



WHITE PAPER



Implementing and leveraging advanced analytics

The insurance industry has always been about handling large volumes of information to establish risk and effectively pricing specific risk cases by comparing them to others. But it has become clear recently that transformational trends—such as leveraging machine-to-machine communications and generating massive amounts of new data—are catapulting the industry into a new age and prompting insurers to ask, “Am I getting the most from my data?”

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The purpose of this white paper is to demonstrate the power of an advanced approach to analytics by building an adaptive methodology for embedding or infusing analytics into the organization.

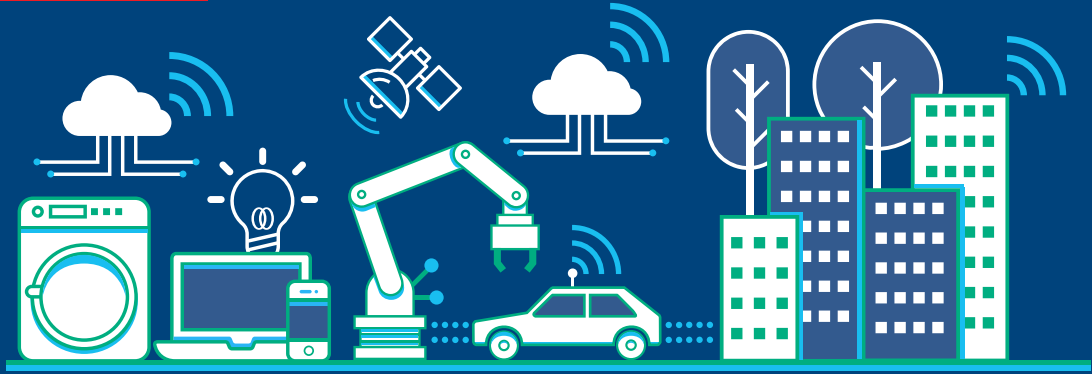
Studies^{1,2} have shown that data complexity is best answered with the simplicity, or at least clarity, delivered by visualization tools that empower analytics experts and insurance managers to make the best decisions.

To achieve simplicity and clarity of vision, there are steps insurers need to take to build a holistic tool for data preparation, querying and visualization, as opposed to the “production line” approach of dividing these tasks between various proprietary data warehousing and visualization tools.

These steps include identifying the trends that are transforming the industry, understanding advanced analytics and what they can do for an organization, and applying an approach to analytics that will help the organization grow more profitably.



TRANSFORMATIONAL TRENDS



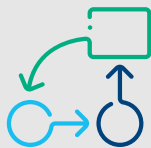
The Internet of Things (IoT) and machine-to-machine communications are the neural pathways in a completely new digital world of data harvesting techniques. This is a world with people at the center who interact with these techniques and use a whole range of new digital hardware.

Some of these neural pathways have already reached the point of common awareness. They include self-service delivery of insurance coverage, machine learning, speech-to-speech translation and hybrid cloud computing. Technology in this stage of maturity is already entering commercial use in motor vehicles (such as gesture control and semi-autonomous safety features) and in insurance claims processing out in the field (virtual reality for underwriting of commercial buildings, autonomous drones and other field vehicles).

Technologies expected to reach everyday use within five to ten years from now include wearable devices, smart home technology, the fully connected vehicle and the autonomous vehicle.

Every day, we see insurance companies execute strategies that harness data in new ways to improve their business. It is the accumulation of these learnings that builds the IoT platform and creates new data pathways.

The volume and types of data flowing through these new pathways continues to grow. Defining the way that information moves in an organization is key to reaching insights about how the process can be streamlined and made more efficient and effective.



Do you understand how risk management data flows through your organization? Do you have a plan for tackling blockages or mismatching between data outputs, reports and customer portals? What is your mental map of how data arrives in your department in a useful manner, and—hopefully—contributes to good decisions?



Internet of Things



It's widely accepted that the Internet of Things and machine-to-machine communications are going to be huge in the years ahead. By 2020, over 20 billion connected things will be in use across a range of industries; the IoT will touch every role across the enterprise.³ Additionally, Bain & Co forecasts the IoT market as a \$20 billion opportunity in 2020 across software, services, analytics and hardware vendors.⁴



There are some key areas where insurers will be expected to play a role in IoT infrastructure:

- Security and privacy
- Data analytics and management including verifying and normalizing data quality where it comes from a variety of hardware sources
- Data integration across a massive number of devices and intermediaries
- Governance (new rules and processes)
- Data transportation including bandwidth and the pipes required to transport data between devices and computing engines
- Computing near the data for 21 billion-plus devices
- Pure computing power for a billion-plus devices

There are still many unknowns with the Internet of Things but certainly the speed of change is increasing as is the need to deliver real-time data at certain critical points in the life of a policy: at customer onboarding, at the point of quote, at renewal, and when key life events occur, and at first notification of loss or point of claim.

For this opportunity to be realized, insurers and other parties in the system such as ISPs, cellular service providers, data aggregators and other data service providers must make some hard decisions. Most of the benefit to the consumer in the future will not occur in tiny monthly data usage fees at the granular level, but in the new applications, new opportunities to provide protection and value-added services that will be powered by analytics.



Ultimately, the primary value of IoT for the insurance industry will lie in the management, use and analysis of the data it generates.



Telematics

In essence, the pieces of the telematics puzzle all converged in the 1990s with initial European Union (EU) legislation that merged Global Positioning System (GPS), Global System for Mobile (GSM) and the Internet as one. This started the process for the automobile to enter a new era of connectivity. This technology is in lift-off phase in most developed and many developing countries.



The most well-known deployment is in usage-based insurance (UBI), enabling new insurance models based on actual driver behavior, speed, cornering, braking and so on. The consumer interface with these new types of products, whether pay-as-you-drive or pay-how-you-drive, and the promise of a new digital relationship for the long-term, will be just as important as lowering insurance premiums.

The main new dynamic data points being generated by telematics are:

- Distance, time, place, behavior and context of driver behavior
- Roadway topography
- Accelerometer data, including rating criteria for hard-braking events, acceleration and cornering
- Context from previous claims history
- Route optimization and other GPS data for economizing on fuel consumption
- Fuel usage, tire pressures, repair or emissions alerts/diagnostic codes for vehicles

In so far as telematics is part of the platform that will power the full autonomous vehicle, it is at the beginning of a major growth curve and will be a major technology in determining the way insurance is priced and sold in the future.

Various forecasts predict that installed telematics used in motor insurance policies will rise quickly over the next few years



EUROPE 2015

5 MILLION

EUROPE 2020

26 MILLION



N. AMERICA 2015

6 MILLION

N. AMERICA 2020

42 MILLION

It seems likely the end of the development cycle—universal application of motor telematics in vehicles—will create a more enjoyable, more personalized and efficient insurance relationship. It is the overall developments with the connected car as a whole that are making universal take-up of telematics more likely, rather than just the cutting edge of cheaper premiums.



Wearable Technology

With wearables, we are witnessing an example of the Internet of Things in action: the network of physical objects embedded with electronics, sensors and connectivity to exchange data with various parties. Wearables, or the smart watches, activity trackers, wellness or medical devices, smart rings for payments and fitness bands, refer not just to garments but to any device worn on the body for business or personal solutions. We can summarize the new data points being generated by wearables as follows:

- Location and other geo-related data
- Real-time claims and catastrophic event assessments at loss locations
- Training for loss adjusters
- Visual aid for 'virtual' field adjusters
- Activity monitoring such as pulse and exercise
- Health monitoring such as blood glucose, vitamin D and CO₂
- Video and audio on driving, eating, exercise or other habits
- Other data from gamification

In the arena of health and life insurance, new apps for wearables and smartphones are launching at a fast pace. The entire eco-system for health apps is emerging around the world. Consumers will increasingly choose to use a mobile device or smartphone to manage their own health and well-being. This brings the focus on self-management and is something that is being encouraged by governments and health service providers.



As carriers develop strategies to use the wide variety of data collected from wearables, the strategy will also require a process on how to analyze it so that the data is actionable. And because much of the data is personal and protected information, emerging compliance and regulatory changes around its use should be expected, as well.



Connected Homes and Cars

New smart building and connected automobile technology has the potential for insurers to move beyond their existing role towards that of an advisor. It enables them to proactively manage risk—through risk mitigation working with other partners—rather than just respond to it.

Some examples of the new data points being generated include:

- Intruder alarms that detect intrusion, call a contact center and take photos
- Fire detection and escape of water/moisture detection triggering automated alerts to emergency services or an engineer
- Thermostats adjusting heating equipment according to residents' routines
- Lighting control, setting away-from-home schedules and aiding in energy-saving
- Smoke and carbon monoxide detectors notifying the property owner and closing down heating and ovens
- Household ovens that can be pre-heated and checked remotely

With these new streams of data comes a new level of complexity as well as huge potential for risk mitigation and risk intelligence that's setting a new pace for insurers. The smart home is already here and many insurers are still configuring their business models to accommodate it.

Cars will become more connected digitally to home computer systems, other cars and to OEMs and data service providers who will gather vast amounts of information from drivers through these networks. The rise of the connected car and telematics means that significant disruptive forces are likely to grow. Indicators like accelerometer data on impact related to personal injury claims and automated alerts to emergency services in the event of an incident could revolutionize the claims management market forever.

According to recent analysis by IHS Markit, in 2023, 69% of the cars sold globally will be connected, and nearly all of these connected cars will have ADAS functionality.⁵ As more of the risk switches from human decision making to auto-derived decision making, this will place enormous demands on data quality and data processing power.



Adoption is happening now and radical changes to the insurance delivery model are likely to follow.



To successfully implement an advanced analytics approach, data must be accurately and efficiently cleansed, standardized, linked to other related data, and fused together into a single, holistic view of every risk because the more that is known about a risk the better it is managed.

Getting the Most out of Data with Advanced Analytics

It is critical to realize that the analytics capability itself is not what is going to give a carrier the advantage over the competition. The integration and implementation of products and information that result from analytics have to be infused throughout the organization so that every part of the business can make decisions and take actions that will lead to a competitive advantage and, ultimately, improved profitability.

There are three elements of an advanced analytics approach. In an equation, it would read as ***Technology x Techniques x Talent² = Advanced Analytics***.

Technology is, in essence, the platform necessary to efficiently process the data being generated. Technology brings the ability to:

- Harvest enormous amounts and varieties of data
- Create the right set of attributes, across a wide range of data sources
- Accurately link millions of rows of data
- Summarize millions of rows of data into thousands of attributes
- Resolve disparate records to a single entity whether it's a person, business, vehicle or address
- Transform raw data into a form that can be statistically analyzed (modeled)

Techniques are the various new neural data pathways emerging from the trends that are already transforming the industry. They include machine learning, speech-to-speech translation and hybrid cloud computing that are generating new data from a variety of new sources. And as we've already discussed earlier in this paper, new applications and opportunities will be realized through value-added services powered by advanced analytics.

UNDERSTANDING ADVANCED ANALYTICS

Talent squared is the most important component of the equation and requires two key inputs: experience and innovative thinking. With the right experience and an innovative mindset, the output of analytics can be exponentially effective. Organizations that are natural innovators, that can challenge the advanced analytics expert or data scientist, provide adequate tools and deliver other big data capabilities will attract the best talent.

When building a team of analytics experts, the business must be ready to leverage and motivate the talent hired.

From a business readiness standpoint, insurers should start by answering some basic questions:

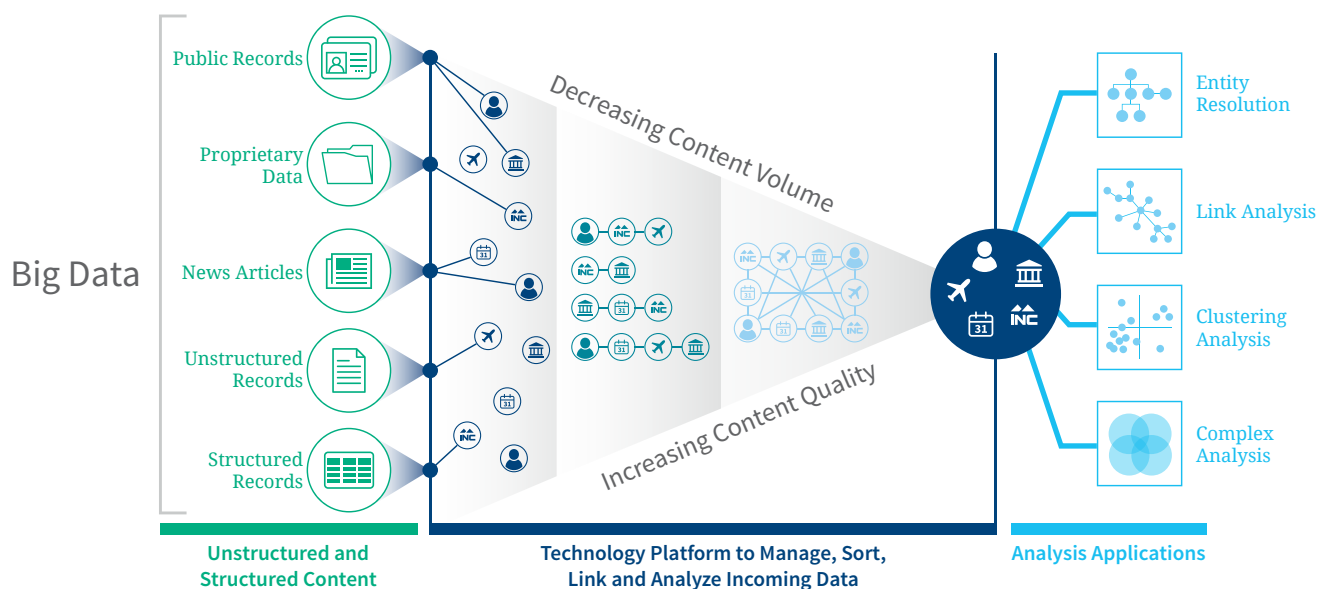
- What do you really need from an analytics expert or data scientist?
- Are the necessary tools available?
- Where is the data?
- Do you have senior level support?

When it comes to motivating a data scientist, businesses should provide not only a compelling salary and benefits package, but also:

- A challenging work environment
- Constantly changing problem sets
- Access to tools and data

A recent survey found that by 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.⁶

The graphic below shows the challenges organizations face when ingesting data of varying sources and varying degrees of quality and the types of analysis required to generate insights for the business.





The Impact of Advanced Analytics

Remaining competitive and profitable when there are multiple disruptive factors requires a full understanding of the impact on the business, and where advanced analytics techniques can be applied to realize a stronger competitive position, growth and profitability.



The deployment of disparate data sources presents challenges for analytical efforts as data needs to be profiled, cleansed and integrated in preparation for analysis. Data preparation can be enormously time consuming and ties up valuable IT resources. Over time with greater automation, business users will engage all these sources more frequently and they will be able to analyze greater data volumes.



There are several areas where advanced analytics offer solutions to the challenges of reducing complexity, cost and processing time for the insurance industry, most especially at the points of: Acquisition, Underwriting, Claims, Fraud and Renewal.

Correct assessment at the point of acquisition and underwriting reduces the possibility of incorrectly pricing risks which can only add to widening loss ratios, damaging profitability and diminishing the customer experience. Data analytics can also help manage the overall underwriting and claims activity more efficiently: putting adjusters onto claims being scored as more complex or more likely to result in legal expenses. This can speed up claims handling—resulting in more low-touch or no-touch claims, reducing settlement amounts, and ultimately improving the customer experience. In terms of fraud, predictive analysis is getting much better at identifying fraud earlier in the claims cycle. With a combination of rule modeling and database searches it is able to score claims according to those worthy of management time and manual handling—creating a more efficient claims process.

Retention of a carrier's best customers is a key element of profitable growth. With continued analysis of its book of business, a carrier can effectively manage and maintain a positive customer experience so that at the point of renewal, the customer is less tempted to shop for alternative providers.

Our own research (UK Consumer Study) identified that 25% of consumers admitted to feeling it is acceptable to provide inaccurate information when arranging a motor insurance policy. Fifty percent said that when this occurs, “claims should still be settled.” It's not just with major fraud but with this long tail of casual fraud where analytics offers big efficiency savings.

Everyone has data. And more is going to come flooding in as new sources arise. But is it the right data? Do you have the right resources, including technology, techniques and talent in place to effectively evaluate, dissect and harness the data to get the holistic view the business requires?



No matter the approach taken—internal, external, or a combination of resources—carriers must master advanced analytics and integrate the results into the entire organization to maintain a competitive edge and profitable growth.

Why Advanced Analytics Capabilities are Important

An ever-rising tide of data already exists, but there's also a tsunami of IoT data about to break shore from a range of sources. Carriers need to integrate advanced analytics into the decision workflow to leverage all of this incoming data to fine-tune scores, segmentation, pricing, risk assessments and claims processing—in short, every aspect of the business that impacts the bottom line. With more data and more analytics power to process and make that data actionable, a carrier can have a more holistic view not only of its own business, but of the industry, that will add insight and confidence into making decisions in line with business objectives.

Holistic View

An individual insurance carrier will often have a much narrower view than might be obvious. Relying only on Policies in Force (PIF) data does not give the full view of the market. Carriers need proof points showing the full universe compared to what may be perceived by an organization's own frame of reference. The ability to analyze industry level benchmarking data is key to gaining a holistic view.

A holistic view of data brings complexity and it requires a more collaborative approach to external data to be able to gain actionable insights. The first step of the data lifecycle, collaboration in harvesting data, is fairly straightforward. It is in the ingesting and graphical presentation of the data—or the exploring, visual, iterative ability to inform business decisions—that the process becomes more challenging.



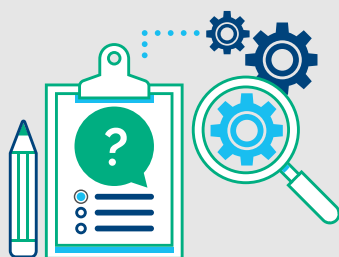
How Advanced Analytics Help Carriers Compete and Grow More Profitably

The insurance business model is moving to a fast, sophisticated process where consumers expect providers to know their needs and preferences. Customers do not want to be asked repeatedly for their personal data at each touchpoint and this requires many new partnerships to bring together external data sources. This was confirmed in our own research (UK Consumer Study) where LexisNexis found that 90% of consumers are comfortable with insurers' auto-filling online applications.

More than three quarters of motorists said they would like insurers to take a whole lifetime of driving data, to be able to price more effectively. These are just a few examples of how the connected world is transforming the insurance delivery model and propelling it toward greater self-selection.

The volume and sources of data required to deliver the changes is already overwhelming. And there is every indication that it will continue to grow exponentially in the short-term. This is not just a trend that will affect insurance at the margins, it is akin to an industrial revolution in the way all digital (non-physical) products are serviced and delivered – and it's all powered by data.

Big data and using insights from analytics no longer reside only in narrow objectives set by the CIO or data scientists. Insurance carriers must be ready to leverage every bit of data and every new advancement across the continuum in a way that will help them maintain a competitive advantage.



Questioning comes before learning. To create, carriers must first question everything and this goes to the heart of the challenges: making sure analytics are interrogating data in ways the business needs and then communicating that throughout the business, handing insights over to operational processes all along the chain.

Sources:

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John Beal is Senior Vice President, Analytics, for LexisNexis Risk Solutions. He is responsible for leading the company's insurance analytics team in product and services development. With more than 20 years of experience in data and analytics across the insurance and financial services industries, John has leveraged his experience and expertise to build a high-performing team of advanced analytics experts that continuously seeks out new methods and models that drive the development of market-leading innovations including incremental predictive uses of existing data and processes for credit-based as well as non-credit models.



About LexisNexis Risk Solutions

At LexisNexis Risk Solutions, we believe in the power of data and advanced analytics for better risk management. With over 40 years of expertise, we are the trusted data analytics provider for organizations seeking actionable insights to manage risks and improve results while upholding the highest standards for security and privacy. Headquartered in metro Atlanta, LexisNexis Risk Solutions serves customers in more than 100 countries and is part of RELX Group plc, a world-leading provider of information and analytics for professional and business customers across industries.

For more information, please visit www.lexisnexisrisk.com.