; however, technology now offers the potential to understand the risk in real time through telematics.

The application of these new approaches is in the very early stages, with the IoT likely to have significant applications in insurance – not just in motor insurance telematics, but also in remote monitoring of fire and water damage risk (connected home and business solutions) and health risks.

In the medium term, we see the potential for the insurance business model to change fundamentally as these techniques become more commonplace.

Big Data/analytics – move to structural risk modelling

In essence, we see a shift toward structural risk modelling.

Today’s risk assessment algorithms are statistically driven, compiling data on events and occurrences that have come to pass, and using statistics to forecast YoY changes into the future – that is, an actuarial approach.

Today, these algorithms are either being developed and maintained internally by insurers, or purchased through standardised risk assessment products.

However, new models are emerging, using not only statistical occurrence data, but also analysing the actual structural drivers behind the occurrences, especially in catastrophe risk assessment (for example, the physics of earthquakes, not just the average damage following one). Structural modelling in catastrophe risk examines not only former trends, but also the science driving the situation and its consequences.

Pandemic risk is a further example. When using statistical models, actuaries need to look back at historical pandemics to see what happened. However, with a structural model, insurers can look at the science of how viruses mutate in ways that they have not done before, for instance, how transmissible and virulent a virus may be. They could even go one step further into epidemiology and cell biology to look at what is possible regarding vaccine efficacy, and consider potential policy responses.

Some examples of Big Data and analytics usage

While the shift towards structural risk modelling and real-time risk monitoring is still in its infancy, our interviews identified several interesting examples:

• A major reinsurer used Big Data in social media to identify a health risk issue (breast implant problems in France), ahead of the class action lawsuit being raised – this enabled the reinsurer to make reserve adjustments ahead of time.
• A reinsurer uses Google Trends to identify disease trends (in humans or livestock) to adjust reserves and implement measures to control the spread of disease for loss prevention.

• In Canada, Aviva tailors its home insurance based on calculations of how exposed homes are to burglary by pinpointing where a property stands in the street – for example, homes that are particularly exposed or hidden are more at risk of burglary, whereas those close to cinemas are more at risk of vandalism.

• Blue Cross & Blue Shield of North Carolina buys spending data on people in its employer group plans, sending people mailings offering weight-loss products if they buy plus-size clothing, for example (source: Wall Street Journal, 25 February 2013, “How the insurer knows you just stocked up on ice cream & beer”).

• Reinsurers are looking at using unstructured public data beyond the company through new artificial intelligence capabilities. Using such data intelligently could have a very material impact on loss ratios – for example, understanding that many global manufacturing supply chains had concentrated risks in a Thai flood zone would have helped avoid a major loss for the industry. The information exists in an unstructured format; the industry just needs a way to see it.

• Reinsurers are using satellite data to improve risk selection, such as the Climate Corporation – this San Francisco-based start-up, founded in 2006 as WeatherBill by two former Google employees, uses Big Data to predict weather and other agribusiness conditions by taking weather measurements from 2.5 mn locations on a daily basis and 150 billion soil observations.

• Lloyds Banking Group in the UK has begun offering prudent bank account holders savings of as much as 20% on their car insurance having used Big Data to identify that consumers that stay within overdraft limits or avoided bounced debit card payments have fewer accidents (source: ‘Insurers Mine Consumers’ Finance Records to Set Premiums’, Financial Times, 11 July 2014).

• Large insurers depend increasingly on data, using predictive modelling as an effective non-traditional data source to combat the movement of consumers from brand loyalty to price sensitivity.

• During a spate of bad weather in the UK in 2014, Aviva sent its consumers daily text messages informing them about the impact of the weather, risk mitigation and how Aviva could help.

**Better reserve accuracy through Big Data**

Analytics can also be used more accurately to calculate the loss reserve by comparing losses with similar claims.

In addition, analytics can reassess the loss reserve whenever the claims data are updated, to help insurance companies better understand the reserve required to pay out claims. Improved reserve accuracy enables insurance companies to redirect funds usually held for reserves into more flexible (and more lucrative) investments (see Predictive Claims Processing: Transforming the Insurance Claims Lifecycle Using Analytics, SAS White Paper, 2013).

**Using Big Data to address fraud in claims management**

Big Data applications are especially promising for improving fraud detection. Early detection of fraud patterns and fraud networks has been demonstrated by some insurers to achieve an estimated 2-3% reduction in auto claims payouts, driven by:

• Improving the detection rate of fraudulent claims by around 30%; and

• Claims mitigation and prevention – for example increased detection of outlier claims.

IBM, for example, has a solution that uses a wide array of analytical tools to investigate potential fraud at each stage of the claims management process:

• Validate the identities of all parties involved;

• Analyse relationships among parties, including parties involved in other claims;

• Scrutinise structured and unstructured data associated with the event or participants in the event; and

• Monitor social media to identify inconsistencies compared with claim details reported to the carrier.
This combination of traditional and non-traditional sources of information allows insurers to identify new and emerging patterns relevant to a specific claim, or a cluster of claims (source: ‘Leverage Big Data to fight claims fraud: How Big Data supports smarter approaches to addressing claims fraud’ IBM, June 2013).

Sales/distribution

Traditional sales channels in insurance are under threat and, in our view, are in the early stages of a significant multi-year transformation. Key challenges for these channels include changing consumer expectations, increasing regulation (for example, in Europe) and the entrance of new players.

However, we believe that the pace of change will vary considerably by market – the UK in particular is already seeing significant disruption, for example from the Retail Distribution Review.

Changing consumer expectations

With the advancement of the digital age, consumers are more willing to use online channels when interacting with insurers, and less willing to pay for face-to-face interactions (more so in motor and home than in life, where products are considered more complicated). Additionally, consumers would like more speed and ease of use, importing expectations from other industries.

We believe that most of the reasons for consumers’ low satisfaction levels can be addressed by insurers.

The results from our global consumer survey suggest that the main improvements consumers would like to see in insurers’ online offering are:

- Simpler, easier to use websites;
- Personalised services or products;
- Simpler explanation about products; and
- Greater reassurance on privacy.

These options were included in the top three choices by 44%, 43%, 34% and 32% of consumers, respectively (Exhibit 55). Additionally, consumers indicated that they value live chat assistance when choosing insurance online, and helpful communication from their insurers on risk reduction.

Although consumers cite a preference for traditional channels (including agent/broker) as a prominent reason for not using the online channels across their journey, research shows that simpler, more user-friendly offerings can improve consumer online experience in insurance.

Increased regulation

Regulation of the distribution of financial products is tightening – especially in Asia (for example in Singapore) and Europe.

Agents and brokers are finding it less lucrative to sell insurance products to mass-market consumers, with commission levels often in decline. In some instances (for example, the UK and Netherlands), commission has been prohibited entirely on certain types of contract.

Furthermore, increased responsibilities are being placed on intermediaries in terms of the suitability of products that are being sold.

New entrants

We expect new players, some already active (such as Google with Google Compare, or aggregators in Germany beginning to gain significant ground in more commoditised products) and others looming (such as Amazon or Apple), to enter the space increasingly, using their existing strong direct channels and presence.

We discuss adjacent potential entrants to the market in detail in the section entitled Disruptive business models (page 70).
Responding to the sales/distribution challenge

Sales channels, however, can be adapted in response to these changes, by adopting more suitable models, some of which are already being implemented by leading players:

- Create differentiated advice models, approaching the mass market with a focus on efficient, high-quality delivery of advice and service using digital instruments (using a digital structured offering to mitigate regulation risks), while diverting salesforces to more affluent consumers willing to pay and consumers in retail lines with existing relationships.

- Capture growth in direct channels by insurers directly and by agents/brokers, through an improved, simplified online offering, driven by a holistic consumer-centric approach.

- Increase agent efficiency by strong IT enablement throughout the distribution process, allowing for better productivity of smaller sales channels.

Agent/broker mobile enablement is accelerating rapidly and delivering both productivity gains and increased consumer satisfaction – a UK wrap platform reports that advisor expectations with regard to mobile enablement have seen a step-change in the last 6-12 months, with advisers now expecting tablet functionality. This is true around the world, with markets such as Asia also focusing heavily on digital mobile enablement for their agents.

Equipping agents with the tools to improve their efficiency can drive significant business improvements across several areas:

- Technological tools shorten the amount of time an agent must spend with each consumer (for example, immediate quote from tablet, interactions documented on CRM, which sends automatic follow-up emails/reminders for follow-up calls, electronic forms generate policy in real time automatically, map and directions generated from current position and consumer address).

Tokio Marine & Fire in Japan offers “Super Insurance”, which sells a range of life and non-life products via a paperless system, to complete contracts using tablet PCs (and obtaining follow-up information via smartphone apps) – this allows the contracts to be swiftly and effectively tailored to the consumer, as well increasing cross-selling for the company. The product has led to a 30% increase in policies and 22% increase in premiums in Japan FY12.

Faster quote turnaround increases consumer conversion rates, while better access and use of consumer data collected during the meeting allow for better pricing.

Novel direct engagement models – Esurance

Novel direct engagement models are also gaining space, with no involvement of agents – for example, Esurance (Exhibit 56), a direct-to-consumer personal insurance company launched in 1998. It is a subsidiary of Allstate, the third-largest personal lines insurer in the US.

Esurance was one of the early pioneers of online motor insurance, which launched in 1999, and was also one of the first to offer comparison quotes. In 2013, it introduced online home insurance, at a time when “only 2-3% of US homeowners’ insurance was purchased online” (http://www.esurance.com/news/2013-esurance-now-offers-homeowners-insurance-in-wisconsin).

In 2014, Esurance introduced video appraisal technology, which enables consumers to video-chat in real time with an Esurance appraiser to receive their claim estimate on the spot, thus eliminating the need for an appraiser to inspect the vehicle in person, and in turn saving the consumer the time of scheduling that appointment.

Making use of social media – Kroodle and Youi

Social engagement models are also appearing, leveraging social networks not only as a distribution channel, but also as a source of data in order to improve consumer targeting and risk management.

Consumers now engage heavily with social media in various steps of the insurance consumer lifecycle, a trend on which several companies have successfully differentiated. Over 54% of consumers use social media to post and share recommendations or complaints, and over 60% use social media to research such items, with usage rates peaking in Asia (reaching over 85% across all uses in China).

An early example of an insurer using social media to interact with consumers is Kroodle, Aegon’s venture in the Netherlands to learn about mobile/social access to consumers and digitalisation of processes.

Kroodle digitises all its processes and uses Facebook accounts for login and Facebook apps for claims, quotes and other services. Its simplest product requires only four questions to be answered and one click to buy life insurance.
Since its inception a year ago, Kroodle has gained 13,437 likes on its own Facebook page from which users can access support.

Youi is a South African insurer that has positioned its brand in an innovative way with consumers through use of social media. It was founded in 2008 and seeks to differentiate itself through its flexible proposition and consumer service. Youi’s website contains the innovative ‘wall’ where consumer reviews are posted in real time and overall satisfaction is given pride of place; currently user satisfaction is at 85% from 75,922 wall posts (as at 8 September 2014) – see Exhibit 57.

Using technology to increase cross-sell – Wells Fargo, Aviva and Aegon

Insurers have traditionally struggled to cross-sell effectively – we believe that embracing technology should help them to address this.

Delivering a high-quality consumer experience drives valuable cross-selling and persistency improvements. Companies can achieve this through a combination of consumer-centric design, branding, and social media engagement.

Wells Fargo is a financial services company that focuses on cross-selling between its banking and insurance businesses. Its strategy is based on cross-selling across its diversified financial service products: retail banking, insurance, business banking, credit, investments, wealth management, retirement, mortgage and wholesale banking “We want to be the first provider our consumers think of when they need their next financial product” (source: https://www.wellsfargo.com/invest_relations/vision_values/6). Aviva in the UK offers a dedicated insurance example – its recently launched ‘MyAviva’ product offers protection, asset management, life & savings products, and P&C stored in one personalised, simple-to-use place (see Exhibit 58).

- Single login to view your Aviva policies in one place;
- Access to discounts on a range of Aviva products;
- Exclusive selection of rewards and giveaways through Aviva Advantages;
- Safe, secure and tailored to use on all devices;
- Stores all motor, travel and home insurance bought direct from Aviva; life insurance, investment bonds, pensions and annuities; private health insurance (except company policies) (source: http://www.aviva.co.uk/news-and-guides/home-advice/video/so-what-my-aviva/); and
- Range of consumer engagement tools being tested, including ability to text or email motor insurance details after an accident from within the app.

Aegon has a similar hypothesis, with MyAegon also allowing a single consumer sign-on across all of the products held.
Growing adoption of e-trading within SME insurance – Acturis, OpenGI and ZTrade

Within commercial insurance, e-trading is being rapidly adopted at the SME end of the market.

In the UK, the two e-trading software houses with greatest market share, Acturis and OpenGI, have seen operating income grow at a rate of 25% and 5% (CAGR), respectively, since 2011 (source: Capital IQ figures, http://www.globalreinsurance.com/why-e-trading-big-premums-is-taking-off-in-2014/1408959.article).

Acturis has seen revenue grow from £4.7 million in 2010 to £29.6 million in 2013.

Zurich announced the launch of ZTrade, its broker-only SME platform in July 2014, with full access coming in September.

Allianz in the UK has also acknowledged a “move towards mid-commercial products being traded in electronic space” – a trend that it addresses with underwriting staff offering support to brokers directly from their trading platform when needed.

UK brokers are increasingly placing higher premium policies through e-trading. For example, £100 million of premium for mini-fleet (smaller commercial vehicle fleets) was placed online in the first six months of 2014 compared to £40 million in the whole of 2013 (source: Global Reinsurance).

Mini-fleet e-trade premiums average £3,268, as opposed to tradesman insurance (traditional mainstay of e-trading), where premiums are largely between £200 and £1,000. Financial lines also appear to be seeing increases in volume:

- Brokers have arranged 20% more director & officer policies online than they did six months ago;
- 13% increase from 2013 to first half 2014 in brokers’ offices using e-trading;
- 56% of all risks by volume are now placed electronically;
- Insurers that want to grow their SME business are turning to e-trading.

Policy administration and servicing – Allianz

In many ways, the impact of technology on policy administration and servicing is more traditional than it is on other elements of the insurance value chain, such as pricing and underwriting.

Benefits accruing include operational efficiency; cycle time improvements and strong consumer service satisfaction.

For example, in 2012, Allianz launched a number of initiatives to improve its operational efficiency:

- Straight-through-processing (STP) enabled the processing of transactions to be fully automated at point of sale (for example, agents are equipped with an iPad enabling the transaction; policy changes can be made with the consumer’s electronic signature).
- Going paperless: the claims process was simplified and life policy handling automated; Allianz introduced systematic scanning of documents to share the workload across locations and optical character recognition (OCR) so that routing could be automated instead of manual.
- In 2012, Allianz Germany’s private life business received 73% of applications via digital entry points and 65% fully automated via STP. The back office is 100% paperless with 45% of routing via OCR and further productivity benefits expected.

Claims management – Esurance

Claims management is one area where we believe the use of technology can both reduce the cost of the claim (in terms of making good the loss and the associated administrative cost) and also significantly improve consumer satisfaction.

Our global consumer survey shows that claims management is the weakest area for insurers – see Exhibit 46.

Source: Aviva investor day, July 2014
Several providers are working to introduce self-service claims solutions – for example, the online-only direct-to-customer (D2C) player Esurance (as discussed previously) offers a self-service solution through reflexive, conditional questioning with a platform that provides critical services from real-time triaging, claims-office assignment and scheduling field appointments for auto physical damage claims.

Esurance has experienced very high levels of consumer satisfaction from those that reported claims online – in 2012 ranking as the number-one US car insurance company for its ability support car insurance consumers (source: Consumer Respect Group, June 2012).

Claims management through automation – Symbility Solutions

Symbility is a Canadian provider of Cloud-based and mobile-enabled claims technology for the P&C and health insurance industries. It focuses on mobile solutions for claims estimation via apps to be used by on-site loss adjusters or those working remotely – which can significantly reduce the time to a settlement. Symbility’s user base grew from 17,080 in 2011 to 41,458 in 2013 while the number of claims created increased by 150%.
Case study: Allianz – digitising a traditional insurer

We think Allianz is a good example of a traditional insurer working to enhance its digital offer and transform its business model. While most of the business remains traditional, management is investing heavily to transform the capability of the business.

Allianz is investing €400-500 million per year in digital initiatives. The digital transformation is a global project, started about five years ago supported by a significant investment programme. In addition to a central team of around 100 people – most of whom have been recruited from leading digital players – there are additional teams at business units.

The investment is focused on 5 key initiatives. 1) process digitalisation, 2) online transactional capability for a large range of products, 3) building a 360 degree view of the client, 4) standardisation of web interfaces across countries and 5) experimental product development – Allianz Digital Labs.

German business is used to spearhead new initiatives, which will then be rolled out globally. Allianz’s German business aims to achieve 100% paperless processes, advanced implementation of straight-through processing, extensive online transactional capability and digital enablement of agents.

Allianz is also putting efforts into using digital to create consumer ecosystems – for example, it has linked up with Deutsche Telekom to advance the ‘connected life’ concept.

While much of Allianz’s business remains traditional, the company is part-way through an ambitious multi-year transformation of the business model. Although there is much left to do, we believe that Allianz represents an excellent example of a traditional insurer working proactively to embrace technology.

For the past five years, Allianz has had a global digital initiative backed by significant amounts of investment and board level sponsorship. The group is investing around €400-500 million per year in the programme.

Five key initiatives

Allianz’s investments are focused on five key initiatives:

1) **Process digitalisation**: Introduction of straight-through processing across business lines

2) **Transactional capability**: Online research, quote, purchasing and servicing for a large range of product categories

3) **360 degree consumer view**: Creation of a single consumer view of data and policies through significant IT standardisation efforts.

4) **Standardisation of web interfaces across countries (OneWeb)**: The intention here is to facilitate a global digital interaction platform.

5) **Open innovation centre**: Allianz Digital Labs is an ‘open innovation centre’ that invests in experimental topics – for example, application of Big Data and on-the-spot insurance.

The programme is global in nature; however, the German-speaking countries and Italy businesses are being used as the testing ground before initiatives are rolled out across the wider business.

Building capabilities to support these initiatives

In order to ensure that Allianz can successfully deliver on these key initiatives, the group has been building up capabilities in the following five areas:

1) **Consumer centricity** – standardised and modularised web interface across countries; centralised build of on-the-go client-facing tools (for instance, mobile apps and agent locator); investment in seamless cross-channel access to consumer data; and experimentation in several countries of social media utilisation.

2) **Operational excellence** – systematic roll-out across business lines of paperless and straight-through processing. Simplification and modularisation of products – in particular to enable packages to be bundled across business lines.

3) **Innovation** – set up of a global innovation lab collaborating with early-stage companies on Big Data, mobile, social media and sponsorships.

4) **IT** – cleaning and aggregating consumer databases to build a homogenous view across business lines; investment in an advanced analytics platform (high-velocity capacity and storage capacity); and global roll-out of an integrated back office across business lines.

5) **Employee culture** – injection of outside-in digital perspective from non-insurance companies (for example, Google, Amazon and eBay).
German business making tangible process

As Exhibit 61 highlights, Allianz’s German business is making tangible progress towards the transformation, across the value chain. Taking a few examples:

1. **OneWeb will be the base for Allianz Germany’s web appearance across all products:** In addition, detailed product descriptions are now online, together with tools for online needs assessment – for example, pensions calculators.

2. **Packaged products:** In P&C, life and health, Allianz has a packaged online solution allowing for combinations of different products and product groups (within the respective segments).

3. **Online quotations available for a broad range of products,** with online application for standard products (for example, term life and dental insurance). Digital enablement of agents to enable straight-through processing. Exhibit 62 summarises which Allianz products in Germany offer online quotes and online purchases.

4. **Online insurance dashboard allowing consumers to have a 360-degree view of their products.**

This digital transformation is being implemented in a business that still has a large traditional agency force; however, Allianz is trying use digital to improve the efficiency of the channel. For example, it is piloting the Digital Agency, which offers the following features:

1. **Pre-sales process:** web/SMS lead generation and introduction of modular offers with mobile/tablet quoting systems.

2. **Digital sale process, with electronic signature:** fast pricing in line with web quotes, digital payments enabled (for example, debit card) and dedicated digital products.

3. **Agents work and sell on the move away from office:** selling suite available on various digital devices (such as the iPad).

4. **Digitally services clients via secured channels:** for example, contracts sent via secured email and available on a secure web portal.

Developing ecosystems

**Exhibit 60**

For retail consumers, Allianz and Deutsche Telekom are collaborating on the development of digital connected-home services

Allianz aims to create client ecosystems through the delivery of unique offers based on digital delivery and services.

The group is combining digital access technologies, services and insurance to create value for business and retail consumers. It plans to increase consumer touch-points and contact frequency via the service component.

To help it achieve this, Allianz has partnered with Deutsche Telekom. They are collaborating on the development of digital connected-home services for retail consumers – for example, if a water pipe bursts, sensors will automatically inform the user via his/her smartphone and notify Allianz’s emergency hotline (see Exhibit 60).


The intention is to approach clients ‘together’, develop a wider range of products, jointly invest in new markets, innovation and technology. Improving digital capability is a key aim of the new structure, specifically:

- Ensuring digital readiness of product offering;
- Providing multi-access consumer experience;
- Using Big Data and advanced analytics to drive decisions; and
- Automate operations and processes.
Exhibit 61
Allianz has made tangible progress with digital initiatives in Germany across the value chain

Source: BCG tier 1 – Digital opportunities in Insurance, Morgan Stanley Research

Exhibit 62
Allianz: A broad range of products can be quoted and subscribed to online in Germany

Source: BCG tier 1 – Digital opportunities in Insurance, Morgan Stanley Research
Digitally born insurer

While many insurers are making evolutionary changes to business models using technology, none has yet done so at scale. In the previous section, we considered some interesting examples of specific initiatives across different aspects of the value chain. Here, we look at what might be possible if one were able to start an insurer from a completely blank sheet of paper. We assume a relatively traditional business model, but design all of the processes using state-of-the-art digital solutions.

This ‘digitally born’ motor insurer allows us to explore the opportunity available. We have broken down our hypothetical motor insurer into the individual underlying business processes and used detailed benchmarking in order to create a ground-up model.

We estimate that a ‘digitally born’ motor insurer could achieve a combined ratio approximately 17-21ppts below a traditional peer. While it is debatable how much of this could be achieved by an existing organisation, we believe that it provides a good roadmap for assessing the opportunity.

The examples of GEICO and Progressive in the US demonstrate the opportunity that exists from modernising the existing traditional business model. Both players have consistently grown much faster than the industry with materially lower costs per policy.

From traditional to ‘digitally born’

Our exercise takes a baseline pure-play European motor insurer and transforms the business model through the adoption of 10 existing technologies.

Based on our analysis, we think it is possible substantially to improve the profitability of the model – from a combined ratio of ~99% in our base case to ~78-82% as a digitally born insurer.

The improvement would be driven by a reduction in the loss ratio from around 67% to ~59% and a decline in non-claims costs from 32% to ~22%, if keeping prices constant.

Our analysis does not include the costs of achieving the transformation and assumes all initiatives at end state, having delivered their benefit potential. Furthermore, we assume all benefits accrue to the insurer, rather than as pricing discounts to the end consumer. In reality, we would expect benefits to be partially competed away if the whole industry over time moved to a more efficient model.

The starting point

The starting point for our analysis is a generic monoline European motor insurer with ~$1 billion of annual premiums with an average premium per policy of around $700.

Currently the insurer operates a pure agency distribution model and is profitable with a 99% combined ratio – in other words, it is making a small underwriting profit, which is then supplemented by investment income.

The 99% combined ratio breaks down into a claims ratio of 67% and a non-claims cost ratio of 32%. The non-claims costs comprised 14 percentage points (ppts) of agent commissions, 6ppts of IT and support functions, and the rest divided among other core functions.

The opportunity – the digitally born insurer

In order to construct our new insurer we have looked at how much more efficient would it be if each area of the business were fully digitally enabled, carried no legacy systems/technology and moved to fully online distribution.

Exhibit 63 summarises the overall impact we believe could be achieved on the combined ratio versus the traditional model – a reduction of 17-21ppts.

If we analyse this in more detail, we can see that the cost savings are achieved by adopting technology in 10 discrete areas.
We believe that there are 10 existing technologies that can reduce the combined ratio by 17-21ppt

The biggest two opportunities are: improving pricing through the application of Big Data, and enhancing sales efficiency (in large part by moving from an agency to a direct distribution model). Taking the midpoint of our analysis, we estimate these have the potential to improve the combined operating ratio by 6.7ppts and 7.1ppts, respectively.

We consider each of these 10 areas of potential improvement in turn.

a) Using Big Data to improve pricing -6.7ppts

As we are trying to demonstrate the potential benefit in remodelling a traditional insurance business, we have not considered in our example the possible impact of adopting telematics on the loss ratio.

However, we believe there are substantial opportunities from using Big Data and analytics to improve risk assessment and pricing.

Insurers with access to prospective consumers purchasing patterns through retailers and/or banking information can assess different risk profiles in different client segments.

b) Automate product and underwriting processes -0.1ppts

We see a relatively modest overall opportunity here as products and underwriting make up a smaller proportion of the expense ratio; however, optimisation around product development and underwriting processes could reduce headcount, leading to savings.

While this could reduce product and underwriting expenses by ~11%, we assume the absolute level of expenses is modest, reducing the aggregate impact.
c) Enhance sales processes using digital -7.1ppts

Along with the adoption of Big Data for pricing/underwriting, we see the biggest opportunity for our digitally born motor insurer in transforming the sales process.

We assume a complete shift away from selling through agency to selling through digital online direct channels; this results in a 100% reduction in agent commissions.

However, some of these savings need to be reinvested in digital marketing initiatives:

- We assume that it costs our insurer $170 to acquire a consumer through online channels such as an aggregator (note, this is not paid on renewal). From zero, we assume these expenses reach 5.3%.
- Removing agents and competing direct will require an increase in the general marketing expense allowance (from 0.9% to 2.5%).

In aggregate, therefore, we see a net saving of 7.1ppts – with 14ppts of agency commission saved, but offset by 6.9ppts of additional digital marketing spend.

d) New team supporting online sales +1.1ppts

Removing the agency salesforce allows the elimination of the distribution team that previously supported them; however, a new team will have to be built to support online sales.

While the model is online-driven, we assume consumers will still need some form of guidance over the telephone. Many consumers prefer a multi-channel experience where they start researching online and then complete the transaction over the telephone.

This may only be for complex or special cases, but could also be for routine business where for whatever reason a consumer is unable to transact online.

Net, we assume the cost of the support team will increase – a consequence of a greater potential number of total interactions with online consumers than with the old agency force.

e) Automating policy admin/service -1.1ppts

We see significant opportunity for efficiency savings by automating policy administration and servicing – this could be achieved by using technology solutions such as those developed by eBaoTech Tech and Guidewire.

A leading-edge solution could in theory result in a 70-80% reduction in the number of full time equivalent staff (FTEs) required in these functions.

Management of contracts – for example, amendments and processing of associated mail – could be completely automated (leaving FTEs only for special cases).

Collections, disbursements and payment transactions could be almost entirely automated.

In aggregate, we believe there is the potential to reduce the policy administration and servicing costs by ~56% from 2.0% on the combined ratio to 0.9%.

f) Improve fraud detection using Big Data -1.5ppts

We believe there is a substantial opportunity to improve fraud detection using Big Data – technology solutions that are available include NetReveal, Experian’s Hunter and SAS.

An increase of 15% in the fraud detection rate is achievable – which has the potential to improve the loss ratio by 1.5ppts from 67.0% to 65.5%.

Several insurers in our interviews are already actively exploring this area.

g) Automation of claims management -1.2ppts

The concept here is that large elements of the claims handling process can be automated and/or moved to a self-servicing model.

We assume higher levels of automation by adopting systems such as Hexaware and Matrix allow for the substantial drop in levels of FTEs – potentially by as much as 40-50%.

Standard claims and mail processing can be substantially automated, with reduced numbers of FTEs servicing more complex bodily injury claims and other special cases.

h) Lower reserve volatility using Big Data -0.1ppts

Big Data has the potential to allow insurers to establish more accurate reserves – reducing the level of volatility and overall reducing the amount of reserves which need to be held.
i) Run modern IT systems -0.7ppt

Rather than relating to a specific initiative, this reflects a digitally born insurer having none of the legacy IT infrastructure of an incumbent.

We assume that, as well as operating a modern, flexible front-end platform (which is increasingly the case), our insurer also operates with a modern back-end system.

Modernising the back-end systems should significantly enhance an insurer’s ability to rapidly launch new products and support new channels.

We think it is possible to reduce the IT expense ratio for an insurer by ~25% from 2.6% to around 2.0% – indeed, this view was reinforced by our interviews with insurers.

j) Optimising support functions -1.2ppt

As with the previous initiative (i), this element of business model improvement runs across the entire business rather than in a specific process area.

We see the potential for automation of various support functions in order to reduce the number of FTEs and overall expenses (for example, the finance function).

In particular, given the reduction in headcount across other elements of the business, we see potential savings in central functions such as human resources.

Case study – GEICO and Progressive

US insurers GEICO and Progressive offer interesting examples of what is possible to achieve by applying state-of-the-art systems and processes to a largely traditional insurance business model (although we note that Progressive is the market leader in the adoption of telematics in the US market through its ‘Snapshot’ product – see page 92 for a case study).

We think they demonstrate how the ‘digitally born’ insurance model could offer real opportunities to the industry.

GEICO – owned by Berkshire Hathaway – is a pure-play direct motor insurer that has grown rapidly.

Progressive is more of a hybrid model, offering insurance direct but also operating a more traditional agency distribution model.

Both players have consistently grown faster than the broader US industry (see Exhibit 65). As Exhibit 70 shows, both have also been able to achieve substantially lower expenses per policy than the industry overall through applying technology and a modern business model effectively.

Specifically:

- **Commission expenses**: As Exhibit 67 shows, GEICO’s pure direct model results in immaterial amounts of commission being paid, while Progressive’s hybrid model sits between that of GEICO and the broader industry.

- **Salaries/benefits per policy**: Both players have a substantial advantage over the industry – driven, we believe, by enhanced levels of automation and modern back-office infrastructures (although it is difficult to conclusively prove this point).

- **Admin/other expenses**: Here Progressive looks more in line with the industry whereas GEICO is an outlier on the upside. We presume the difference is driven by marketing expenses. While the direct model is likely to require higher marketing spend (given the lack of agency or broker distribution), to a large degree we believe that GEICO’s position is an active decision to try to grow the business (and indeed the entire direct motor segment in the US) rather than maximise short-run profitability.

- **Overall expenses per policy**: Here GEICO runs lower than both Progressive and the industry, as the saving on commissions and a lean infrastructure more than offset the company’s additional marketing expenditure.

We also believe that GEICO and Progressive’s lower expense ratio could enable them to offer a lower priced product than peers for a given risk – they have the ability to absorb a higher loss ratio and produce the same combined ratio as peers. We think this is also a likely factor behind their faster growth than the overall market (see Exhibit 65).
Both GEICO and Progressive have grown premiums faster than the industry

Net Written Premiums (1996 = 100)

Source: SNL, BCG Analysis, Morgan Stanley Research

GEICO can absorb a higher loss ratio than the industry due to its lower expenses

Loss ratio (%)

Source: SNL, BCG Analysis, Morgan Stanley Research

GEICO’s direct model results in a small commission expenses relative to the industry

Commission expense per policy (USD)

Source: SNL, BCG Analysis, Morgan Stanley Research

The direct model results in lower labour costs – both players have an advantage over the industry

Salaries and benefits per policy (USD)

Source: SNL, BCG Analysis, Morgan Stanley Research

GEICO has been growing its marketing spend over the years

Admin and other expense per policy (USD)

Source: SNL, BCG Analysis, Morgan Stanley Research

Both GEICO and Progressive have been able to achieve lower expenses per policy than the industry

Overall expenses per policy (USD)

Source: SNL, BCG Analysis, Morgan Stanley Research
Updating IT systems – a painful process

Insurers were relatively early adopters of IT in the 1970s and 1980s; however, these legacy systems make it hard to adapt to change. Most insurers operate a highly complex IT architecture, with a combination of systems developed in-house and various packaged software solutions.

Legacy IT makes it harder to react to change. Old systems often lock an insurer into outdated business processes, which may fall short of consumer expectations, making it hard to adjust to new business models.

We see three principal challenges that insurers’ IT needs to be able to deal with: 1) changing nature of consumer interaction – broader number of channels, e.g. mobile; 2) data – novel types of data feeds, e.g. IoT/telematics and Big Data analytics; and 3) need to increase flexibility of back-end systems.

Many insurers have responded to this by introducing new functionality by ‘wrapping’ the legacy systems. While this approach maximises the historical investment in the core systems, it increases the complexity of maintenance and makes it harder to react to change.

We consider what a modern IT platform could look like for an insurer. We think a single consumer view is important, as well as the ability to improve consumer interaction across multiple channels, strong data analytics capability – including IoT – and the flexibility to work with external partners, for example to build an ecosystem, and a strong link between the business and IT function.

Despite the challenges, insurers are making progress. An annual BCG benchmarking study in Germany and France shows that the total IT cost ratio has been declining over the past 10 years, with change costs increasing less than run costs have decreased.

Context – insurers were early adopters of IT

Insurance has always been an industry well suited to automation by IT. It has no traditionally manufactured product, relies heavily on data, and those data have been largely managed on paper in the past.

Insurers invested heavily in IT in the 1970s and 1980s. At the time, the packaged software industry was in its infancy so insurers could not cover all their operations with software from one vendor. Insurers were forced to develop their own individual systems, with some packages emerging to cover specific elements of functionality.

In contrast, we believe the manufacturing industry moved later, so was able to adopt ERP from packaged software vendors such as SAP and Oracle in the 1990s.

Challenges of a heterogeneous IT landscape

While many companies may contend that ERP adoption was painful, once it was installed the software vendor was responsible for keeping the software up to date and complying with regulatory changes.

However, when a company runs a mix of in-house developed systems and various packaged software solutions, it is forever fighting an integration battle to try to ensure the various systems can share data and communicate with each other.

The insurer is also likely to be responsible for regulatory compliance, which adds another burden. A further complexity is that many of the systems that insurers run were written in older software code, which tends to be much less flexible than modern software. These systems can also tie the insurance company in to specific processes (ways of doing things) and specific (and generally more expensive) hardware. These systems become increasingly expensive to maintain over time.

In-house developed systems can become more problematic as they may not have been well documented when they were first written and, at the very least, all the changes that have made over the years are unlikely to have been fully documented. The employees that understood how the systems worked originally and how to modify them most effectively are also retiring now, or have already retired.

We acknowledge that almost every industry faces these challenges, as no large company’s IT architecture is simple or homogeneous, but we believe it is worse in insurance given the timeframe when technology was initially adopted and the lack of packaged software systems available at that time.

Islands of automation created data silos

We believe this technology adoption led to ‘islands of automation’ in insurance – insurers had many different software applications to automate individual areas of the business. Each system had its own database where the data specific to that business reside. This approach created silos of data with limited communication between them.

Critically, this means there was no single view of the consumer within the insurer, which makes simple concepts
like cross-selling or group-wide risk management much harder to achieve.

Some of the challenges this type of architecture brings include:

- **Insurers are often locked into a specific business process or way of doing something.** For example, a claims management system may have been designed 20-30 years ago when paying claims quickly may not have been a key goal. The insurer may want to take a more consumer-centric approach, trying to differentiate itself on claims handling; however, changing the software to enable this is likely to be a complex, expensive and time-consuming process.

- **Consumers are constantly finding new ways in which they would like to engage.** This means that insurers need to make constant changes and updates to their consumer-facing systems. Again, this is very difficult to achieve with inflexible IT architecture at both the front and back ends.

- **New channels also bring new data fields that insurers need to include.** For example, a 30-year-old system is unlikely to have a field for a consumer’s mobile phone number, let alone an email address or WhatsApp ID. Also, systems are generally set up to produce written documentation and letters rather than to generate emails or messages to mobile applications.

**Legacy complicates the IT landscape**

As demands have changed in the intervening years, we have seen insurers add ever more layers to their IT landscapes.

These new layers have enabled insurers to protect the investments they have made in legacy systems while also delivering new functionality.

However, adding new layers to existing systems tends to:

- Increase the complexity of maintaining the system;
- Increase the cost; and
- Lower the flexibility.

The major challenge is that, when many systems are bolted together in this way, it becomes harder and harder to add new things.

Each time a change is made or a new system added, significant testing is required to ensure the core process still works as originally intended.

A generic schematic of this type of architecture is shown in Exhibit 71.

**Layering systems has stored up problems**

As new technologies have emerged, insurance companies have tended to add new systems to manage them on top of the existing infrastructure, rather than replacing the existing system with software that could cover all the requirements in one.

Some of the new products are off the shelf (third-party packaged software), some internally developed and some developed by IT services companies on a custom basis. This approach has created a huge amount of integration points that have to be maintained – which in turn makes the system very inflexible.

Over time it becomes harder and harder to add new functionality due to the challenges inherent in testing the impact of the changes.

There is a significant cost in maintaining even a basic level of integration between the systems, as each time a change or upgrade is made to one system (which can often be regulatory driven), all the integration points that touch that system have to be tested and potentially changed.

**Is outsourcing/BPO the answer?**

Some insurers have gone down the outsourcing or business process outsourcing (BPO) route.

In the outsourcing model, an IT Services company takes over running the IT (often the hardware and software) and manages it for the insurer based on a service level agreement (SLA). The insurer passes the complexity of running the IT over to a third party.

In a BPO agreement, not only is the IT handed over, but an entire business process. For example, several insurers have decided to outsource their entire claims management process to a third party. In this case the partner takes over the IT and also the management of the process. Again, the complexity is outsourced.
Exhibit 71
An example of current IT architecture – the complexity of current IT systems is growing exponentially due to the ‘application to application’ logic

1. Historically, applications are built in standalone, with their own databases, to equip a specific process.
2. These applications multiplied with new needs ...
3. ... which made it necessary to build synthesis systems ...
4. ... and front-end systems to implement a limited multichannel approach...
5. ... resulting in complex application landscape (multiplication of interfaces, data replication).
6. In this context, setting up new digital applications implies integration in this high level of complexity.

Source: BCG Analysis, Morgan Stanley Research

Exhibit 72
An example of current IT architecture – there are hundreds of applications with a high level of redundancy and technical heterogeneity

<table>
<thead>
<tr>
<th>Product development</th>
<th>Marketing</th>
<th>Win clients, sales</th>
<th>Offer/conclusion</th>
<th>Contract admin.</th>
<th>Claims/payment</th>
<th>Sales support</th>
<th>Finance</th>
<th>Accounting</th>
<th>Controlling</th>
</tr>
</thead>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inconsistent product models</td>
<td>High redundancy of contract management and claims systems</td>
<td>High complexity through connection of insurance core systems with the finance system</td>
<td>Inconsistency and lack of transparency through large number of accounting and controlling systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Division-specific sales systems</td>
<td>Manual interfaces</td>
<td>No uniform data model for the overall application environment</td>
<td>No central partner system</td>
<td>Fragmented data restrict automatic reporting</td>
<td></td>
<td></td>
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Notes: BCG project example, Morgan Stanley Research
This outsourcing approach may lower short-term costs, but we believe is akin to ‘kicking the can down the road’: the underlying architecture problems still exist but the problem of managing them has been passed on to a third party. However, the insurer hasn’t addressed the core problem of the inherent limitations of the IT systems and therefore risks becoming less competitive than peers that are willing to deal with the challenges head-on.

Another problem that we believe outsourcing has created is within the insurer’s own IT department. Our interviews with insurance companies revealed that, in the past, junior IT employees were recruited for low-level work before they gained experience and moved up the hierarchy. The outsourcing process has meant that a lot of that low-level work is now managed by a third party, so that recruitment stream has dried up.

We see consequences of this:

- The IT departments at the insurance companies have in some cases become top heavy as the pyramid of IT employees has not been refreshed with more junior staff.
- There is less internal expertise in new areas of IT – for example, digital channel management – as younger employees with these skills are not joining the business.

We see three principal IT challenges for insurers

1) Changing nature of consumer interaction

Consumers increasingly want to interact with insurers in a broader – and growing – number of ways, not just via an agent or call centre, but also via email, the web, social media and mobile applications. The pace of change at the front (consumer-facing) end is made more difficult by the legacy systems – a new consumer channel is typically another integration point to a number of back-end systems that have to be maintained. This increases the cost of setting up new channels.

We believe consumer interaction is one of the biggest challenges facing insurers today.
Insurers on average have 0-1 interactions per year with the consumer. This makes it very difficult to build a consumer experience and brand loyalty. Consequently, insurers are trying to find ways to interact with consumers more frequently – but this aim is compromised by inflexible back-end systems.

Finally, insurers would like a single view of the consumer – for cross-selling, risk management and regulatory purposes. Again, ‘islands of automation’ and the data silos in legacy IT make this difficult to achieve.

2) Data – new analytics, new sources of data

There have been major improvements in the technology used to analyse data – and the variety of data that are available to insurance companies is increasing.

For many years data analysis was a one-size-fits-all model – companies had to force whatever data they were trying to analyse into a relational database.

However, over the last 3-5 years we have seen a huge increase in the technology available to companies in this area, some of it coming from internet companies and the open source community and some from commercial software vendors. This gives insurers much more flexibility to analyse datasets – whether to drive better consumer engagement or to improve risk management.

Unfortunately, data silos and the difficulty of incorporating new datasets into existing processes make it difficult for insurers to take full advantage of all these new technologies.

Insurers also often work on batch (for example, overnight) processes rather than in real time, and this can make it more difficult to act on data analytics in a timely manner.

The IoT/telematics brings a whole new dataset that can be used to build new business models, interact with consumers more regularly, and lower claim and fraud ratios. However, insurers need to be able to integrate the new data into existing processes that were not built with it in mind.

Without a single view of the consumer and data from all of the consumer channels, it is difficult for insurers to use new analytical tools to increase consumer engagement.

In many sectors of insurance, companies have had relatively limited data on which to base underwriting decisions – for instance, name, age, postcode, car model. Recently, insurers have been supplementing this with external data such as credit rating, retail purchasing habits and bank data.

Social media also bring a completely new dataset, which could be much richer and more valuable than the data insurers have traditionally worked with.

The challenge for insurers is how to access and use these data. Could we see partnerships emerging with insurers or even a new competitive threat from internet companies with their differentiated consumer data?

3) Internal processes – lack of back-end flexibility

We believe that insurers’ back-end systems need to be more flexible to enable better consumer and data management and also run and change at lower cost.

A few examples:

- The production system at many insurers (creating new policies and offerings) remains expensive and inflexible.
- It is difficult to add new consumer channels to back-end systems.
- Claims processes are often expensive and poorly adapted to the current environment.
- Lack of straight-through processing (STP) makes it hard to deliver real-time information and processes to consumers.

Risks of changing core systems are high

One of the biggest dilemmas facing insurers is that the core back-end systems are mission-critical – they are not allowed to fail.

While insurers understand there would be many benefits from changing these systems, they are also very aware of the risks that such change entails.

What might a modern IT platform look like?

From our discussions with insurers and technology providers, we believe a modern insurance IT platform would need to incorporate the following elements:

- **A single consumer view** – potentially a central repository for all consumer data.
- **A model for improved and increased consumer interaction across multiple channels.**
- Flexibility and speed in both front- and back-office systems. This would facilitate: i) new consumer channels to be added quickly and easily, ii) rapid development of new products, and iii) integration of new datasets.
- Strong data analytics capacity – integrated into the processes, ability to launch IoT-style products.
- Ability to work flexibly with external partners – for example, in order to operate an ecosystem model.
- A strong link between the business and IT.

Exhibits 72 and 73 show an illustration of a structure that delivers against these objectives.

Structured data are shared by all processes, which feed and are fed by different applications, which can be added and removed according to changes in the business and in the nature of interactions with consumers.

**Insurers are making progress**

Despite the challenges, insurers are investing in changes, and getting positive results: a BCG benchmarking exercise in Germany and France shows the total IT cost ratio declining over the last 10 years, with change costs increasing less than run costs decrease – see Exhibits 74-75.

**How can insurers get to where they need to be?**

Some insurers are deciding to substitute the legacy systems completely, which puts the company in a strong position in the long term but requires significant systems up-front.

One UK insurer we interviewed is spending a substantial sum on replacing its systems, and has not calculated a payback or ROI as “it is simply the right thing to do for our long-term success”.

We believe the changing IT is needed – it is no longer an option – but it is also costly and high risk; there remain many more examples of failure than of success.
Disruptive business models

To date, the majority of insurers have focused on the evolution of existing business models. While this has involved some impressive applications of technology, the business model has not yet been transformed.

We believe that we are on now the cusp of a period of rapid and disruptive change in the industry. There are revolutionary changes brewing that could fundamentally change the insurance business model in a way not seen to date.

Use of technology offers novel ways of increasing engagement with consumers and reducing barriers to entry. Direct distribution models could challenge incumbent distribution while the risk of competition from adjacent entrants increases.

The combination of mobile, the Internet of Things/telematics and Big Data/analytics has the potential fundamentally to change the existing insurance underwriting model. Current actuarial pricing and reserve techniques could be superseded by new approaches. Peer-to-peer models could be a further challenge.

Ecosystems are likely to become increasingly important; however, it is by no means certain that such systems will be controlled by insurers. For example, OEMs may be at an advantage in motor, while a range of players could be well placed to benefit from the home insurance opportunity (for example, telecom providers, security firms, utilities, appliance manufacturers or Apple/Google).

In this section, we look at 11 potential business models that offer significant potential for disruption in the industry – where possible, we provide live examples.

As discussed already, up until now most insurers have focused on evolving their existing models and on dealing with challenging legacy IT environments.

Now, we are seeing insurers talk about digital technology, sometimes in the same breath referring to incremental changes to their business, such as consumers’ ability to self-serve online (for example, changing an address) or enabling their agents with iPads. While these are worthwhile changes that give an efficiency boost, they are evolutionary in nature and miss the widespread disruptive change happening in the industry.

Leading innovators in insurance, however, are doing much more than evolve. They are developing innovative business models, partnering, and often leveraging successful models from other industries.

In this section we consider 11 business models that we believe offer significant potential for disruption in the industry.

1) Internet of Things/connected devices

The IoT is likely to have a substantial impact on the insurance industry over the long run. While telematics is the most documented example (discussed separately below), other forms of connected devices are equally important.

Connected devices in the home could fundamentally change the underwriting model, offering the ability to mitigate the cost of claims through early detection of risks such as fire and water damage.

Health devices are also likely to make an impact, with wearable and smartphone monitoring devices already beginning to gain adoption.

2) Telematics

At present telematics is having the greatest impact on two specific markets: the UK, where it is addressing the prohibitively high cost of insurance cover for young drivers, and in Italy, where adoption has been driven by telematics’ ability to reduce claims fraud.

However, in other markets telematics is struggling to take off as a consequence of the cost of implementing the IT solution and the uncertain benefit on the loss ratio.

The importance of telematics is likely to increase if the analytics are able to demonstrate more clearly that the data collected can accurately predict claims patterns.

We argue in the discrete telematics section that, at present, the economics of the product (ex-UK young drivers and Italy) support a model where the insurer sells telematics as a premium product (with additional features versus traditional insurance such as theft prevention) rather than as way of reducing the premium cost.

3) Ecosystem-based insurance

Ecosystem-based insurance is where the insurer moves to having a high-frequency, high-value relationship with the consumer through a platform/services model or ecosystem.

Among all the disruptive business models in insurance today, we believe the greatest paradigm shift is for insurers to develop service-based offerings as part of an ecosystem.
However, we do not believe that insurers are naturally well placed as ecosystem owners. For example, an OEM might be a more natural host for motor insurance, while other players could have an advantage in home insurance.

Among the insurers, we think Ping An in China is particularly well placed. It is launching ecosystem-based offerings, broadening and deepening the consumer relationship in a way that local national insurers or monolines players have not yet started.

This trend is strongly backed up by consumers in our global survey (Exhibit 77), who are very interested in switching to new innovative insurance models, both on the higher level of an ecosystem platform for managing their insurance portfolio, and on choosing specific policy elements to meet their needs.

87% of respondents in our global consumer survey said they would switch\(^2\), would consider switching or would like to learn more about an online, flexible, combined insurance solution, which would allow them intuitively to manage coverage for their own and their families’ risk. Demand for such platforms is highest in Asia (reaching over 96% in India and China), but in North America and Europe it is also high, above 75%.

Consumers are also willing to collaborate to operate such new models, in sharing the required data with insurers. Over 60%\(^2\) of consumers would share all types of personal data that might be required by insurers, with 66-80% willing to share some types of sensor data (house, car, wearables).

A lower price would drive most consumers (81%) to share personal information with insurers – 38% see “great” value in that and would share the required information, and 43% see “some” value and would be prepared to share selected information.

Looking at non-price related benefits, better claims processes and more personally tailored products would drive over 75% of consumers to share data. Around 28% of respondents were willing to share the required information while an additional ~47% were prepared to share selected information.

Although varying across countries, even in more mature markets, 2 out of 3 consumers would willingly share information for a price reduction (Germany and France), versus more than 85% in China (90%), South Korea, and Italy.

**Examples of insurance ecosystem providers – Ping An, Discovery and Allianz**

Ping An has separate technology and financial technology subsidiaries, have P&L responsibility as well as the autonomy to innovate.

The group has a clear focus on consumer engagement and convenience. It positions itself as a financial services ‘supermarket’, where consumers find all their financial needs through one account – for example, insurance, bank accounts, loans and wealth management.

Consumers are often attracted by novel, convenient business lines that drive interaction, and are then offered more traditional financial products.

*Discovery* is a leading health insurer in South Africa with interests in the UK through the PruProtect joint venture with Prudential plc.

Discovery introduced Vitality, a “science-based wellness programme” that gives users discounts on premiums and other rewards for improving their health and fitness. It provides knowledge, tools, personalised wellness programmes and motivation for individuals and families, both online and through the Vitality magazine.

Vitality offers online and offline health assessments, resulting in a ‘vitality status’. The better an individual’s Vitality status, the better access to travel, lifestyle and shopping rewards. A higher vitality status also results in a premium discount, which the policyholder can keep until the end of his/her plan.

Allianz created *Allianz Worldwide Partners* (AWP) in January 2014 to specialise in B2B2C\(^3\) business. AWP comprises Allianz Global Assistance and Global Automotive, Allianz Worldwide Care and Allianz France International Health. AWP is tasked with being the “innovation driver for digitally driven delivery and services”.

The intention is that, by combining the businesses under one ‘global lines’ management structure, resources will be freed up for innovation, and local innovations can be scaled up across countries.

The aim is to approach consumers together, develop a wider range of products and jointly invest in new markets, innovation and technology with four target digital capabilities:

- Ensuring digital readiness of product offering;
- Providing multi-access consumer experience;
- Using Big Data and advanced analytics to drive decisions; and
- Automating operations and processes.

\(^2\) Straight sample average.

\(^3\) Business to business to consumer.
Allianz says that the approach will offer “unique” propositions – for example, “connected home” (safety and security for family and property – digital access and assistance, plus insurance cover), “connected car” (digital access and assistance, plus insurance cover) and “connected health” (safety and care for elderly/assisted living, plus health insurance). See Exhibit 76.

4) Offering a step-change in consumer-centricity

The insurance industry has a reputation for offering products that do not meet consumer needs well – indeed, one of the traditional insurance maxims is that “insurance is sold and not bought”.

This says much about the way products have often been designed – principally to meet the needs of the distribution force and the insurance carrier rather than the end client.

However, we think that technology brings significant opportunities to introduce and market products that are significantly more responsive to consumer demands – be it by tailoring products possible through modular design, increasing the availability of niche products or even allowing the purchase of insurance on demand for short periods on mobile devices.

Three companies illustrate these trends:

Youi – tailored insurance cover

Youi, a South Africa-based insurer, prides itself on high levels of consumer service. In 2008, it launched a business in Australia offering insurance that can be tailored by consumers to select the precise insurance cover they require. Cover is offered for car, home, motorcycle, watercraft (ski boat, motorboat), caravan and trailer, and business liability.

Integrated Protection Solutions – innovative life cover

Integrated Protection Solutions aims to provide financial advisers with life assurance on a wrap platform by integrating technology, insurance protection and wealth management.

IPS’s Wealth Protect is an assurance product that projects how the consumer’s portfolio will perform over a set term. This risk is then embedded into the premium.

Wealth Protect keeps daily track of consumers’ assets and predicts premiums accordingly, so consumers only pay for the cover they need.

The policy then pays out on death any gap between the desired level of cover and the existing account value.

Tokio Marine/NTT DoCoMo – ‘one time’ insurance

Japanese insurer Tokio Marine has partnered with mobile operator NTT DoCoMo to offer insurance through a platform. This allows consumers to buy one-time insurance policies covering, for example, travel, golf, sports, skiing and driving.
Exhibit 77
Consumers are willing to adopt innovative policy products and ecosystem-based online insurance, and are willing to share data across a range of categories
Which information would customers share to gain benefits?

![Bar chart showing willingness to share personal information](chart.png)

Source: Morgan Stanley/BCG Global Consumer Survey 2014. Question: “Of the types of personal information below, which ones do you consider very private/sensitive, and which would you be comfortable/willing to share with insurers to benefit from a better product offering and lower prices.”

Exhibit 78
Willingness to share data varies considerably by country, with most Asian countries more ready to share data
Consumers willingness to share information for Price Reductions

<table>
<thead>
<tr>
<th>Country</th>
<th>Willing to Share</th>
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<tbody>
<tr>
<td>China</td>
<td>90%</td>
</tr>
<tr>
<td>South Korea</td>
<td>86%</td>
</tr>
<tr>
<td>United States</td>
<td>85%</td>
</tr>
<tr>
<td>Italy</td>
<td>85%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>84%</td>
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<tr>
<td>India</td>
<td>83%</td>
</tr>
<tr>
<td>Canada</td>
<td>83%</td>
</tr>
<tr>
<td>Global</td>
<td>81%</td>
</tr>
<tr>
<td>Australia</td>
<td>80%</td>
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<tr>
<td>United Kingdom</td>
<td>79%</td>
</tr>
<tr>
<td>Japan</td>
<td>77%</td>
</tr>
<tr>
<td>France</td>
<td>72%</td>
</tr>
<tr>
<td>Germany</td>
<td>69%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014. Question: “For each of the benefits, please indicate how likely you would be to share personal information to obtain it.”
All that consumers need to do to purchase a policy is register a credit card, their ‘network PIN code’ and date of birth.

A new distribution method, which identifies specific consumer needs, creates products and distributes specifically to the targeted micro-group.

5) Innovative distribution methods

_Bought by Many_ negotiates insurance for groups of people with similar needs. Users sign up for groups that they fit into based on particular needs, and Bought by Many obtains a quote for the entire group, saving money for each individual.

Distribution is achieved through targeted search and social media, not through the Bought by Many website. The product design is highly automated, with selection driven by Big Data analysis of Google search terms.

Given that the insurance is meeting a specific need that the individual has identified, persistency and premium levels are high (as the cover is niche in nature).

Insurers are attracted to offer cover by the quality of the business and also the economic capital benefits of acquiring diversified risks.

Since starting in September 2012, Bought by Many has acquired over 15,000 members.

6) Peer-to-peer insurance

_Friendsurance_ is a start-up based in Germany pioneering ‘social’ or ‘peer-to-peer’ (P2P) insurance and covering home insurance, personal liabilities and legal expenses.

Through the website, consumers can select their individual insurance cover from an aggregator covering a broad range of providers. They then connect together by sending invitations, much like other social networks.

When two people connect, they agree to support each other with a small amount of money in the event of a claim. The more connections a consumer has, the less cover s/he requires from the insurance provider and thus is rewarded a payback (the difference between the original premium quoted and the network support). With as few as 10 connections, a payback of ~50% can be achieved.

In addition, there is a ‘stop loss’ built in to guarantee that the support a user provides to others never exceeds his premium payback.

P2P insurance benefits from reduced fraud, better risk selection and reduced processing and sales costs.

7) Adjacent entrants at an advantage

One important disruptive risk is disintermediation by adjacent players. From online retailers to internet companies to supermarkets to car manufacturers, new players are entering the insurance market, and more look likely to follow.

These players have far broader and deeper data assets and consumer relationships than insurers, and pose a unique threat of disintermediation to the insurance industry.

For example:

_Rakuten_ is Japan’s largest internet company; it is primarily concerned with e-commerce and in 2013 its revenues were $5.3 billion.

In 2009 Rakuten bought AIRIO Life Insurance and began marketing insurance products, and in 2013 it rebranded the company as Rakuten Insurance.

Exhibit 79

**NTT DoCoMo offers one-time insurance policies that identify specific consumer needs**

Source: NTT DoCoMo (www.nttdocomo.co.jp/english/)

Exhibit 80

**Bought by Many negotiates insurance for groups of people with similar needs**

Source: Bought by Many (www.boughtbymany.com)
Seven out of 10 people in Japan are Rakuten members and 58% of Rakuten members purchased products from 2 or more Rakuten services between 2013 and 2014. Rakuten offers fully diverse products and services to consumers through its ecosystem, such as banking, travel, investment, e-commerce and insurance. There is very little that a consumer would need to use other companies for.

In June, Apple announced the next version of its internet operating system (iOS), version 8, which includes a new app – Health. This collates health and fitness data from various apps and provides users with an overview of their health. HomeKit has sold over 800 million iOS devices with 130 million people buying their first iOS device in the last year – demonstrating huge distribution reach. Apple has a loyal base of consumers who are captive to whatever it wishes to include in its mobile platform.

Overstock.com is a discount online shopping retailer based in Salt Lake City. Its vision is “to save people money”.

In April 2014, the company introduced an insurance exchange, which lets consumers compare live quotes for insurance on residential, vehicle and small business insurance, and buy insurance policies right from the site. Overstock has identified insurance as something it can deliver as part of extended offerings to its consumers.

In 2014, Google acquired Skybox, a satellite imaging company founded in 2009. Skybox’s first satellite launched at the end of 2013, with plans to launch 23 further satellites designed to capture high-resolution images and 90-second videos of the surface of the Earth.

SkyNode technology allows real-time tasking and downloading of data direct from satellites.

The capability is already in use for insurance modelling – offering near real-time images of the extent of natural disasters and providing frequent monitoring of high-value assets.

Many of these players are at an advantage in terms of frequency of interaction, depth of relationship, data assets and capabilities, which could disrupt the industry.

For example, given the quality of data assets these companies have available, the relevance of rating factor questions used by insurers to assess consumers’ risk level is called into question – why ask the consumer questions when you know the answers so well already?

Insurers are also at a disadvantage as they traditionally interact with their consumers far less frequently than many other players.

For example, 74% of consumers interact with online search engines on a weekly basis. For banks the figure is over 50%, but it falls to below 15% when measuring consumers’ weekly interaction with their insurance company.

8) Disruptive catastrophe modelling approach

Insurers’ approach to catastrophe (cat) risk underwriting has changed radically over time due to the advent and growth of sophisticated cat models by third-party agencies. The disruption of these new entrants is growing, as more risks are covered and models are increasingly becoming the standard language of the sector. We could see even more disruption from Risk Management Solutions’ (RMS) Cloud-based computing approach.

Cat loss estimate modelling used to be in the purview of cat reinsurers, which exploited their competitive edge in trading risk. Underwriters have always been, and will doubtless always be the key instruments in pricing, but private modelling and analysis have in the past allowed the leading companies to cherry-pick the market and achieve superior returns.

As cat modelling has become more sophisticated, the cost of establishing and running an in-house team has ballooned. Plugging the gap, RMS, AIR Worldwide, EQECAT and a few other firms have entered the market with their own offerings.

Third-party modelling agencies were initially useful for insurers that did not want the cost of running their own teams, as well as for larger reinsurers that wanted to benchmark their approach to the market.
Over time, however, cat modelling has become increasingly ingrained in how the industry functions and how risk is traded. With that trend, the sophistication of use and understanding of models have also grown, so the skill of underwriters has remained an important business driver.

One important part of modelling is how it has enabled the advent of convergence capital. Most insurance-linked securities (usually collateralised investment in cat risk), industry loss warranties (ILWs) and even collateralised reinsurance use AIR or RMS to model the probability of a loss trigger.

Because the modelling agencies are independent third parties in the process and have a standardised approach to judging risk, they provide an invaluable service in creating the language and measurement that links those wishing to buy and sell risk.

Cat modelling is not just applied to non-life risks. Several deals have been done that use models as a measure of life risks. The instruments can have a duration that matches investor appetites while covering a long-term risk where the trend is re-priced on exit using RMS calculations.

RMS is the most commonly used model among reinsurers and has helped create a common way of viewing risk. Each company adjusts its cat model with its own assumptions, so the competitive edge of applying intelligence of underwriters is not lost, yet the tools are far more powerful than in the past.

The modelling agencies are now ingrained in the reinsurance industry and, as there are only a few market leaders with high barriers to entry, they are managing to capture a part of the value chain that used to belong to underwriting teams. They also offer clear value to reinsurers who save on their own modelling costs.

RMS, the market leader, is starting a Cloud-based cat modelling approach. Each client who participates uploads data to a single platform, and from there receives significant benefits:

- **A Cloud approach allows very powerful computers to be accessed by anyone with a terminal**, boosting the computing power available to clients.
- **Unlike existing approaches, the installation of cat modelling systems** into a reinsurer’s network is now much simpler and easier.

- **The aggregation of data in one location** and the use of a standard measure of risk create a much more interchangeable environment, which could help re/insurers trade with each other.
- **Data sharing becomes easier too**, as it is all on one database and can be transferred between parties.

Overall, the cat modelling growth and especially the Cloud computing approach have the potential to make models available to a much broader range of participants, so they open up the risk trading market to new parties.

9) **Technology-enabled workplace distribution**

A new distribution method provides technology-enabled financial education in the workplace, as well as advice and direct-to-consumer investments, via a wrap platform.

**Wealth at Work** is a UK firm providing educational services for employees on savings management. It also offers savings advice and management services.

The Wealth at Work model creates negative acquisition costs as employers contract the company to provide education to employees, thus promoting the firm’s brand and offering.

Furthermore, the model provides a single platform for execution-only or advised investments, and sees exceptionally high top-up rates owing to the degree of engagement with company and consumers.

10) **Low-cost online savings and investment**

We are also seeing novel, low-cost ways of providing savings and investments online. For example:

**Nutmeg** is an online discretionary investment platform that aims to provide maximum transparency for its consumers. It tailors investment portfolios to individuals based on needs and provides full information on portfolio performance, constituents and the impact of fees and charges on the account value.

The user interface allows consumers to run multiple portfolios based on individual goals – for example, saving for a house deposit or a pension.

Nutmeg has attracted over 35,000 users since its public launch in January 2013. It has also raised a total of $50 million of capital for development.
11) Integrated micro-insurance providers

A further potential disruptive business model is emerging from micro-insurance providers being integrated with other services – for example, retail and telecoms.

Swedish owned Bima is a mobile insurance provider that partners with mobile operators and insurers to provide insurance to individuals in emerging markets (Africa and South East Asia). It leverages the market penetration of mobile phones (~70%) to distribute insurance products to the uninsured and provides services to mobile operators to manage them.

Since its launch in 2010, Bima has attracted 7 million users and is growing at a rate of 500,000 new policy holders per month.
We think that the Internet of Things is likely to drive major changes to the business model of insurers. Cheap, connected monitoring devices offer a fundamentally different way of assessing and, crucially, mitigating risk.

To date, telematics is the most developed example of this. The application of telematics in motor insurance has been steadily growing for some time – particularly in Italy and for young drivers in the UK.

Connected-home solutions are likely to become increasingly prevalent. Several insurers are piloting connected-home solutions – typically in partnership with other players. More broadly in the connected-home space, we note Google’s recent acquisition of connected-home device player Nest. Samsung Electronics and Apple are also increasingly active in this space.

The development of an IoT insurance model also presents risks for insurers, as they are not necessarily the obvious host for the ecosystem – we believe that insurance is likely to be cross-sold into an ecosystem designed predominantly for another purpose (entertainment for example).

Building a business case for telematics is challenging for the mass market. To date, the adoption rate for telematics has been constrained by the technology cost, the need to offer an upfront premium discount and the as yet weak link to risk reduction. Cross-selling additional services will be important to financial success – particularly for the mass market, where the technology cost relative to the premium is highest.

The IoT has significant application to industrial risks. Just as telematics has gained faster adoption in the commercial market than in retail, we believe a similar trend could be seen for IoT. There are lots of potential ways in which connected sensors could be used to reduce risks in commercial lines insurance.

Wearable devices could also become important. We see potential applications for remote monitoring of health for more accurate pricing of life and health insurance risk. While there may be privacy issues here, we note the increasing popularity of devices such as UP (from Jawbone). Apple’s iOS8 will introduce the HealthKit hub.

Telematics hardware likely to standardise and consolidate. Over time, we anticipate a trend towards standardisation of hardware solutions for telematics, which is likely to result in consolidation in that space.

Furthermore, we see a significant prize for the analytics vendor that can successfully combine telematics and claims data quantitatively to predict future loss experience. At present it is hard to contextualise the data gathered from telematics devices (for example, for location or weather conditions) and combine them with claims data.

We believe the IoT has widespread application in insurance – more so than in any other area of financial services.

Connected devices have the potential fundamentally to change the way that insurance risk is measured, shifting from actuarial-style analysis of risk proxies to real-time risk measurement. The IoT concept is discussed in length in the Morgan Stanley’s Blue Paper The ‘Internet of Things’ Is Now – Connecting the Real Economy, April 3, 2014.

Examples of connected devices are shown in Exhibit 84.

Drawing an analogy with the media sector, in the past advertisers would categorise consumers into a series of broad buckets (ABC, etc.), whereas increasingly analysis of online behaviour is allowing offers to be targeted on an individual basis.

Using connected sensors, the insurance industry has the opportunity to price risk in a targeted way that has not been possible in the past.

In this section, we consider the implications of the IoT for insurance and conduct a deep dive on telematics, which is the most developed application of an IoT approach in insurance.

What can the Internet of Things offer insurers?

Cheap, connected smart sensors have the potential to change the way in which insurers assess certain categories of risk. These sensors enable real-time monitoring of risk, such as:

- Driving behaviour;
- Heat/fire;
- Water;
- Unauthorised entry;
- Leakage (pipelines for e.g.); and
- Biometric information – heart rate, movement, alcohol consumption.

Together with an appropriate analytics approach, insurers can use this information to develop novel product offers for corporates and individuals.
Use of connected devices in cars and trucks via telematics has been around for some time; going forward, however, we expect adoption of the IoT to be far broader.

**The connected home**

One of the most obvious areas where the IoT has an application that is relevant to insurers is the ‘connected home’. Remote monitoring of sensors in the home should allow risks to be mitigated – reducing claims costs and improving the value proposition for consumers.

For example, a policyholder could be contacted via smartphone if a fire or leak is detected and an emergency response team from an insurer/public authority dispatched automatically.

The IoT also opens up the opportunity of cross-selling other products and services. We are already seeing several insurers develop propositions here.

**Economics of connected homes driving ecosystems**

While the benefits to insurers of better risk measurement from connected homes are clear, the challenge is how to make the economics work.

Given the smaller size of a home insurance premium versus motor, it is hard to achieve an adequate payback on the cost of the hardware and cover the installation expense and ongoing maintenance.

As we discuss later in this section, the economics of telematics in motor are currently challenged in all but a couple of discrete segments.

We believe, therefore, that it makes sense for insurers to partner with other providers that already service infrastructure adaptable for IoT applications – for example, the link between State Farm in the US and (the alarm and security company ADT).

However, there are some low-cost solutions available – we note the agreement between French cellular networking company Sigfox and insurer MAAF. MAAF offers its consumers a home security unit that sends an SMS alert when the sensor is triggered in the case of an intruder or fire.

The Sigfox network uses free spectrum (which is slower than 3G or 4G, but still fit for purpose) so the costs are low. The self-monitoring system cost €79 at launch (although this was an introductory offer), but with an annual subscription fee of only €3.

**Insurers could be sidelined**

It is conceivable that insurers will be bypassed altogether from the connected home.

We note Google’s recent acquisition of Nest, which could create a very interesting ecosystem.

This could lend itself to an associated insurance solution, but Google would own the client – reducing the economics for any future insurance partner.

Samsung has recently announced the acquisition of start-up SmartThings to develop its connected-homes offer.

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Exhibit 84

Examples of connected devices range from wearables and tracking devices to sensors and smart meters

![Connected Devices](Source: Company Data, BCG, Morgan Stanley Research)
Apple already has its HomeKit framework, which will allow users to use its iOS8 system to control third-party devices from vendors such as Philips and Honeywell – see Exhibit 85. Similarly, HealthKit will be available with iOS8 and will become Apple’s connected health hub.

**Industrial applications of Internet of Things**

Given the typically higher value at risk, we believe the cost barriers to adoption of an IoT approach are much lower for industrial risks.

Connected sensors offer the ability to monitor in real time a range of industrial risks and reduce claims costs through anticipation and mitigation of claims costs.

While remote risk monitoring is not new for large industrial companies (in the oil and gas industry, for example), we believe it has not yet been applied to insurance. To do so, the data need to be collected, analysed and used to predict claims.

Commercial lines insurers already offer risk management solutions as part of their product offer, so in some ways remote monitoring would be a natural extension of this approach.

There is also an opportunity to use the low cost of new IoT devices to reach new markets – for instance, while larger corporates may already benefit from remote fire and flood monitoring, this could now be viable for SMEs.

Some areas where we believe IoT approaches could give significant insight into insurance pricing:

- Infrastructure monitoring – particularly where there is environmental risk, such as leakage risk in remote oil pipelines;
- Industrial fire and flood risk;
- Monitoring condition of goods in transit for water damage, heat and impact; and
- Measurement of wear and tear on industrial equipment – anticipation of breakdown, consequential damage and business interruption.

Telematics has already made a significant impact on fleet management solutions, as we discuss later.

**Wearable devices**

A further potential opportunity for the IoT in insurance is the development of health monitoring devices – individual devices such as UP (produced by Jawbone) are increasingly popular and allow monitoring of activity, diet and sleep.

We expect to see the development of offers where the price of life and health insurance is linked to the data collected from such devices.

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**Exhibit 85**

Major technology players Apple, Google and Samsung are developing connected home and other smart device offers, often through acquisitions

<table>
<thead>
<tr>
<th>Connected Home</th>
<th>Connected Health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Google Nest</strong> develops connected-home devices that automate and control home appliances, such as thermostats and smoke alarms, through a smartphone (Nest Thermostat, Nest Protect)</td>
<td><strong>Skybell</strong> PHILIPS Honeywell</td>
</tr>
<tr>
<td>Samsung acquired SmartThings in 2014, which allows users to synchronise and control connected gadgets on a single smartphone app.</td>
<td>Apple’s HomeKit is an iOS framework where smart devices from industry partners (such as those shown above) connect and share information, so that users can control home appliances from their smartphone.</td>
</tr>
<tr>
<td>HealthKit is Apple’s connected health hub. The smartphone app gives the user a dashboard of his or her health and fitness data. HomeKit and HealthKit are due to be launched with iOS8.</td>
<td></td>
</tr>
</tbody>
</table>

Source: Company Data, BCG, Morgan Stanley Research
Deep dive on telematics

What is ‘telematics’? The generic term refers to satellite-based global positioning system (GPS) and other wireless technologies that allow a real-time, detailed data exchange between cars/drivers and third parties such as insurers. A schematic example is shown in Exhibit 86.

The telematics landscape is evolving fast, including around the potential uses of the technology and the scope of future digital interactions.

To give some sense of where we are today, information delivery to cars/drivers already includes data related to safety services, route information and in-car entertainment.

Information delivery to third parties such as insurers already enables the tracking of vehicle movements and the monitoring of driver behaviour.

The technology is being explored by the insurance industry given its potential to drive revolutionary benefits for insurers and consumers alike.

However, at this stage deployment to consumers is still in its infancy. While more than 80 insurers worldwide offer telematics-based products (with more coming on-stream all the time), we estimate penetration is no greater than 1% in most markets – roughly 3 million policies globally.

Exhibit 86
Telematics allows for real-time, detailed data exchange between cars/drivers and third parties – the example shown below is from Cobra

Italy is the most advanced telematics insurance market, with 19 of its top 20 insurers participating and a penetration rate of over 3.5%. However, we expect penetration to rise to 10-13% within the next few years. The main attraction to Italian insurers lies in the opportunity to reduce claims fraud.

The UK market has been quick to adapt to developments in the insurance space in the past, such as online price comparison. However, Admiral estimates that, despite rapid growth for the market overall, telematics sales represent only around 2.5% of new business sales by volume (Exhibit 87), but nearly 6-7% by value given the higher premium size of the target market. In the UK currently, telematics is mainly aimed at the young driver market, where insurance premiums have been prohibitively high.

In the US, 10 of the top 25 insurers participate in telematics-led motor insurance, while in Japan, many automakers are installing telematics equipment in new vehicles, and interest among Japanese insurers is rising.

In the medium term we believe the outlook for telematics take-up is strong given the value the technology could deliver.

Exhibit 87
Admiral estimates that telematics represents ~2.5% share of UK motor new business sales by volume, but close to 6% or 7% by value

Market size and share estimates

C250k or 2.5% of Total Market New Business Sales (Per Annum)*1

So we do not see the forecast penetration figures (such as those we mentioned for Italy) as caps on take-up; on the contrary, we see the percentages moving higher in later years.

**Telematics benefits for consumers**

The major push-back we have seen on telematics up until now is that consumers are often put off by its ‘big brother’ connotations – that is, concerns around data privacy. However, our global consumer survey (Exhibit 88) suggests that these concerns can be addressed over time if the benefits are clear. More than 81% of consumers surveyed said they would be willing to share at least some additional information with insurers if they were able to obtain price reductions.

As we discuss, the first benefits are likely to be felt in a lowered cost of the core insurance product. Further out, however, we see consumers benefiting from additional services provided through telematics.

1) **Potential for sizeable savings on insurance premiums**

Instead of pricing factors such as age, address and past driving record determining the premium, a driver’s current behaviour behind the wheel becomes the significant factor.

The value proposition for consumers is simple: the safer the driving – as established by, for example, driving frequency, speed, rate of acceleration, route familiarity and road conditions – the lower the insurance premium.

This is particularly important for younger drivers or those with impaired driving records for whom the affordability of car insurance is more problematic. To illustrate the scale of the problem for younger drivers, data from Confused.com/Towers Watson in the UK show that the average cost for 17-year-olds in Q2 2014 stood at £1,997 versus £597 for the UK driving population as a whole, despite a 32% year-on-year decrease – see Exhibit 89.

As insurers use telematics to cherry-pick the better-quality drivers from higher-risk consumer clusters, premiums for those remaining could increase as the assessed average risk of the grouping rises.

In the very long term, we could see this incentive remaining drivers to move towards a telematics solution. Driver education (for example, warnings to drivers about certain stretches of road under particular weather conditions) and feedback provided through in-car telematics could support an improved risk profile and, ultimately, lower premiums.

2) **Ability to tailor insurance cover to meet needs**

MetroMile is a US insurance company that offers pay-as-you-drive insurance – see Exhibit 90. Consumers pay a monthly base rate and then a rate per mile for every mile driven. As a result, infrequent drivers (MetroMile targets those who drive less than 10,000 miles per year) are spared an insurance cost when their cars are not in use.

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**Exhibit 88**

80% of consumers in our survey would share at least some information with insurers to obtain price reductions

<table>
<thead>
<tr>
<th>% of respondents</th>
<th>0%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price reductions</td>
<td>19%</td>
<td>43%</td>
</tr>
<tr>
<td>Better Claim Process</td>
<td>23%</td>
<td>48%</td>
</tr>
<tr>
<td>Personalized Products</td>
<td>24%</td>
<td>47%</td>
</tr>
<tr>
<td>Benefits as gifts and cash</td>
<td>30%</td>
<td>45%</td>
</tr>
<tr>
<td>Complementary Products for Convenience</td>
<td>30%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014; BCG e-intensity index, Morgan Stanley Research. Question: “For each of the benefits, please indicate how likely you would be to share personal information to obtain it: I see great value in this benefit and would share personal information to receive it; I see some value in this benefit and would share selected personal information to receive it; I would not share any personal information to receive it.”

**Exhibit 89**

The cost of car insurance in the UK for a 17-year-old is more than 3x more expensive than for the average driving population

Average cost of car insurance in the UK

<table>
<thead>
<tr>
<th>£0</th>
<th>£500</th>
<th>£1,000</th>
<th>£1,500</th>
<th>£2,000</th>
<th>£2,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 year old</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK driving population</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3) Using telematics data to improve claims experience

Discussions over claims could be simplified, become more transparent and therefore be perceived as fairer by the claimant, with higher-quality, objective data gathering around the circumstances of an accident. Better data could also accelerate the claims payment process.

4) Delivery of other services

Telematics also allows the delivery of additional services to consumers alongside the core insurance product, enhancing the overall consumer experience.

The scope of the extra services is potentially very significant and wide ranging, some examples being:

a) Theft recovery and accident alert services. These are already provided by companies such as insurethebox.com in the UK, whose GPS technology enables the tracking of stolen cars and assists with their recovery. Its Accident Alert service looks to deliver speedy roadside emergency assistance to clients in the event of a serious car crash. If the telematics device senses a strong impact on the car, the company’s service centre is automatically contacted and a response action plan is activated. Octo in Italy provides a similar service.

b) Car ‘infotainment’ – that is, in-car entertainment, such as the ability to access social media, movie streaming, or information that would be useful during a car journey such as locations of petrol stations, parking or refreshment. Kia Motors America has signed a deal with US insurer MetroMile offers pay-as-you-drive insurance – consumers pay a monthly base, then a per mile rate

Google to integrate content and search-based solutions into its UVO eServices telematics system (see Exhibit 91). Kia owners will be able to benefit from Google Places, which will provide point-of-interest and destination resources, and Google Maps, which will provide travel directions.

c) Other novel business models could emerge – for example, advertisers offering location-based discounts to insurance consumers.

Telematics benefits for insurers

We also see significant potential benefits for insurers who fully embrace telematics – specifically:

1) Pricing – selecting low-risk drivers

Telematics allows insurers to select individuals from broad actuarial groups. Companies with the most innovative pricing models can identify the lowest-risk consumers, leaving higher-risk consumers with less sophisticated providers.

This anti-selection effect could result in increased premiums for non-telematics products, harming the competitive position of providers that are slow to adopt telematics solutions.

Insurers that offer telematics coverage could thus benefit from an influx of consumers seeking lower premiums, from reduced exposure to risk, and from retention of low-risk policyholders.

The EU Gender Equality Directive, as well as the possibility of new legislation concerning age discrimination, may limit insurers’ ability to use traditional gender- and age-based pricing methods.

Exhibit 90

US insurer MetroMile offers pay-as-you-drive insurance – consumers pay a monthly base, then a per mile rate

Source: MetroMile (www.metromile.com)

Exhibit 91

UVO eServices is a subscription-free infotainment and telematics service integrated into Kia vehicles

Source: Kia Motors. Photo reproduced with kind permission from Kia Motors.
Should such constraints arise, data gathered by telematics devices could be that much more useful.

Safe drivers have an incentive to join a telematics scheme as current behaviour behind the wheel – as opposed to age, address, past driving record, and other traditional factors – is a significant element in determining the premium.

Telematics also provides a set of personalised driving data that is neither attainable through standard underwriting nor currently transferable to other insurers. Drivers therefore have good reason to stay with their insurer.

Although insurers are just beginning to use data gleaned by telematics devices, the data have the potential to give them a significant competitive advantage. A key challenge for insurers will be building the internal skills, capabilities and infrastructure to take full advantage of the technology.

2) Claims management: reducing costs

Telematics offers instant notification of accidents, more accurate assessments of who is at fault, detection and deterrence of fraud, and the ability to settle claims more quickly (ahead of other interested parties such as automakers and lawyers).

Given this, telematics has the potential to revolutionise claims management processes and efficiency – and lower insurers’ costs at the same time.

UK motor insurer Direct Line has highlighted that it sees significant potential for claims management cost savings through consumers self-serving (a consumer can track real-time repair processes, reducing the need for call centres).

The ability to capture such benefits will not come overnight: insurers must learn fully to exploit the technology. In the long term, though, we believe the results will prove well worth the effort.

Our analysis suggests that telematics can have as significant an effect on claims management as on pricing, although so far, relatively few insurers have fully acted on either opportunity.

3) Loss prevention: increased proactivity

Leading insurers recognise the need to manage losses across the entire life of the policy.

Telematics can help them bridge underwriting and claims points in several ways. For example, installation of the telematics box gives insurers the opportunity to collect additional information, such as the general condition of the client’s vehicle. Such data can enable insurers to alert drivers ahead of time of potential malfunctions that could be dangerous. For instance, recently developed technology allows insurers to inform drivers if the tyres on their vehicles are not adequately inflated.

Moreover, insurers can frequently provide driving feedback to policyholders through a web portal or smartphone app, thereby encouraging better driving behaviour and developing patterns of meaningful interaction with the consumer. Such regular contact can also boost consumer loyalty and retention.

4) Greater product and service differentiation

We believe that telematics opens the door for greater product and service quality differentiation. If insurers can devise the right service offering at the right time for the right segment, telematics gives them a golden opportunity to differentiate their value propositions.

This, in turn, can have a positive influence on consumers’ perception of policy value and drive higher brand value. Indeed, leading players are trying to make motor insurance more service-based, as opposed to primarily product and risk-based. Telematics, with the range of services that can be provided in the event of an accident, lends itself naturally to this strategic shift.

5) Stronger relationships with agency salesforces

Telematics can also positively influence the relationship between insurers and their sales channels, especially when agents are involved.

There is a physical element of the product – the black box – to manage. Also, as premiums evolve from the flow of driving data, so do commissions.

Agents in Italy, for example, initially resisted telematics because they feared potentially lower commissions. However, many now see telematics-based policies as clear and concrete value propositions that they can leverage to sell
additional and profitable types of coverage. Moreover, they perceive telematics as a way to protect their consumer base from direct players.

6) Additional non-insurance revenue streams

As we have discussed, installed telematics devices open the door for supporting services to be offered to consumers alongside the core insurance product – that is, the development of an ecosystem offer.

The economics of motor insurance could soon expand to include service revenues, such as from advertisers or even local government authorities wanting better to understand the distribution and cause of traffic accidents.

Can telematics improve consumer persistency?

We think the likely impact of telematics on persistency is complex and will change over time.

Currently, with lower penetration and no standardisation of technology, we believe telematics can deliver higher persistency for insurers.

Given the information advantage provided by telematics, and the fact that users are typically better drivers, these users can benefit from policy prices that other insurers may find hard to beat, and therefore they are unlikely to switch insurers.

Experience from Italy suggests that telematics-equipped policies have persistency up to 10 ppts higher than the market average.

In the medium term, with higher penetration, standardised boxes and data, persistency is likely to fall, as consumers will be able easily to change insurer, leveraging their personal driving history data (which is their property and in the long term would be transferable between insurers) to gain premium discounts.

Longer term, however, insurers’ monopoly as suppliers of motor insurance could be threatened – especially if they do not take the opportunity to broaden the product offer.

For example, telematics technology providers could conceivably establish themselves as aggregators, matching insurer offerings to consumers according to their driving behaviour and habits.

BCG research shows that motor insurers interact less than 1.5 times per year with consumers when selling, renewing or managing policies, and when paying for claims.

Telematics allows for potential daily interaction, generating more data and opportunities to offer services and add value.

Catalysts for future growth

Given the multiple benefits available to consumers and insurers, what will accelerate the growth of telematics in the motor insurance from the < 1% typical penetration to a critical mass? Possible catalysts include:

- Potentially game-changing forces could provide momentum. For example, new regulatory measures such as eCall could boost consumer adoption. eCall is a European Commission, pan-European initiative that will enable faster location and rescue of car accident victims through the use of telematics. From October 2015 all new passenger cars will need to be equipped with a system that, in case of accident, automatically dials 112 – Europe’s single emergency number, see Exhibit 92.

- Automakers in many markets are thinking of installing telematics systems as standard equipment. Many have already invested heavily in the development of the technology, such as GM through its subsidiary OnStar Corporation. Over time we believe telematics devices will be viewed by consumers as standard in cars, just as radios and satellite navigation systems started as optional devices and are now more and more seen as an integral part of cars.

Exhibit 92

eCall is a European initiative intended to bring faster assistance to drivers through telematics

Source: Mercedes Benz, BCG, Morgan Stanley Research
• Consumers could become sufficiently convinced of the benefits that they proactively install boxes.
• Media firms could push telematics as a means to develop infotainment revenues. We note Google’s recent reported $1.3 billion acquisition of travel mapping service Waze.
• A car repair chain could use telematics installation as a tool to attract a heavier flow of consumers.
• Many players could share the costs and benefits – for example, insurance companies interested in pricing partnering with garage chains interested in consumer flow, and with media companies interested in offering ads, joining resources to accelerate the technology adoption.

Building a business case for telematics

To date, telematics adoption has been relatively limited, with the most successful examples being in Italy (where claims fraud is an issue) and in the UK young drivers segment (where premium rates are very high).

In this section, we explore how one might construct a business case for broader adoption. We highlight the considerable challenges that exist before telematics becomes a mass-market technology.

We consider the business case potential for telematics across two broad scenarios:

• **For a young driver**, we take a 17-year-old paying a premium of $4,500 per year.
• **For an experienced driver**, we consider a 30-year-old with over 10 years’ driving experience, paying $800 per year.

We think the contrast between these two illustrates the key issues facing this new technology.

Our analysis does not consider the upfront investment needed by an insurer to enable it to offer telematics policies. This could be significant and would detract from the telematics economics we set out below.

Our analysis considers the impact of including telematics versus our base case assumption of a traditionally underwritten contract.

We consider the economics on a multi-year basis to allow us to explore the impact of retention on financial returns.

**Scenario 1: The young driver**

Our assumed starting combined ratio for a portfolio of younger drivers is 89%. This comprises a loss ratio of 82%, expense ratio of 4.6% (low, given the high premium size) and commission ratio of 2.6% (this latter cost paid in year one but not in subsequent years given high assumed consumer retention).

The large premium assumed is despite recent reductions for this grouping, and reflects the sharp rate increases previously seen. We note UK insurer Admiral, which has a higher than average risk portfolio because of its focus on young drivers, reported a FY13 combined ratio of 83%.

In year one, those selecting fully installed telematics are offered a 25% premium discount (versus our base case of 5%). The discount is consistent with those currently observed in the UK, where companies offer very attractive rates to draw in drivers to the telematics technology. However, in other markets the average premium discount may be lower than 25%, or higher than 5% for experienced drivers. In the following years we assume further (and consistent between scenarios) premium discounts given increased age and driving experience (discount compounds at 5% per year). By year five, when our 17-year-old is aged 22, the cumulative telematics rate decline is 32%.

In year one the insurer has to bear additional costs associated with the telematics hardware (we prudently assume $100) and its installation (we assume $125 but note that some insurers are already rolling out self-install technology).

We rule out the use of smartphones in this scenario given the reduced functionality versus specialised installed telematics devices. Beyond year one the only telematics costs relate to ongoing data analytics. We also assume no action to reduce other group expenses, which we keep flat in absolute terms.

Finally, we assume no ecosystem benefits, such as in relation to home insurance cross-selling (we assume that relatively few 17-year-olds would be purchasing property and therefore needing home insurance). Given that it is untested, we do not
factor in profit uplifts from infotainment and associated services.

Key conclusions from our modelling for young drivers

Exhibit 93 shows the break-even point for the telematics offer—that is, the ongoing improvement in loss ratio an insurer needs to assume to offset the initial premium discount given.

Expressed differently, achieving this reduction in loss ratio gives the same level of profitability as a non-telematics policy—after absorbing the initial cost of the box and installation and the ongoing data feed/analytics expense.

Our model considers the profitability over a cumulative six-year period, assuming a structural increase in retention over a normal motor policy.

Having spoken with a variety of industry participants, we think this balancing act between the additional cost of the telematics solution, the upfront discount given and the impact on the loss ratio remains the biggest area of uncertainty around the broader adoption of telematics technology.

As Exhibit 93 shows, in our young driver illustration a 9ppt improvement in loss ratio is required to offset the impact on profits of the original 25% premium reduction associated with the telematics offering and the technology costs.

By year five, in absolute terms this means claims costs in absolute terms have to fall a highly significant 39%.

This assumed reduction in claims costs looks too ambitious to us, even considering the potential for lower underwriting risk from a positive selection bias from better younger drivers actively choosing a telematics option.

The graph also examines the sensitivity around the initial telematics discount and loss ratio assumptions. As would be expected, the lower the initial discount, the smaller needs to be the improvement in loss ratio. For example, if the initial telematics discount falls to 15% (rather than 25%), the loss ratio has to improve by a more modest 5 ppts.

For insurers with existing strong traditional underwriting skills in the young driver segment, our modelling suggests the widespread advent of telematics in the market could be negative for insurance companies. This reflects the need for them to offer sizeable premium discounts to maintain market share in the face of higher competition from new entrants.

Scenario 2: The experienced driver

This scenario assesses the business case for telematics adoption in the mass market—that is, for a more typical premium level than is seen in the young driver segment.

Our starting combined ratio point for this risk group is 94%, which comprises a lower loss ratio of 65% (reflecting reduced risk versus the younger driver), an expense ratio of 26% (higher given smaller premium size, though consistent in absolute terms) and a commission ratio of 3% (again, we assume this cost is paid in year one but not in subsequent years given high assumed consumer retention).

The economics for this product are clearly influenced by the lower assumed starting premium for these policyholders ($800 versus $4,500).

This affects the potential premium discount that is economically affordable and the type of technology likely to be deployed.

For the premium discount, we assume a 5% reduction to entice take-up of a telematics offer followed by 2.5%
cumulative reductions thereafter. By year five, the total rate decline is relatively small at only 6%.

For the telematics technology solution, we assume a smartphone is used rather than a more sophisticated ‘black box’. This has more limited functionality, but the benefit of zero purchase and installation costs. It creates a substantial telematics cost advantage versus the young driver illustration. However, we maintain the same ongoing data analysis costs as in the previous scenario.

For the experienced driver we also factor in some benefit to the consumer relationship from cross-selling, in relation to home insurance (an assumed 5% margin on a home insurance premium of $510). This reflects our assumption that this age cohort is more likely to require home cover linked to a house purchase.

Key conclusions for experienced drivers

Our analysis indicates a much weaker telematics business case for existing lower-risk, and therefore lower-premium, drivers.

First, we wonder whether, given the much smaller starting premium, it is possible for sufficiently eye-catching discounts to be offered that will entice take-up of a telematics-led product. At first glance our illustrative 5% perhaps does not appear large enough to persuade those concerned over privacy and other issues associated with the technology (be they real or perceived).

As illustrated in Exhibit 94, even with the modest 5% initial discount given and a low-cost smartphone solution, the ongoing claims ratio would have to be assumed to decrease by around 7 ppts per year.

If the initial discount increases to 10%, the loss ratio has to improve by 10 ppts per year to make the economics comparable with the base case scenario. Such an improvement is required for younger drivers seeing a 28% initial reduction.

We also believe that, given the more limited technology deployed, smartphones are capable of delivering a similar reduction in loss costs to the full box solution.

What is clear from our experienced driver example is that, against a low premium base and relatively tight underwriting margin, even with a modest discount the data analysis costs would weigh more heavily. The situation would be worse if more expensive telematics technology were needed.

In Exhibit 94 we repeat the previous analysis but assume that self-install and full telematics devices are deployed. The higher technology costs place an even greater requirement for loss ratio improvement in order for the economics to remain stable relative to our base case scenario.

Our technology cost assumptions are shown in Exhibit 95.

The success of cross-selling from the wider ecosystem is more important in this scenario in terms of generating an overall profit, given its potential to offset the added technology costs.

In Exhibit 96 we re-run our initial telematics scenario for experienced drivers but assume no ecosystem benefits. We can see that, without assuming cross-selling benefits, a materially higher increase in loss ratio needs to be assumed.
Comparing our two scenarios

In Exhibit 97 we compare the graphs for young and experienced drivers, using our base-case telematics assumptions for each (smartphone for experienced versus the full solution for young).

This demonstrates that the business case for telematics is much harder to make for the mass market given the costs of the technology, the requirement to offer an upfront discount and the still uncertain benefits on the loss ratio.

Telematics – the technology angle in detail

Telematics technology comprises three main layers:

- **The hardware** – the device that monitors and records how you drive;
- **A communication layer** that transmits that data back to a data store; and
- **The telematics services and Big Data analytics** that take the data and (hopefully) turn it into something useful for the insurers.

We consider each in turn.

Telematics hardware – several possible solutions

There are three main types of device on the market today. The most common is the ‘black box’ that has to be installed in a vehicle, normally a self-contained unit. Sometimes the black box will double up as a tracker device so the vehicle can be tracked and recovered in case of theft – indeed, many of the telematics hardware vendors came from this vehicle recovery background.

Another variety of hardware is the dongle, which can connect into the vehicle’s on-board diagnostics (OBD) port.

Telematics providers are also looking to the smartphone as a method of capturing driver information.

The products have quite different costs. The black box tends to be the most expensive as it is custom-built for this application and needs to have all the sensors built into it, including accelerometers and gyroscopes to measure acceleration, braking, cornering, speed and timing. Installation costs are also highest for black boxes.

Dongles are a cheaper alternative but sometimes will also need to link into a mobile phone (for example, via Bluetooth) for the data connectivity.

The smartphone is often the lowest-cost device as there is no need for the insurer to fund the hardware cost as the consumer already has the device.

However, there are differences between the devices in terms of the type and quality of data they can capture. The ability to
identify a specific driver could also be an issue. At present, the dedicated black box likely delivers the most detailed and highest-quality data, but is the most expensive alternative. This could be relevant, say, in the data leading up to, and just after, a collision. A black box may be able to produce enough information to identify who is at fault. This may not be possible on a smartphone, where app data quality and reliability are variable.

The US market tends more towards dongles, whereas Europe has been more a black-box market to date.

We estimate the black boxes cost around $50-100, while a smartphone solution may cost as little as $20 to set up.

**Software/services: collecting and analysing data**

We see two main layers to the software side of telematics.

First, there is the telematics service provider (TSP), which runs the boxes and collects the data on behalf of the insurer. Some of these companies are integrated, so also provide the black box itself, while others are standalone. Once the data have been collected, the second element is data analytics.

The amount of analytics delivered by the TSP depends on the maturity and sophistication of the insurer. Some insurers want a complete analytics solution from the TSP up to and including driver scores, which they then use to calculate discounts.

At the other extreme, some insurers want the raw data and to work with the TSP so that the insurer’s own actuaries can work with and interpret the telematics data.

There is also a difference between the boxes in the type of data that they deliver. Some boxes (event-based) already interpret the data in a basic way whereas others capture all the raw data and send it on for analytics. The boxes that interpret only capture 1-2MB of data per month, whereas an insurer may need as much as 20-30MB per month of raw data to make detailed analyses. Another challenge with boxes that make their own interpretation of the data is that, if the box changes, the interpretation the insurer gets will also change slightly.

**Exhibit 98**

Telematics technology comprises three main layers: hardware, communication and telematics services

Source: BCG Analysis, Morgan Stanley Research
Data analytics here are far from simple: data volumes are quite large and often insurers will want to use these data in tandem with mapping data in order to see where an event happened.

We believe the complexity of the analytics has persuaded pure-play telematics analytics companies to set up, which can dedicate themselves to mastering this data.

From our interviews, we estimate the cost of the TSP and analytics is around €50 per year although it varies by provider.

We also see another major challenge for the data providers and insurers. To date, insurers have made use of a very small dataset (for example, name, postcode, type of vehicle, age) to calculate motor insurance costs. They have detailed claims data correlated with these factors.

The challenge they now face is an avalanche of driving data – how many miles, how fast, how much acceleration/braking, cornering speed, and so on – which could be highly useful, but for which they do not yet have an existing correlation with claims data.

We believe the insurer or telematics provider that can successfully marry up the new driving data with the claims data to demonstrate lower claims costs will have a major advantage, as a large part of the current benefits of telematics comes from driver self-selection, which will reduce over time if telematics is to be broadly adopted.

Several of the telematics technology companies we spoke to also acknowledged that the overall cost of telematics provision likely needs to fall for the solution to appeal to the mass market.

We see the potential for a clear split in the value chain between hardware and software/data.

**Potential for consolidation in devices segment**

In the devices segment, given the expected push towards the development of an industry standard, we see potential for consolidation. This could include partnerships between OEMs and telecom companies, for example.

To that end, we note Vodafone’s offer to buy Italian car electronics maker Cobra Automotive Technologies. A key rationale behind the transaction lies in Cobra’s telematics products and expertise, which will enable Vodafone to provide a more comprehensive range of end-to-end services to automotive consumers.

**More analytics opportunities**

In software/data we believe a new set of companies focused on collecting raw data from devices and providing insurers with useful and actionable information will increasingly gain importance. Such companies already exist (for instance, The Floow), but we see their number increasing.

Over time insurers may look to capture this part of the value chain themselves (as many supermarkets already do with regard to their customer information) through the acquisition of such expertise.

To that end it is not surprising that UK insurer Direct Line recently took a 15% stake in The Floow, having been working with the company since 2013 and buying from it smartphone applications and telematics data analytics for the Direct Line DrivePlus telematics product range.

**Implications for telematics technology providers**

**More standardisation of devices**

Over time, we see a push towards standardisation of telematics devices as a means of supporting accelerated adoption of the technology. Standardisation guarantees access to the information produced for different insurers and data analysis companies, drives down costs in the system and encourages take-up among consumers worried about potential technology redundancy.
Case study: Progressive’s ‘Snapshot’ product

Progressive is the US telematics market leader through its Snapshot offering, part of the company’s usage-based insurance (UBI) system, which has been developed since the mid-1990s. It is a voluntary on-board telematics device that monitors mileage, changes in speed/direction, and time of day. Progressive analyses the data and awards a discount (up to 30%) to consumers who drive less, more safely and during safer times of the day.

Big Data drives predictive power

Over six years, Progressive has accumulated 10 billion miles worth of driving data (100+ terabytes). The data enable the company not only to price consumers to the optimal level, but also to price new policies with the same characteristics to an optimal level. Progressive uses many different rating variables to price policies, but believes driving behaviour (Snapshot data) is ~2x more predictive in determining consumer profitability than the next most relevant variable (Exhibit 100).

Driving growth and consumer retention

At its annual analyst meeting in May 2014 management reported that Snapshot had more than $2 billion in premiums (10%+ of total premiums) and had grown by +30% year to date (surpassing $1 billion in annual premiums in 2012) – see Exhibit 99.

Consumers who enrol in Snapshot have an 11% greater policy life expectancy and those who receive a discount have a 19% longer policy life expectancy.

Data privacy is key impediment to telematics adoption

The first Snapshot devices did not contain GPS because of consumer privacy issues, but now that 60% of US consumers have GPS on their phones, these concerns have abated somewhat. However, some consumers are still not comfortable with having their driving behaviour monitored.

Take-up rate has been slower than company expected

Snapshot’s take-up rate has, by admission, been below the company’s expectations. The economics of telematics have yet to be proven as the Snapshot discounts offered to existing consumers could cannibalise profitability. Progressive argues that telematics creates a sustainable competitive advantage with more accurate pricing of risks, longer policy life expectancy, and higher overall profitability.

Competitors are catching up in telematics offering

Progressive has numerous patients in force on Snapshot. Following litigation with some competitors on patents, the company will begin to license its technology to peers in 2015. Some competitors offer their own programmes, including Allstate (DriveWise), Intact Financial, Liberty Mutual (Onboard Advisor), State Farm (In-Drive) and Travelers (Intellidrive).
Case study: Ping An – early ecosystem leader

We think that Ping An Group in China is an early example of an insurer developing an ecosystem business model. From its roots as a P&C insurer, the company now offers a wide variety of financial services (including banking), wealth management and other non-financial services.

Ping An provides financial services alongside other new business lines that are intended to grow the consumer base. For example, it offers car and home marketplaces, a loyalty point programme and an online payment system.

Consumer centricity is core to the business model. The company positions itself as a financial services supermarket where consumers find all their financial needs through one account with a “single sign-on” for all Ping An services. Consumers are then attracted to the platform by new business lines and offered traditional financial products.

Ping An makes innovative use of financial technology supported by a flexible group structure. The group has created a large digital incubator outside the insurance businesses, which has P&L responsibility as well as relative autonomy to innovate. New ideas are tested through start-ups within the mother company and are allowed to compete for consumers within the group.

Despite its roots as a P&C insurer, Ping An offers a broad range of financial and non-financial services. In addition to insurance, it offers banking services (it acquired Shenzhen City Commercial Bank and Shenzhen Development Bank), wealth management and other services.

Ping An’s value proposition is:

- **Financial services** – to cover life’s essentials, including auto, home, health and others, to become China’s largest retail financial services provider.
- **Wealth management** – to have the largest market share of affluent and mass-affluent retail consumers in China.
- **Other services** – to enhance life’s essentials (the basic products) and generate profit through a multi-dimensional approach, including platform, data and services.

Ping An – an unusual corporate structure

Ping An’s governance structure is highly unusual, with all subsidiaries operating independently, each having a discrete profit and loss account, and budget.

For example, the group has established Ping An Technologies, an independent company focusing on technology. It has its own P&L and budget, financed by Ping An Group. Given this, each subsidiary is under pressure to perform with the pace of innovation therefore increasing – for example, there are no lengthy central approval processes. This approach gives management the opportunity to test new ideas through start-ups.

Attracting consumers through new business lines

The Ping An model seeks to develop innovative business models that attract consumers who can then be cross-sold more traditional financial services products.

As Exhibit 101 shows, Ping An has a variety of new business lines that aim to funnel consumers to the core products; however, all of these ventures have their own profit motive.

The intention is that these ventures have large customer numbers – and crucially a high frequency of consumer interaction (unlike much of insurance). Through a combination of data mining and precision marketing, these consumers can be migrated to other products.

Examples of the innovative business models include:

- **Lufax**: a peer-to-peer lending platform that launched in 2011, Lufax aims to meet the need for credit in secondary, third and fourth-level cities where there is low availability of funds. The business offers lending through agents and an online investment platform. The intention is to use the consumer contacts to upsell insurance, wealth management and mortgages via Ping An Bank.
- **Hao Che**: an online trading platform for used cars, Hao Che allows consumers to search for vehicles that it has
pre-tested. There are branded stores that operate as points of sale and service centres. The aim is to sell Ping An auto insurance and car loans.

- **Qian Bao**: one online wallet in which consumers can make and save, borrow and lend money. Qian Bao has inbuilt access to Ping An’s other products, such as Lufax.

- **Wan Li Tong**: a loyalty points programme that gives Ping An access to a regular consumer base. Wan Li Tong lets consumers earn points on a large variety of transactions. Consumers wishing to view their points balance on a mobile need to use Qian Bao (above). Wan Li Tong provides more source data for Ping An’s Big Data effort.

- **Tian Xia Tong**: an instant messaging and social networking app with financial product information and services built in. For example, friends can be added via a phone’s contact list – they can then provide status updates and message each other. Personal connections between agents and consumers are encouraged. Tian Xia Tong connects with other Ping An services.

**One Account – bringing it all together**

One Account consolidates all Ping An products owned and even external bank accounts into one online account. All of the online features from the various products are available from within the account. Consumers can purchase additional products through the account with special offers shown.

The goal is to drive migration of consumers between traditional and non-traditional businesses by providing seamless transitions between them – see Exhibit 102.

A shared technology platform enables full integration of business apps and websites, with front-end channels controlled centrally, enabling cross-selling. Calls centres, mobile apps and the salesforce can sell any product across the group.

Ping An’s strategy is to source Big Data insights from its new businesses and use this to influence the development of its three core services, insurance, investment and banking.

**Exhibit 101**

Ping An attracts consumers through new business lines, then migrates them to traditional financial services

<table>
<thead>
<tr>
<th>New Business Lines</th>
<th>Lufax</th>
<th>Qian Bao</th>
<th>Tian Xia Tong</th>
<th>Hao Che</th>
<th>Wan Li Tong</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Qian Bao</td>
<td>2 Hao Che</td>
<td>3 Lufax</td>
<td>4 Tian Xia Tong</td>
<td>4 Wan Li Tong</td>
<td></td>
</tr>
</tbody>
</table>

Consumers pass through funnel to right business line

Large consumer numbers, frequent interactions

Data mining, precision marketing and consumer migration

Source: Ping An strategy presentation August 2013
Exhibit 102: Ping An focuses on technology to drive consumer migration, for example sourcing Big Data from its new business to influence its three core services.

Source: Ping An strategy presentation, August 2013
Consumers willing to adopt new technologies

Encouragingly, our global consumer survey suggests that consumers are keen to consider new technology-based business models and insure new risks. More than 80% of consumers are willing to at least consider new technology-enabled insurance policies.

Younger and wealthier consumers are most keen to consider new products. We see very strong interest among younger consumers in new products; however, a majority of over-65s are also in favour (particularly in the case of connected health). Consumers with higher incomes show the highest degree of interest in new products.

Consumers also appear keen to adopt unified ecosystem-based insurance, where they can tailor products using online building blocks. On average 23% would switch to this new platform, while a further 43% would consider it. Interest was highest in Asia.

There is a willingness to insure new risks, with 74% of consumers prepared to pay for identity theft insurance (for example).

Trust in insurers is high – 81% of consumers are willing to share personal information (such as sensor data) in order to benefit from price reductions. Chinese consumers were the most willing to share, followed by South Korea and the US.

In our global consumer survey, we asked respondents in detail about their attitudes towards new technologies and their degree of trust in sharing increased amounts of data with insurance companies.

Our two main findings are:

- Consumers are keen to consider new technology-based business models and to insure new risks, which could help increase the insurance risk pool both through the addition of new risks and via increased penetration of existing risks; and

- Consumers are willing to share more information with insurers (needed for new business models), for price and non-price related benefits, and trust insurers to manage their sensitive information.

Consumers keen to use new technology-based products

With insurers increasingly emphasising digital strategies, our survey asked consumers whether they would be willing to adopt new technologies offered to them by insurers.

We began by asking consumers their views on technology adoption on a select sample of possible new products across motor, home and life insurance. These were:

- **Motor**: more flexible insurance policies enabled by mobile apps/online, allowing for easy activation and de-activation and adjustment of level of cover according to their needs (for example, reducing policy coverage automatically when the car is parked in a secure car park).

- **Home**: installing smart-home sensors that alert consumers to potential damage, and also prevent damage (such as water consumption monitors that notify leaks and shut down the water supply if needed).

- **Life**: mobile health data shared by consumers, which insurers can use to detect healthy activities (say, regular check-ups or stopping smoking) and price accordingly.

The results of our survey are shown in Exhibit 103.

In all three categories, more than 80% of consumers were willing at least to consider new technology-enabled insurance policies.

In Exhibit 104 we show willingness to adopt by demographic group, and in Exhibit 105 we present this by household income. We can see that younger and higher-income consumers are more likely to switch to the new insurance models.

Exhibit 103
Consumers show a high degree of consideration for innovative insurance products

<table>
<thead>
<tr>
<th>Feature of technology</th>
<th>Yes, I would definitely switch</th>
<th>I would consider switching</th>
<th>I would be willing to hear more about it</th>
<th>No, I would not switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk prevention through sensors</td>
<td>17%</td>
<td>36%</td>
<td>34%</td>
<td>14%</td>
</tr>
<tr>
<td>Risk prevention through servicing</td>
<td>15%</td>
<td>33%</td>
<td>35%</td>
<td>15%</td>
</tr>
<tr>
<td>Insurance on demand</td>
<td>15%</td>
<td>35%</td>
<td>35%</td>
<td>17%</td>
</tr>
<tr>
<td>Easier and faster process</td>
<td>15%</td>
<td>36%</td>
<td>34%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below?”
Exhibit 104

Younger population keenest to consider new products, but so too are a majority of older consumers

% of respondents that would switch to a new model would consider it or would like to hear more

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below?” Chart shows consumers that chose “Yes, I would definitely switch”, “I would consider switching”, or “I would be willing to hear more about it”. See text on page 96 for a full list of products.

Exhibit 105

Consideration for new insurance products is highest among higher-income households

% of respondents that would switch to a new model would consider it or would like to hear more

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below?” Chart shows consumers that chose “Yes, I would definitely switch”, “I would consider switching”, or “I would be willing to hear more about it”. Note: Interviewees indicated annual household income from 6 proposed brackets, the lowest two were named “low”, and the highest two were named “high” (e.g., for the US, brackets are: up to $25k; $25k-$50k; $50k-$100k; $100k-$250k; $250k-$750k; and above $750k).
Exhibit 106
Willingness to adopt new technologies – motor

<table>
<thead>
<tr>
<th></th>
<th>Yes, I would definitely switch</th>
<th>I would consider switching</th>
<th>I would be willing to hear more about it</th>
<th>No, I would not switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>14%</td>
<td>35%</td>
<td>35%</td>
<td>15%</td>
</tr>
<tr>
<td>Service</td>
<td>17%</td>
<td>37%</td>
<td>31%</td>
<td>14%</td>
</tr>
<tr>
<td>Insurance on demand</td>
<td>17%</td>
<td>33%</td>
<td>34%</td>
<td>16%</td>
</tr>
<tr>
<td>Easier and faster processes</td>
<td>19%</td>
<td>35%</td>
<td>32%</td>
<td>14%</td>
</tr>
<tr>
<td>Adjustment to changing risks</td>
<td>17%</td>
<td>33%</td>
<td>32%</td>
<td>18%</td>
</tr>
<tr>
<td>Assistance</td>
<td>18%</td>
<td>35%</td>
<td>33%</td>
<td>15%</td>
</tr>
<tr>
<td>Training</td>
<td>14%</td>
<td>31%</td>
<td>34%</td>
<td>21%</td>
</tr>
<tr>
<td>Full mobility solutions</td>
<td>14%</td>
<td>30%</td>
<td>34%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below?” See Appendix 2 for a breakdown of products within each category.

Exhibit 107
Willingness to adopt new technologies – home

<table>
<thead>
<tr>
<th></th>
<th>Yes, I would definitely switch</th>
<th>I would consider switching</th>
<th>I would be willing to hear more about it</th>
<th>No, I would not switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk prevention through sensors</td>
<td>17%</td>
<td>36%</td>
<td>34%</td>
<td>14%</td>
</tr>
<tr>
<td>Risk prevention through servicing</td>
<td>15%</td>
<td>33%</td>
<td>35%</td>
<td>15%</td>
</tr>
<tr>
<td>Insurance on demand</td>
<td>15%</td>
<td>35%</td>
<td>35%</td>
<td>17%</td>
</tr>
<tr>
<td>Easier and faster process</td>
<td>15%</td>
<td>36%</td>
<td>34%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below?” See Appendix 2 for a breakdown of products within each category.

Exhibit 108
Willingness to adopt new technologies – life

<table>
<thead>
<tr>
<th></th>
<th>Yes, I would definitely switch</th>
<th>I would consider switching</th>
<th>I would be willing to hear more about it</th>
<th>No, I would not switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk prevention</td>
<td>14%</td>
<td>32%</td>
<td>33%</td>
<td>20%</td>
</tr>
<tr>
<td>Insurance on demand</td>
<td>13%</td>
<td>32%</td>
<td>34%</td>
<td>22%</td>
</tr>
<tr>
<td>Easier and faster processes</td>
<td>15%</td>
<td>33%</td>
<td>34%</td>
<td>18%</td>
</tr>
<tr>
<td>Assistance</td>
<td>13%</td>
<td>30%</td>
<td>34%</td>
<td>22%</td>
</tr>
<tr>
<td>Planning tools</td>
<td>9%</td>
<td>26%</td>
<td>40%</td>
<td>14%</td>
</tr>
<tr>
<td>Pension flexibility while saving</td>
<td>12%</td>
<td>27%</td>
<td>37%</td>
<td>13%</td>
</tr>
<tr>
<td>Pension flexibility during retirement</td>
<td>11%</td>
<td>27%</td>
<td>37%</td>
<td>14%</td>
</tr>
<tr>
<td>Forecasting tools</td>
<td>9%</td>
<td>25%</td>
<td>41%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below?” See Appendix 2 for a breakdown of products within each category.
Exhibits 106-108 show willingness to adopt in the motor, home and life segments, with a split by type of technology (prevention, assistance, insurance on demand).

Consumers were also keen to adopt unified ecosystem-based insurance (Exhibit 109). Online flexible, combined insurance solution that would allow consumer to tailor different building blocks of insurance to meet their needs – 13% said they would switch to this new platform, while a further 43% would consider it. Only 9% would definitely not switch. Consumers in Asia showed the greatest interest.

Some consumers have refrained from buying insurance, but we believe this could be overcome by insurers using digital products. For example, when we asked consumers without home insurance why they did not hold the product, some 50% felt the risk was too low, while 36% said they could not afford it. We believe that applying risk mitigation techniques (such as IoT/connected devices) may enable insurers to offer more tailored cover and/or reduce prices. Some 32% of consumers without motor cover cited a lack of “suitable” policies – a finding mirrored in home (37%) and life (34%).

Consumers are also willing to insure new risks

As Exhibit 110 demonstrates, 74% of our respondents were willing to pay for identity theft insurance, 68% for data insurance policies, and 65% for cyber risks.

Trust and data sharing – the consumer view

We believe that consumers have a high level of trust in insurers to manage the information and sensor data needed for innovative insurance products, despite having a relatively low frequency of interaction with insurers.

In Exhibit 111, we show that only 14% of consumers interact with insurers on a weekly basis, compared to 53% with banks. Yet consumers report a higher level of trust in insurance than in other industries (Exhibit 112) – 40% picked insurers as one of their top-three choices as a trusted handle of their sensor information – double that of internet search engines.

In addition, better offers seem to be the biggest driver of information sharing. 81% of consumers would share personal information with insurers to benefit from price reductions, followed by 77% of consumers willing to share information to experience better claims processes (Exhibit 113). Taking price reduction as the benefit for information sharing and analysing by country, Chinese consumers were the most willing to share, followed by South Korea and the US (Exhibit 114).
Exhibit 112

Insurance companies ranked fourth on the list of industries that consumers voted first choice to manage their connected home and car, and third as consumers’ top three choice.

Which company do customer trust to manage their connected home and car?

% of respondents which chose company as 1st, 2nd or 3rd choice

<table>
<thead>
<tr>
<th>Company</th>
<th>1st choice</th>
<th>2nd choice</th>
<th>3rd choice</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Company</td>
<td>38%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Banks</td>
<td>43%</td>
<td>47%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Security Companies</td>
<td>48%</td>
<td>45%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Insurance Companies</td>
<td>43%</td>
<td>47%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Internet Search companies</td>
<td>29%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Computer Companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Utilities Companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Car Companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Social Network Companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Broadband providers</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Home appliance companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Online retailers</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Electronic entertainment companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Retail companies</td>
<td>28%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Other</td>
<td>38%</td>
<td>25%</td>
<td>22%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “In the future one single platform could control all automated items in our homes and motors. Which of the companies below would you trust the most to manage them?”

Exhibit 113

Most insurance consumers are willing to share information in exchange for tangible benefits.

% of respondents

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Would Not Share Info</th>
<th>Some Value - Would Share Selected Info</th>
<th>Great Value - Would Share Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price reductions</td>
<td>38%</td>
<td>43%</td>
<td>29%</td>
</tr>
<tr>
<td>Better Claim Process</td>
<td>29%</td>
<td>48%</td>
<td>23%</td>
</tr>
<tr>
<td>Personalized Products</td>
<td>28%</td>
<td>47%</td>
<td>24%</td>
</tr>
<tr>
<td>Benefits as gifts and cash</td>
<td>25%</td>
<td>45%</td>
<td>30%</td>
</tr>
<tr>
<td>Complementary Products for Convenience</td>
<td>22%</td>
<td>47%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “For each of the benefits, please indicate how likely you would be to share personal information to obtain it: I see great value in this benefit and would share personal information to receive it; I see some value in this benefit and would share selected personal information to receive it; I would not share any personal information to receive it.”
Exhibit 114

Willingness to share information in order to benefit from price reduction varies considerably by country, with Asian countries most willing.

Customers willingness to share information for Price Reductions

<table>
<thead>
<tr>
<th>Country</th>
<th>Willing to Share</th>
<th>Unwilling to Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>-10%</td>
<td>90%</td>
</tr>
<tr>
<td>South Korea</td>
<td>-14%</td>
<td>86%</td>
</tr>
<tr>
<td>United States</td>
<td>-15%</td>
<td>85%</td>
</tr>
<tr>
<td>Italy</td>
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<td>85%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>-16%</td>
<td>84%</td>
</tr>
<tr>
<td>India</td>
<td>-17%</td>
<td>83%</td>
</tr>
<tr>
<td>Canada</td>
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<td>83%</td>
</tr>
<tr>
<td>Straight Sample Avg.</td>
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</tr>
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<tr>
<td>United Kingdom</td>
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<tr>
<td>Japan</td>
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<td>77%</td>
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<tr>
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<td>-28%</td>
<td>72%</td>
</tr>
<tr>
<td>Germany</td>
<td>-31%</td>
<td>69%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG e-intensity index, Morgan Stanley Research. Question: “For each of the benefits, please indicate how likely you would be to share personal information to obtain it.”
The evolution of insurable risk pools

Technology has always had an important impact on insurable risk, yet we think this could accelerate over the next 10-15 years as risk pools change due to improvements in safety.

New risks will doubtless emerge to replace old ones. Areas such as cyber liability are as foreign to insurers right now as motor insurance would have been when the car was first popularised. New risks have always raced to replace old ones.

We think that motor and home risk pools may shrink, causing a $62-102 billion fall in global non-life premiums in today’s terms (5-9% of global non-life excluding health).

This could be as high as $246 billion if take-up of prevention technology is nearly universal and it works at the upper limit of our expectations (~20% of global non-life).

Penetration and severity trends may reverse these falls and keep the risk pool stable over time, but we would expect market growth to be curtailed. Medical cost inflation in particular is hard to predict, but may be driven upwards by improving technology over time.

Telematics particularly important for motor insurance. While implementation may be a challenge (see the section entitled Internet of Things / telematics), telematics could alter driver behaviour, reduce theft and improve accident monitoring – reducing losses. Our working assumption is that this technology will eventually work and reduce losses by 15-25%. This implies $30-54 billion of lost premium income, assuming adoption rates correspond to those in our global consumer survey.

Home insurance benefiting from smart devices. Connected smart meters, intruder and fire alarms could reduce the risk pool for home by 40-60%. A large portion of consumers we surveyed were interested in investigating these types of technology. We think this could reduce premiums by $32-47 billion in today’s terms, unless penetration rises.

Penetration could rise due to digitalisation. More flexible and accessible policies could offset the decline in risk pools, and leapfrogging technology could make penetration rates in EM grow more quickly than the historical S-curve suggests.

Liability may change hands. Some technologies, such as automated cars, could transfer liability from one group to another – that is, from drivers to manufacturers/software providers. If risk accumulates too much around one-off systemic events, some risks may be uninsurable in the future (say, if the system caused all cars simultaneously to crash).

Existing treaties need to be reconsidered. The wording of existing treaties may be affected in ways that insurers do not anticipate. For instance, contingent business interruption could be exacerbated (or reduced) based on the technologies that the policyholder uses.

Impact on insurable risk pools

Technology will have a profound impact on insurable risk pools in the future, as it has always done through the course of history. We identify five major impacts:

1. New risks will emerge, which will need to be covered.
2. Technology will shrink some risk pools over time.
3. Insurance penetration growth should accelerate through better distribution and more flexible policy terms.
4. Liability for risk will change hands.
5. Existing treaties may unintentionally contain new risks in ways that insurers do not anticipate.

We estimate that up to $246 billion of today’s premiums, or ~20% of global non-life premiums (excluding health) could disappear through less frequent and severe loss events in home and motor insurance as a result of improved technology over time.

Our base case is for a $62-102 billion (5-9%) fall, based on a survey on the willingness of consumers to adopt these technologies. Both estimates are gross of offsetting penetration, severity and new product growth. Yet we think that penetration growth is in a race with risk pools shrinking.

Factor 1: new risks will emerge

Ever since insurance was established as an industry, the types of risk that individuals and businesses face have been changing. Originally rooted in marine cover, insurance was extended to new areas as the industrial revolution, advent of motor vehicles and the aviation industry created new perils that needed to be covered.

Today that process continues, as new types of risk emerge and others shrink. The prime example of this is cyber risk, explored below. Yet there are many other emerging risks such as undersea mining and liability insurance on unmanned aerial vehicles. Some risks we cannot conceive of today may be important for insurers in the future.

We have already explored consumers’ willingness to pay to cover new emergent risks. Exhibit 15 shows the results.
Consumers seem highly willing potentially to pay for cover of data risk, cyber risk and identity theft risk, for example.

**Factor 2: reducing risk pools over time**

Technology has the capacity to reduce existing risk pools or to expand them – with strong implications for insurers. The smaller the risk pool, the smaller the premiums it can generate, affecting the revenues of the sector.

Using our global consumer survey of consumer willingness to adapt new technologies, we find that the motor risk pool could shrink by $30-54 billion and the home risk pool by $32-47 billion, or about 5-9% of total global non-life premiums (excluding health) over the next 10 years.

Importantly, we assume in our analysis that IoT technology is eventually economically viable for insurance. Whether that is the case today is explored in more detail in the relevant section from page 78.

**Motor analysis**

We see two major areas of potential lower risk in motor due to telematics technology:

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**Cyber risk – a case study**

The cyber liability market is worth $1-1.3 billion, yet is expected by Swiss Re to grow by 10-15% per year on average over the next 10 years.

As it is currently structured, cyber liability covers externally generated business interruption, excluding power failures and internet interruption. This leaves significant areas uncovered.

The problem for the industry lies in defining products in a way that can provide meaningful value for a client without exposing the industry to unacceptable accumulation or agency risks.

Given the pace at which technology is linking systems together, it is possible that a single disruption could take down an entire networked system across multiple global locations. A global inter-linked shock of this kind is difficult to insure against.

Furthermore, determining the cause of a disruption can be difficult. The current product requires a forensic analysis to determine the cause of the loss, which we believe is possible. Yet if the coverage is expanded to employee negligence or brand damage, it is more difficult to quantify.

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Exhibit 115

**Global consumer survey – consumers are open-minded to insuring new risks. Data, identity theft and cyber risk are areas where a majority of respondents see value in insurance**

% respondents willing to pay to insure new risks

![Global consumer survey chart]

Source: Morgan Stanley/BCG Global Consumer Survey 2014. Question: "Please also add next to each risk how much you would consider a fair price for this insurance per year. Please write zero if you would not be willing to pay for one of the ideas."
a) **Reduction of accident rate** by ~5% through driver monitoring, feedback and education. Many people believe telematics is about risk selection, but actually the use of the black box has an important effect on driver behaviour: drivers are more likely to follow the rules with a box in the car.

b) **Reduction of fraud.** Telematics can tell how an accident happened, which can be used as evidence of a deliberate crash or one that could not have caused, say, whiplash. Similarly, telematics makes car theft harder.

Based on the above, we estimate that the risk per policy could be reduced by 15-25% with a telematics-equipped car. Based on our consumer survey, we estimate a 55% potential take-up rate, which leads to our conclusion of a $30-54 billion reduction in premiums over time (assuming stable loss ratios).

We believe that on-demand insurance for car policies may be a popular trend in the future, which could help insurers more accurately price the risk of policies. However, it is unlikely to change the risk pool and therefore will not reduce the overall size of the motor market.

The reason why we think on-demand will not change overall premiums is that it should not change the amount of losses for the whole industry. If people only buy insurance as they drive, that doesn’t (necessarily) mean that they will drive less.

So the industry still needs to charge losses plus in premiums to make a technical profit, which suggests to us that on-demand is not likely to change global risk pools as such.

In our survey, only 24% of the reasons given for no motor insurance policy were related to issues that technology cannot affect, such as “no need due to leased car” (Exhibit 123).

We think technology is likely to solve issues such as “process is too long/complex”, “need insurance for less time than cover” and “haven’t found ideal product”.

The categories of “can’t afford” and “refused by all insurers” are potentially solvable through technology, since new product types could offer solutions to high-risk drivers or offer a lower price point (on-demand for infrequent drivers).

We therefore think the overall impact on global loss pools could be partially mitigated by those technological factors.

**Motor trends more generally**

The safety record of transport has improved considerably over time, reducing frequency of accidents and the number of fatalities. Part of this trend is due to better safety rules and enforcement, but technology has also played a role.

Yet the offsetting trend, particularly in motor, is that severity trends have offset much of the frequency gains. The core drivers of severity are:

- Medical cost inflation,
- More expensive replacement parts, and
- A lower number of deaths per accident.

Technology has played a large part in each of these instances.

For instance, the type of material used in cars has improved over time, and for most insurance companies the cost of replacing windscreen is typically higher than that of theft (in the UK).
Medical costs are driven by constantly improving treatments for injured people, as well as improved life expectancy of badly injured accident survivors.

Technology has also had a profound impact on survival post accidents. One company we interviewed told us that, in the late 1990s, it noticed that its losses from motor accidents had increased substantially, but it didn’t know why.

In the end the company discovered that the advent of mobile phones meant that accidents were reported more quickly, so people survived more often. That is, of course, very good for drivers, yet increasing the survivability of severely injured motorists wrong-footed actuarial assumptions at the time.

Telematics has the potential to hasten the response time for victims of car accidents – saving and improving lives but potentially at a cost to insurers.

We would also highlight the potential of autonomous cars to reduce risk pools (see Morgan Stanley’s Blue Paper Autonomous Cars: Self-Driving the New Auto Industry Paradigm, November 6, 2013). While accident frequency may reduce, accident severity costs may continue to rise as car complexity increases.

Motor insurance – balance needed

The motor insurance pool will likely grow with the global car park as well as trends in compulsory cover, optional cover behaviour and severity trends.

We have summarised across our target countries what level of penetration/severity increase is needed to keep the overall motor risk pool stable (Exhibit 121).

We estimate that most pools should stay stable in absolute terms, with only Italy screening as a market that is likely to shrink. Asian countries look likely to need high real growth to increase premiums, but we believe they are also likely to achieve that in the long run.

Ultimately, technology threatens to increase or reduce the absolute level of potential non-life penetration that is achievable for each market.

Home insurance

Property insurance is also facing a wave of technological improvements, which could affect losses for insurers:

- **Connected fire alarms** can reduce the instance and severity of fires by alerting the owner and authorities as soon as one happens. A connected alarm is more reliable than a battery-powered one, as it is more likely to be functioning when it needs to be.

- **Water leak detectors** can reduce the damage that a burst pipe can do to a home by cutting off the water supply.

- **Connected intruder alarms** could reduce theft.

We think that, as well as reducing risk, the advent of on-demand policies could have a mixed impact on risk pools.

Some currently insured homeowners could trade down to covers that attach to the specific time periods they are worried about – such as leaving the house empty on holidays. On the other hand, currently uninsured people may be attracted in. The overall impact could fall either way.

For home insurance, we expect the impact to be even larger than for motor, with a 40-60% reduction in the risk losses.

Unlike motor, we would not anticipate that severity trends would offset this to the same degree (since medical costs are not a major part of homeowners’ risk).

Our survey found that 28% of consumers in aggregate would switch to having smart-home devices and 38% would consider it. However, 90% would like to hear more about it, which means that, if the economics are strong (cheaper premiums, safer houses), the take-up rate could be very high.

Similarly, a high proportion of respondents said they would consider switching to on-demand. While this may or may not change the risk pool, it could have a profound impact on risk selection and therefore the shape of insurance covers.

Home insurance – penetration needed

We repeat our exercise to show the required growth in home insurance penetration over time, to achieve a stable base of premiums. The outcomes are similar to those for motor, with the exception that the US would need to have a stronger increase in penetration than it would need in motor. This suggests that the US in particular is at risk of disappointing on growth as new technologies are adapted (Exhibit 126).

Commercial property

We do not include the potential fall in risk pools for commercial property in our study – only that of homeowners.

Smart-device technologies are already more prevalent in commercial properties, partly because the value at stake is higher but also because they dovetail with other business needs such as business continuity risk management.

So we would estimate that the impact on risk pools of smart device take-up would be lower for commercial enterprises – possibly more, though, for small and mid-sized enterprises.
Factor 3: more flexible cover may help penetration

The digitalisation of insurance processes on the back-end, together with the rise of digital distribution platforms, could have interesting implications for the way that insurance cover is sold in the future.

One possible outcome is that policies become a lot more flexible in what they cover and how they cover it.

One application of telematics and avionics is the creation of pay-per-use policies. When a car is in the garage, it does not generate liability claims, so consumers who rarely drive may be over-paying for their policies. On-demand products may be a more attractive solution.

While motor insurance third-party liability is usually compulsory, other forms of insurance may increase in penetration with the advent of on-demand policies – for example, home theft insurance. As the chance of theft is much higher when on vacation, on-demand insurance cover could be purchased just for the periods when people are away from their homes.

On demand policies could reduce purchases of full policies, but we also believe that consumers who do not buy insurance at the moment may be tempted to come in on this more affordable basis.

Similarly, policies can have more flexible inclusions and exclusions, which again allow for greater customisation and potentially, therefore, higher sales in the future.

The speed of buying cover – already fast for motor or home online in many countries – could become even faster and simpler than it is today.

Leapfrogging in emerging markets

Technology could hasten penetration of insurance in some emerging markets in two important ways:

- By reducing the costs of distribution, certain types of covers can become economical for a wider audience.
- Through faster transfer of information, technology could speed up sales in new areas.

Old Mutual has a number of programmes in place in Africa where mobile phone payments are used to purchase life savings and protection products.

Swiss Re’s Sigma issued a report in 2013 highlighting that the “protection gap”— uninsured mortality risk — was $86trn globally. The consequences of the death of a worker in emerging markets can have a disproportionate impact on the lives of loved ones, and the ability to provide effective cover is very important to such communities.

As mobile phones become more sophisticated at a lower price point, the distribution capacity to emerging markets also improves. In some markets mobile phone payments already act as a quasi-banking system, and insurance could easily find new avenues of growth through this channel.

We show in Exhibit 118 the S-curve of development in non-life insurance. The theory is that, initially, people cannot afford insurance but, as a middle class emerges, demand for protection rises.

However, once a society is sufficiently rich, it can afford to ‘self-insure’ either through a generous welfare net or because the loss of a car or a home does not have as much impact on the financial wealth of individuals or companies.

The potential of 'leap-frogging' technologies may accelerate the progress of emerging markets up the curve, since the sales process is simpler than ever before and efficiencies improve the viability of products for smaller risks.

Factor 4: risk transfer from one party to another

Changes in technology can affect the liability of parties who need to purchase insurance cover.

While we do not anticipate that autonomous cars will be a major feature of the motor market in the next 10 years, they serve as a useful example in this instance.

If cars were to ‘drive themselves’, the culpability of a human driver would likely fall in the case of accidents. Crashes might be rarer, but there would be a risk that the machines would fail and people would be injured or property damaged.

However, if an autonomous car crashed, who would be ultimately liable? Maybe the manufacturer or software company would be found liable – taking the liability risk away from individuals.

Many airplanes today effectively do fly themselves, and should one of those fail, the manufacturer might conceivably also find itself liable, rather than the airline, depending on the circumstances.

One of the most difficult challenges in any systemic scenario is accumulation risk.
Exhibit 118
The S-curve of development in non-life insurance

Penetration

Source: Sigma Swiss Re, BCG Analysis, Morgan Stanley Research

Exhibit 119
We expect telematics to reduce risks per policy by 15-25%

Current motor risk/losses

Risk reduction through adoption of smart devices

Future potential home risks/losses

-~5% reduction in accidents due to educational programmes linked to telematics
  Speed limits
  Safe distance to other cars
  Safer turns and breaks, etc

Reduction in fabricated bodily injury claims due to whiplash
-~70% of total value of bodily injury claims in the UK
10-15% of which are fabricated

Elimination of fraud
10-20% of claims due to fraud in both underwriting and claims assessment
Fraud can be eliminated in policies equipped with telematics

Source: Association of British Insurers, BCG case experience, DFT UK; Morgan Stanley Research. * Based on UK claims split in 2012. Other technologies such as on-demand policies and in-car accident prevention technologies will also have an impact, but are not modelled here.
Exhibit 120

Willingness to adopt telematics devices among consumers who hold motor insurance policies – on average ~85% of insured consumers are at least willing to hear more about telematics

Split of current insured customers by willingness to adopt technology (%)

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG Analysis, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make motor insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below? Motor: adjustment to changing risks: installation of smart risk trackers (e.g. devices that track speed, driving behaviour, location, etc.) that send the insurer information on your driving would allow you to pay only for the risks you take.”

Exhibit 121

We estimate that ~$25-41bn ($32bn midpoint) of motor premiums from the countries below could be lost at the current level of likely adoption of telematics technologies. Scaled to all countries, this rises to $30-54bn

Estimated reduction in motor insurance premiums due to telematics ($bn) 2013

Source: Morgan Stanley/BCG Global Consumer Survey 2014, Sigma, BCG Analysis, Morgan Stanley Research. Note: $32bn is the midpoint of 15-25% lower risk from telematics (20%) measured against the anticipated adoption rate of the technology based on our global survey. Note that countries on the chart represent ~76% of global motor premiums.
Exhibit 122

Motor: Asian countries show a potential growth in premiums, whereas European and North American countries are stable or potentially shrinking

% penetration increase to compensate for technology risk reduction (%)

- High penetration increase needed, but low GDP growth – premium pool potentially shrinking
- Low penetration increase needed, and GDP growth – premium pool close to stable

Source: Morgan Stanley/BCG Global Consumer Survey 2014, Sigma, EIU

Exhibit 123

Technology can help address most reasons preventing consumers from purchasing motor insurance policies

Split of current not insured customers by reason not to have a policy (%)

- Of the reasons for not buying insurance, only 27% on average were due to reasons that could not be impacted by technology

Telematics to make high risk groups insurable, lower risks and on demand to make policies cheaper and more flexible, digital distribution channels to make purchase and policy management processes simpler and shorter

Source: Morgan Stanley/BCG Global Consumer Survey 2014, BCG Analysis, Morgan Stanley Research. Question: "What are the reasons why you do not have motor insurance? Please indicate to what extent you agree or disagree with each of the statements as fitting your personal situation or view." Considered on the graph: "Strongly agree" and "Agree". 2. Weighted by population.
Exhibit 124: Our analysis shows that smart-home devices should reduce risks per policy by 40-60%.

Our analysis shows that smart-home devices should reduce risks per policy by 40-60%.

- **Current home risk/losses**
  - 100% Other
  - 80% Electrical
  - 60% Theft
  - 40% Water Damage
  - 20% Fire

- **Risk reduction through adoption of smart devices**
  - **Water Leakage**
    - Connected meters: ~20-30%
    - Connected electronic manometers: ~20-30%
    - Active leakage detection devices: ~70%
  - **Fire**
    - Smoke detector: ~70%
    - CO2 detectors: ~70%
  - **Theft**
    - IP DIY alarm systems: ~10-80%
    - Advanced alarm systems: ~10-80%

- **Future potential home risks/losses**
  - 100% Other
  - 80% Electrical
  - 60% Theft
  - 40% Water Damage
  - 20% Fire

Source: BCG case experience, smart systems suppliers; BCG Analysis, Morgan Stanley Research.

Exhibit 125: On average, ~90% of insured consumers are at least willing to hear more about smart homes, with 28% definitely keen on switching.

On average, ~90% of insured consumers are at least willing to hear more about smart homes, with 28% definitely keen on switching.

<table>
<thead>
<tr>
<th>Country</th>
<th>Yes, I would definitely switch</th>
<th>I would consider switching</th>
<th>I would be willing to hear more about it</th>
<th>No, I would not switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted avg (2)</td>
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<td>Germany</td>
<td>13%</td>
<td>13%</td>
<td>31%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Source: Morgan Stanley/BCG Global Consumer Survey 2014. BCG Analysis, Morgan Stanley Research. Question: “Through technology, there are some new ways insurers could make motor insurance policies more adapted to your needs and more affordable (between 10-15% discount). Would you change your insurance purchasing decision if offered one of the options below? Home: Risk prevention through sensors: insurers could help protect your home and belongings instead of just insuring them by installing smart-home sensor devices that not only alert you if there is a problem, but also prevent damage (e.g. water consumption monitors which notify of leaks and shut down the water if needed etc.).” Weighted by population.
Exhibit 126

Across 12 countries, we estimate $23-35bn in home premiums are at stake ($29bn midpoint) where a 20-30% increase in current penetration is needed to neutralise risk reduction. Scaled to all countries, this adds to $32-47bn

Exhibit 127

Home: Asian countries show a potential growth in premiums, but European and North American countries are stable – or potentially shrinking

% penetration increase to compensate for technology risk reduction (%)
Technology can help address most reasons that prevent consumers from purchasing home insurance

Exhibit 128

Technology can help address most reasons that prevent consumers from purchasing home insurance

While the risk that a single machine fails and causes a loss is insurable, it is harder to know if the severity of a systemic failure that causes many accidents all at once is something that the insurance industry could provision for.

**Factor 5: changes in existing contracts**

The final area where technology is affecting risk pools is on existing treaties – particularly around business interruption. The greater reliance on technology can make post-loss event repairs more expensive or business disruption lengthier, affecting the losses that insurers face.

Many of the companies we interviewed were aware of these risks and were looking for ways to ensure that those that related to their policies were properly priced and paid for.

There is a chance that some kinds of losses may not be anticipated and the industry could suffer a windfall loss from a trend it did not anticipate.

The impact on survivability of car accidents from the advent of mobile phones (discussed above) is again relevant here – it affects an existing policy in a way not foreseen by insurers.

**Calculating the cost**

We believe that up to $246 billion of global non-life premium in today’s terms is at risk through the contraction in motor and home risk pools owing to preventative technologies.

Our calculation is based on the following: the global non-life premium was $2trn according to Sigma data for 2013. Of this, we estimate ~40% is health insurance, which we exclude from non-life.

Of the remaining $1.2trn, we estimate 49.9% is motor insurance and 13.4% is homeowners. This is based on using mean-line shares from national databases of major markets.

In our estimated impact on telematics analysis, we assume the risk pool shrinks by 15-25%, with 20% our best estimate. For home insurance, we assume 40-60%, with 50% our best estimate.

Based on these top-down figures, we calculate a fall of $154-246 billion of premiums, or 13-20% of the total non-life pool.
Note that this assumes universal adoption of the technologies. By balancing this calculation with survey responses in 12 countries (which represent ~80% of the global market), we conclude that $62-102 billion of premiums, or 5-19% of the total pool, are at risk.

Our best estimate is $32 billion for motor and $29 billion for home premiums lost due to better technologies.

Important assumptions for this calculation:

- We assume that risk pools and premiums are correlated (loss ratios are stable).
- We assume no offsetting rise in penetration from new products, expansion of coverage or simply emerging market development.
- We assume no increase in severity, which would raise the loss pool.

Motor insurance

Exhibit 119 breaks down the existing sources of motor claims and looks at how telematics could impact each one. This is all premised on telematics being economically affordable (see section “Building a business case for telematics” on page 86), the probability of which increases with time.

We estimate that, when it is deployed, telematics could reduce the risk pool by 15-25%, largely through reducing accidents and eliminating various types of fraud.

We then look to Exhibit 120, which shows the willingness of consumers across 12 of the most important current and future insurance markets to adopt telematics.

85% of insured consumers who replied to our survey said they were at least willing to hear about telematics and 21% said they would definitely switch into it if it were available.

By combining the willingness to adopt with the impact on claims behaviour, we determine how much of a reduction this implies to the loss pool and how much penetration needs to grow to keep the pool stable (Exhibit 121).

Exhibit 122, which looks at the average of 2014-18 GDP forecasts\(^4\) (as an indicator of longer-term growth), shows the penetration increases needed to compensate for technology risk reduction.

Italy has high motor insurance penetration but low GDP growth prospects (1% in 2014-18) so seems most at risk. On the flipside, some emerging markets have a relatively GDP growth outlook, which should offset any pressure from telematics adoption.

We note, but cannot easily quantify, how much technology could help overcome reasons why some people do not buy motor insurance (Exhibit 123).

In particular, if risk selection or policy flexibility improves such that more clients are offered the type of policy they need, this would offset some of the pressure on the motor risk pool.

On our modelled approach, we see $30-54 billion of global motor risk at risk in today’s terms; if, instead, we assume 100% take-up, that would increase the premiums at stake to $90-151 billion.

Home insurance

Our analysis of home insurance follows a similar method to motor insurance.

We begin by looking the various sources of claim and the potential impact of prevention and safety technology (Exhibit 124). We estimate that 40-60% of claims could be saved with connected and smart devices working in a home.

90% of consumers who buy home insurance and replied to our survey said they were willing to hear more about these technologies and 28% were highly willing to switch (Exhibit 125).

Exhibits 126 and 127 show the penetration improvement required and which countries have the GDP growth to outpace the reduced risk profile. Again, Italy is in a weaker position and emerging markets look well positioned to face this pressure.

Once again, penetration may be positively affected by technology (Exhibit 128). Policies such as pay-per-use could increase penetration (people buy home cover when they go on holiday) or reduce it (people switch down from full-time cover to pay-per-use).

We estimate that, at our anticipated adoption rates, $32-47 billion of premiums are at risk, yet at 100% adoption that figure rises to $63-95 billion.

\(^4\) Data from The Economist Intelligence Unit
Risk of anti-selection

Technology is changing risk selection in (re)insurance. The increasing power and decreasing cost of computing, combined with the greater availability of data and improving analytical options, are vastly increasing the areas where investing in risk selection is economically sensible.

A zero-sum game. For every improvement in risk selection by one insurer, the rest of the market is picking up a loss (although a small amount may be pushed out altogether from the loss pool). This means that risk selection is a race where those that win not only get better loss picks, but also benefit from price rises as the rest of the market has to adjust for the anti-selection impact on loss experience.

Investment in risk selection makes sense where loss pools are large, investment is reasonable, run-rate costs of selection are manageable and the impact on the loss ratio is meaningful. Yet many companies worry about ‘bleeding edge’ investment in new technologies, if no business need is identified up front.

IoT/Telematics, Big Data, catastrophe modelling and digitalisation of insurers are key areas where technology is improving risk selection.

Big Data is one of the biggest areas of potential, yet is hampered by analytics. The use of unstructured data is increasing through the application of artificial intelligence. Areas of largely unexploited potential include social media, although access and privacy are potential barriers to entry.

Cat modelling is also rapidly improving. We see a clear trend of risk selection advantage for those (re)insurers that are able to use the vendor models intelligently over those that do not.

Insurers have always found advantage in selecting risks more successfully than peers. However, risk selection is in large part a zero-sum game. If one insurer starts picking the best risks from a pool, the rest of the market suffers from worsening claims.

Technology is boosting this process and making risk selection ever more accurate and precise. Because of the anti-selective component to this trend, insurers should feel highly incentivised at least to keep up with peers.

The quantity of data being generated today is far in excess even of what was happening 10 years ago. The problem in general is not in gathering new data, but in using it effectively. The ways in which technology is improving, or may in the future improve, risk selection include:

- Big Data – enriching the underwriting decision;
- Cat modelling – a more forward-looking, sophisticated measurement of risk; and
- Digitalisation of insurance, which makes data more readily analysed and products more readily adapted.

Anti-selection risk

We estimate the top quintile of risks is 9x less costly than the bottom. This highlights the powerful impact that loss selection has on insurance profitability.

We did a simple analysis of 500 risks where we randomly assigned the chance of loss from 0-10% for a year. Assuming a 70% loss ratio for the market, Exhibit 129 shows the outcome that is produced if risks are selected randomly.

However, if you select risks by quintiles of probability of loss, the results are shown in Exhibit 130. The highest risk bucket produces 9x more losses than the least risky.

Technology cannot yet predict with absolute certainty who will have a loss, but between the best and worst the gap is so huge that small incremental improvements create a large differential.

Cost of risk selection

The cost of improving risk selection has to be weighed against the benefits. Arguably the ‘easy pickings’ of risk selection are gone in many fields.

For instance, postcode, age and gender are well known motor metrics that can explain the bulk of the loss probability for an individual. The question is whether the additional advantages in lower loss ratio can outweigh the costs of investing in new technology that allows better risk selection.

Technology is partially a race where the loss ratio benefit may be double the initial estimate. If better risk selection leads to a 4% lower loss ratio, the bulk of that benefit will be another insurer’s loss through anti-selection.
Theoretically, the rest of the market should respond by raising prices, so the original innovator receives the 4% benefit in loss ratio plus the price rise forced onto the competition due to anti-selection.

**Given the cost/benefit analysis, the key factors to weigh are:**

- Expected loss ratio impact;
- Premium pool behind that risk;
- How sustainable is the advantage;
- Initial upfront cost;
- Run-rate costs; and
- Likelihood of competitors doing it first.

The longer the advantage produced, the lower the upfront and running costs, the bigger the premium pool affected, the more likely the competition will attempt this and the bigger the impact on the loss ratio – the better the case is to make the investment.

Many of the companies we interviewed were cautious about investing in new ‘bleeding edge’ and potentially riskier technologies.

One company noted that the use of better analytics should be business-led. The start must be a clear business need rather than a big pool of data and trying to find uses for it.

**Technologies to improve risk selection**

**Telematics**

If a company can accurately link driver behaviour to loss probability, telematics can offer a way to target lower premiums to lower-risk policyholders.

The problem is that linking driver behaviour to loss experience is difficult technically owing to the current limitations of the technology. This could change with time.

The ‘placebo’ effect of a box (where awareness of the black box in a vehicle leads to improved driver behaviour) is also unclear, although anecdotally some companies say drivers forget the box is there after a short while and drive as they normally would.
Avionics

Similarly to telematics, devices can be attached to marine, aviation and other forms of craft to determine how those vehicles are used. Apart from the ‘pay-per-use’ potential of such devices, they may allow insurers to differentiate between better or worse risks.

Big Data

Big Data is potentially the most powerful way to improve risk selection, as the quantity and quality of data have improved dramatically over the last few years.

UK motor insurer Admiral has for years been at the vanguard of using data ranging from how clients use their website to better predicting driving behaviour. Management cites a correlation between 1) whether people buy in one go or buy a few days after first logging on and 2) ultimate driving outcomes.

The level of available data on social media users and web behaviour has yet to be fully considered in an insurance context. The reasons for this include access, privacy and analytics of unstructured data.

In the section entitled “Disruptive Business Models”, we look at the risk of adjacent companies entering the digital insurance space. Companies with a large amount of user data, such as Google, Apple and Facebook, could in theory enter the market through superior risk selection. However, none of them can easily map user data to claims experience, as the data may not be easily accessible to them.

If insurers can find a way to leverage the data from such providers, a potential win-win could emerge where the profits of better risk selection are shared among the players.

Privacy is another big concern that could hamper the use of some types of Big Data for insurance risk selection. Company feedback suggests that the US is less strict than Europe in this regard. Solutions may therefore differ by geography. We hear, for example, that in the US medical records are more easily obtained and used for mortality and morbidity underwriting than they are in Europe.

Finally, there is the difficulty of creating useful information from unstructured data. Advances in artificial intelligence are apparently helping, yet we did not hear about any tangible examples of its application in our interviews with insurers.

Apart from social media, data can be found from any number of new sources, such as businesses, governments, manufacturers, satellites and other weather-monitoring systems, CCTV and banks.

A good example here – which has not yet been applied to insurance – is the link between General Electrics’ aviation business and Pivotal’s Big Data offering. Using Big Data analytics, GE is able to provide better predictive maintenance to its 25 airline consumers, identifying which parts are likely to break and trying to prevent this happening.

Cat modelling

The improvement in the science behind cat risk prediction has been dramatic over the past 20 years, aided substantially by the rise of computing power and improvement in the quality of underlying data.

Traditionally, insurers looked at loss frequency and severity to judge the probabilities of risk of loss. This technique is very useful for high frequency loss pools, such as motor, where actuarial techniques can be very accurate year on year.

It is far more difficult to apply that theory to cat modelling. Such events tend to be infrequent (such as the California earthquake in August 2014) or affected by near-term factors (for example, weather losses).

So most modelling is now done prospectively with an effort made on near-term forecasts. For instance, Risk Management Solutions’ (RMS) model has both a five-year forward forecast and a long-term forecast for the probability of loss events – and the two can be very different depending on weather expectations.

The next improvement in cat modelling is the granularity of the data used. Previously, location was the key driver for loss expectations; now, highly detailed building standards are applied to loss models in order more accurately to price the risk.

At the moment, the best cat models are for wind events in the US, although similar models for Europe and Asia are also available. Flood modelling has proven to be one of the most difficult areas to measure technically, as the flow of water across topography is harder to predict than wind losses.

The economics of cat modelling are improving, such that new models for smaller and smaller perils are gradually becoming possible.
A clear limitation at the moment is the availability and quality of data in certain markets. Anecdotally, we hear that in some markets there may be clear building standards for a given geography, but the insurer will also need to check about enforcement as well. Such discrepancies matter a lot when a natural catastrophe hits a region.

Cat modelling is economic because the loss impacts are usually very large, so accurate prediction pays off. Still, the prohibitive costs of keeping up with the three large modelling agencies (RMS, AIR Worldwide and EQECAT) have led most of the industry to outsource and use their services rather than develop their own approach. This has allowed a deep pool of resources to be concentrated in three organisations that are pushing the boundaries of risk selection ever further.

An ancillary on cat modelling is risk selection by knowing the limitations of the models.

Either through human experience (underwriters) or through digging out anomalies in the models (actuarial), the re/insurance industry is trying to outsmart this new technology and gain an advantage in risk selection.

Digitalisation of insurers

The digitalisation of insurers has had a strong impact on the flexibility and speed with which new products can come to market. This is also having an effect on risk selection.

In the past, if a market inefficiency was detected, it used to take up to six months to fully roll out a product to the market. Now, it can take just a few weeks.

The reasons for the improvement include digital distribution, electronic processing and better integration between pricing and underwriting systems.

The speed to market should enable those that improve risk selection to gain from that sooner. It should also allow companies to experiment more with product innovation to try to improve the products they sell.
## Appendix 1: Vendor profiles

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Ownership</th>
<th>TTM revenues</th>
<th>Employees</th>
<th>Consumers</th>
<th>Key Solutions</th>
<th>Competitive Positioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Floow</td>
<td>Founded in 2012 as an alternative to telematics in the motor insurers business. The Floow provides telematic data services for insurance companies. It shares facilities with the University of Sheffield (which has a 15% stake in the company) and works with global insurers such as AIG and Direct Line (which owns a 15% stake).</td>
<td>Private</td>
<td>N/AV</td>
<td>N/AV</td>
<td>N/AV</td>
<td>Big Data analytics: collects data on driver behaviour and enriches this with other contextual information. Offers 3 delivery options for the data: A) delivery of raw data to allow insurer to perform its own custom analysis, B) delivery of data already regressed against claims history and ranked with scores, C) delivery of data regressed, ranked with scores and reported with information/insights to help management reduce overall risk taken.</td>
<td>The Floow’s telematics insurance strategy revolves around data. Since its inception, the company has remained ‘device agnostic’ rather than focusing on a particular device (i.e. black box). Distinctive analytic model collects data and enriches it with contextual information. Gives insurance companies and actuaries a toolkit to understand and interpret these data.</td>
</tr>
<tr>
<td>Cobra</td>
<td>Based in Italy and now part of the Vodafone group, Cobra specialises in motor telematics. It is divided between Cobra Telematics, supplying telematic services for insurers and automakers; and Cobra Electronic Systems, which designs, produces and distributes telematic devices.</td>
<td>Private</td>
<td>$194m</td>
<td>823</td>
<td>N/AV</td>
<td>Telematic Device: focuses on offering an end-to-end solution, engaged in design and production of telematics in-car devices, integrated with vehicle electronics. Telematic Analytics Platform: runs analytics on data collected from vehicles, performing statistical analysis, e.g. event correlations and event aggregators. Consumer Application: offers mid-market smartphone application that allows drivers to measure and assess their driving behaviour in order to increase risk awareness. Service Application: services to motor insurance companies, e.g. vehicle usage data, crash management and device management.</td>
<td>Offers an end-to-end telematics solution, with both telematics hardware devices and insurance services around data. Collaborates with automakers and embeds telematics devices within cars. The hardware approach for insurance services allows company to provide valid crash reconstruction thanks to non-modifiable data collected from vehicle devices.</td>
</tr>
<tr>
<td>Telematics</td>
<td>UK-based Telematics was founded in 2011 to provide telematic insurance and retail services. It is already present in several countries such as Australia, the US and Canada. Telematics develops software solutions using mainly smartphones as a platform to collect and transmit driving data. Data are used to assess risk for insurance companies, corporations operating fleets, and drivers.</td>
<td>Private</td>
<td>$193m</td>
<td>823</td>
<td>N/AV</td>
<td>Global Green Drivers: a smartphone application that focuses on safe driving. It gathers driving data from a GPS phone or handheld device, then creates a driver risk profile. This profile is periodically updated and can be used by the driver to enhance safety, by companies operating fleets to assess different types of driver, and for insurance companies to better price risk. Global Green Drivers OBDi: a richer application collecting driving and vehicle data from a plug-in unit connected to the OBDII port. The unit uses Bluetooth or WiFi. This solution offers additional features such as vehicle data (i.e. engine, brakes), which can add extra value for fleet managers and insurance companies.</td>
<td>Adopts a ‘device agnostic’ approach. Offers a high level of granularity about driver behaviour to improve interpretation and insights gained. Through Global Green Drivers, Telematics profiles driving behaviour with the goal of helping insurance providers price risk better.</td>
</tr>
<tr>
<td>Octo Telematics</td>
<td>Octo Telematics is a global company providing telematics insurance services. Founded in Italy in 2002 as a stolen vehicle recovery service, it has since expanded to services such as claims management and crash assistance. The company expects to generate revenues &gt;$200 million and EBITDA of ~$130m during 2014.</td>
<td>Private</td>
<td>N/AV</td>
<td>220</td>
<td>&gt;70</td>
<td>Usage-based Insurance: enables insurance companies to offer insurance policies based on actual driving usage and behaviour. Provides telematics devices to insured drivers and gathers the data they generate. Then analyses the data, runs analytics on claim history and delivers insurers a driving risk profile per driver. Claims Management: uses valid non-modifiable data to support insurers in claims management process.</td>
<td>Early adopter of telematics technology for insurance services, it has broadened addressable market by eliminating cost of the telematics device, which is seen as one of the main barriers to adoption. Offers in-vehicle telematic device free of charge, and collects fees in exchange of the data provided to insurers. Octo is a partner of Meta Systems.</td>
</tr>
<tr>
<td>OneShield</td>
<td>OneShield is an US software company providing solutions for the P&amp;C insurance market. It delivers enterprise and core systems software solutions. OneShield was founded in 1999 and has a strong presence in North America.</td>
<td>Private</td>
<td>N/AV</td>
<td>N/AV</td>
<td>&gt;30</td>
<td>Software Suite: offers an end-to-end, modular software suite for P&amp;C insurers. Solutions include policy, rating, billing and surety. Offers the solution on-premise and in the Cloud.</td>
<td>Core software solutions help insurers reduce total cost of ownership and provide operational efficiencies. Modular approach enables insurers to automate whatever business process is most critical, without risking failure elsewhere. Core operations are in the US and Canada, but the company recently expanded to Australia and the UK. Main competitors: Guidewire, Accenture, Exigen in the US, and IDIT in the UK.</td>
</tr>
</tbody>
</table>
Vertafore | Headquartered in the US and founded in 1969, Vertafore provides end-to-end software solutions for the insurance sector. It offers enterprise and connectivity solutions for independent insurance agencies and managing general agents (MGAs). | Private | N/AV | 220 | N/AV |

Applied Systems | Applied Systems is a software company providing agent management and connectivity solutions to independent insurance agencies. It operates in Canada, the UK and US, where it is headquartered. The company was founded in 1983 and has been growing at ~20% over the last two years. | Private | $275m | >1,000 | 12,000 |

eBaoTech | China-based eBaoTech is a global software company providing enterprise solutions to P&C and life insurers. The company delivers configurable, modular enterprise solutions to insurers and independent brokers, as well as implementation and support services. Founded in 2000, eBaoTech has offices across Asia, Europe and the Americas. It works closely with a network of >100 insurers, including AIG, Liberty Mutual and ASR. | Private | N/AV | 1,000 | >100 |

Fineos | Fineos is a global company providing software solutions for life, accident and health insurers. The company delivers claims management solutions across groups and individuals in life, disability, accidental death and critical illness. Founded in 1993 and based in Ireland, Fineos has operations across Europe, North America and Australia, and a client network of more than 50 corporations. | Private | N/A | 355 | >50 |

Meta System | Founded in Italy in 1975, Meta System is a global designer and manufacturer of telematic vehicle safety and security devices. It produces products including alarm systems, parking aids and vehicle telematics (where it has a partnership with Octo Telematics). | Private | $200m | 500 | N/A |

Pegasystems | Pegasystems is a US-based, publicly listed software vendor with products that focus on business decision management. It offers solutions across multiple industries including financial services, healthcare and insurance. Key products include BPM, salesforce automation, marketing and consumer service. | Public | $500m | 2500+ | 50 of the top 100 insurers |

| **Enterprise Platform** | a front-end, modular software suite designed and tailored for agencies. The platform integrates CRM and policy management, among others. |
| **Enterprise Suite** | designed for large agencies, national brokers as a back-end solution, integrating and managing workflow, content and reporting, etc. |
| **Connectivity & Rating** | aimed at increasing connectivity between insurance agencies, carriers and MGAs. Offers software platforms that can process transactions and rating comparisons by streamlining all parties' connections under the same platform. |

| **Applied TAM** | an enterprise-class software solution designed for insurance agencies and independent brokers. It is a modular end-to-end solution, encompassing all enterprise core activities needed for agency management (i.e. policy management, claims management). It is offered both on-premise or in the Cloud. |
| **Carrier Interface** | consists of a platform connecting agents and independent brokers to agents in order to transmit real-time data and manage flow of information and communication between agents and carriers. |

| **General Insurance Solutions** | offers General System Suite, an enterprise solution available on-premise and on-demand. It includes front- and back-end modules such as sales platform, policy administration, finance, reporting and analytics. eBaoTech also offers Collaborator, a distribution platform connecting brokers, MGAs and carriers delivering real-time rating quotations. |
| **Life Insurance Solutions** | offers Life Systems Suite, the equivalent of general suite for life insurance companies, as well as its own sales platform. |

| **Fineos Claims** | an end-to-end software suite supporting claims management, billing and policy administration. Claims management is at its core, with a single platform handling group and individual business. Highly customisable, it offers different modules such as CRM, Process Analyzer, Business Analyzer and Payments. |

| **MetaSAT TVM** | a telematic vehicle management system solution installed in automotive vehicles and used through the Octo Telematics software platform, connected via GPRS/GPS. It transmits a precise geolocation and includes contextual information e.g. speed, acceleration and other vehicle data. Data collected have many applications and uses, e.g. driving risk analysis, instant fleet management/reporting, and crash management and reconstruction. |

| **Business Process Management** | Facilitates collaboration of different IT systems throughout a business project lifecycle. Forms and visual tools help consumers illustrate workflows and business processes. Pegasystems believes its BPM solutions can help consumers significantly improve productivity, citing a 30% reduction in claims handling time at AIG. |
| **Omni-channel/Salesforce Automation** | Pegasystems "Better Business Software" delivers an omni-channel CRM platform is designed for consumers in the socially connected economy. The company believes that insurers need to be increasingly aware of the many channels consumers use to access insurance to remain relevant for their consumers and improve retention. |

The company’s main strategy is around helping companies optimise how they deal with major business processes and applications. Especially in areas like insurance, companies need to make the most of the data in their legacy systems to create a true multi-channel experience for consumers. By creating an omni-channel sales experience, the company believes insurers can improve consumer retention and cut costs/service time.
Guidewire

Guidewire is a global software company delivering enterprise software solutions to the P&C insurance industry. Its core system suite covers the entire P&C lifecycle including underwriting, policy administration, billing and claims. The company reported ~$300m of revenues in 2013 and has a market capitalisation of ~$3bn.

Guidewire Insurance Suite: a modular software suite including solutions for underwriting, policy administration and claims & billing management. Data management and business intelligence can be performed either in-house, with third-party software, or by the Guidewire DataHubInfoCenter.

Guidewire Live: a hosted platform that provides anonymised benchmarking data that are collected from various insurers connected to the network. Guidewire believes the data can help insurers make context-driven decisions, allowing users to optimise products to improve profitability.

Delivers end-to-end-enterprise-class products to P&C insurers. Focuses on creating highly customisable, modular solutions that enable integration with third-party software. Offers its solutions on-premise or in the Cloud. Also offers Guidewire Live, a peer network that allows insurers to gain access to peer-based and benchmark data from peers also connected to the network. Aim is to improve decision-making and profitability of insurance providers.

The Innovation Group

The Innovation Group is a technology vendor providing software and business process outsourcing solutions to the insurance, fleet and motor industry. It reported ~$340m of revenues in 2013 and has a market capitalisation of ~$640m.

Enterprise Software: delivers enterprise-class solutions for insurers in the P&C space. The company has developed a modular software suite, including Policy Administration, Claims Management, Billing and Payments as well as CRM for insurance.

Business Process Outsourcing: engaged in insurance outsourcing activities, which involve the takeover of operations and responsibilities of specific business functions, e.g. policy administration, claims management and IT infrastructure management.

Engaged in Software and IT services within insurance. The company believes it can help insurers drive down costs, improve speed to market of new products and services, develop customised distribution models and manage different parts of the insurance supply chain in a single interface. Given the modular nature of the software suite, this gives insurers flexibility to adopt the most critical functionality without risking failure of core IT infrastructure.

SAP AG

SAP is a leading global enterprise software vendor, offering ERP solutions and business intelligence/analytics. It has developed various industry-specific solutions for the energy and natural resources, public services and insurance industries. The company reported ~$22.6bn of revenues in 2013 and has a market capitalisation of ~$95bn.

Enterprise suite: offers a modular enterprise-class software suite with front- and middle-office functions. Includes different modules, e.g. CRM, Policy and Product Lifecycle Management, Claims Management, Billing and Payments. SAP offers these solutions on-premise and in the Cloud.

HANA: an in-memory database capable of processing transactions and analytics simultaneously. This allows insurance companies to perform real-time business intelligence and analytics.

SAP has highlighted insurance as one of the industries experiencing the highest level of growth within its vertical business lines as insurers look to improve their service offering.

CapGemini

CapGemini is a global IT services company, with its core operations based in Europe. The company offers IT consulting, technology, outsourcing and local professional services solutions. Capgemini has developed vertical specific services for various industries including Financial Services, Public Sector, Manufacturing and Insurance. As of FY13 the company reported ~$13.5bn of revenues and has a market capitalisation of ~$11bn.

Consulting and SI: offers strategic advice on how to align insurers’ IT systems with their overall organisation. Leverages existing technology from partners such as Guidewire, then customises the solutions to meet clients’ needs. Provides advice and support to Billings, claims, front office and mobile solutions. CapGemini also offers system integration and implementation services.

Through existing partnerships with software vendors such as Guidewire, Pegasystems, Thunderhead and FirstBest, CapGemini leverages their domain expertise to offer end-to-end solutions as insurance companies gradually move to replace their legacy systems.

Microsoft

Microsoft is a global infrastructure and application software provider, offering software solutions ranging from operating systems, server applications, productivity applications, to business solutions and software development toolkits. Microsoft has created specialised vertical solutions for >10 industries, including banking, manufacturing, retail and insurance. In FY2014 it reported ~$67bn of revenues and has a market capitalisation of ~$370bn.

Agency Solutions: offers different solutions to streamline flow of information for insurance agents. Agent Desktop is an enterprise solution offering CRM, productivity and line-of-business applications. Microsoft also offers Agent Portal, a solution to build Agencies’ own online distribution channel.

Actuarial: offers High-performance computing (HPC) solutions to actuaries, who use HPC to run statistical analysis and modelling to price their policies.

Big Data Solutions: some insurers, e.g. Aviva, use Big Data Solutions that Microsoft offers on the Azure Cloud to analyse data gathered by telematic devices.

Strategy is to help insurers focus on sales and quality of consumer service to drive organic growth. Insurance-specific solutions centre on omni-channel CRM, Big Data & analytics, and core systems modernisation. Microsoft believes its solutions can give insurers better insight into risk and business performance, while improving total cost of ownership of legacy IT systems.

Bluewolf

Bluewolf is a US-based IT consulting/services player with global operations in ~25 countries. The company’s services are tailored for multiple industries including media, health care and insurance.

Business Consulting/Salesforce Consulting: Bluewolf offers consulting capabilities across a wide range of technical fields. Within insurance it focuses on client interaction and service. The company aims to help consumers unlock the true value of their back-end data to improve the client experience.

Integration: Partnering with Informatica to make changes to back-end systems, ExactTarget to help with the marketing automation and Salesforce.com to create a strong front-end experience, the company helps with the implementation of new client interaction systems.

Focus in insurance is around client interaction. The company believes systems have traditionally been back-end focused, which has put consumers out of the view of the broker, such that insurers have had difficulty reacting to changes in the consumer environment. Bluewolf believes that, by improving the front end of the consumer experience and unlocking more of the intelligence in the back-end data, insurers can significantly enhance consumer interaction, leading to higher retention rates and consumer wins. Additionally, by introducing more sales analytics, the company argues that insurers can focus more on the consumers who are most likely to join.
<table>
<thead>
<tr>
<th>Company</th>
<th>Description</th>
<th>Public</th>
<th>Market Capitalisation</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accenture</td>
<td>Accenture provides management consulting, technology and outsourcing services globally. It has specialised vertical services in &gt;30 industries including energy, financial services, utilities and insurance. In FY13 the company reported net revenues of $28,600m and has a market capitalisation of ~$50bn.</td>
<td>Public $28,600m</td>
<td>293,000</td>
<td>N/A</td>
</tr>
<tr>
<td>Wipro</td>
<td>Wipro provides high-end R&amp;D, application development, managed services and business process outsourcing to large corporates and global technology organisations. It has developed 22 industry-specific service solutions including automotive, banking, consumer goods and insurance. The company posted ~$7.3bn of revenues in F2014, with a market capitalisation of ~$28bn.</td>
<td>Public $7,300m</td>
<td>147,452</td>
<td>4 of top 10 global insurers</td>
</tr>
</tbody>
</table>
Appendix 2: Global consumer survey methodology

Scope of global consumer survey

For our global consumer survey, we composed and presented the same questionnaire to a population of 500 respondents in each of 12 territories.

The territories sampled were: the US, Canada, the UK, France, Germany, Italy, Australia, Japan, China, India, Hong Kong and South Korea, bringing the total sample size to 6,000 respondents.

We surveyed the population aged 18-65, and chose a representative sample by age and gender for each country – 61-66% of the sample were aged 25-54. There was an approximately equal mix of male and female respondents.

The survey was carried out online, and took place in June 2014.

Channel breakdown

In our survey we asked consumers which interaction modes they used to interact with insurers. This section presents the possible channels in detail.

We asked respondents, “Please indicate which of the 22 possible interaction modes you are using in each step of the client journey”. Responses included:

- **Direct online channels**: insurer websites, insurer mobile and tablet apps, bank websites
- **Non-direct online channels**: third-party websites, financial magazines or newspapers, social media and online advertising; and
- **Other channels**: employer, letter or form in the post, and friends and family.
Morgan Stanley Blue Papers

Morgan Stanley Blue Papers address long-term, structural business changes that are reshaping the fundamentals of entire economies and industries around the globe. Analysts, economists, and strategists in our global research network collaborate in the Blue Papers to address critical themes that require a coordinated perspective across regions, sectors, or asset classes.

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- **US Manufacturing Renaissance**
  - *Is It a Masterpiece or a (Head) Fake?*
  - April 29, 2013
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(as of August 31, 2014)

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<th>Stock Rating Category</th>
<th>Coverage Universe</th>
<th>% of Total</th>
<th>Investment Banking Clients (IBC)</th>
<th>% of IBC</th>
<th>% of % of Rating Category</th>
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<tbody>
<tr>
<td>Overweight/Buy</td>
<td>1078</td>
<td>34%</td>
<td>334</td>
<td>39%</td>
<td>31%</td>
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<td>Equal-weight/Hold</td>
<td>1378</td>
<td>44%</td>
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<td>Not-Rated/Hold</td>
<td>108</td>
<td>3%</td>
<td>21</td>
<td>2%</td>
<td>19%</td>
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<tr>
<td>Underweight/Sell</td>
<td>556</td>
<td>18%</td>
<td>93</td>
<td>11%</td>
<td>16%</td>
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<tr>
<td>Total</td>
<td>3,130</td>
<td></td>
<td>861</td>
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Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months.

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