THOUGHT LEADERSHIP



Revolutionising Insurance: The Imperative of Data-Driven Solutions in an AI Market

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Executive Summary

In today's insurance landscape, the strategic adoption of data-driven decisions is not just advantageous but imperative. This whitepaper explores how data analytics, the training data used by artificial intelligence (AI), and digital transformation are reshaping the insurance industry. Insights gathered from various sources highlight that data-driven innovations are optimising risk assessment, claims processing, and customer interactions. By leveraging advanced analytics and autonomous technology, you can mitigate risks more accurately, streamline operations, and enhance customer satisfaction.

Digital transformation plays a pivotal role, enabling your organisation to integrate cutting-edge technologies that improve efficiency and operational accuracy. At the same time, autonomous, data-driven operations are helping insurance companies find new revenue opportunities and future-proof them against market uncertainties.

Beyond ad hoc pilot programmes, AI enhances capabilities across the insurance value chain, fostering innovation and operational excellence. Ultimately, this whitepaper underscores the critical importance of embracing data as an essential first step to unlocking value in this new market.

Introduction: The Dawn of Data-Driven Insurance

Insurers have an enormous amount of data they acquire from interactions with customers, agents, and third parties such as medical records and telematics. Traditionally, this data is used for underwriting, risk assessment, setting premiums, processing claims, and personalising insurance products.

In the new data-driven insurance model, insurance companies use their data to develop new solutions, create value-added services for their customers, and produce unique insights to better understand risks. Data is also the intelligence behind autonomous agentic processes insurers are building to further reduce costs and create new opportunities.

What are the factors influencing this data-centric approach?



AI and Agentic Technology

AI is a critical pillar in the use of data information. For data analytics, the integration of AI enables predictive analytics and autonomous business decisions.



Cloud Computing

With scalable computer power and storage, cloud computing is leading the way for the handling of infinite amounts of data.



IoT (internet of things)

IoT is a major resource for real-time big data. It can help with preventative maintenance for homes and businesses along with the efficient management of resources and optimised operations.



AI-Driven Automation

Robotic Process Automation (RPA) automates repetitive, mundane tasks, reducing human error. Automation in customer service takes shape as chatbots and virtual assistants, increasing customer satisfaction and efficiency. Intelligent autonomous agents also perform administrative tasks and accomplish defined business goals with minimal human involvement.

Together these factors impact the insurance industry and how it does business. Research by Celent says that more than 62% of P&C insurers are acting on data initiatives. Digital acceleration, a key differentiator for life insurers, is underpinned by a new era of data production coming from a variety of sources.

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What can data do in the insurance industry?

- Risk Assessment
- Personalise Customer Journey
- Enhance Communication
- Predictive Analytics
- Improve Customer Experience
- And more...
- Claims Automation

We'll dive deeper into each of these topics later in the paper, but as illustrated here, data is impacting every corner of the insurance landscape. One of the biggest areas where data will affect the insurance industry is in decision-making.

Data-based decision-making does not replace the human element but rather supports it and leads to more precise decisions across functions. For instance, the automation of underwriting increases straight-through processing (STP) for business and renewals by reducing the number of policies sent to manual underwriting and rationalising rules for greater consistency. Claims automation allows a customer experience that builds loyalty and increases first-day settlements by automating decisions. Businesses can respond faster to changes in market conditions, regulatory updates, and even weather-related perils by managing business logic and decisions independently.

> *"The only way to realize the full potential of data science is to use it to systematically shape the what and the how of decision-making, thereby redefining roles and reshaping organizational cultures."*
>
> **-Murli Buluswar**
> Boston Consulting Group

The Current State of the Insurance Industry

Technology wasn't always there for insurers. In the past, decisions were made manually with minimal information provided by the client or agent. The amount of information that underwriters and claims handlers had was minimal compared to what they have today. Insurers adapted technology to manage policy administration without the possibility of integration with data intelligence solutions.

These legacy systems are encumbered with old technology, a shrinking workforce, and data silos. On average, about 70% of an insurer's annual IT budget is spent on maintaining its legacy systems, according to PWC. Delaying the upgrade of legacy technology creates technical debt which leads to more costly and complex migrations in the future. The longer a company waits, the harder and more expensive it becomes to rid yourself of technical debt.

Cybersecurity, a top concern for insurers due to the amount of data they amass, is imperiled by legacy technology. The technology operates on old security protocols, leaving companies at risk of costly data breaches and tarnished reputations. Solutions are created off platform, while business is being conducted on spreadsheets rather than the legacy system. An EMC study states that siloed solutions cost the industry $1.7 trillion a year.

> *"For insurance firms, seamless integration of data and systems is crucial for providing efficient services and valuable analytics. Legacy systems risk creating silos of data, hindering collaboration between departments and obstructing opportunities for innovation. Combined, this can hamper a firm's ability to respond rapidly to market changes and evolving customer demands."*
>
> -Insurance Edge

This situation means that without innovation, insurance organisations are left behind when trying to compete for new business without the use of AI and other data-driven autonomous solutions.

The Need for Data-Driven Tools

The need for in-depth data analytics is helping to empower data-driven decision-making which, in turn, leads to streamlined operations and enhanced efficiency for insurers. By harnessing the power of data, insurance companies can significantly improve the accuracy and speed of their decision-making processes. Through advanced analytics and machine learning algorithms, insurers can gain valuable insights into customer behaviour, risk assessment, and market trends.

For example, insurers can use customer data to identify high-risk segments and tailor their underwriting processes accordingly. By analysing historical claims data, they can develop more accurate pricing models and avoid underpricing or overpricing risks. Additionally, autonomous agents can be employed to detect patterns of fraudulent claims, enabling insurers to take proactive measures to prevent losses.

Real-time data analysis allows for swift responses to changing market conditions and customer needs. For instance, insurers can use data to monitor economic indicators and adjust their pricing strategies accordingly.

The insurance industry has increasingly recognised the transformative potential of data-driven strategies. By leveraging vast amounts of data, insurers can gain deeper insights into customer behaviour, risk assessment, and market trends. This shift leads to improved decision-making, enhanced customer experiences, and increased profitability.

A study by McKinsey & Company found that top-performing

insurance companies in EMEA using advanced analytics have seen an average 10-25% increase in profitability. But still, most companies don't describe themselves as analytics driven companies. In fact, research from Franklin Manchester, Global Insurance Strategic Advisor at SAS, shows that carriers use as little as 12% of their data, while others claim an inaccessibility rate between 60 and 80%.

The good news is that alongside the companies that have fallen behind, many more have been making significant investments in predictive analytics. A survey from EY finds

> 74% of firms identifying it as a key area for underwriting and claims functions. At the same time, commercial P&C firms are leading the charge at 78%. This shift reflects a significant response to insights from a 2024 survey, where more than 50% of insurers recognised predictive risk assessments as a future priority.

These statistics demonstrate the significant value that data-driven strategies can bring to the insurance industry. By harnessing the power of data, insurers can gain a competitive edge, improve their financial performance, and deliver better outcomes for their customers.

Key Areas of Transformation

1 Underwriting

Traditional underwriting heavily relies on historical data and manual assessment. When an insurer can determine the value of a set of assets across the underwriting chain, it is easier to set the correct premium based on client risk factors. A data-driven environment and real-time data collection equips underwriters with better control over processes. Without quantifiable data and the means to extract it, underwriting is more complex, less efficient, and not as accurate.

With predictive analytics, powered by data drawn from historical trends and the latest market information, insurers can forecast risks with greater precision. For example, telematics collected from cars can provide real-time information about driving behaviours, enabling insurers to tailor premiums to individual drivers. IoT devices in homes can provide advanced warnings of possible hazards like fire or water leaks, making for proactive risk management and prevention.

2 Claims Journey

The use of automated, data-driven processes powered by AI can speed up the claims journey and reduce the potential for errors and fraud. To meet the customer's desire for claims that are settled quickly and efficiently through a hassle-free experience, data-driven decision-making allows insurers to rapidly process an influx of data and extract the data needed to process claims. Advanced data models equip claims teams to make informed decisions, transform the workflow, and enabling the agentic use of critical information to settle claims quickly and efficiently.

3 Customer Engagement

Data analytics allow insurers to communicate with customers more effectively. Tailored communication strategies, powered by predictive analytics, powered in turn by data-driven insights, ensure that customers receive relevant information and offers at the right time and even in the right place. For instance, insurers can send individualised alerts and reminders about policy renewals, coverage options, and risk mitigation tips based on customer profiles. This approach improves customer engagement and fosters long-term relationships. Personalised AI agents provide customers with a summary of their policy and their claim, simplifying the claims and renewal process.

By using customer data such as browsing and purchase history, demographic information, and social media activity, businesses deliver relevant offers that are useful to the customer. To balance privacy concerns and regulations, insurance organisations must focus on data that is relevant to the customer's experience and act in an ethical and transparent way.

4 Risk Management

Advanced risk modelling leverages sophisticated analytical techniques to quantify and predict potential risks. By analysing vast datasets, insurers can identify patterns, correlations, and underlying trends that traditional methods might overlook. Insurers can:

- Improve underwriting accuracy: Data-driven models assess the risk profiles of individual policy-holders more precisely, allowing insurers to offer more tailored pricing and coverage.
- Enhance risk selection: Insurers use predictive analytics to identify potential high-risk segments and adjust their under-writing criteria accordingly.
- Optimise pricing: By analysing historical claims data and market trends, insurers develop more accurate pricing models, preventing underpricing or overpricing risks.

Autonomous mitigation strategies, driven by data, focus on proactively addressing potential risks to minimise losses. This shift involves predictive maintenance to identify potential equipment failures before they occur, preventing costly claims. Data-driven tools also help insurers identify emerging risks, such as cyber threats or climate change, allowing them to develop strategies to address these challenges.

Advanced analytics facilitates real-time data analysis of IoT devices for individual and continuous premium design in usage-based insurance products and when applied to situational and real-time data, AI techniques generate contextual intelligence to be used for real-time risk assessment.

Technological Enablers

1 Autonomous AI

Artificial intelligence is revolutionising the insurance industry. Supported by historical data and real-time market intelligence, it optimises and automates risk assessment processes and analyses complex data sets faster and more accurately than any human. AI-driven agents evaluate risk factors to provide underwriters with precise risk scores for better pricing and mitigation. The effectiveness of AI is tied to the quality of the data it processes. Insurance companies must prioritise quality data from credible data sources to prevent biases and inaccuracies in AI-driven decisions. By ensuring a strong foundation of customer data, companies pave the way for reliable and unbiased AI outcomes.

The technology is changing the way the insurance industry operates. Specific use cases across the value chain in the insurance industry include support for administrative tasks in P&C. Using AI, insurers or their customers obtain a copy of a policy or find content on a webpage, automated chat capability, handling property First Notice of Loss (FNOL) claims and claims intake, and requesting photos and video, reducing the time to inspect.

Complex claims, like auto claims, catastrophe claims, and specialty claims, are processed in a fraction of the time using text analysis. And increased connectivity through Model Context Protocols (MCPs) coordinates different systems to capture, analyse, document, and store critical claims data.

2 Autonomous Analytics

Traditional fraud detection systems rely on rule-based approaches, historical data, and predefined thresholds to identify fraud. While these methods are valuable, they have limitations. Insurtech providers detect fraud through analysing data from various sources including social media, public records and insurance claims. AI models trained for anomaly detection through synthetic data, adapt to new fraudulent patterns, augment data using synthetic data of fraud transactions, learn unsupervised patterns, and analyse transaction behaviours. By reducing fraud, insurance companies reduce their losses and improve their profitability.

Predictive analytics are used to identify fraudulent claims and provide valuable insights into customer behaviour, risk assessment, optimise pricing and react quickly to market trends. Predictive analytics can identify which customers are at risk of lapsing or switching to a competitor. By analysing big data, insurers can engage with at-risk customers using personalised services or offers. Big data expands the pool of information for insurers which can help set premiums that reflect actual risk profiles.

Business intelligence (BI) that uses data to analyse and visualise for better decision making, helps insurers track KPIs, monitor operational performance and uncover trends that impact profitability. BI can also help segment customers into more granular groups to create tailored products and marketing strategies for specific segments. To streamline operations, BI and big data can be used to identify inefficiencies across the insurance value chain including underwriting and claims processing. STP can be increased by analysing workflow data to identify bottlenecks and thus accelerate time-to-market for new products.

3 Cloud Computing

Cloud computing is the lifeblood of the insights and functionality we have been describing. By bringing everything into the same workflow, data is centralised, and you are able to unlock actionable insights. Actionable insights drive multiple outcomes for insurers and when real-time data is collected on the cloud, data silos are broken down and data is centralised. Everyone in the organisation can access the same up-to-date information, improving collaboration and decision making. Centralised, cloud-based data is also essential to train the AI that will transform your business. Without it, you are only transforming portions of your business, instead of the whole.

4 AI Decisioning

In an era where data-driven decision-making is altering the insurance landscape, our autonomous AI has emerged as a vital technological tool for insurance businesses. This advanced system leverages our 30+ years of industry ontology and to automate and enhance decision-making across your entire business, ensuring greater speed, accuracy, and consistency.

Autonomous AI also play a crucial role in transforming vast amounts of structured and unstructured data into actionable insights. By empowering businesses with the capability to define their objectives, our AI platform gives you insight to action and is the bridge between data and analytics and business value and impact. By integrating real-time data sources, insurers create fastest-path customer journeys and launch products faster with improved efficiency.

When combined with other key technological tools, such as AI, agentic AI, big data platforms, and robotic process automation (RPA), autonomous decisioning software becomes a powerful enabler of data-driven operations aligned to business strategy. It facilitates seamless data flow across insurance ecosystems, allowing insurers to:

- Automate claims: By automating adjudication decisions, you can increase first-day settlements for claims FNOL and give your customers a superior customer experience
- Automate underwriting: Increase STP for new business and renewals by reducing the number of policies sent to manual underwriting and rationalising rules for greater consistency
- Improve business responsiveness: Respond quickly to changes in market conditions, regulatory updates and even weather-related events by managing business logic independently
- Transform PAS: Decouple your business rules from your policy admin system to achieve greater flexibility, transparency and performance

In underwriting, decisioning software enables instant risk assessment by analysing thousands of data points, leading to faster policy issuance and higher customer satisfaction. In claims processing, automated decisioning can detect fraudulent activities with high precision, reducing loss ratios. Additionally, it empowers insurers to offer dynamic pricing models, adjusting premiums based on real-time risk assessments. Importantly, an AI platform combines real-time analytics with human-in-the-loop control and explainable, auditable decisions.

Challenges and Solutions in Adopting Data Driven Strategies

Successful data-driven strategy adoption requires a holistic approach that balances technological innovation, regulatory compliance, talent development, and customer-centric thinking. Insurers must view data not just as a technological challenge but as a strategic opportunity for transformation. Below are some of the challenges faced by insurers in adopting a data-driven strategy and suggested solutions.



Data Quality and Integration

Successful data-driven strategy adoption requires a holistic approach that balances technological innovation, regulatory compliance, talent development, and customer-centric thinking. Insurers must view data not just as a technological challenge but as a strategic opportunity for transformation. Below are some of the challenges faced by insurers in adopting a data-driven strategy and suggested solutions.



Technological Infrastructure

Insurers should invest in cloud-based platforms to support scalable, flexible operations. They should utilise advanced analytics and machine learning tools to extract deeper insights from their data. Adopting scalable, flexible data management systems allows infrastructure to grow alongside business needs, while leveraging APIs enables seamless data integration across platforms.



Skills Gap and Organisational Change

Insurers should recruit data science professionals to build internal expertise. They should also develop cross-functional teams that bridge technical and business perspectives and establish data-driven performance metrics to track progress. Finally, promoting a culture of continuous learning and innovation ensures the organisation can adapt as data practices evolve.



Data Quality and Integration

Insurers should implement master data management (MDM) solutions to maintain a single source of truth across systems. They should also create standardised data collection and integration protocols, so information flows consistently across the organisation. Establishing data quality assessment and improvement processes further ensures that data remains accurate and reliable over time.



Regulatory Compliance and Data Privacy

Insurers should develop transparent data usage policies that build trust with customers and regulators alike. Implementing strong cybersecurity measures protects sensitive information from breaches, while ensuring GDPR and regional compliance keeps operations aligned with legal requirements. Creating ethical AI guidelines and establishing clear data anonymisation processes further safeguard responsible data use.

Case Study

How a Global Insurer Processed More than 50 Billion Records within 40 Hours

A top insurance company was looking to modernise their data infrastructure and seeking an insurance platform that delivered five essential attributes: future-proof, AI-based, open, modular, and integrated. The insurer's business teams were keenly aware that to accelerate technology adoption, reduce costs and stay ahead in a competitive market, they needed an industry-leading solution that innovates with intelligence. Their immediate goal was to migrate their current data platform to Amazon Web Services (AWS) and provide an enterprise-wide, consolidated view of data. By structuring and consolidating data, they wanted to improve performance, productivity, security, and user experiences, and drive tangible business benefits.

The insurer selected Sapiens for their data platform, including the implementation of Databricks with Sapiens' proprietary data warehouse and data mart to structure and consolidate data across the tech landscape. Sapiens also delivered its proprietary reports and dashboards to provide insight across various functions including sales and distribution, claims, policy, and quotes.

A solution, like Sapiens and its enhanced data processing capacity, enables the insurer to:



Process, transform, and load more than 50 billion records within 40 hours



Seamlessly process complex transformations



Perform a daily incremental load of more than 70 million records



Enable faster insights to deliver greater business value

Sapiens' integrated, out-of-the-box solution stands out for its ability to produce actionable insights to maximise the value of data for smarter decision-making.

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Embracing the Autonomous AI Revolution

Data-driven decision-making represents a transformative approach for the insurance industry, offering unprecedented opportunities to enhance operational efficiency, risk assessment, and customer experience. By leveraging advanced analytics, artificial intelligence, and comprehensive data strategies, you can move beyond traditional models to proactive, predictive, and personalised insurance solutions. The benefits extend far beyond operational improvements, enabling more accurate pricing, faster claims processing, reduced fraud, and the creation of tailored insurance products that meet customer needs with remarkable precision.

The future of insurance is tied to data and technological innovation. A once-in-a-generation is taking place, where insurance will evolve from a transactional service to an intelligent, predictive, and deeply personalised ecosystem. Autonomous AI enables you to anticipate risks, prevent losses, and provide services that extend far beyond traditional coverage. The insurance companies that will own the future are the ones who invest in it today. They are the ones who view data not as a tool, but as a strategic asset that drives innovation, customer understanding, and revenue.

Contact Us

About Sapiens

Sapiens International Corporation N.V. is a global leader of AI-centric, SaaS-based insurance software, delivering hyper-relevant experiences that are efficient, compliant, and innovative. With agile intelligence, Sapiens' solutions turn real-time data and human insight into precise action at every moment, across every risk. The Sapiens platform includes agentic workflows accelerating every capability across policy, underwriting, claims, reinsurance, decisioning, and finance and compliance. With more than 600 insurers in over 30 countries running on Sapiens, our deep industry expertise is the foundation of our long-term relationships, from initial implementation through to modernization and market transformation. Sapiens is headquartered in London, serving customers in property and casualty, life, reinsurance, specialty, and workers' compensation from offices across North America, Europe, the Middle East, and Asia Pacific.

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