



Accelerate Business Growth and Outcomes with Data and AI

How 21 organizations are accelerating decision making, improving business processes, enhancing user engagement, reducing costs and driving remarkable growth and profitability.

Getting Started on Your Data and AI Journey



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Businesses in every industry are facing extraordinary circumstances due to COVID-19. Companies are trying to respond to the crisis with both short- and long-term actions to increase resilience against future disruptions, and prepare for rebound and growth.

For our clients, leading through such uncertainty and change demands strong actions around cost, strategy and talent. It is about tactical, immediate decisions enabled by data and intelligence to achieve immediate objectives (cost takeout, enabling remote workforce, handling customer service) and longer-term strategy goals (migration to cloud, migration off legacy systems, operational improvements).

The following 21 case studies present a range of real-world examples to guide your imagination. These examples show how modern data and intelligence can enhance an existing application, workflow or process and reduce friction; solve complex business problems by stitching together multiple parts of an experience; and offer up entirely new channels of revenue and service in ways not possible using traditional techniques.

Let these case studies inspire your journey and inform how data modernization and artificial intelligence are applied within your company and across industries.



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One of the important trends we see in AI is the move from advanced model building, fueled by breakthroughs in scalable neural network technology — deep learning — to creative optimization, enabled by breakthroughs in making evolutionary computation scalable. In recent years, we've seen this technology move out of research labs and into major commercial deployments, including automated trading, web site optimization, automated industrial design and even agriculture.

The marriage of evolutionary computation and deep learning — Evolutionary AI — promises a new era of advanced, robust solutions that are designed by AI, by computers. These AI-based decision augmentation systems will go beyond creating new insights to suggest optimum actions in contexts that have never been encountered before, impacting outcomes that businesses care about most.

This technology, therefore, has broad and deep applicability. My team and I are bridging the gap between experimentation and fully-scaled business deployments for our clients.

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Managing Complex Operations



Accomplishing Exhaustive Due Diligence in a Fraction of the Time

The Challenge

A leading global professional services organization wanted to improve its laborious and time-consuming risk management due diligence process. International due diligence involves exhaustive research, with more than 40,000 global sources tracking not only media but also corporate records, financial transactions and legal cases at the company. Results based on analysts' text strings needed to be painstakingly reviewed for each entity before a report could be finalized.

We worked with the organization to more quickly and accurately research businesses for ties to potentially illegal behavior, such as money laundering, insider trading, corruption and terrorism.

The Solution

We developed an application programming interface (API) to connect the company's due diligence software to a machine-learning model. In less than five weeks, we developed cognitive APIs powered by deep-learning algorithms and governed by predefined rules using semantic language processing.

Conventional search technology relies on Boolean word strings and returns results ordered by the appearance of individual words that meet search criteria, irrespective of their context.



Searches on our newly developed platform narrow results by indexing them against discrete parameters, including a custom dictionary of keywords for specific industry sectors.

Our Approach

In a global environment where risk and regulation are on the rise, having tools to screen partners, vendors, counter-parties and acquisition targets for potentially criminal

activity is vitally important. Our AI and analytics solution provides the global professional services organization with the means to automate risk detection across the broad range of its business relationships, improving its ability to comply with a complex array of international laws and compliance regimes.

RESULTS

14% of reports completed in one hour. Sharply decreased researchers' time.

30% more due diligence reports generated per year.

Over 40,000 global sources tapped in exhaustive research.

Enabled real-time analysis of compliance and financial risk in real time.

▶ [Read the full case study here.](#)



Mining Data to Optimize Mining Worker Accommodations

The Challenge

A major mining company needed to improve the efficiency of how it managed housing for its onsite workers. Erratic housing needs and patterns, inaccurate daily occupancy reporting, price differences, and varying rules for employees and contractors made this a complex undertaking for the logistics team. The team also struggled with transportation planning. The company asked us for a technology-based solution to address these challenges and lower process costs.

The Solution

Our AI and analytics team worked with the company to develop a proof of concept for a secure data analytics solution that automates basic reporting, manages ad hoc schedule changes, predicts no-shows, and flags noncompliance and reporting anomalies that impact costs.

We built an “optimization engine” that processes current occupancy data and recommends space allocations based on a back-to-back optimization approach. Our team consolidated these features into a digital analytics platform and shifted the platform to a cloud environment.



In subsequent stages, we expanded the platform’s capabilities to analyze data on the company’s fleet of trucks, as well as a range of plant and equipment productivity metrics.

Our Approach

Our team optimized the company’s accommodation management process at the lowest cost, automating room assignments

by analyzing a complex set of variables. We partnered with the company to design and build a cloud-based data analytics platform that not only provides cost-effective solutions to the challenges of managing housing and transportation but could potentially optimize the logistics operations of the entire organization.

RESULTS

\$4 million U.S. savings in year one.

\$20 million in savings is expected from optimized room utilization.

A 50% reduction in costs due to no-shows or records and reporting errors is anticipated.

▶ [Read the full case study here.](#)



Fast-Tracking Cancer Drug Development Using Data Science

The Challenge

The stakes are high in oncology drug development: The process is costly, the competition is fierce, and the mission — saving lives — is critical. A major pharmaceuticals company wanted to improve its highly manual process for conducting clinical trials for its cancer drugs. The company wanted to reduce the time it takes to conduct clinical trials for cancer drugs while increasing the effectiveness and safety of the drug development process.

The organization chose us as a partner for this ongoing initiative because of our skills in data science and artificial intelligence, as well as our deep experience in life sciences and the pharmaceutical industry.

The Solution

Our overall goal was to use AI to enhance decision-making in the clinical trials phases of oncology drug development. AI improves the process of selecting candidates for specific drugs by collecting evidence of drug effectiveness based on chemical structure and how the targeted body tissue responds.

We are working closely with the company's Pharmaceutical Development & Commercialization organization to build an automated process for data analysis in preclinical trials. The power of AI helps us predict adverse



drug reactions, which results not only in a safer and faster process but also a more streamlined regulatory approval process.

Our Approach

The project is part of an ongoing research and development initiative, with each phase producing assets that can be reused as case studies for future research problems. This knowledge provides recommendations for

improving the process of capturing data in other trials. Using AI and data science helps shorten preclinical trial times by three to four years and cut per-patient costs while improving safety and producing reusable assets and technical knowledge that can be utilized in future initiatives.

RESULTS

A 3 to 4 year reduction in clinical oncology trials.

8% to 10% cost savings per patient.

Created a reusable, automated data analysis pipeline for drug candidates.

AI-enabled deployment of next-generation candidate drug evaluation methods.

Saved time and money by streamlining the drug development process.

▶ [Read the full case study here.](#)

Improving Business Processes and Revenue





Assessing Risks and Rewards in the Flood Insurance Market

The Challenge

Complex factors drive insurance in flood zones across the U.S., and a major global insurance company wanted to better understand the financial risks and opportunities involved in the flood insurance market. This meant understanding the size, scope and regional nuances of this market. We partnered with the company, with the goal of providing an integrated view of the flood insurance landscape in the U.S. — not just who has coverage and where, but what factors are driving the market, including behavioral patterns.

The Solution

We developed a solution illustrating the behavioral patterns and key drivers of flood insurance in the U.S. This involved analyzing flood hazard maps developed by the National Flood Insurance Program, as well as U.S. Census data and housing information available through Google Maps and Zillow.

We then employed geospatial analysis — data science that examines people’s geographic location and then derives understanding from that knowledge — and utilized a machine-learning framework to interpret the analysis. Using application program interfaces (APIs), the data and intelligence were integrated into a



user-friendly analytics application, providing a single view of data from multiple sources.

Our Approach

We analyzed flood hazard maps developed by the National Flood Insurance Program, as well as publicly available census data and housing

information. We identified an overall financial opportunity worth \$3.3 billion, with 83% accuracy and a potential market of \$34 million in New Jersey alone. The company is now well-equipped to fully develop its flood insurance business in the U. S.

RESULTS

83% accuracy in modeling potential markets.

A 10-fold reduction in underwriting cycle time.

25% improvement in case acceptance rate.

Models risk across portfolio by combining flood hazard maps, GIS data and the frequency and cost of historical claims.

▶ [Read the full case study here.](#)



AI Solution Detects Check Fraud for a Leading Global Bank

The Challenge

A global financial services organization wanted to automate and streamline its fraud detection process. At many large banks, millions of checks are still hand-written each month. While part of this process is truly automatic, including scanning paper checks, large banks still employ hundreds of people to sit every day at computer screens trying to spot signs of fraud in those scans. This process is time-consuming and inaccurate, and banks lose millions annually to counterfeiters.

Our objective was twofold: to spot fraudulent checks in real time at the time of deposit, and to reduce the number of checks requiring manual review. Such a solution would stem the outflow of disbursements on counterfeits, reduce tedious work and lower processing costs.

We helped the financial services organization build a machine-learning solution that teaches itself to identify counterfeit checks, thus reducing fraud risk and lowering costs.

The Solution

We developed an artificial intelligence-driven machine-learning solution to flag potential fraud by analyzing scanned images of handwritten checks. The technology is designed to automatically compare a variety of factors on scans of deposited checks against a growing



database of checks previously identified as fraudulent, and then flag potential counterfeits in near real-time while deposit transactions are in process.

Our Approach

When we tested our model on a historical portfolio of past transactions, it demonstrated

50% savings on fraud losses. It processed up to 20 million checks per day, with end-to-end response times of less than 70 milliseconds and the ability to process up to 1,200 checks per second.

RESULTS

50% savings in check fraud losses was demonstrated.

70 millisecond real-time check confidence score generated.

A \$20 million reduction in losses to fraud annually, based on current models is forecast.

Reduced manual effort while keeping initial and ongoing costs low.

▶ [Read the full case study here.](#)



Data Analytics Solution Optimizes Equipment Utilization

The Challenge

A global mining company with more than a dozen mines on three continents faced financial hurdles caused by the delays in transporting ore, among other inefficiencies. The massive transportation equipment used by this company and the complex operations involved in the process were difficult to track in real time. To avoid further interruptions and to reduce the financial loss caused by the delay, the company asked us for help.

The Solution

To address efficiency improvements worldwide, our team gathered sensor data on the client's global installed base of mobile equipment, monitored that equipment's performance and applied algorithmic analysis to improve the efficiency of its use. The goals being to reduce queuing and idle time for heavy haul trucks, and to help ensure a steady stream of ore to refining facilities and transportation hubs at each mine.

Our machine learning solution monitors equipment in the field to isolate the major causes of wait times. Then, our model breaks down the transportation cycle into eight steps — from queuing to load, to unloading and returning — and captures data on equipment location, movement, load, use, speed and efficiency to ensure the right equipment is in the right place as frequently as possible. A dashboard provides real-time monitoring and benchmarking



during the eight predetermined stages of the transportation cycle.

Our analytics application enables mine operators to monitor throughput, efficiency and tonnage, viewing the root cause of lower yields on a near real-time basis.

Our Approach

Cognizant Digital Business established a center of excellence to collaborate with the client's management team to design and deliver a solution that would gather sensor data on its global installed base of mobile equipment,

monitor that equipment's performance and apply algorithmic analysis to improve the efficiency of its use. Our machine learning solution provides a dashboard for real-time monitoring and benchmarking at various stages of the transportation cycle. The solution captures data on equipment location, movement, load, use, speed and efficiency to ensure optimal use of equipment.

Our cloud-based analytics solution also helped mine operators to monitor the throughput and efficiency by viewing the root cause of lower yields on a near real time basis.

RESULTS

A \$30 million reduction in capital cost due to higher equipment availability.

8% increase in annual throughput at initial location, by identifying bottlenecks.

Saved 24 hours of manual equipment management time per site per week.

▶ [Read the full case study here.](#)



Large Airliner Takes Off with Conversational AI

The Challenge

Lots of people spend time daydreaming about a vacation, but when vacation dreaming gives way to planning an actual trip, they have a lot of questions. For one large airline, all those questions were going straight to its call center. Call center agents were getting bombarded with calls from flyers asking the same questions over and over.

The airline decided to create a conversational AI agent for members of its frequent flyer program to answer their most common questions. The goal was to reduce costs and improve customer satisfaction by providing 24x7 assistance to valued frequent flyers.

Specifically, the airline wanted to reduce its operating expenses associated with live agent inquiries via chat and telephone.

The Solution

We helped the airline develop a text-based conversational AI agent solution to automate frequently asked questions (FAQ) related to its loyalty program. The conversational AI agent has significantly reduced call center costs by answering guest questions 80% of the time. On average, 1,200 members are using the conversational AI agent for support every week.

Building on top of its virtual assistant success, the airliner has mapped out plans that include voice



activation and support for Japanese, Korean and Chinese languages in addition to English. The company is also planning to connect the virtual agent to its back-end systems so guests can ask questions specific to their own profiles and travel situations. So far, the virtual assistant is moving the needle on cutting down on live support calls for the airline.

Our Approach

Built in three months using the Google Dialogflow natural language understanding

platform, the conversational AI agent answers 50 of the most common customer queries. Guests simply type their question in a text window, and the virtual assistant responds with the answer in seconds.

The virtual assistant is integrated with LivePerson, enabling it to quickly and easily transfer conversations to a live agent when it is unable to field the request or there's a need for human intervention.

RESULTS

80% of inquiries are now handled by the conversational AI agent.

Top 50 inquiries are now answered by the chatbot agent.

Conversations are seamlessly transferred to a live agent to resolve more complex issues.

Increased omnichannel reach and expanded customer touchpoints.

Making People's Lives Better





Preventive Care, with a Dose of Artificial Intelligence

The Challenge

A leading healthcare services provider wanted to reduce the incidence of drug addiction among its patients and lower healthcare costs by proactively identifying potential drug-seeking behavior. Treating addiction is very expensive — U.S. healthcare organizations spend more than \$500 billion annually caring for patients suffering from opioid addiction alone. Drug addiction also interferes with positive health outcomes for patients being treated for other conditions, and diverts much-needed resources from other patients. Across a large healthcare organization, however, it's challenging to consistently identify patients at risk of becoming addicted and alert physicians to that risk.

The Solution

People seeking opioids or other addictive drugs tend to behave in predictable ways and have common characteristics. We developed an artificial intelligence-driven machine-learning solution for the healthcare provider's compliance function that parses doctors' notes entered into the organization's electronic medical records (EMR) to identify potential drug-seeking behavior.

Our AI-based solution links text analytics performed on physicians' notes from patient visits — including their impressions of a patient's behavior, appearance and diagnoses — with data in the organization's confidential third-party



EMR system. It then uses that text analytics and advanced machine learning to generate system alerts for doctors during patient visits when a pattern of at-risk behavior is identified. This enables caregivers to intercede with patients in real time and take corrective actions.

Our Approach

We sought to identify common characteristics of typical drug-seekers by examining three

sources of information: the patient's diseases and conditions as recorded in the EMR, the types of drugs that historically had been prescribed to the patient, and the behaviors and symptoms exhibited due to each type of drug. Our solution learns continuously from its own results to verify the accuracy of its models and improve searches.

RESULTS

\$60 million identified in organizational savings.

Identified 85,000 at-risk patients.

Captures behavior and symptoms as patients interact with a physician.

Identifies at-risk patients in real time.

► [Read the full case study here.](#)



Customer Care Done Right — with Real-time AI

The Challenge

Customer satisfaction is paramount in handling claims and renewing policies. An industry-leading P&C insurer, however, was experiencing high call-handling times at its call center and lacked the ability to transcribe these calls to analyze the quality. Of an approximately 8,000 calls per month, only 40 received review. But auditing calls isn't enough: It doesn't proactively address how to best serve an upset, stressed caller facing a loss. The goal was to equip customer service representatives (CSRs) with the tools to quickly answer customer questions, provide key information and resolve their issues.

The Solution

We provided an analytics platform informed by artificial intelligence to improve the insurer's customer service, enable supervisors to monitor call quality and help CSRs understand customer sentiment during insurance claim calls. We worked closely with the insurer's internal innovation team to improve the customer experience in various scenarios. Use cases included streamlining how insurance quotes are provided, automating and simplifying underwriting, and improving the claims process.

We extended the insurer's analytics capability to analyze customer sentiment during calls, provide CSRs with appropriate information to



respond with empathy, and offer questions and information relevant to each caller's situation.

Our Approach

We taught the call center system how to recognize 40 individual steps for each call and created a dashboard that lets CSRs monitor call progress on their displays. By performing

speech analytics on calls as they take place, the checklist is automatically updated to show which tasks have been performed and which remain outstanding. Using language analytics, including diction, word choice and tone, the system improves CSR insight into each customer's attitude.

RESULTS

85% to 90% call dialog accuracy achieved.

35% to 40% reduction in supervisors' review time.

All 8,000 calls now reviewed monthly.

Provided personality profiling and conversation cues for deeper insights.

▶ [Read the full case study here.](#)



Improving Patient Insights, Care through AI Data Analytics

The Challenge

In the healthcare industry, social determinants of health — including economic stability, education, healthcare system and physical environment — are considered to be important factors in addressing patients’ holistic healthcare needs and outcomes.

A large healthcare provider was looking for a resource with expertise in natural language processing (NLP) that could mine physician notes to identify these important determinants. The goal was to create a cohesive, holistic patient health history — and better serve patient needs with regular, targeted and localized care — by establishing interoperability across thousands of healthcare provider electronic medical records (EMR) systems.

The provider wanted to capture all caregiver notes to analyze social determinants of health in a structured format, and then ascertain whether these factors had a significant impact on patients’ health outcomes.

The Solution

We developed an AI and ML solution that identifies and analyzes which social determinants of health have a significant impact on a patient’s health by mining the unstructured data found in physicians’ notes.



By supporting patients with proper care in their local communities, the system helps the provider more closely monitor and control patients’ overall health and illnesses. This has resulted in fewer acute medical issues requiring emergency room visits, which has lowered healthcare costs overall.

Our Approach

We built a text mining engine that efficiently analyzes physician notes to not just extract specific words and relevant information but

also find meaningful insights and context. We implemented an algorithm to analyze 900,000 records from approximately 200,000 patients.

The anonymized records comprise caregiver notes taken during patient encounters. This includes multiple notes from the same visit, such as operative, clinical, post-operative and discharge notes. Our solution helps identify people in need of care for a particular disease and points them to specific outreach programs in their local area.

RESULTS

Identified 11% of encounters with homelessness and food insecurity-related social determinants.

Identified 34% of additional encounters that lacked Z codes through text mining.

Analyzed 900,000 patient records for patient insights.

Improved quality of care and health outcomes.

Reduced cost of care.

▶ [Read the full case study here.](#)



How Unstructured Data Analysis Can Lead to Healthier Patient Behavior

The Challenge

Taking medications as prescribed can improve not only patient health but also the success of the companies producing pharmaceuticals and other treatments.

A biotechnology company wanted to use its case notes to understand why patients did or didn't follow their medication regimens. But the descriptions of patient interactions were often inaccurate, incomplete or inconsistently formatted, which made it difficult or impossible to derive valuable insights that the company could capture and act upon.

The Solution

We worked with the biotech company to apply AI, machine learning and natural language processing to gain insight into factors that motivate patients to start, discontinue and switch use of medications. Using these insights, the company was able to increase treatment compliance by identifying roadblocks and improving patient support.

The company created new key performance indicators for its customer service processes, workflow improvements and coaching for improved patient engagement. Next steps include more complete documentation of the insights, training in documentation techniques and exploring how this approach could improve other functions, such as sales and marketing.



The company's connection of the pilot project to its overall strategic goals helped ensure the project's overall success. The company is now implementing the project's recommendations throughout the organization and showcasing the value of new techniques to enhance patient engagement.

Our Approach

Working with the biotech company to understand its products, patients and business

needs, we identified the words and phrases of greatest interest within its case notes and built the ontologies and taxonomies required to train an artificial intelligence application to recognize this content. Our life sciences technology experts applied machine learning and NLP to years of unstructured, free-text notes. To more effectively share the findings with client stakeholders and senior leadership, we created a 40-page narrative that presented our results in an understandable and actionable format.

RESULTS

Uncovered 30 meaningful insights and nine key recommendations.

Developed KPIs to monitor and encourage actions that maximize patient wellness and drug sales.

Improved training for patient services staff by creating better documentation and increasing the focus on patient interactions.

▶ [Read the full case study here.](#)



Using Data Science to Improve Patient Care and Satisfaction

The Challenge

In healthcare, one of the most important measures of success is patient satisfaction. Every hospital patient in the U.S. is asked to complete a Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey. In 2017, a large health network asked us to analyze its CAHPS data using advanced artificial intelligence and computer science techniques.

The healthcare provider's goal was to fully understand patients' needs so it could improve its CAHPS ratings and develop better, more customized care. The challenge was to deliver specific, actionable recommendations and advice, using a combination of patient feedback and clinical background data.

The Solution

We investigated data from 60,000 patients who visited the organization's health centers over the course of six months. Our team evaluated key patient-care issues such as communication, responsiveness and pain management, and then compiled a holistic set of analytics correlating the patients' clinical and social backgrounds, along with their satisfaction feedback.

We were able to identify and target very specific patient care issues, and show the healthcare provider where it ranked on these issues in relation to national averages. More importantly,



we were able to recommend specific actions the organization could take to improve patient care delivery, health outcomes and business operations.

Our Approach

We delivered a detailed set of patient satisfaction analytics, along with observations and specific recommendations that would have the highest

impact on patient satisfaction levels and resulting CAHPS scores. We made a number of suggestions regarding patient communications, such as older patients needing to be carefully briefed on their medications and new mothers requiring extra attention on discharge day. We advised the client on resource planning to ensure proper staffing for these special circumstances.

RESULTS

Analyzed 60,000 CAHPS records.

Identified factors leading to lower patient satisfaction.

Recommended specific improvements for increasing patient satisfaction, which is expected to significantly improve the organization's CAHPS scores.

▶ [Read the full case study here.](#)

Transforming Data Methods and Decision Making





Data Modernization Cuts Costs, Speeds Data to Pharma Sales Reps

The Challenge

A specialty pharmaceuticals company faced rising costs and delays in gathering, analyzing and transmitting the information its sales representatives needed to plan their physician calls and meet their sales targets. Sales reps struggled with incomplete, conflicting and hard-to-use information, and the company lacked a single, integrated source of marketing and financial data to improve its decision making.

The Solution

Using our AI Data Modernization Platform, we helped the company reduce the time and cost of collecting and normalizing data from 20 internal and external systems. Now, sales reps receive customized advice on a daily basis on their laptop or mobile devices, based on their location and the current state of their accounts. This includes recommendations on which accounts are the most worthwhile to visit, which physicians and administrators to see at each account and which products or promotions they should spend the most time discussing.

These reports also warn of any danger signs, such as stagnating sales of a specific product at an otherwise well-performing customer. For the first time, the company now has a “single source of truth” for all its financial and marketing data, helping sales reps maximize revenue and profits.



Our Approach

In addition to reducing costs and speeding data access, the new platform also provides advanced analytics to each representative on a daily basis and a customized plan of accounts to target the optimal plan for meeting sales goals.

Pre-built analytics and our industry-aligned data model reduced the time required to deploy the platform by one-third, and our change management capabilities ensured rapid adoption, user satisfaction and timely retirement of older platforms.

RESULTS

\$450,000 in annual savings for gathering and distributing account data to sales reps.

35% reduction in the time required to produce reports for the sales force.

30% reduction in implementation time through the use of our pre-built analytics and industry-aligned data model.

Maximized revenue and profits with improved, real-time data.

▶ [Read the full case study here.](#)



A Modern Platform Unlocks Fast-Food Insights

The Challenge

One of the largest U.S.-based fast-food companies wanted to improve its decision-making, provide more self-service data analysis for franchisees and expand its loyalty offerings. To accomplish these goals, the company needed better insights into franchise performance and improved visibility into its inventory and staffing.

The company knew this meant migrating from its on-premises legacy data warehouse, which couldn't produce needed information in a timely fashion and was costly and burdensome to maintain.

Our Approach

Our proposal featured our cloud-based AI-driven platform that enables faster reporting, better data accuracy and lower maintenance costs while increasing flexibility, scalability and customer engagement. It also includes an AI-driven personalized customer experience and marketing intelligence reports.

The restaurant chain now has 4,000 stores in North America that are uploading data to the warehouse in real time. Leveraging data on a cloud-based intelligent platform has enabled the business to gain insights, build customer relationships and improve operations, achieving its overall goals of increasing revenue and reducing costs.



The Solution

We delivered insights that allow the business to find and resolve real-time operational challenges, track sales of specific menu items to drive insights into customer preferences and manage labor efficiency and inventory.

The solution also provides quick insights into sales, product mix and the performance of promotions and discounts, as well as a single view of data consolidated from multiple locations.

RESULTS

10% reduction in average order time for drive-through customers.

4,000 North American stores access the data warehouse, greatly improving data accuracy.

Significant cost reduction due to the near elimination of software licenses.

Up-to-the-minute sales, product and regional insights and performance metrics.

▶ [Read the full case study here.](#)



AI Speeds Repairs, Cuts Costs for Electric Utility

The Challenge

A U.S. utility needs to monitor the condition of thousands of different components across tens of thousands of square miles of service area, much of it in remote locations. Such monitoring is essential because in order to maintain service levels and prevent system outages, it's crucial to identify and fix failing or damaged components, such as the insulators that connect transmission wires to poles.

While the utility used images taken by drones to identify equipment that needed repair in its far-flung distribution network, it was time-consuming and inefficient to manually examine the photos and open a repair ticket, making it impossible to generate actionable real-time intelligence.

The Solution

The utility now has a fully managed data and analytic platform that enables data scientists to build, train and deploy AI models on-site or in the cloud, greatly reducing the cost and time required for image analysis and performing needed repairs.

To compensate for a lack of properly labeled images, we used image augmentation to create as many as 12 new labeled images from each original by changing lighting or angles or adding new objects to the images. This greatly increased the raw data on which the application could



learn, and thus its accuracy. We also automated critical activities such as data labeling, the building of AI models, training and deployment.

Our Approach

We used our AI Data Modernization Platform to create an AI-driven image analytics application that assesses drone-captured photos in real time to identify problems such as broken or chipped insulators. This self-service solution provides immediate insights to detect issues and an

alerting engine to notify the maintenance team about needed repairs.

The utility's deep-learning library is now hosted on a cluster of computing containers to reduce the cost and effort of implementation and management. An optimal cognitive computer vision model has been employed to provide the highest accuracy and ease of implementation to seamlessly scale and accommodate the alerting pipeline.

RESULTS

60% reduction in the effort required for image scanning.

Faster and less costly repairs through automated identification of problems and triggering of work orders.

Increased service levels, reduced outages and improved the customer experience.

▶ [Read the full case study here.](#)



Healthy Data? That Means Reliable, Defensible and Accessible

The Challenge

Over its 100 years, a global life sciences company has acquired multiple complementary businesses, including major pharmaceutical research companies. The company has accumulated a vast repository of global human health data that it uses to address questions and concerns, respond to legal inquiries and incorporate in ongoing research.

While the organization had critical information on its substantial range of drugs and compounds, the data wasn't readily accessible. Faced with an expensive, legacy mainframe environment that inhibited free and fast access to its own data, the company chose to migrate more than 150 terabytes of data to a new, globally accessible cloud platform, increasing information flexibility and lowering costs.

The Solution

Our AI Data Modernization Method has substantially improved the company's data access times and sharply lowered its costs — \$10 million over three years. It has reduced the IT department's reliance on an internal team and an exhaustive process to design and deliver custom reports. It also preserves the company's existing data access and data security protocols, and it uses the same portal as the previously outsourced mainframe hosting provider.



Having ownership of its database allows the company to manage data across the business lifecycle, using a unified security model that ensures active data governance. The new platform helps ensure compliance with global regulations for storing and using health data under the industry-standard rubric of “good practice” quality guidelines and regulations (GxP).

Our Approach

We examined the current state of the company's IT architecture, developed use cases to support

the blueprint for its desired future state, and then designed and managed the successful migration of all its historical data. Our solution, based on Amazon Web Services (AWS), offered the company a global repository.

This cloud-enabled architecture is a modernized, highly responsive data ecosystem that helps the company source, transform and consume data through the cloud, leveraging artificial intelligence and advanced analytical techniques. The model provides the flexible data structure, tools and accelerators needed to generate maximum business value.

RESULTS

95% reduction in external mainframe data-hosting costs.

\$3.6 million annual savings through cloud migration.

50% improvement in data access and retrieval speeds

► [Read the full case study here.](#)

Delivering Market and Customer Insights





Tidying Up the “Digital Shelf” with Centralized Product Information and Images

The Challenge

A global consumer goods business wanted a way to syndicate accurate product information to its 500 e-commerce partners and distributors quickly — and confirm that existing listings were correct and up-to-date. However, product information was scattered across many systems. Attributes such as product titles, features, descriptions, dimensions and package counts were inconsistent across countries. Additionally, the systems could not store product images, documents and videos, which were spread across still more systems.

A lack of a single source of truth for product information was created cascading problems. New product listings had to wait until marketing and brand teams could hunt through multiple systems to find the right information and images. Different descriptions for the same product produced inaccurate sales reports and forecasts. The full auditing process on e-commerce sites for out-of-date information took six to eight months, exposing the company to legal and compliance risks. These challenges would multiply as the company introduced more products in more countries through more channels and in more languages.

The Solution

We built a digital shelf solution that serves as a single source of truth for tens of thousands of



products and hundreds of thousands of images for business segments operating in 40 countries. We worked in two-week sprints to roll it out across North America, Latin America, EMEA and Asia Pacific from 2015 to 2019.

Today, more than 3,500 employees and agencies use the digital shelf solution, which country teams can customize to accommodate their needs. The company now has an easier, more automated way to syndicate product data to retailers and other channels.

Our Approach

We designed and implemented a centralized product information management and digital asset management system that ensures the company’s e-commerce sites and distributors are publishing the latest product information and images — increasing sales, strengthening the brand and avoiding fines.

RESULTS

\$3 million annual savings in operational expenses.

60% improvement in time to market via digital channels.

68% time saved on creating product listings.

Six months of time saved on auditing images on partner websites.

▶ [Read the full case study here.](#)



Digital Ad Agency Uses AI and Deep Learning to Improve Marketing Campaigns

The Challenge

A digital advertising agency wanted to improve the click-through rate of the ad extensions it created for its customers. With ad extensions, brands can pinpoint the targeted audience and further increase campaign performance.

The agency's existing process to identify relevant ad extensions, however, was manual and tedious. The entire process of creating the ad extension was so focused on platform compliance that the core objective of driving ROI through the best click-through rate was lost.

The Solution

We designed an automation tool to create ad extensions that feature deep learning-based natural language processing (NLP). The automation tool was able to recommend the best ad extensions for each website, based on research of customers' sites to identify the right value propositions and also conform to compliance needs.

We determined optimal website ad placements, improving productivity and overall campaign effectiveness. The AI-based solution enhances the performance of ad extensions across a large number of websites. By integrating advanced analytics, productivity of the campaign managers improved by 50%, increasing the effectiveness of the ad extensions by 10%.



Our Approach

The solution incorporates five key components: Website scraping collected real-time insights on the company's brand offerings. The relevant text was clustered and converted to ad extension format and checked for quality in real time. Text was processed through a recurrent neural

network model to predict selection probability of new words or sets of words. Terms with the highest probability of selection were used for recommendation. Text mining gave the online ad agency a scalable way to collect and organize the critical data aggregated for each site.

RESULTS

50% efficiency gains.

85% accuracy of the deep-learning algorithm.

10% increase in click-through rates.

Scalable and reusable methodology and algorithms for multiple NLP use cases.

▶ [Read the full case study here.](#)



Intelligent Conversational AI Agents Improves Sales and Customer Satisfaction

The Challenge

A leading regional U.S. power utility sought to differentiate itself through customer service and customer satisfaction. With millions of customers in its geographic area, including thousands of businesses — from heavy industry and hospitals, to professional offices and restaurants — power consumption for its customers varies greatly. With such a varied customer base, no single account manager or service representative could possibly understand all the businesses and industries served.

The utility was committed to ensuring its field service personnel could be more customer-centric by equipping them to quickly answer questions and find ways to better serve customer needs. We focused on giving executives, account managers and field service technicians better tools to prepare for meetings with a range of customers.

The Solution

We developed use cases and solutions for an AI-driven conversational subject matter expert. This intelligent assistant keeps sales reps better informed of their customers' industry and energy needs. This natural language processing virtual assistant informs sales personnel about factors that affect utility usage within a particular industry.



The intelligent personal assistant also allows executives, account managers and customer service representatives to conduct research using voice commands or by typing queries.

Our Approach

We combined voice-activated, AI-driven search technology with an application programming

interface (API) that presents the user with an organized, detailed response to questions from information found online, helping salespeople better understand their customers' industries and energy needs.

RESULTS

Enabled sales personnel to be informed on key factors related to specific industries.

Automated the research process for the sales team.

Provided instantaneous access to needed research materials through a voice or keyboard interface.

▶ [Read the full case study here.](#)



Causality AI Informs Credit Card Collections

The Challenge

A large U.S.-based issuer of branded credit cards was writing off nearly \$1 billion in consumer credit debt every year. It employs thousands of agents to recover a portion of amounts owed by consumers in default. Collections cost more than \$30 million annually, and agent turnover was running at more than 40%.

The company needed more sophisticated predictive technology to improve its debt-collection efforts. Debt collection is an intensive process, with significant effort and overhead expended on people in default, many of whom never repay their debts. To improve debt collection strategies and maximize debt collection revenue, the company turned to us for help.

The Solution

After analyzing monthly data on creditors already in default, we made a surprising discovery: the factors the company thought were the highest determinants of collections success were not relevant to payment outcomes. Rather than conduct analysis based on the company's pre-conceived knowledge and assumptions about the debt collection process, we applied an AI-based causality engine to the problem.

The AI-based causality engine showed that directing collections activity toward the subgroup of clients more likely to repay their



debts would result in \$5 million to \$7 million in increased revenue, and as much as \$10 million in annual savings. Furthermore, these higher collections are expected to increase employee commission compensation, which could lead to a significant decrease in turnover rates, hiring expenses and training costs.

Our Approach

Using a “white-box” artificial intelligence engine, we helped the credit issuer more fully understand the behavior of consumers defaulting on credit

card debt and the likelihood of collections. Our causality solution (derived from information theory) determined which variables are the most relevant to the given outcome.

We showed that certain consumers will never pay no matter how much effort is expended, while others will pay over time, before the debt must be written off. Moreover, the solution identified a third category of debtor — one who will generate revenue if encouraged to pay down their outstanding debt.

RESULTS

\$10 million in expected call center savings.

Designed model to review voluminous data on slow- and no-paying credit customers.

Identified factors that determine consumers' payment behavior.

▶ [Read the full case study here.](#)



AI Informs Policy Underwriting Across Insurer's Portfolio

The Challenge

There are four classic ways to manage insurance risk: assume it, lessen it, avoid it altogether or transfer it. The last is the most difficult, since it entails accurately pricing what is essentially unknowable. But advances in data science can now inform risk analysis in a whole new way.

A global reinsurance company needed help developing a data-driven information management solution that could determine the best cases for underwriting, and assist underwriters in assessing case files to decide which cases must be underwritten. The company asked us to help build an intelligent underwriting tool, driven by artificial intelligence, to aid the underwriting process and boost efficiency while predicting and prioritizing the cases that should and should not be accepted.

The Solution

We established an internal data science center of excellence that allows the insurer to examine underwriting processes across the ecosystem, developing use cases and demonstrating proofs-of-concept for applying data collection, analytics and predictive modeling to address the range of risks in the company's portfolio. Using optical character recognition and image processing, the system processes complex and varied stacks of documents and assembles them as a single, consistently formatted document.



We used natural language processing to aid the organization and extraction of data from the source documents, as well as AI-based machine learning to make sense of the data and assign scores to the most promising cases.

Our Approach

We combined geospatial information with demographic and social data, as well as data on the incidence of accidents, to understand where losses differed in certain areas. Our solution

provides a holistic, end-to-end view of insureds at the individual level, resulting in a probability signaling the likelihood of a customer's risk of being involved in an accident.

This provided the insurer with a more detailed and reliable picture of the individuals whose automobile policies they were reinsuring, including behavioral and environmental factors. The insurer can now model premiums for different and more nuanced profiles of risk.

RESULTS

Improved underwriting efficiency.

Reduced total underwriting time.

Increased case acceptance percentage and revenue.

▶ [Read the full case study here.](#)

LEARN MORE

For more information and to view our full library of client case studies, visit www.cognizant.com/case-studies.

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As part of Cognizant Digital Business, Cognizant's Artificial Intelligence Practice provides advanced data collection and management expertise, as well as artificial intelligence and analytics capabilities that help clients create highly-personalized digital experiences, products and services at every touchpoint of the customer journey. Our AI solutions glean insights from data to inform decision-making, improve operations efficiencies and reduce costs. We apply Evolutionary AI, Conversational AI and decision support solutions built on machine learning, deep learning and advanced analytics techniques to help our clients optimize their business/IT strategy, identify new growth areas and outperform the competition. To learn more, visit us at cognizant.com/ai.

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Cognizant (Nasdaq-100: CTSI) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 193 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us [@Cognizant](#).

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