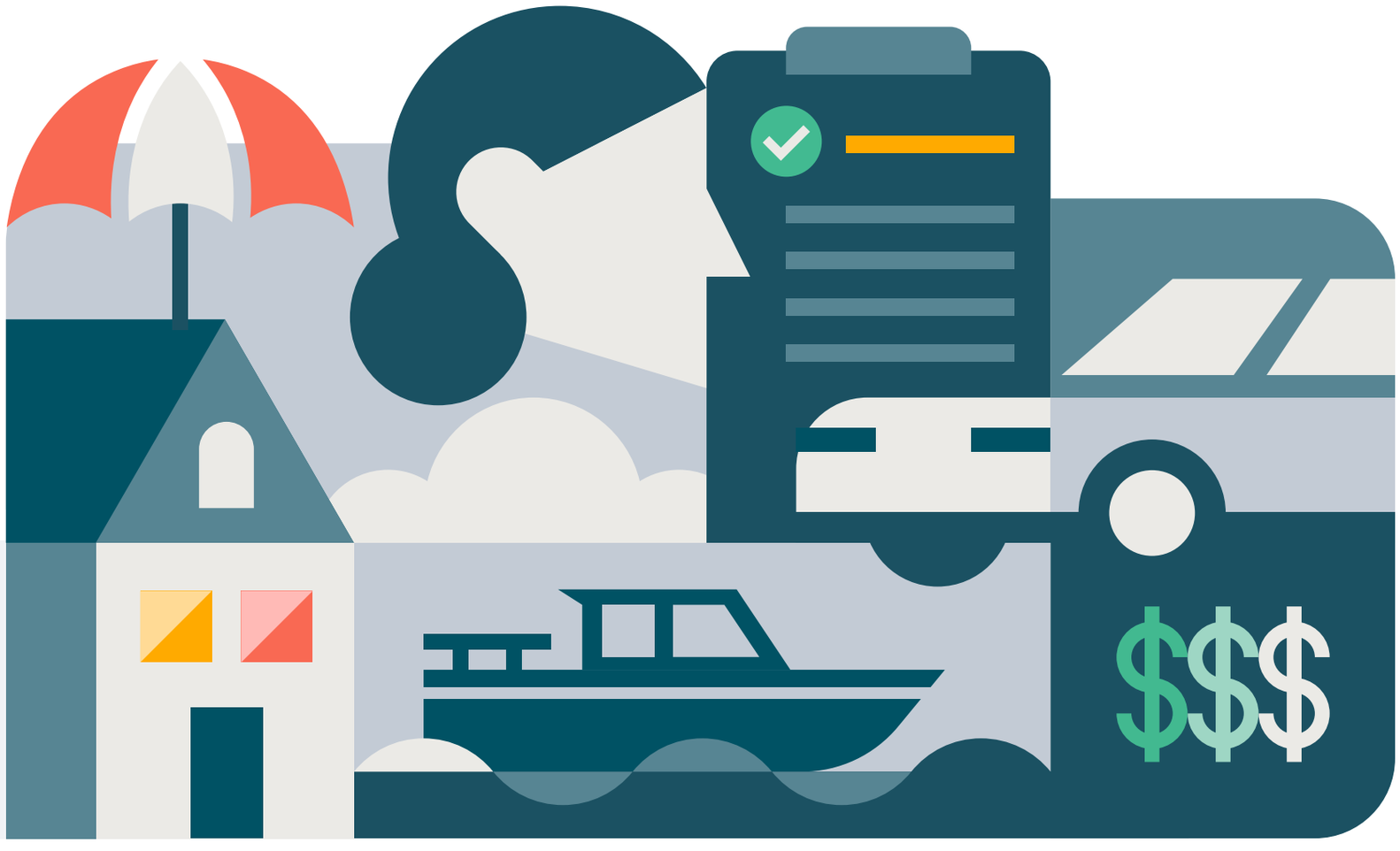
eBook

Accelerate Digital Transformation in Insurance With Data, Analytics and AI

Real-world use cases with Databricks Lakehouse



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Introduction

With the rapid advancement of technology, rising consumer expectations, and strong competition between insuretechs and incumbents resulting from the dissolution of industry boundaries, it is clear that insurers must continue to accelerate their data transformation journey. Today, new insights are derived as quickly as data can move in the insurance industry. This speed has increased as insurers collect vast amounts of customer data from new sources, such as IoT sensors, smartwatches that provide insight into consumers' health data, and online behavior that includes clickstream data, spending habits, and frequented websites. As a result, the data strategy has become even more complex.

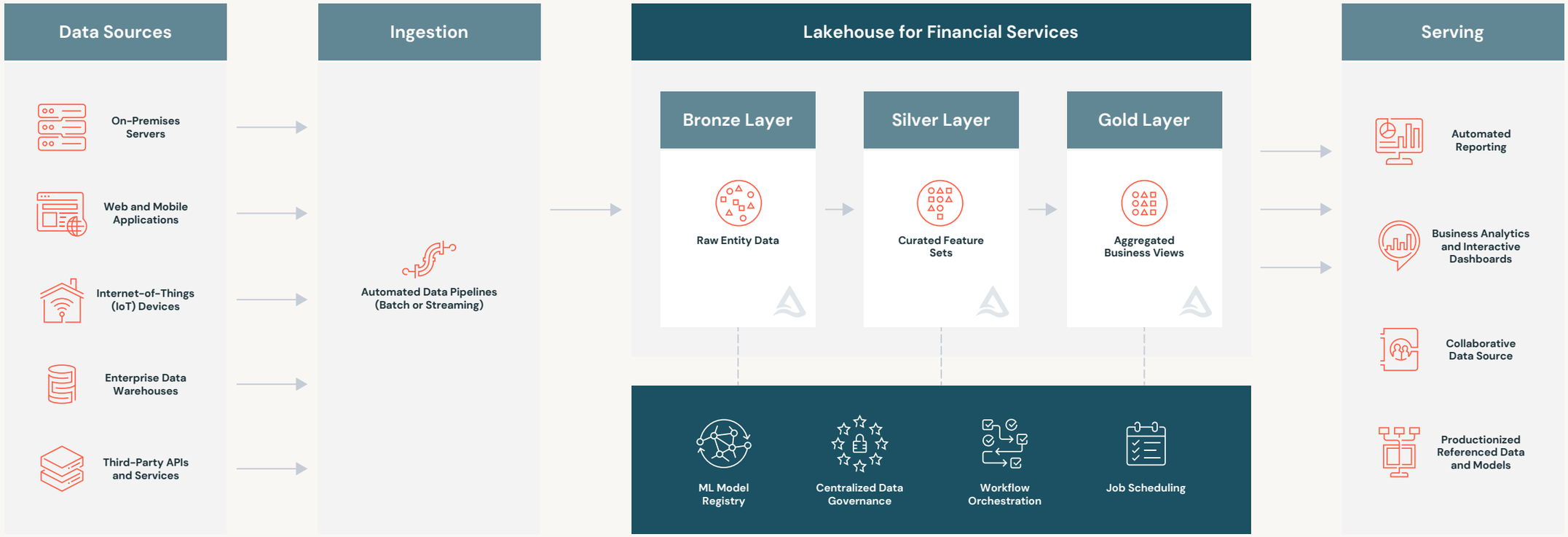
Consumers want stronger reassurance for what they value most: financial security and greater peace of mind. Insurers have always prided themselves on delivering such protection and security. However, customer needs have changed, and insurers that move most swiftly to satisfy them will be in the best position to navigate challenging times. The bottom line is that insurers must adapt to these changes and meet the evolving needs of their customers to remain competitive.

Data-driven insurers will seek opportunities to improve the customer experience, develop more sophisticated pricing models, and increase their operational resilience. More than ever, the total cost of ownership (TCO) of digital investments and enterprise data strategy has become a top priority for boards and senior executives in the insurance industry. So, what does this mean from a data and analytics perspective? It all comes down to having one reliable source of truth for data, which is derived from batch and streaming data, structured and unstructured data, from multiple clouds and jurisdictions.

In a regulated and risk-averse industry where data sharing was once seen as optional, it has now become fundamental. To compete in the digital economy, insurers need an open and secure approach to data sharing. Databricks Lakehouse for Insurance plays a critical role in helping insurance providers accelerate innovation and transform their businesses, resulting in significant operational efficiencies and improved customer experiences at a fraction of the cost of data warehouses. This eBook provides an in-depth exploration of key challenges and common use cases in the insurance industry. Most importantly, you will gain insight into how Databricks Lakehouse can unlock the true value of your data through practical Solution Accelerators and a wide range of partners available to assist you on your journey.

> **The future of insurance will become increasingly data-driven, and analytics enabled."**
>
> **EY's** "Five principles for the future of protection"

The Lakehouse reference architecture below illustrates a sample framework upon which insurers can build. Moving from left to right in the diagram, the first layer represents various data sources such as on-premises systems, web and mobile applications, IoT sensors, enterprise data warehouses, and third-party APIs. Data is then ingested through automated data pipelines, and processed within the Lakehouse platform across three layers (Bronze, Silver and Gold). These layers are responsible for data preparation, including ML model registry, centralized governance, workflow orchestration, and job scheduling. They ensure a compliant and secure infrastructure that sits atop the cloud layer (or multiple clouds), eliminating the need for data duplication. Finally, the transformed data is delivered as actionable insights and supports use cases such as automated reporting, business analytics, customer 360, and claims analytics. These use cases not only mitigate risk but also drive revenue.



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Three Trends Driving Transformation in Insurance

Over the next decade, technology-enabled insurance companies will bear little resemblance to today's organizations. The following three trends are driving this transformation in the insurance industry:

The rapid emergence of large language models and generative AI

In recent years, there has been a significant breakthrough in the field of artificial intelligence with the emergence of large language models (LLMs) and generative AI. These models, such as GPT-4 and its predecessors, Databricks Dolly and others are built using deep learning techniques and massive amounts of training data, enabling them to generate human-like text and perform a wide range of natural language processing tasks. LLMs and generative AI can help insurance companies automate repetitive tasks such as underwriting, claims processing, and customer service, improving efficiency and reducing costs. They can also help insurers to better understand customer needs and preferences, leading to more personalized products and services. However, as with any disruptive technology, the adoption of LLMs and generative AI will require careful consideration of ethical and regulatory issues, such as data privacy and algorithmic bias.

Transformed ecosystems and open insurance

According to EY, leading companies leverage insurtechs in their ecosystems to achieve high margins in commoditized products. Open insurance, which involves sharing and managing insurance-related data through APIs, is more than an item in the regulatory agenda. It can give consumers access to better products and accurate pricing, as well as enable them to execute transactions more easily. In its annual Chief Data Officer Survey, Gartner found that organizations that promote external data sharing have three times the measurable economic benefit across a variety of performance metrics compared to their peers.

Revised target operating model with a focus on talent

Demographic shifts and perennial cost pressures make it critical for insurers to attract and retain talent. Consequently, it's important for insurers to equip their workforces with the right tools and technologies to help them identify business processes that can be optimized to differentiate themselves from their competitors, with an emphasis on moments that matter in the customer journey, according to EY. Recent research from Deloitte highlights the advantages of upskilling and building a future-ready workforce. One of the benefits of AI adoption in the workforce is that it enables organizations to automate a wide range of business processes, boosting speed and efficiency. But what's even more important is that it enables employees to focus on higher-value work, according to Deloitte.

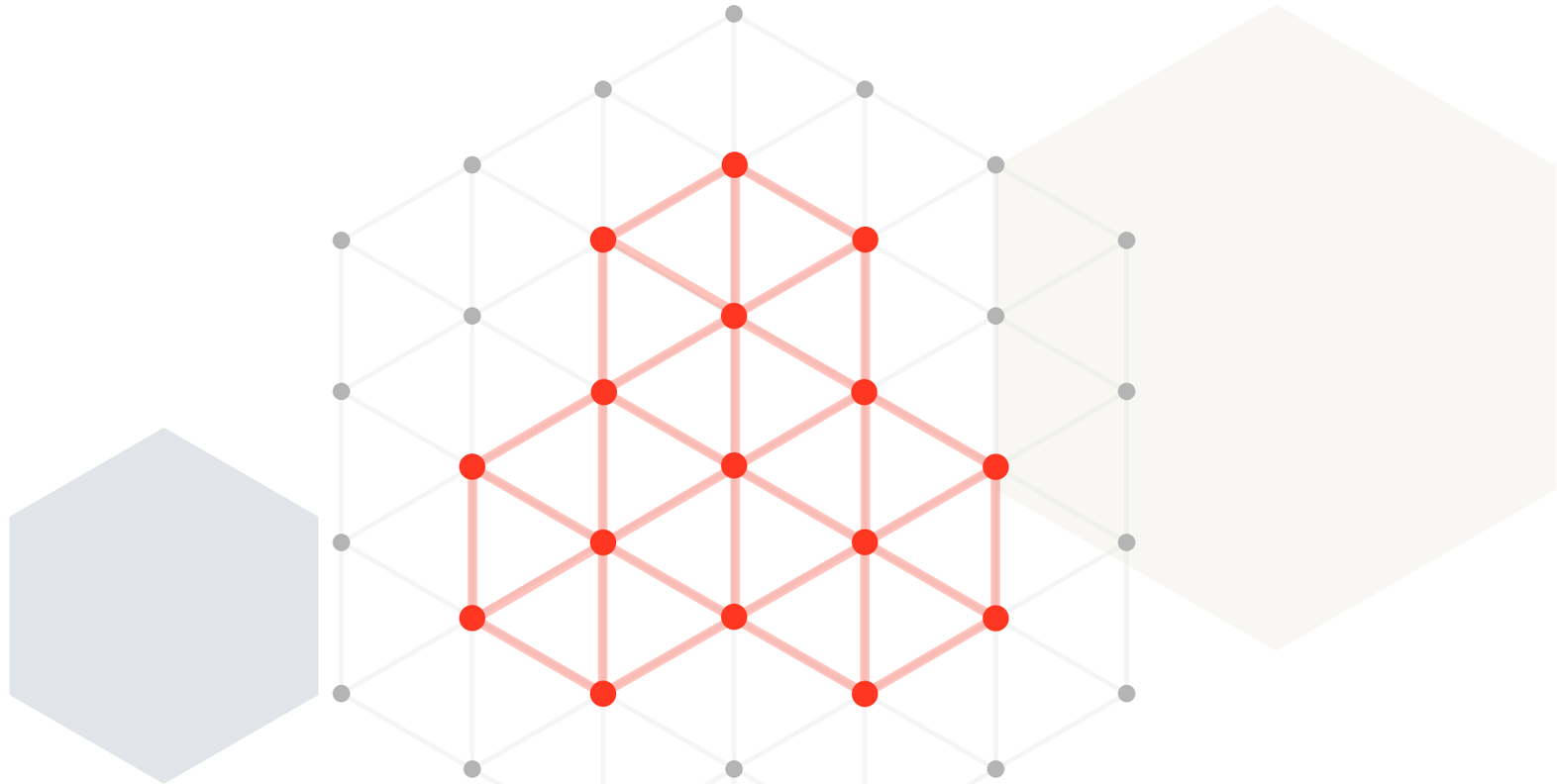
The Need for Modern Data Infrastructure

Insurers turning to cloud and data analytics

The insurance industry has undergone significant changes over the years, and one of the areas that has evolved the most is data management. With the growing need for advanced analytics and digital transformation, many insurance companies are turning to cloud technology and modern data infrastructures to enhance their data management strategies. The benefits of adopting cloud technology are numerous, particularly the ability to efficiently store and quickly access vast amounts of data, which is crucial in a heavily regulated and data-driven industry like insurance. Additionally, the flexibility of the cloud enables insurers to scale costs, adapt to changing work environments, and meet evolving customer and business requirements.

Furthermore, insurance providers can leverage the cloud to analyze customer data at scale, gaining insights into behaviors that drive hyper-personalization, dynamic pricing and underwriting, and form the foundation for claims automation. By implementing advanced analytics, insurers can innovate more easily, scale their businesses, and bring new products to market more quickly.

To remain competitive, insurance companies must increase their investment in cloud technology and data analytics, as this will accelerate insightful decision-making across various functions such as claims management, underwriting, policy administration, and customer satisfaction. Overall, the adoption of cloud technology and data analytics is imperative for insurance providers to enhance operational efficiency, improve business processes, and stay relevant in today's fast-paced business landscape.



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Let's take a closer look look at a few examples:

Auto insurers need to integrate new data sources, such as weather and traffic, to build solutions capable of real-time processing. This enables them to alert emergency services promptly and gain a better understanding of drivers' driving patterns. It also enables the development of sophisticated machine learning-based risk assessment, underwriting and claims models.

Commercial insurance, including property, general liability, cyber insurance and business income insurance, utilizes ML-based automation of actuarial models. This automation facilitates underwriting, claims forecasting and dynamic pricing for their customers. Another notable trend in recent years is the use of IoT-based alerting for sensitive or valuable commodities. For example, in the case of vaccines, IoT sensors can monitor the temperature in real time and send alerts to the appropriate team or person if the temperature exceeds acceptable thresholds. This is crucial as vaccines must be stored within specific temperature ranges.

In **life insurance**, complex ML models can be employed to create a profile of the customer's lifestyle and, importantly, detect any changes to it. This deeper understanding and 360-degree view of the customer enable more customized underwriting and pricing based on the policyholder's current health, lifestyle and eating habits.

		High-priority business use caes			
Type of Data Source	Typical Vendors	Claims Automation and Transformation	Dynamic Pricing and Underwriting	Anomoly Detection and Fraudulent Claims	Customer 360 and Hyper-Personalization
Policy data	Guidewire, Duck Creek, Majesco, FINEOS, EIS, Unqork	✓			✓
Claims data	Guidewire, Duck Creek, Majesco, FINEOS, EIS, Unqork, TransUnion	✓	✓	✓	✓
Real-time ingestions	Cambridge Mobile Telematics, Zendrive, Custom	✓	✓	✓	✓
Alternative / Supplemental data	Experian, Equifax, Verisk, IBM Weather	✓	✓	✓	✓
Marketing data	Salesforce, HubSpot, Google Analytics		✓	✓	✓

Figure 1. Innovating with data and analytics — use cases made possible and key data sources from popular insurance vendors

Common Challenges Insurers Face Using Legacy Technology

Modernization is not an easy process for insurers, and while transforming IT ecosystems is necessary to improve business outcomes, ensuring business continuity is absolutely critical. However, the volume of data they collect, along with changes in user behavior and legacy systems that can't handle this amount of data, are forcing insurance providers to accelerate their modernization journeys.

Insurance providers face several challenges when using legacy technology, including:

Legacy on-premises systems: Legacy on-premises systems are not only expensive to maintain, but they also store large amounts of big data in silos across the business. This makes it difficult to access the data, hindering data analytics efforts and limiting executives' ability to make informed business decisions.

Ingesting large volumes of transactional data in real time: The inability to ingest data from transaction systems in real time is a major obstacle to obtaining critical insights. Transaction logs from operations such as policy administration, enrollment and claims constantly stream data. However, many insurance companies still rely on legacy data warehouses built around batch processing, which is not suitable for ingesting and integrating large data sets. As a result, insurers often opt to ingest data nightly, leading to delays in receiving accurate data for decision-making.

Performing fine-grained analysis at scale within tight time frames: Legacy technology forces insurers to make a trade-off when analyzing data for user intent. They can choose between detailed and accurate predictions or fast predictions. Running detailed forecasts can improve accuracy, but it requires performing millions of model calculations within narrow service windows, which exceeds the capability of legacy data platforms. Consequently, insurance companies have to accept less accurate predictions.

Powering real-time decisions on the front line: Serving real-time data to thousands of workers is a complex task. While data warehouses can serve reports to large groups of users, they are limited to providing stale data. As a result, most insurers only provide daily or weekly updates to reports and rely on employees' judgment for more frequent decisions.

Delivering a hyper-personalized omnichannel experience: Today's insurers aim to deliver personalized experiences across every channel, both digital and offline. While insurance providers have access to vast amounts of customer data, off-the-shelf tools for personalization and customer segmentation struggle to handle such high volumes, leading to inaccurate analytics. To succeed in the insurance industry, companies must deliver personalized experiences at scale.

Databricks Lakehouse for Insurance addresses the key challenges faced across the insurance value chain. The lakehouse enables the integration of various data types, including images and structured data, in real time. It offers robust management and governance capabilities, and rapidly transforms data into actionable insights through real-time reporting and predictive analytics. This platform-as-a-service solution delivers exceptional speed and industry-leading total cost of ownership, providing insurers with faster insights to enhance the customer experience and gain a competitive edge.

Sales & Lead Management	Product Development & Feature Selection	Application Review & Submission	Underwriting and Pricing	Rating Offer & Endorsements	Policy Issue, Service & Administration	Claims
Hyper-personalization/ life events	Coverage/ features/riders	Review policy documents (submission)	UW rules guidelines & technical pricing	Evaluate rate options, pricing and endorsements	Omnichannel	Fraud, frequency, severity and reserves

We continuously develop solution accelerators and enablers to accelerate the time to market.

- Dynamic segmentation
- Personas
- Hyper-personalization
- Intelligent automation

- Product architecture and manufacturing
- Configurable products
- Competitor rates

- Reflexive questionnaire
- LLM assistance for document summarization
- NLP for unstructured data

- Evaluation of risk within appetite
- Validation of UW requirements
- Straight-through processing optimization
- Risk assessment via actuarial pricing
- Triaging of risk to underwriter SME for policy/ exposure changes

- Predict loss cost (frequency and severity)
- Computer vision on images to identify loss
- Auto-adjudication and triaging of claims to claim adjuster
- Tailor communication by segment (e.g., email, text, mail, or omnichannel)
- Identify Fraud, Waste and Abuse, route to ICU

Figure 2. Evaluating data maturity across the insurance value chain and lines of business (LOBs)

Why Lakehouse for Insurance

Databricks Lakehouse for Insurance combines simplicity, flexibility and reusability, enabling insurers to meet the demands of the market with speed and agility. It offers best-in-industry performance and serves as a modern data architecture that provides differentiated capabilities for insurers to thrive in a competitive industry.

- Insurance companies can store any type of data using Databricks Lakehouse for Insurance, leveraging the low-cost object storage supported by cloud providers. This helps break down data silos that hinder efforts to aggregate data for advanced analytics, such as claim triaging and fraud identification, regulatory reporting, or compute-intensive risk workloads. Another critical feature is the time-travel capabilities of the lakehouse architecture, allowing insurers to access any historical version of their data.
- Supporting streaming use cases, such as monitoring transaction data, is easier with the lakehouse. It utilizes Apache Spark™ as the data processing engine and Delta Lake as the storage layer. Spark enables seamless switching between batch and streaming workloads with just a single line of code. Delta Lake's native support for ACID transactions ensures reliable and high-performing streaming workloads.
- For both machine learning and non-machine learning insurance models, a comprehensive governance framework is provided. Data, code, libraries and models are linked and independently version controlled using technologies like Delta Lake and MLflow. Delta Lake ensures stability by allowing insurance companies to declare their expectations for data quality upfront. MLflow enables training models in any language and deploying them anywhere, minimizing the need for complex handoffs between data science practices, independent validation units and operational teams.

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Level-up value with Databricks Lakehouse for insurance

Building your data lakehouse with the Databricks Lakehouse Platform empowers your organization with the speed, agility and flexibility needed to address critical insurance use cases that have a significant impact on your customers and your business. Additionally, it helps lower the total cost of ownership (TCO).

With a modern and unified data architecture, the Databricks platform enables the implementation of your data, analytics and AI strategy at scale on a unified and modern cloud data architecture. The key benefits include:

1. Cost and complexity reduction

The Databricks Lakehouse provides an open, simple and unified cloud data management architecture that streamlines operational inefficiencies, reduces IT infrastructure costs, and enhances productivity across teams.

2. Enhanced risk management and control

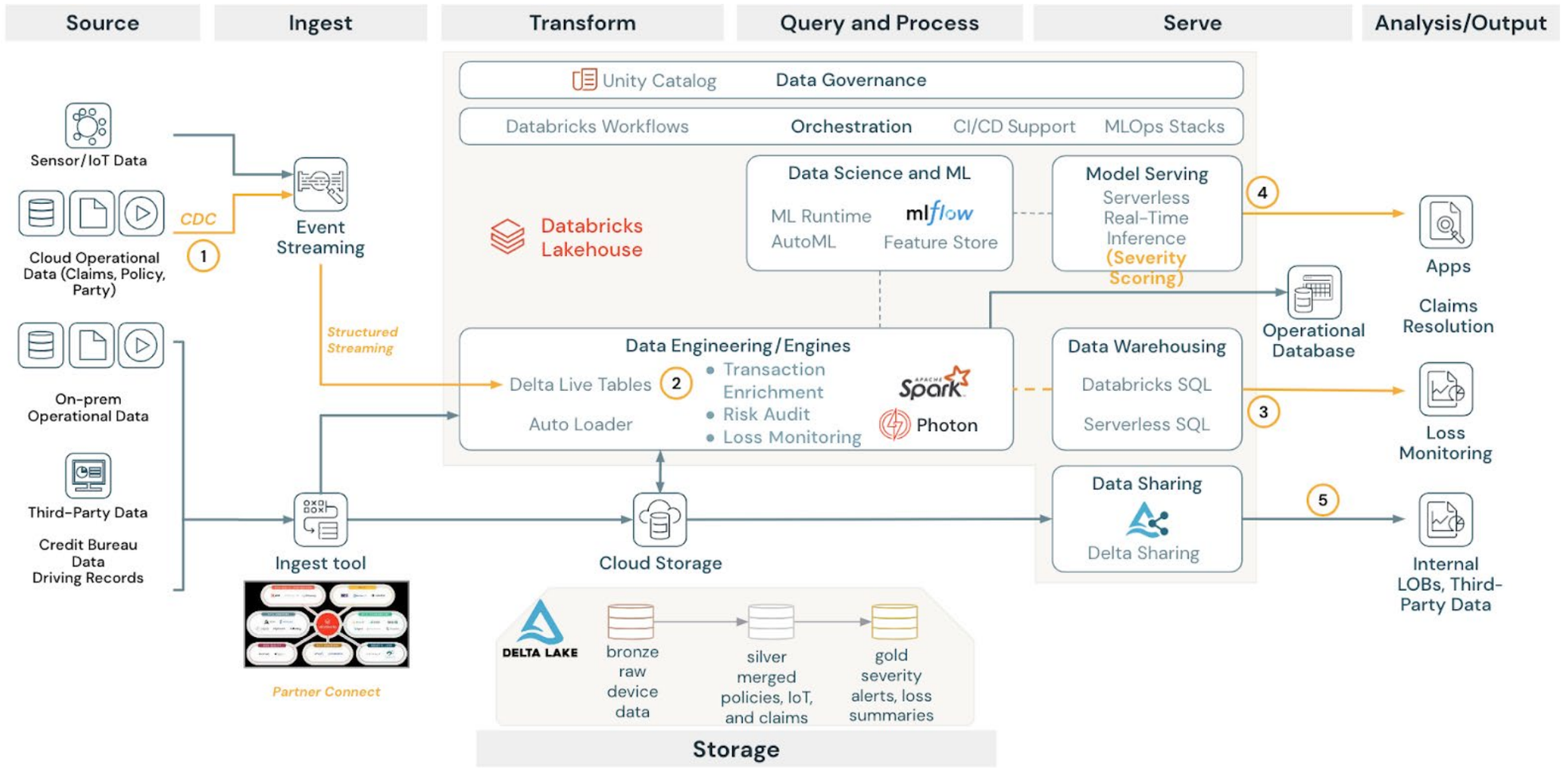
By unlocking the value of enterprise data, the platform helps reduce corporate governance and security risks. It facilitates data-driven decision-making through governed discovery, access and data sharing.

3. Accelerated innovation

The platform enables the acceleration of digital transformation, modernization and cloud migration initiatives, fostering new growth opportunities and driving innovation for improved customer and workforce experiences.

To help you get started, this guidebook includes the most commonly observed use cases across the insurance industry.

Reference Architecture for Smart Claims



1. The Lakehouse ingests various types of data, either in bulk or incrementally through change data capture (CDC). These include structured and unstructured data sets like images, text, and video, such as IoT sensor data, operational data like claims and policies, and on-prem or third-party data such as from credit bureaus, weather, and driving records. Partner Connect offers a range of ingest tools from different vendors that you can directly use from the Databricks portal.

2. Delta Live Tables (DLT) is the preferred ETL path to transform the data based on business requirements. All the data resides in cloud storage, where Delta refines it into Bronze, Silver and Gold zones of a medallion pipeline blueprint. Databricks Workflows provide orchestration of the various dependent tasks, with advanced capabilities like retry, repair and job status notifications.

3. Databricks SQL, with Photon and serverless options, caters to BI consumption use cases to refresh a dashboard monitoring key metrics and KPIs, with query history and alerts on critical events.

4. Databricks ML Runtime, MLFlow, along with Feature Store, Auto ML, and real-time Model Serving enable ML use cases to provide predictive insights.

5. Delta Sharing provides a secure and governed way of sharing data internally and externally without copying it, using Unity Catalog.

Secure data sharing with Delta Lake

At the heart of Databricks Lakehouse for Insurance is a technology that allows insurers to overcome the trade-offs between speed and accuracy. Technologies like Delta Lake enable the lakehouse, which combines the strengths of data warehouses and data lakes, to directly address these challenges. With Delta Lake, insurance providers can unify all their data — structured and unstructured, batch and real-time — in one centrally managed and governed location.

Once the data is in the lakehouse, various stakeholders such as e-commerce systems, reporting users, analysts, data scientists and data engineers can leverage this information. They can use it to develop models for applications, power real-time reporting, perform advanced analytics, and create large-scale forecasting models, among other use cases.

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Lakehouse Platform

KEY USE CASE

Claims automation and transformation

Overview

Insurers are entering a new era of claims transformation, supported by evolving technological advancements and increasing data availability. Leveraging the Databricks Lakehouse, organizations can deal with the massive amount of structured and unstructured data coming in from different sources, in different formats, and time frames. Every touchpoint in the claims journey — beginning even before an incident occurs — can be supported by a combination of technology and human intervention that seamlessly expedites the process.

Business problem

Missing data, or data that is "not in good order" and needs to be corrected before processing, leads to claims leakage and inefficient processes in triaging claims to the right resource.

Solution/value with Databricks

Enable triaging of claims and resources by leveraging big data processing and integrated ML and AI capabilities, including MLflow model lifecycle management.

Business outcomes and benefits

- Decrease in annual claims payout
- Increase in claim fraud detection/prevention
- Improve efficiencies by 15%

> **"Applying AI as broadly, as aggressively and as enthusiastically as possible. No part of our business should be untouched by it."**
>
> — Masashi Namatame, Group Chief Digital Officer, Managing Executive Officer, Tokio Marine

CUSTOMER CASE STUDY

Tokio Marine: Striving to become AI-driven

Insurers of all types now routinely use AI models to drive underwriting, streamline claims processing and accelerate claims adjudication, protect against insurance fraud, and improve risk forecasting, for example. Tokio Marine — Japan's oldest insurance company, which has done business since 1879 — has been applying advanced uses of AI, particularly in its auto insurance business, says Masashi Namatame, Group Chief Digital Officer and Managing Executive Officer at Tokio Marine: "To assess collision damages, the company uses an AI-based computer vision solution to analyze photos from accident scenes." Comparing these with what he describes as "thousands or even millions" of photos of past analogous incidents, the model produces liability assessments of the parties involved and projects anticipated repair costs. AI has also provided the company with tangible benefits in online sales — especially in personalized product recommendations and contract writing, according to Namatame. Read the case study in the MIT CIO vision 2025 report.

KEY USE CASE

Dynamic pricing and underwriting

Overview

In modernized insurance platforms, there is a growing trend toward personalized approaches, where insurance carriers utilize metrics from trip summaries to inform pricing strategies for individuals based on their behavior. This involves leveraging unstructured and streaming data, including IoT telematics driver data, weather information, geolocation, traffic patterns and crash history. The Lakehouse platform is well suited for these new use cases as it offers native support for streaming, making it easy for insurance carriers to incrementally ingest data.

Business problem

Actuaries are spending valuable time on low-value activities, which hampers agility and advanced analytical capabilities in pricing and underwriting, hindering improvements in risk and pricing modeling.

Solution/value with Databricks

- Unified cloud-native platform
- Scalability for ingesting IoT data from millions of trips, expanding the customer base
- Reduced total cost of ownership compared to legacy Hadoop systems
- Usage-based pricing, leading to lower premiums for customers and reduced risk for insurance carriers, thereby lowering loss ratios
- Enables the creation of a digitally enabled, end-to-end underwriting experience

Business outcomes and benefits

- Improve competitive position
- Decrease combined ratio
- 15% improvement in efficiencies

CUSTOMER CASE STUDY

American financial services mutual organization

This organization aimed to leverage the vast amounts of structured and unstructured data it collected to enhance its underwriting and decision-making processes, enabling greater efficiency and effectiveness. However, the company's legacy infrastructure struggled to scale with the increasing data volume and processing demands, limiting its ability to analyze the data and derive actionable insights.

With Databricks, the insurer centralized everything on one unified Lakehouse platform, supporting all operational and analytical use cases. This allowed them to analyze broader sets of data for superior underwriting performance and create a digitally empowered, end-to-end underwriting experience.

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KEY USE CASE

Anomaly detection and fraudulent claims

Overview

Fraud continues to grow at a rapid rate, posing a threat to the revenue and growth of companies. For example, American consumers reported losing more than $5.8 billion to fraud in 2021, a 70% increase from $3.4 billion in 2020, according to the Federal Trade Commission. The insurance industry is undergoing transformational change to support new channels and services, offering transactional features and facilitating payments through digital channels to remain competitive. However, the speed and convenience of these capabilities benefit both consumers and fraudsters. Building a fraud framework requires more than just highly accurate machine learning models. It often involves a complex decision science process that combines a rules engine with a robust and scalable machine learning platform.

Business problem

Insurers need the ability to identify fraudulent activity and respond to new suspicious trends in near real-time.

Solution/value with Databricks

Modernized approaches in insurance require full digital transformation, including the adoption of usage-based pricing to reduce premiums. Insurance providers now consume data from the largest mobile telematics providers (e.g., CMT) to obtain granular sensor and trip summaries for users of online insurance applications. This data is crucial not only for pricing but also for underwriting scenarios to mitigate risks for carriers.

> **$1 of fraud costs companies 3.36x in chargeback, replacement and operational costs**
>
> Lexis Nexis

CUSTOMER CASE STUDY

One of the largest U.S. insurance companies and a leading small business insurer

The increasing availability of data and market competition challenge insurance providers to offer better pricing to their customers. This U.S.-based insurer, with hundreds of millions of insurance records to analyze for downstream ML, realized that their legacy batch analysis process was slow and inaccurate, providing limited insight for predicting the frequency and severity of claims. With Databricks, they were able to scale up the use of deep learning models, resulting in more accurate pricing predictions and increased revenue from claims. By leveraging Databricks Lakehouse, they harmonized data, analytics and AI at scale, enabling accurate pricing predictions and supporting various use cases from vehicle telematics to actuarial modeling.

KEY USE CASE

Customer 360 and hyper-personalization

Overview

Winning the hearts and minds of your customers starts with personalizing the user experience. The ability to offer complementary products to meet the needs of your customers lets you build deeper relationships with them and engender their loyalty. In addition, a better understanding of the finer details within accounts allows you to offer them more personalized products. To do this, you need 360-degree customer views, which requires you to locate and consolidate all your customers' contact data from every digital tool that you use and house it in one central location. With Databricks Lakehouse, insurers can "hyper-personalize," increase cross-sell/upsell opportunities, enhance customer 360 and bring new products to market faster.

Business problem

The inability to reconcile customer records across different lines of business limits real-time customer insights necessary for upselling and cross-selling. Siloed data makes it challenging to create accurate and comprehensive customer profiles, resulting in suboptimal recommendations for the next best action.

Solution/value with Databricks

Databricks provides the tools needed to process large volumes of data and determine the next best action at any point in the customer journey.

- Eliminates data silos by unifying all customer data, including basic information, transactional data, online behavior/purchase history, etc., to create complete customer profiles
- Integrated data security ensures that security measures are incorporated at every layer of the Databricks Lakehouse Platform
- Delta improves data quality, providing a single source of truth for real-time streams and ensuring reliable and high-quality data for data teams
- Integrated ML and AI capabilities utilize AI to create self-optimizing ML models that determine the next best step for each customer
- MLflow model lifecycle management helps manage the entire machine learning lifecycle reliably, securely and at scale

Business outcomes and benefits

- Use AI, ML, automation and real-time data to gain deeper customer insights and understand their needs
- Improve competitive positioning
- Enhance the customer experience

CUSTOMER CASE STUDY

160-year-old U.S. insurance company

This insurance provider underwent a significant digital transformation to provide a more personalized financial services experience to its 10,000 advisors and millions of customers across various touchpoints. Recognizing the importance of becoming data-driven, the company leveraged Databricks in its client 360 platform to aggregate transactional and behavioral data, along with core attributes, providing business users with next-best-action recommendations for seamless customer engagement.

Global Regulatory Impact in Insurance

Navigating global regulations with technical implementation

Digital innovation continues to reshape the insurance sector. The pace and scale of technological change are likely to increase due to factors such as artificial intelligence (AI), cloud computing, and the entry of new players like insurtechs, e-tailers, and manufacturers from outside the insurance industry.

To succeed and thrive in today's economic environment, insurers should prioritize upgrading their infrastructure and technology, rather than solely focusing on transforming operations. For example, migrating from on-premises systems to the cloud can bring significant benefits, according to global consultancy Deloitte.

As insurers upgrade their compliance processes to meet new global regulations, such as IFRS 17 and LDTI, the impact of regulatory updates becomes more complex for organizations operating across multiple jurisdictions. Instead of merely responding to regulatory and industry requirements, insurance companies should make data-focused investments that help them anticipate and meet the expectations of distributors and policyholders.

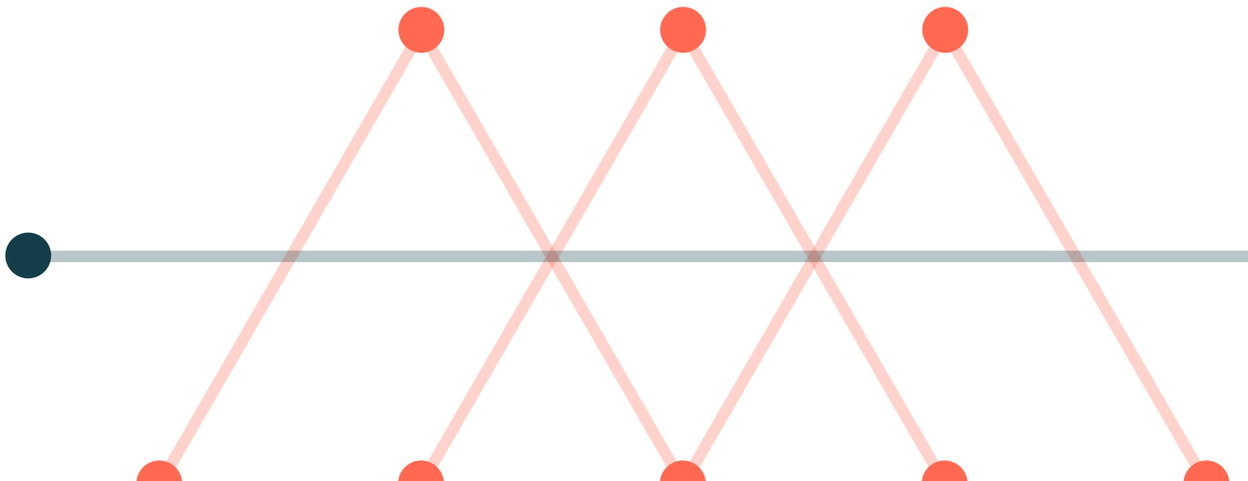
It is crucial for insurers to redirect their focus toward developing advanced data management and utilization capabilities that offer better insights and improved performance. These investments serve as not only a foundation for regulatory compliance but also a starting point for more comprehensive and proactive transformation initiatives.

IFRS-17

IFRS 17 is an International Finance Reporting Standard (IFRS) for insurance contracts. IFRS 17 aims to standardize insurance accounting by providing consistent principles for all facets of accounting for insurance contracts. IFRS 17 removes existing inconsistencies so analysts, investors and others can more easily compare companies, contracts and industries.

LDTI for long-duration contracts

The Financial Accounting Standards Board long-duration targeted improvements (LDTI) introduced changes to the U.S. GAAP accounting model to simplify and improve the financial reporting of long-duration contracts, including providing financial statement users with more timely and relevant information about those contracts.



INDUSTRY SOLUTIONS

Get Started With Accelerators, Brickbuilders and Enablers

Insurance Solution Accelerators and enablers are pre-built collateral to help customers rapidly develop and deploy technical capabilities to accelerate value.

Adoption challenges

Numerous challenges hinder organizations from developing and implementing the necessary technical solutions to enhance their operational effectiveness, increase revenue, and stay competitive. These challenges include:

- Lack of technical skills (data scientists/data engineers): Companies often struggle to find employees proficient in Python or Scala, or individuals who possess extensive experience in data science.
- Business problems require in-depth data science and industry knowledge: Businesses seek solutions tailored to address specific problems, rather than generic technical features.
- Companies seek actionable insights: Organizations prefer readily applicable patterns that can be quickly implemented, rather than custom data science solutions that come with potential costs and risks of implementation failure.

What are accelerators/enablers?

Solution Accelerators

Save hours on discovery, design, development and testing with Databricks Solution Accelerators. Our purpose-built guides, including fully functional notebooks and best practices, expedite results for your most common and high-impact use cases. With these accelerators, you can go from idea to proof of concept (PoC) in as little as two weeks.

Brickbuilders

Brickbuilder Solutions are data and AI solutions designed by leading consulting companies to address industry-specific business requirements. Built on the Databricks Lakehouse Platform and backed by the industry experience of these consultancies, businesses can have confidence in solutions tailored to their specific use cases. Brickbuilder Solutions can be implemented at any stage of the customer journey.

Solution Enablers

Solution enablers consist of targeted collections of notebooks and materials, such as webinars and blog posts, designed to support larger solutions. They aim to solve pain points or address specific layers of business capabilities, such as resolving data ingestion challenges.

Get Started With Industry Solutions

Claims transformation: automation and fraud prevention

Insurers are entering a new era of claims transformation, supported by evolving technological advancements and growing data availability. The end-to-end claims process, from extracting relevant information from documentation submitted when filing a claim to triaging and routing claims and the underwriting process, is ripe for digital transformation. By leveraging the Databricks Lakehouse, organizations can handle millions of data points coming in different formats and time frames, from various sources, at an unprecedented volume. Every touchpoint in the claims journey, starting even before an incident occurs, will be supported by a combination of technology and human intervention that seamlessly expedites the process. Personalizing the claims experience by anticipating needs, providing real-time status alerts, and reducing friction in the process increases customer loyalty and retention.

Claims processing is the process whereby an insurer receives, verifies and processes a claim report submitted by a policyholder. It accounts for 70% of a property insurer's expenses and is a criticial component of customer satisfaction with their carrier."

Deloitte, "Preserving the human touch in insurance claims transformations"

Customer/Partner Successes

Accelerate underwriting through collaboration and efficient ML

A leading P&C insurer took full advantage of the MongoDB and Databricks integration, leveraging both platforms to foster collaboration between their data and developer teams. The integration provides a more natural development experience for Spark users and exposes all of Spark's libraries. This allows MongoDB data to be materialized as DataFrames and data sets for analysis using machine learning, graph, streaming and SQL APIs. The insurer also benefits from automatic schema inference. With this integration, the insurer was able to train and observe their ML models (MongoDB Atlas Charts) more efficiently and incorporate them into business applications.

As a result, crucial underwriting processes that previously took days are now executed in seconds. In addition to the time and cost savings, the company can provide a more immediate response to customers within its digital experience platform.

Learn more:

- FRAUD DETECTION ›
- CLAIMS AUTOMATION ENABLER ›
- CAR CLAIMS IMAGE CLASSIFICATION ›
- SMART CLAIMS: CLAIMS AUTOMATION ›

Watch video:

Laying the Foundation for Claims Automation

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Risk management: dynamic pricing and underwriting

Modernized approaches at insurance carriers require a full digital transformation, and one aspect of this transformation involves dynamic pricing and underwriting to reduce premiums. Insurance providers are now consuming data from the largest mobile telematics providers to obtain the most granular sensor and trip summaries for users of online insurance applications. Not only is this data critical for pricing, but it is also critical for underwriting scenarios to de-risk carriers. Dynamic pricing and underwriting automate routine tasks and provide teams with alternative data sources to empower actuarial and underwriting professionals to become "exponential." This allows teams to focus on key aspects of risk selection and analysis that drive competitive advantage and market differentiation. By leveraging personalized data points, insurers can deliver near real-time underwriting decisions for life insurance applicants, reducing policy abandonment and costs.

> **Risk is highly influenced by behavior, and 80% of morbidity in healthcare risk is driven by factors such as smoking, drinking alcohol, physical activity and diet. In the case of driving, 60% of fatal accidents are a result of behavior alone. If insurers can change customer behaviors and help them make better choices, then the risk curve shifts."**
>
> **Accenture Insurance Blog,** "Discovery – a holistic, ongoing innovation story"

Customer/Partner Successes

Automated extraction of medical risk factors for life insurance underwriting (John Snow Labs)

Life insurance underwriting considers an applicant's medical risk factors in addition to mortality risk characteristics. These risk factors are often found in free-text documents. New insurance-specific natural language processing (NLP) models can automatically extract relevant medical history and risk factors from such documents. Forward-thinking companies are embracing accelerated underwriting, which utilizes new data along with algorithmic tools and modeling techniques to quickly assess and group applicants without requiring bodily fluids, physician's notes, and so on. This joint Solution Accelerator from Databricks and John Snow Labs simplifies the implementation of this approach, creating a faster, more consistent, and scalable underwriting experience.

Learn more:

- RISK MANAGEMENT ›
- ACTUARIAL WORKBENCH ›
- UNDERWRITING AUTOMATION ›
- LIFE INSURANCE UNDERWRITING WITH NATURAL LANGUAGE PROCESSING ›

Watch video:

Automated Extraction of Medical Risk Factors for Life Insurance Underwriting

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Product distribution: segmentation and personalization

The most forward-thinking and data-driven insurers are focused on achieving personalization at scale. They are exploring new partnerships and business models to create integrated, value-added experiences that prioritize the overall health and financial wellness of their customers, rather than just their insurance needs. These insurers are investing in new data sources, analytics platforms, and artificial intelligence (AI)-powered decision engines that enable them to connect producers with like-minded customers or engage customers with enticing offers and actionable steps based on their previous choices. The outcome is more efficient and effective service from producers, trusted and convenient interactions for consumers, and increased customer engagement and growth for insurers in an increasingly digital-oriented world.

> **Demand for hyper-personalized and real-time risk protection requires broad adoption of artificial intelligence (AI), machine learning and digital platforms.**
>
> **EY,** "Nine customer types defining the next wave of insurance"

Customer/Partner Successes

Persona 360: Financial Customer Data Platform (DataSentics)

Persona 360 developed by DataSentics, an Atos company, is specifically designed for retail banks and insurance companies. It enables them to complete, unify and comprehensively capture customer profiles using a smart data model. Built on the Databricks Lakehouse Platform and available on multiple clouds, Persona 360 enhances basic profile information with insights derived from digital behavior and unstructured data, such as call center recordings. By utilizing Persona 360, you can leverage pre-built banking and insurance customer 360° data models and access over 1500+ attributes to gain a deeper understanding of customer segments.

With Persona 360, you can:

- Access pre-built insurance-specific customer 360° data models and AI segmentation, consisting of 1,695+ attributes and segments
- Seamlessly connect the workflows of data scientists (via Databricks) and marketing specialists (via Persona 360), making it easy for data experts to incorporate their findings and enabling nontechnical users to comprehend and activate the data
- Leverage tools that can increase engagement by 37% and conversion rates by 45% through personalized campaigns

Learn more:

- NEXT BEST OFFER ›
- CUSTOMER LIFETIME VALUE (CLTV) ›
- CUSTOMER SEGMENTATION ›
- REPUTATION MANAGEMENT ›
- CHURN PREDICTION ›

Watch video:

The Impact of Analytics and AI on the Future of Insurance

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Summary and applicability of Solution Accelerators based on insurance provider type / Solution Accelerator matrix by insurance provider type

Product distribution

		Consumer Lines (Auto/Home/ Personal Lines)	Commercial Lines	Life Insurance	Reinsurance
Personalization	Given the volume of data required, the complexity of operating AI from experiments (POCs) to enterprise scale data pipelines, combined with strict data and privacy regulations on the use of customer data on cloud infrastructure, the Lakehouse has quickly emerged as the strategic platform to accelerate digital transformation.	✓	✓	✓	
Next best offer	Customers have different needs at each stage of the buyer journey. Choose the right recommender model for your scenario to find the next best action at any given point in the customer journey.	✓	✓	✓	
Customer lifetime value	Analyzing customer lifetime value is critical to improving marketing decision-making, campaign ROI and customer retention. Learn how to identify your most valuable customers with Databricks' Customer Lifetime Value Solution Accelerator.	✓	✓	✓	
Churn prediction	Earning loyalty and getting the largest number of customers to stick around is something that is in your best interest as well as your customers' best interest. Develop an understanding of how a customer lifetime should progress and examine where in that lifetime journey customers are likely to churn so you can effectively manage retention and reduce your churn rate.	✓		✓	
Customer segmentation	Personalization is touted as the gold standard of customer engagement. Using sales data, campaigns and promotions systems, this solution helps you create advanced customer segments to drive better purchasing predictions based on behaviors.	✓	✓	✓	✓
Reputation management	Harness the Databricks Lakehouse Platform to build a risk engine that can analyze customer feedback securely and in realtime to power an early assessment of reputation risks.	✓	✓	✓	

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Anomaly detection and fraudulent claims

		Consumer Lines (Auto/Home/ Personal Lines)	Commercial Lines	Life Insurance	Reinsurance
Anomaly detection	Anomaly detection is the technique of identifying rare events or observations which can raise suspicions by being statistically different from the rest of the observations.	✓	✓		
Fraudulent claims	A large-scale fraud prevention system is usually a complex ecosystem made of various controls (all with critical SLAs), a mix of traditional rules and AI and a patchwork of technologies between proprietary on-premises systems and open source cloud technologies.	✓	✓	✓	

Risk management

Adopt a more agile approach to risk management, including actuarial and underwriting intelligence by unifying data and AI in the Lakehouse.

		Consumer Lines (Auto/Home/ Personal Lines)	Commercial Lines	Life Insurance	Reinsurance
Risk management	Adopt a more agile approach to risk management, including actuarial and underwriting intelligence by unifying data and AI in the Lakehouse.	✓	✓	✓	
Underwriting automation	Machine learning provides a decision support system for underwriting processes to help you improve your underwriting outcomes.	✓	✓	✓	
Actuarial workbench	You can use the Databricks Lakehouse Platform to automate actuarial models and leverage Machine Learning (ML) for underwriting, claims forecasting, etc.	✓	✓	✓	✓

Claims transformation

		Consumer Lines (Auto/Home/ Personal Lines)	Commercial Lines	Life Insurance	Reinsurance
Anomaly detection and claims fraud	Preempt fraud with rule-based patterns and select ML algorithms for reliable fraud detection. Use anomaly detection and fraud prediction to respond to bad actors rapidly.	✓	✓		✓
Car claims image classification	By applying transfer learning on pre-trained neural networks, Databricks helps insurance companies kickstart their AI/computer vision journeys toward claim assessment and damage estimation.	✓	✓	✓	
Claims automation	Insurers are entering a new era of claims transformation, supported by evolving technological advancement and growing data availability. You can simplify and scale your claims lifecycle with data and AI.	✓			
Medical claims	Using advanced natural language processing, you can extract text from medical records and enable automation.	✓	✓	✓	
Guidewire claims center data integration	Data ingestion enabler for distributed ledger technology that has predefined schemas and mapping to/ from Guidewire data format.	✓		✓	

Conclusion

Today, data and AI are at the center of every innovation in the insurance industry. Databricks Lakehouse for Insurance empowers insurance providers to leverage the potential of data and analytics to address strategic challenges, make informed decisions, mitigate risks, enhance customer experiences, and accelerate innovation.

Customers that innovate with Databricks Lakehouse for Insurance

Some of the top property and casualty, life and health insurance companies and reinsurers in the world turn to Databricks Lakehouse to harness the power of data and analytics to solve strategic challenges and make smarter decisions that minimize risk, deliver superior customer experiences and fast-track innovation.

About Databricks

Databricks is the data and AI company. More than 9,000 organizations worldwide — including Comcast, Condé Nast and over 50% of the Fortune 500 — rely on the Databricks Lakehouse Platform to unify their data, analytics and AI. Databricks is headquartered in San Francisco, with offices around the globe. Founded by the original creators of Apache Spark™, Delta Lake and MLflow, Databricks is on a mission to help data teams solve the world's toughest problems. To learn more, follow Databricks on Twitter, LinkedIn and Facebook.

Begin your journey with a free trial of Databricks Lakehouse for Insurance and start developing advanced data and AI applications today

START YOUR FREE TRIAL

Contact us for a personalized demo at:

dbricks.com/contact

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