

# Understanding customers and risk

*Your cognitive future in the insurance industry*

## Executive Report

Insurance and Watson

### IBM Insurance

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

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### IBM Watson

Watson is a cognitive system that enables a new partnership between people and computers that enhances and scales human expertise. For more information about IBM Watson, visit [ibm.com/Watson](http://ibm.com/Watson).

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## *Cognitive + insurance = the future*

*Welcome to the age of cognitive computing, where intelligent machines evaluate complex data in new ways to help solve society's most vexing problems. For insurance, cognitive computing has indeed arrived, and its potential to transform the industry is enormous. Already, cognitive systems are driving customer engagement through virtual digital agents and improving decisions for underwriters. Our research indicates leaders are poised to embrace this groundbreaking technology and invest in cognitive capabilities to spark the digital future in insurance.*

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## **Executive summary**

In the world of IT, there is often talk of “the next big thing.” Today, many of these conversations are broadening, as cognitive computing is touted as revolutionary for IT, many industries and, indeed, society in general.

For insurance in particular, the timing for a game changer couldn't be better. The industry has been facing a broad range of disruptive forces, from economic and societal to technological. Empowered consumers living in an increasingly digital world are demanding more from their insurance providers; yet the deeply conservative industry is slow in recognizing customers' needs and customizing their products and services to individual situations and emotional frameworks. In a recent IBM Institute for Business Value survey, 41 percent of respondents stated that they left insurers that were too slow to react to their changing needs – a number that is likely to grow as more customers become accustomed to faster and omni-channel service in other industries.<sup>1</sup>

To thrive amid the disruptive forces, insurance leaders must be smarter in how they approach data. While the digital age has brought a massive amount of data brimming with potentially useful insights for insurers, such as social media conversations, organizations still struggle to unlock its full value.

Advances in the pioneering area of cognitive computing can help bridge the gap between data quantity and data insights. Cognitive-based systems can build knowledge, understand natural language and provide confidence-weighted responses. And these systems can quickly find the proverbial needle in a haystack, identifying new patterns and insights – capabilities the industry has never had before.

# 95%

of surveyed insurance executives familiar with **cognitive computing** intend to **invest in cognitive capabilities**

# 98%

of insurance executives familiar with **cognitive computing** believe that it will play a **disruptive** role in the industry

# 85%

of insurance leaders familiar with **cognitive computing** said it will have a **critical** impact on the **future of their business**

Our research reveals that cognitive solutions are already helping insurance organizations blaze new territory. In this report, we examine current and future applications and provide recommendations for those seeking a cognitive journey. As a follow up to the “Your cognitive future” report, we launched a new series of industry-specific studies based on research conducted in early 2015. (For more information on the research, which included a survey of 86 insurance executives, see the “Study approach and methodology” section.)

We also offer insights from insurance executives who understand that the potential for cognitive to push the current boundaries of innovation and growth is immense. These leaders recognize the potential to transform insurance – and are set to exploit cognitive capabilities to do so.

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## Conquering industry forces

The insurance industry is experiencing unprecedented disruption. From changing economics to newly empowered customers, providers are being bombarded by challenges and distractions. We have identified a number of disruptive forces that are shaping – and shifting – today’s insurance arena:

*Rapid digitization:* A host of digital technologies such as cloud are making the insurance value chain more transparent and easier to decompose. At the same time, mobile technology makes content and data accessible anytime and from anywhere, enabling new business models and creating a huge volume of new data.

*Rising consumer expectations:* As customers witness how other industries deploy new technologies to offer individual products, services and experiences, they tend to expect and obtain more than ever before, and trust in the insurance industry remains low.<sup>2</sup> To build trust and provide the experience that empowered consumers demand, insurers need to treat customers as individuals and engage them in genuine, responsive ways.

*Changing demographics:* In mature markets, populations – and with them, insurers’ portfolios – are aging, while in emerging markets a new middle class is growing. Millennials everywhere are exhibiting different behaviors, needs and expectations, making it necessary for insurers to rethink their marketing, product and distribution strategies to stay relevant.

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### What is cognitive computing?

Cognitive computing is a new computation paradigm. Different types of cognitive computing solutions offer various capabilities, including...

- Learning and building knowledge from various structured and unstructured sources of information
- Understanding natural language and interacting more naturally with humans
- Capturing the expertise of top performers and accelerating the development of expertise in others
- Enhancing the cognitive processes of professionals to help improve decision making
- Elevating the quality and consistency of decision making across an organization.

*Economic environment:* Due to generally depressed markets after the global financial crisis, interest rates have been historically low, negating an important offset for inferior operating results. At the same time, revenue growth has slowed or halted, while costs continue to grow and catastrophe losses are trending upward for the long term.

*Sophisticated fraud:* In the interconnected world, fraud, and cyber-risk in general, is presenting an increasing challenge for insurers. As criminal capabilities advance, insurers need improved fraud detection and new, innovative ways to mitigate risk.

#### **From disruption to focus**

It's clear that insurance organizations are operating amid turmoil. Although the forces challenging the industry appear varied in nature, we identified key themes among them relating to communication and collaboration, innovation, and decisions and outcomes.

To rise above the disruption, we suggest insurers focus on improving their capabilities to engage, discover and decide (see Figure 1). Increased engagement among customers, intermediaries and insurers will improve communication and collaboration, thus allowing faster and more effective services. New discovery tools and capabilities can help unearth insights and ideas buried in the masses of data encountered today, thereby facilitating customer centricity and innovation. And better decision-making capabilities will support faster claims processing, improved underwriting and better portfolio planning, making enhanced outcomes possible.

**Figure 1**

*To cope with a broad range of disruptive forces, insurers need strong capabilities in engagement, discovery and decision-making*



*Source: IBM Institute for Business Value.*

*Engage:* Today's consumers want speed, transparency and personal interaction with their insurers. Although a clear majority of insurance executives in our survey understand these demands, the majority are unable to deliver. In fact, 53 percent reported that they were not effectively delivering a personalized experience, while 56 percent said they were not providing successful self-service options. In addition, 63 percent were not satisfied with their ability to comprehensively and quickly address consumer concerns.





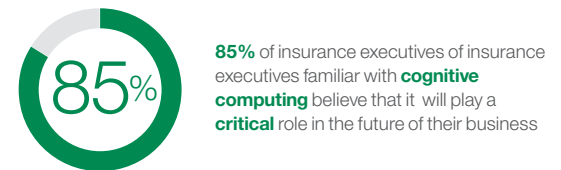
## Cognitive opportunity in insurance

Big data has been called the new natural resource.<sup>4</sup> And this resource continues to rapidly grow in volume, variety and complexity. Business data is estimated to double every 1.2 years,<sup>5</sup> yet despite the explosive growth of information across industries, less than 1 percent of the world's data is currently analyzed.<sup>6</sup> More than 70 percent of insurers in our study had difficulty in dealing with unstructured or semi-structured data.<sup>7</sup>

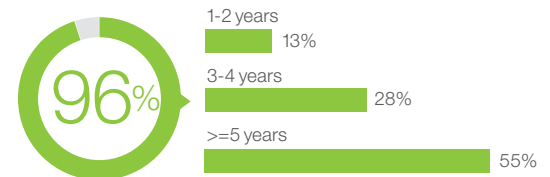
While effective for a number of applications, traditional analytics solutions cannot fully exploit the value of big data: They are unable to adapt to new problem domains or handle ambiguity, and are only suitable for structured and unstructured data with known, defined semantics (the relation of words and phrases and what they mean). Without new capabilities, the data paradox of having too much data and too little insight will continue.

How can the insurance industry bridge the gap between untapped opportunities and current capabilities? How can hidden insights that reside in data – structured and unstructured – be more fully harnessed for discovery, insight, decision support and dialogue? The answer is cognitive computing. Cognitive-based systems build knowledge and learn, understand natural language, and reason and interact more naturally with human beings than traditional programmable systems.

Insurance executives agree that cognitive computing has the potential to radically change insurance. Among insurance leaders familiar with the technology, 98 percent believe it will play a disruptive role in the industry, 85 percent believe it will be critical to the future of their business and, as a result, 96 percent said they intend to invest in cognitive capabilities.



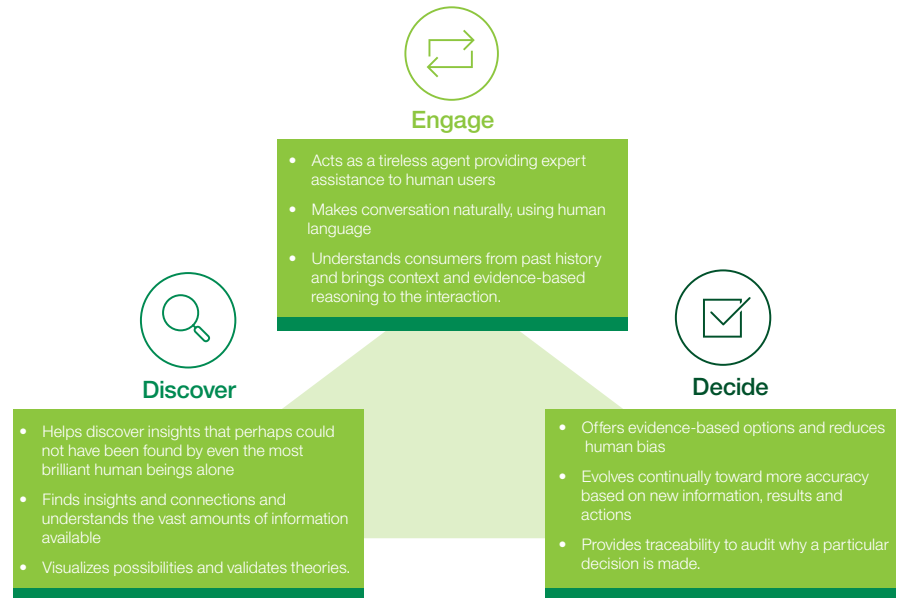
**Nearly all** insurance executives familiar with **cognitive computing** say they plan to **invest** in it within:



So, how specifically can insurance organizations leverage cognitive computing to address issues currently plaguing the industry? By setting it to work in the three areas mentioned earlier: **Engage**, **Discover** and **Decide** (see Figure 2).<sup>8</sup>

**Figure 2**

*Cognitive computing can help insurers enhance their capabilities*



*Source: IBM Institute for Business Value.*



## Engagement capabilities

Cognitive systems can fundamentally change the way humans and systems interact and significantly extend the capabilities of humans by leveraging their ability to provide expert assistance. They provide advice by developing deep domain insights and bringing this information to people in a timely, natural and usable way. Here, cognitive systems play the role of an assistant – albeit one who does not require sleep, can consume vast amounts of structured and unstructured information, can reconcile ambiguous and even self-contradictory data, and can learn.

Because they are able to engage in dialogue with humans, these systems can understand customers based on past communication and behavior, and bring context- and evidence-based reasoning to interactions. Today, these types of cognitive systems help insurers offer engaging and personalized advisory interface to consumers (see sidebar, “Leading insurer uses cognitive computing to better customize advice”).

Future cognitive systems will likely have free-form dialogue capabilities, which could help the flow of information among individuals.<sup>9</sup> In this way, the cognitive system can act as a virtual digital adviser, augmenting or, in cases where no human interaction is needed, replacing the traditional intermediary. For example, customers moving across jurisdictions that necessitate changes in coverage could query the system about their options and necessary actions. The virtual advisor would follow up on details, prepare required steps for customer and insurer, and finalize where possible. These interactions would be in natural language, making the process easier.

## Engage

### Leading insurer uses cognitive computing to better customize advice

The cognitive systems of a leading provider of consumer insurance use Watson natural language capabilities to answer questions and provide coverage counseling about the company’s products and services with the goal of creating a more compelling online shopping experience. The solution can understand context based on information provided during the shopping experience and can tailor its answers accordingly. Over time, the solution will incorporate customer analytics derived from big data to create a more personalized experience for each customer.

## Discover

### European bank aims to improve trading effectiveness

A large European bank plans to use cognitive computing as part of its strategic program to improve revenue and reduce costs. Trading is one of the key functions where the bank will deploy the cognitive system. The system will ingest huge amounts of internal data, such as customer trading history and local market intelligence, and external data, such as market news, events and weather to predict future trading patterns of buy-side fund managers. It will also analyze the trading demand across multiple venues and seek to improve the estimation of corporate dividends.

The bank expects its use of cognitive computing to be a game-changer in the market. The technology should help the bank improve trading effectiveness and continue its revenue growth while remaining ahead of its competitors.



### Discovery capabilities

Cognitive systems can help users discover insights that perhaps might not be discovered by even the most brilliant human beings. Discovery involves sifting through the vast amounts of information available around the world, “connecting the dots” in new and unexpected ways, and translating these findings into insights about customers, markets, opportunities and risks.

Some discovery capabilities have already emerged, and financial services providers are looking to use them. Advanced cognitive capabilities have improved the bottom line by reducing operational costs. Using insights into customers’ behavioral traits, providers can understand customer needs and improve on offerings (see sidebar, “European bank aims to improve trading effectiveness”).

In the near future, cognitive solutions could help insurance organizations reduce costs imposed through differing regulatory regimes, such as in the United States. For example, many states have slightly different rules for the same claims process; cognitive computing can help by scanning the images and contents of all legal and claims documents and cross referencing this information against each of the specific state laws. In addition to improving the cost basis, this process will also support better risk assessment and premium calculation.



### Decision capabilities

Cognitive systems aid in decision making and reduce human bias by offering evidence-based recommendations. They continually evolve based on new information, outcomes and actions. Current cognitive systems perform more as advisors by suggesting a set of options to human users, who ultimately make the final decisions based on their own experience and the confidence estimates the cognitive system provides with its recommendations.

These systems are helping insurance professionals make more informed and timely decisions. In claims management, they can greatly reduce processing times by instantly recognizing relevant passages from documents and communications (see sidebar, “RIMAC’s cognitive solution improves claims decision-making and speed”).

Future applications might help underwriters assess the individual risk of each customer in a more personalized manner. Combining weather data, geolocation data and other sources through mobile and augmented reality technology, underwriters can make informed decisions on site and in real time. These decisions could foster better risk mitigation and risk prevention measures, which insurers could contract out as separate services for customers.

### Decide

#### RIMAC’s cognitive solution improves claims decision-making and speed<sup>10</sup>

RIMAC Seguros is the largest Peruvian provider of insurance products and services, with more than 4,000 employees and 117 years of experience in the market.

RIMAC is preparing to use Watson Content Analytics to transform claims processing for health insurance. When a claim is made, Watson will scan thousands of policy documents and almost instantaneously pull out the paragraphs relevant to the decision at hand. In early tests, this cut the time to process a claim by more than 90 percent. Watson will also enable RIMAC to develop much deeper insights into key trends that today it might miss entirely. For example, it will help the insurer determine if a hospital charges too much for a certain procedure, or if a particular region of Peru is responsible for an alarmingly high number of claims for one illness. In fact, Watson could become an important tool in addressing public health issues in Peru.

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## The way forward

Despite the enthusiasm for cognitive, insurers should realize there is often a steep learning curve. In terms of system implementation and user interaction, cognitive systems are fundamentally different than traditional programmatic systems.<sup>11</sup> Carriers can learn from pioneering organizations that have already implemented cognitive by following three key sets of recommendations (see Figure 3).

**Figure 3**

*Organizations with cognitive computing experience have identified three critical action areas for success*



*Source: IBM Institute for Business Value.*

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## 1. Define the value

Early planning helps ensure the greatest return on investment. Defining the value of cognitive to your insurance organization is critical and includes several steps:

*Find the right opportunity* – Cognitive solutions are well-suited to a defined set of challenges. Insurance organizations need to analyze the specific problem to determine if cognitive capabilities are necessary and appropriate:

- Does the challenge involve a process or function that today takes underwriters an inordinate amount of time to seek timely answers and insights from various information sources, such as historical accident records, location data and on-site inspections? Are various techniques used to make a decision or think through a problem?
- Is there a need for users to interact with the system in natural language (such as an agent who is seeking help on giving the right advice to a client in a specific situation)?
- Does it involve a process or function that requires providing transparency and supporting evidence for confidence-weighted responses to questions and queries (such as personal risk ratings for underwriting)?

*Define the value proposition and chart a course for cognitive* – Identify both the differentiated value provided by cognitive computing and the business value up front – from quicker risk selection and underwriting to cost savings. In addition, establish a cognitive computing vision and roadmap with executive-level support. Continuously communicate roadmap progress with appropriate executives and stakeholders, such as intermediaries and perhaps customers.

*Be realistic about value realization* – The benefits of cognitive computing systems are not realized in a single “big bang” at the time of initial deployment. Rather, these systems are evolutionary and improve as they deliver increasing value over time. Communicate this reality to stakeholders and specify benefits for underwriter, adjuster, intermediary and customers. Consider using a phased rollout or deploying the solution to a subset of trusted users who understand the technology’s evolutionary nature.

## **2. Prepare the foundation**

Prepare the foundation for a successful cognitive computing solution implementation by focusing on the following:

*Invest in human talent* – Cognitive solutions are “trained,” not programmed, as they “learn” with interactions, outcomes and new pieces of information, and scale expertise. Often referred to as supervised learning, this labor-intensive training process requires the commitment of human subject matter experts (SMEs). Consider using a newly qualified actuary instead of a busy underwriter, and also be sure to include appropriate insurance informatics talent.

In addition to domain expertise, a cognitive implementation also requires expertise in natural language processing, machine learning, database administration, systems implementation and integration, interface design and change management. There is an additional intangible “skill” required for team members: intellectual curiosity. The learning process never ends – for the system, the users and the organization.



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*Build and help ensure a quality corpus* – Cognitive systems are only as good as their data. Invest adequate time in selecting data to include in the corpus, which might include structured (such as policy administration records) and unstructured data (such as text fields in policy application forms) from multiple databases, as well as other data sources – even real-time data feeds and social media. Data will likely emanate from new and untapped sources too, including call center recordings, blogs and customer advocacy groups. In addition, invest in records digitization to secure the future of your organization’s corpus, focusing on both historical and new documentation.

*Consider policy, process requirements and impacts* – Assess any potential impact on processes and how people work. Because users interact with cognitive systems in entirely different ways than traditional input/output systems, processes and job roles could be impacted. In addition, consider whether any data policy changes are necessary. Obtaining necessary data could test the boundaries of existing data-sharing policies. It might also require new or modifications to existing policies, regulations and agreements, particularly in insurance, where security and privacy requirements are stringent.

### **3. Manage the change**

Compared to traditional programmable systems, cognitive systems are a whole new ballgame. As such, change management is more critical than ever.

*Ensure executive involvement in the cognitive journey* – Begin with active participation in defining the cognitive vision and roadmap and continue throughout the journey. Include executives in regular reviews of incremental progress and value realization.

*Communicate the cognitive vision at all levels* – Because cognitive computing is new and not completely understood by most, regular communication at all levels is critical. Address any fears, uncertainties and doubts head on, and leverage executive sponsors to reinforce the value of cognitive to the insurance organization's mission.

*Continue to raise the cognitive IQ of the organization* – Education is critical to assuring that cognitive is understood and adopted. Managing expectations related to system-generated recommendations is particularly important. Cognitive systems are probabilistic (that is, have several possible outcomes with assigned probabilities) and not deterministic (that is, every input has fixed outcomes). While accuracy rates will improve as a system learns over time, the rate will never reach 100 percent. Educate stakeholders early about accuracy rates, and conduct regular reviews on incremental improvements.

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## Are you ready to start benefiting from cognitive computing?

- What opportunities exist to create more engaging and personalized experiences for your consumer and the wider insurance ecosystem?
- What risk and insurance-related data are you not leveraging that, if converted to knowledge, could allow you to better meet key objectives and business requirements?
- What is the cost to your organization of making non-evidence-based decisions or not having the full array of possible options to consider when actions are being taken?
- What benefits could you gain by being able to detect hidden patterns locked away in your data? How would this accelerate innovation and consumer services?
- What is your organization's skill gap in cognitive computing? What might change if you could equip every employee to be as effective as the leading expert in that position or field?

**For more information**

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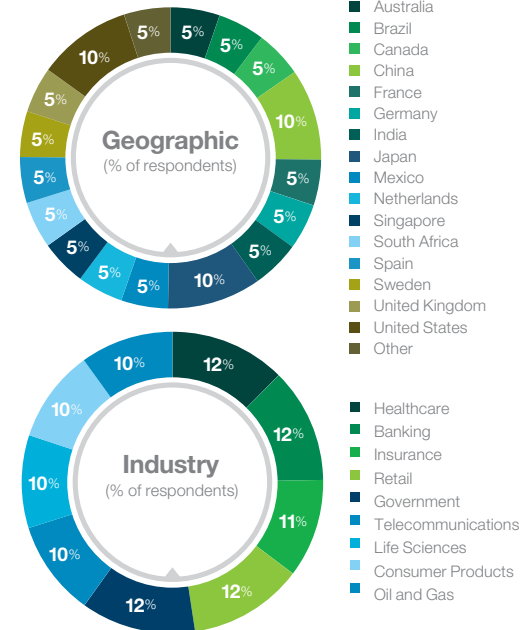
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### Study approach and methodology

As a follow-up to the initial IBM "Your cognitive future" research study, we conducted additional research in early 2015 to dive deeper into select industries and explore opportunities for cognitive. Through a survey conducted by the Economist Intelligence Unit, IBM gained insights from more than 800 executives from around the world representing a variety of industries, including insurance (with 86 respondents), healthcare, banking, retail, government, telecommunications, life sciences, consumer goods, and oil and gas. The study also included interviews with subject matter experts across IBM divisions, as well as supplemental desk research.



### Related publications

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