

# Harnessing the power of data and analytics for insurance



Data and analysis have always been the basis of the insurance industry. Today, information is being used for much more than traditional historical analysis. Insurers are leveraging data to attract, retain and service clients and producers; develop new products; assess and mitigate risks; set rates; process claims; and manage financial performance.

But the nature of insurance data is also changing. The volume, variety and velocity of data available to insurance companies are increasing rapidly along with the ability to evaluate its veracity. In addition to internal sources of traditional, structured data, insurance companies are collecting real-time weather feeds, geospatial data, public records, social media posts, call-center recordings, emails and their attachments, and streaming data captured by devices and sensors that make up the Internet of Things. This unstructured data, in conjunction with analytics, puts insight into perspective and provides context for the findings so you can act confidently on the results.

How can insurers take advantage of all these data sources to gain fresh insight in real time or near-real time? What if an insurer could tap into call recordings, emails, notes in medical records or comments in an application, service requests or claims files before taking action? How useful would it be to access all information across the entire organization, regardless of line of business? Could this data-enhanced insight help an insurer make smarter decisions or better understand policyholder behavior?

Insurers have enormous amounts of data, but to fully capitalize on it they must be well prepared to accommodate traditional and nontraditional sources, become data consumers, and have the right analytical tools to make the data meaningful. They must reduce the time between action and insight and extend analytics everywhere throughout the organization.

Data and analytics offer substantial opportunities for insurance companies to do just that by using insights to better inform actions and predict outcomes (see Figure 1).

By combining data with analytics, insurers can generate insights that help transform the business, create closer relationships with customers, gain competitive advantage or perhaps generate entirely new business models. This white paper explores the transformative power of data and analytics in the insurance industry, and highlights how the IBM® Analytics platform is designed to deliver the capabilities insurers need to derive insights from valuable data resources.

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*“No matter how an organization wants to get started with predictive analytics, IBM has an option for them....IBM’s predictive analytics has the power to take on truly big data and emerge with critical insights.”*

—“The Forrester Wave™: Big Data Predictive Analytics Solutions, Q2 2015,” Forrester Research, Inc., April 1, 2015

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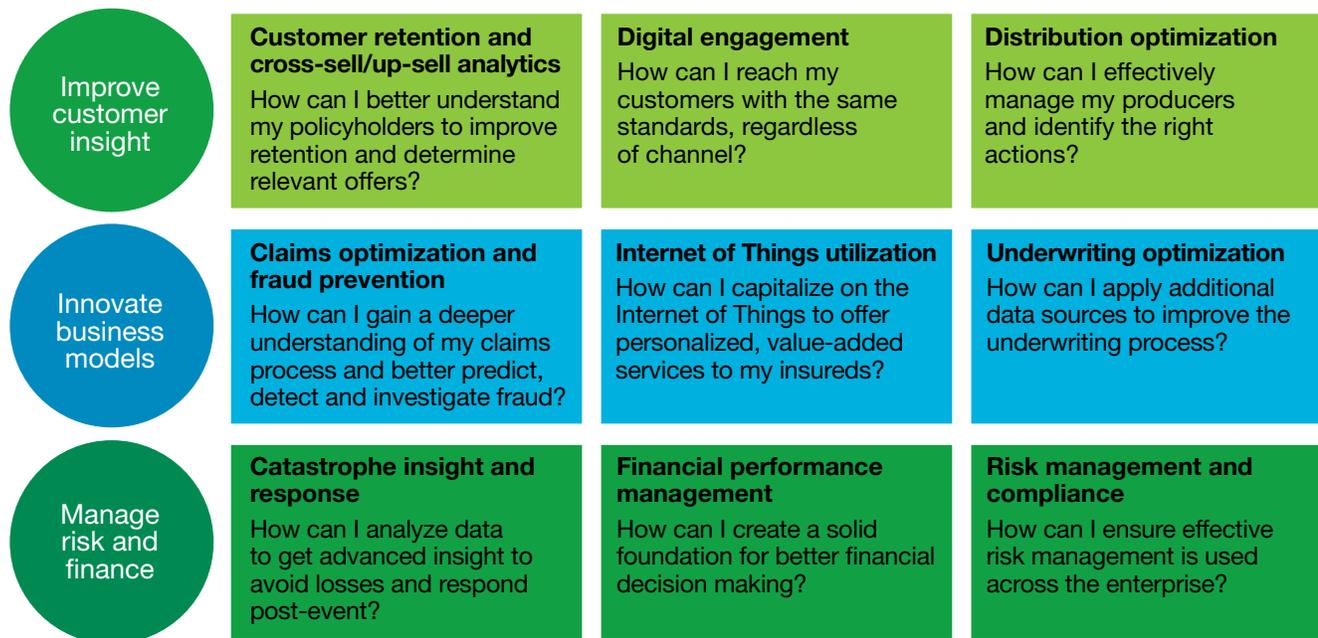


Figure 1. IBM data and analytics can improve outcomes and bring new capabilities to the insurance industry.

## Improving customer insight

What company doesn't want more knowledge about its customers? Data and analytics are making the previously impossible possible by changing how an insurer engages with intermediaries and policyholders. They enable insurers to focus on and personalize every customer or producer interaction. An insurer's marketing approach should be based on a

customer's individual story. By creating a more complete view of a customer, sophisticated analytics and predictive insights let insurers provide in-context offers and customer service support that is customized for the policyholder and is relevant to his or her immediate situation. An insurer that knows the lifetime value of a particular policyholder can select offers and strategies depending on that value.

### Customer retention

Retention is one of the most critical profit drivers for an insurer. IDC reports that insurers are spending up to seven times more to attract new customers than retain existing ones.<sup>1</sup> The goal for any insurer is to have policyholders and producers feel as if the carrier understands them as individuals and responds to their changing needs. Imagine someone who is unable to complete a policy inquiry on the company website and contacts the call center. The next best action might be for the agent to start the call with an apology for the inconvenience and then help the customer complete the inquiry using virtual chat.

Predictive analytics can help insurers identify whether a customer is a retention risk and suggest the correct action to mitigate that risk. This identification can take place as the policyholder interacts with an agent, mobile application, website or call-center representative. Timely, appropriate actions like these can significantly improve customer satisfaction and help keep valuable policyholders. Predictive analytics can even determine the likelihood that a customer will move to a competitor, allowing time to identify the next best action for retaining the customer.

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### Improving retention by identifying the right customers

**A large US insurer conducted extensive analysis on customer information files, transaction data and call-center interactions to identify customers who would respond positively to contact with an agent. Based on the analysis, the company then developed new product offers. The result was a significant increase in offer response rates and up to a 40 percent retention rate improvement.**

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### Cross-selling and up-selling

A data- and analytics-enabled view of policyholders helps insurance companies anticipate customer needs to create cross-sell and up-sell successes. Analyzing customer actions or tracking important life events enable a company to offer new types of policies or new levels of coverage that match a customer's current or future needs. For example, a company could offer a discount on bundled auto insurance as a policyholder's child nears driving age, or recommend a convertible life insurance policy after discovering that the policyholder has been comparing types of policies online.

Analytics can help identify that next best offer based on an enriched view of the customer that is supplemented with new data sources (such as social media) for additional context. Sophisticated analytics can then predict the likelihood of the policyholder accepting the offer—all during a real-time interaction.

Highly targeted offers can be automatically delivered through all channels of communication with the customer—including producers, contact-center support, social media, chat, mobile, email and regular mail—or provided to agents in real time at the point of customer interaction. Creating personalized offers and delivering them as preferred by the policyholder help improve customer sentiment and increase profitability.

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### Increasing cross-sell with improved segmentation

After several years of rapid growth, a large Korean non-life insurer wanted to boost revenues by improving its competitive position. The company needed to enhance the effectiveness of its large, distributed network of affiliated agents by providing them with the insights and tools to identify opportunities and implement more targeted and relevant cross-selling offers.

The company deployed a comprehensive customer-segmentation and market-targeting solution built on IBM technology. By applying analytics and predictive modeling to customer account data and transaction histories, the solution enables agents to conduct segmentation based on the probability customers will adopt complementary or higher-value insurance services.

By analyzing customers' consumption of services, the company can optimize cross-selling strategies, fine-tune marketing messages and deliver targeted offerings. The insurer can more accurately predict which insurance products are the most appropriate for each customer. Offering the right mix of services improves the effectiveness and efficiency of the company's sales force, while the more personalized touch helps agents forge closer bonds.

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Each insurer will have a different approach for implementing data and analytics strategies for customer interactions, but data must remain at the core of the analysis and be drawn from as many sources as possible. This enables the insurer to deliver value by taking the right action at the right time and in the right way for each policyholder during every interaction. All of this extra data creates a more vivid and complete picture of the customer that better optimizes the customer experience. Because insurers generally have fewer interactions with their customers compared to other industries, every moment of contact is critical.

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### Boosting policy purchases by using customer data to tailor offerings

AEGON Hungary Composite Insurance Co. Ltd, a subsidiary of the AEGON Group and one of the largest insurance providers of life insurance, asset insurance and pension products for individuals and businesses in Hungary, had huge amounts of raw customer data but lacked the ability to turn it into insight and cross-selling opportunities. Using powerful statistical analysis and modeling solutions from IBM, the company developed an innovative methodology to connect life events and situations to insurance needs; based on aggregate profiles and predictive behavior models, the insurer can craft insurance offerings to individual requirements. As a result of these efforts, the company improved customer response 78 percent through a targeted direct marketing campaign and increased policy purchases by 3 percent. Read more at <http://ibm.co/1vWN0F>

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### Digital engagement

Policyholders expect to be able to move between digital or self-service channels and human-based interactions without repeating their information each time. Data and analytics help insurers solve this problem by gathering insights from historical and real-time web or app clicks and applying them to present relevant interactions digitally.

Improving digital engagement requires online tools that give policyholders the ability to interact with insurers in real time. For example, gamification is becoming an increasingly popular tactic where policyholders can play game-like scenarios to determine the right policy fit, and the insurer can offer real-time feedback on different options during the game.

These digital channels can also create great leads, while potential customers can be matched with the right channel to close new business. According to IDC, data from the Hollard Group in South Africa shows that its product non-takeup rates are lowest when a potential customer researches its products through the web, and then finalizes a transaction over the phone or at a branch.<sup>2</sup> Insurers can also use social networks to amplify mitigating messaging or value-added information through direct, digital or intermediary channels.

### Claims optimization and fraud prevention

A deeper understanding of claims provides insurers with insight into expected duration and severity, litigation propensity, routing, potential fraud, subrogation and case reserves. Data and analytics play a critical role in addressing questions such as:

- Do insurers have confidence that they haven't paid duplicate bills to providers?
- Are appropriate collection actions being taken?
- Can unstructured data put a claim into context? For example, can text analytics and geospatial data assist in documenting the claim?
- Is there visibility into the status of each and every claim in real time? How helpful would this be during a catastrophic event?
- Can the claim be fast-tracked?
- Does the claim require involvement by a special investigative unit?
- Is there potential fraud?
- Are anti-fraud efforts in place?

During claims intake, companies can access and leverage information in unstructured areas of applications, and supplement it with social media posts or geospatial data to

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### Identifying insurance fraud with predictive analytics

Santam Insurance, the largest short-term insurance company in South Africa, chose an IBM Partner, Olrac SP Solutions, to deploy an advanced predictive analytics solution from IBM. Benefits of the solution include:

- Detected a major fraud ring less than 30 days after implementing the IBM SPSS®-based solution
- Saved more than USD2.5 million in payouts to fraudulent customers and nearly USD5 million in total repudiation
- Reduced claims processing time on low-risk claims by nearly 90 percent

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inform investigations and policy decisions. Geospatial data, for example, can help insurers discover whether policyholders are being honest about accident details or if medical or repair services rendered are legitimate.

Predictive analytics solutions can help categorize risk and deliver fraud propensity scores to claim intake specialists in real time so they can adjust their line of questioning and route suspicious claims to investigators. For ongoing analysis of fraudulent claims and their impact on the business, companies can use solutions to analyze reports and create visualizations of data patterns.

Another option is to pursue new and emerging sources of analyzable information to conduct periodic analysis of emerging trends. Combining structured and unstructured data, as well as internal and external information, can identify emerging trends in fraud and leakage. These new indicators can be applied against open claims to determine if additional research and investigation are warranted.

## Leveraging the Internet of Things

In today's digitally infused world, data sources range from sensors in medical devices or wearable health-tracking devices to vehicles, consumer electronics and commercial equipment used in industries like mining, farming and transportation. This always-connected, device-driven phenomenon is called the Internet of Things (IoT), and it can provide a wealth of valuable information for insurers—if they can intelligently collect and analyze it.

For insurers, the connected car, home and lifestyle are all generating new opportunities for customer interaction and risk mitigation. The IoT creates business potential by aligning data and analytics strategies with policyholders' lifestyles. The insurance industry's most common application of sensor data is usage-based insurance (UBI) or telematics products for P&C insurers. These types of offerings are becoming more prevalent and increasingly necessary for insurers to remain competitive. By analyzing driving data and routes and incorporating them into insurance pricing, UBI and telematics provide benefits in the form of reduced premiums for lower-risk drivers.

As automotive companies embrace these technologies in greater numbers, innovative insurers are using telematics to:

- Improve actuarial risk patterns
- Automate first notice of loss processes based on incoming telematics
- Initiate police and medical assistance
- Improve customer driving behavior
- Alert drivers to high accident areas or poor road conditions
- Offer drivers instant products if they drive into an uninsured area
- Protect against certain types of fraud, such as car thefts

Data and analytics enrich telematics with geospatial, topographical and weather data to provide context for these services. Dashboards provide business analysts with data for modeling activities that were previously impossible. Plus, the work done with vehicle telematics is paving the way for related programs, such as home insurance telematics offerings.

Insurers are also using IoT and sensor data to drive new opportunities with the connected home and lifestyle. Sensor-equipped homes can transmit information that may enable insurers to proactively mitigate risks. Recent new regulatory clearance has paved the way toward using fitness monitoring devices for the underwriting process. By interacting with policyholders more frequently and with more personalized information from these sensors, insurers can build relationships outside of the application process, the claims process or the infrequent service request. This kind of trusted partner relationship is strengthened by data and analytics' ability to add value at every point of contact.

## Catastrophe insight and response

What if you could send real-time alerts to your policyholders about an impending event, and recommend actions to take before, during and after the event based on their exact location? Running data and analytics risk models lets carriers handle the volume and variety of data available today while enabling response planning. This way, insurers can dive deeper into potential losses at the policy level and calculate the immediate effect of a new policy on the portfolio while it is being quoted. The real-time nature of predicting must be accompanied by the ability to act instantaneously, and the experience must be seamless to the customer. How an insurer helps its policyholders prepare for and recover from a disaster is crucial: policyholders must feel the insurance company is available and accessible during emotional and stressful events.

To better understand and respond to catastrophes, insurers must accelerate the speed and increase the precision of catastrophe risk modeling. In the past, actuaries were restricted by the inability to run frequent, fast models. Now, companies can integrate historical event data, policy conditions, exposure data and reinsurance information to provide near-real-time risk assessments.

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Formed in 2005, Security First Insurance has rapidly become one of the largest property insurance companies in Florida. During a typical month, Security First Insurance processes 700 claims, but in the aftermath of an event such as a hurricane, this number can swell to tens of thousands within days. It can be a challenge for the company to quickly scale up its resources to handle the influx of customers trying to file claims for damaged property and possessions.

Security First Insurance worked with Integritie Social Media Capture 4 to develop a transformative platform that draws on IBM Content Analytics solutions and combines sophisticated content management capabilities with social listening and content analytics. The solution allows Security First Insurance to rapidly and accurately capture, analyze and process large volumes of unstructured data from email, social media and mobile sources. If major storms were to make landfall today, Security First Insurance expects many policyholders to reach out to the company to report a claim using social media and smartphones. The company's content management and analytics system, powered by IBM technology, enables Security First Insurance to effectively manage the high volume of requests the company anticipates it will receive after a hurricane and improve response time to customers. Learn more here: <http://bit.ly/1FJGGJD>

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With a powerful data warehouse built for big data, insurance companies can analyze trillions of data rows and rapidly deliver results that underwriters can use to price policies by street address, proximity to fire stations or other granular parameters, rather than simply by city, county or ZIP code. A data-enabled solution allows pricing models to be updated more often than a few times a year, and specific risk analyses can be determined in minutes rather than hours.

A solution built to analyze streaming data enables companies to capture and analyze real-time weather, geographic and disaster data for risk mitigation on both personal and commercial lines. Predictive modeling solutions can help companies anticipate those losses before disasters strike or as events unfold, allow for risk mitigation or avoidance, and enable them to evaluate response plans.

### **Underwriting optimization**

Historically, efforts to increase automation for commercial risk and large case individual life underwriting have been limited by the document-rich evaluation process. In addition to an insurance application, underwriting in these areas may involve medical records, lab results, motor vehicle reports, the US Securities and Exchange Commission and custom data sources. Often, this information is attached to an email. The process of manually inputting, categorizing and culling this information is generally time-consuming, costly, error-prone and requires a highly experienced (and aging) workforce.

Data and analytics are changing the game in this area by combining text analytics, business rules and predictive capabilities to machine-read applications and their attachments, by developing a bind propensity score and by ranking the submissions accordingly. In the commercial P&C space, where it is common for submission volumes to exceed underwriters' quoting capacity, insurers are using this approach to prioritize the most valuable submissions for quoting. In the life industry, carriers are declining to quote the lowest-value submissions, saving money on the requirements not ordered and improving turnaround times.

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#### Midwestern life insurer employs smarter underwriting to address DAC challenge

Until recently, US insurers could capitalize direct and indirect expenditures related to underwriting as a Deferred Acquisition Cost (DAC). This could have included the cost of underwriting systems, medical requirements, loss control and underwriter salaries for both won and lost business. It meant that the industry could amortize these costs over a period of months or years and only realize a fraction of the charge in the current accounting period. Today, however, the DAC rule has changed and only direct expenses on bound business may be capitalized.

A Midwestern life insurance company had a channel of independent producers with a low bind rate and the new DAC rule had significantly damaged the profitability of this business. The carrier combined attending physician statements (APS), MVRs, internal competitive information and customer information in a big data platform from IBM and applied big data analytics and visualizations. This enabled the carrier to quickly identify which applications were worth quoting. The analytics and visualizations reduced errors and increased underwriter productivity, reduced turnaround times, lowered non-DACs and increased the company's hit rate.

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Results from fraud programs also enhance underwriting. Insurance companies can employ data and analytics to scrutinize applicant identities by searching and analyzing large volumes of information rapidly. Companies can determine whether applicants—and people associated with those applicants—have been linked to fraud in the past. Through a review process, companies can avoid fraud by denying applications for disability, health, homeowner or automobile policies with high potential risk.

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#### Specialty insurer addresses knowledge management with smarter underwriting

Like many commercial insurers, a specialty carrier had more submission volume than it could physically quote. When unexpected employee turnover struck, this challenge became critical.

To optimize precious underwriter resources, the insurer—a writer of professional liability—needed to screen submissions to determine whether they satisfied their underwriting appetite. A smarter underwriting solution from IBM machine-read the email that contained the Association for Cooperative Operations Research and Development (ACORD) application and other attached documents. A combination of natural-language processing, business rules and predictive analytics determined the submissions' priority in the underwriters' queue.

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## Financial performance management

Understanding what drives profitability is essential for any business. Factors range from pricing, underwriting, claims and claims adjustment expenses to less-well-understood aspects such as agency productivity, marketing campaign ROI, operations effectiveness efforts, reorganization, and dynamic, financially aware decision making.

Unfortunately, many insurance companies have not developed strong, reliable and effective planning, budgeting and forecasting capabilities. Running dynamic what-if and scenario-based analyses and observing their effects on a three-year rolling forecast happens far too infrequently. When it does happen, it is viewed as a major accomplishment because it takes so much time, money and effort.

IBM provides insurers with the technical capabilities to develop and optimize their planning, budgeting and forecasting capabilities. The goal: create a solid foundation upon which all decision makers can base their product, operational and customer-related activities.

Carriers that have grown through acquisition must reconcile various data source formats and values from a plethora of administration systems into the desired aggregation and allocation formats. In this case, the need for reference data and reference data management is a fundamental imperative for governance and integrity. The connection of the financial consequence of each decision to the overall goals and objectives of the corporate strategy is paramount to managing a positive outcome.

## Risk management and compliance

Increasingly, insurance organizations want to make decisions that are influenced by their risk appetite, whether in personal or commercial lines, life and pensions or annuities, or specialty lines. Capital management and financial strength will always remain key factors for influential rating agencies—but in addition to quantitative information, they are also looking for qualitative statements regarding strategy, compliance, management and operations. Management needs to be able to test the sensitivity of its assumptions, measure risk and capital in normal and stressed conditions, and assess the risk and capital implications of strategies before implementation. With the proliferation of social media, reputational risk must be monitored and considered. Increasingly, insurers are looking at how to best manage risk imposed by the supply chain or how to best manage the talent as the industry expertise retires.

Such considerations not only affect product development, but also investment management, hedging strategies, and asset and liability management. Transformed insurers are integrating risk and financial performance management. In doing so, they increasingly change the culture of the insurance organization by ensuring effective risk management is applied at group, business and product line levels to provide timely, trusted and actionable information.

## Distribution optimization

Distribution optimization relies on two elements: effective support models for existing producers and powerful analytics to attract, retain and optimize the producer workforce. Data and analytics solutions can support both of these requirements.

Traditional optimization measures show only a limited view of distribution issues by focusing on premiums written and loss-ratio management. Leveraging data and analytics, companies can now estimate the potential of a market and then evaluate a producer's contribution of that share of the business.

This analysis can also be used for target setting and training to improve overall market penetration. Whether a producer is a captive or an independent agent, a financial advisor or an intermediary, the use of big data analytics can help drive top-line and bottom-line growth.

Companies can leverage analytics across a broad range of producer information, including interaction history with the carrier and customers, social media capabilities, claims, payments and agent histories to understand which characteristics predict successful behaviors. The findings can be used to search and screen for new producers and to help existing producers increase their performance. These efforts can be supported by next best actions delivered through value-added activities such as training and lead sharing, or existing business flows such as quoting.

Data and analytics can also help make producers smarter about their customers, so they can anticipate customer needs more effectively and help retain business. Sharing cross-sell offers and sentiment analysis with the producer community can add to the producer's business and drive incremental revenues to the carrier company. Analytics enable the matching of producers and customers to drive cross-sell and up-sell opportunities, help carriers maintain wallet share, and reduce policy exchanges or cancellations. Creating a trusted and reliable relationship with key producers enables insurers to be quick and accurate with producer credentialing, compensation and lifecycle management—all of which are vital to the revenue stream.

### IBM Analytics platform capabilities

The IBM Analytics platform provides a foundation of information integration and governance, data and content management, high-value extensions to open data technology and extensive analytics capabilities to help insurance organizations leverage data with speed, ease and confidence for business value.

The platform features a wide range of components and capabilities, including the following:

- **Content analytics** find, organize, analyze and deliver insight from textual information that is found in documents, email, web content and more using intuitive natural language recognition and categorization.
- **Cognitive systems** navigate natural language, explore vast disparate data sources and learn from every interaction in an intuitive experience.
- **Discovery and exploration capabilities** provide a context-relevant view of a business through federated navigation, visualization and interaction with a variety of internal and external data sources and data types.
- **Business analytics** deliver insight to users with dashboards, reports, analysis and modeling on desktops, the web and mobile devices.
- **Predictive analytics** perform statistical analysis, data and text mining, and predictive modeling to reveal patterns and trends from structured and unstructured data.
- **Enterprise content management** allows comprehensive content lifecycle and document management with cost-effective control of existing and new types of content with scale, security and stability.
- **Hadoop systems** bring the power of Apache Hadoop to businesses; IBM solutions combine Hadoop administrative, discovery, development, provisioning and security features with the analytical capabilities of IBM Research.
- **Stream computing** analyzes massive volumes of streaming data in near-real time by deploying advanced analytics in a highly scalable runtime environment.
- **Data refinement, integration and governance features** build confidence in data and analytics with the ability to integrate, understand, manage and govern data appropriately throughout its lifecycle.

## For more information

To learn more about how IBM solutions can help insurance companies capitalize on big data and analytics, please contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/analytics/us/en/industry/insurance/index.html](http://ibm.com/analytics/us/en/industry/insurance/index.html)

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<sup>1</sup> Chew, Li-May. "Global Insurance 2015 Top 10 Predictions: Perils and Prospects for the New Year." IDC Financial Insights. January 2015. <http://www.idc.com/research/viewtoc.jsp?containerId=AP250896>

<sup>2</sup> Ibid.



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