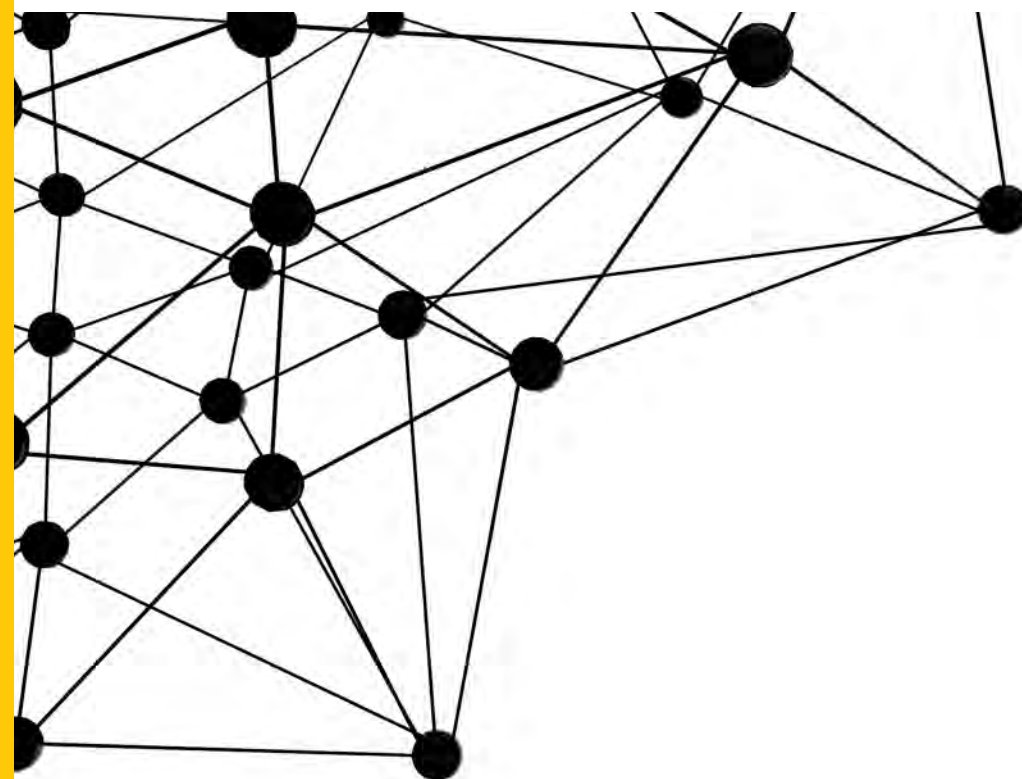DREXEL UNIVERSITY
LEBOW COLLEGE OF BUSINESS

AND

CIO.COM

Analytics
50
AWARDS

Analytics|50

The Analytics 50 is a collaboration between Drexel University's LeBow College of Business and CIO.com to honor 50 organizations using innovative analytics solutions to solve business challenges. The goal of the initiative is to share best practices while connecting academia and industry. Honorees were selected by a panel of researchers and practitioners who judged nominations based on the complexity of the business challenge, the analytics solution implemented, and the solution's impact on the organization.

DREXEL UNIVERSITY
LeBow
College of Business

CIO

WELCOME

Welcome to the inaugural Analytics 50 awards ceremony. We're proud and excited to recognize distinction in a field with such rapid growth and innovation. With more and more organizations making analytics a priority, we think it's important to highlight the contributions being made in the industry – and the Analytics 50 collaboration allows us to do just that.

From fraud protection and customer engagement to cancer research and logistics management, the honorees' use of analytics has resulted in increased efficiencies, cost savings, revenue growth, and improved quality of life.

In addition to recognizing these accomplishments, we also hope to bridge the gap between academia and industry by forming relationships and creating an environment of knowledge sharing to promote best practices in analytics. We envision an intersection of industry leaders and academics who, together, will address business challenges and influence the next generation of analytics practitioners.

We're looking forward to continuing the conversation. Thank you for joining us for what is sure to be a wonderful evening.

Sincerely,

Frank Linnehan, PhD
R. John Chapel Dean,
Professor of Management
Drexel University LeBow College of Business

Dan Muse
Editor in Chief
CIO.com and CIO
Digital Magazine

DREXEL UNIVERSITY
LeBow
College of Business

CIO

THANK YOU

to our panel of judges in academia and industry
for their participation, shared expertise, and commitment to this initiative.

Pramod Abichandani — Drexel University LeBow College of Business
Assistant Clinical Professor, Decision Sciences

Abichandani's research interests are centered around optimal, multi-dimensional, data-driven decision-making, through the use of techniques from mathematical programming, linear and nonlinear systems theory, statistics, and machine learning. Sponsors of his research include federal and commercial organizations. He has won several awards for his teaching. In 2013, he was selected to participate in the National Academy of Engineering's fifth Frontiers of Engineering Education symposium, where he presented his data science education initiatives.

Elea McDonnell Feit — Drexel University LeBow College of Business
Assistant Professor of Marketing

Much of Feit's career has focused on developing new quantitative methods and bringing them into practice, in product design at General Motors, commercializing new methods at marketing analytics firm, The Modellers, and as Executive Director of the Wharton Customer Analytics Initiative, where she built the academic-industry partnership program. She is a co-author of *R for Marketing Research and Analytics* published by Springer in 2015.

Keri Hettel — Razorfish Health
Vice President, Group Director of Analytics

Hettel has nearly 15 years of analytical experience and 10 years in digital healthcare marketing analytics. In her role, Hettel leads the analytics vision of intelligence-driven design and development in support of Razorfish Health's uniquely integrated approach to client solutions. Her team develops and directs global data solutions, measurement programs, and advanced analytics techniques to help inform and optimize business decisions throughout each client engagement.

Matthew Holtman — CorpU
Vice President of Learning Analytics

At CorpU, Holtman builds systems to measure and optimize learner engagement, quality of collaboration, and business impact. With more than 20 years of experience in innovation management and applied statistics, he is an expert on the use of predictive analytics to increase business value.

Dan Muse — CIO.com and CIO Digital Magazine
Editor in Chief

Muse has covered technology for three decades and held senior editorial positions with Ziff Davis, Jupitermedia, Disney Publishing, McGraw-Hill and Advance Digital. At CIO, he works with a talented team of staff writers, editors and freelancers to produce news, analysis, how-to and trends articles on topics such as IT leadership, big data, IoT, security, cloud services, BYOD, social media, IT careers, IT outsourcing, mobile technology, data center trends and much more.

TABLE OF
CONTENTS

Analytics 50

THE HONOREES

BUSINESS CHALLENGE

360i is a digital agency specializing in search engine marketing, social media, mobile marketing and web design and development. The company aims to ensure that its staff purchases the right click for its clients, who want to place bids for search engine marketing.

ANALYTICS SOLUTION

360i built a technology suite that is unique in the industry and includes:

- Natural language processing that puts keywords together with the right ad copy and landing pages to maximize relevance to the consumer

- Advanced forecasting and optimization to make sure budgets are allocated where and when they are needed

- Predictive bidding that uses linguistic similarity as a proxy for performance correlation between keywords to calculate accurate bids for keywords with sparse data

- Performance monitoring that unscrambles the opaque second-price auction to tackle campaign performance issues before they occur

IMPACT

360i's Pulse has resulted in $250 million in cost savings and $1 billion in revenue generation for the company's paid search clients.

Jared Belsky
President

360i

Atlanta, GA

Industry: Marketing

1

BUSINESS CHALLENGE

Companies hire a fleet management company like ARI to help them manage, among other things, expenses related to running a fleet of vehicles. In almost every case, a company's biggest expense is fuel. The ARI Fuel Cost Reduction Program focuses on miles per gallon and cost per gallon awareness and improvement. Through quantitative and descriptive statistical analysis, focused reporting, alerts, KPIs, and predictive and prescriptive feedback, as well as consistent communication to the front line with strategies and best practices for improving these important metrics, the program produces a more transparent picture that identifies trends and the spending habits of fuel cardholders. This has created measurable improvement to their clients' bottom lines, and ARI is now confident in its ability to deliver results consistently over time.

ANALYTICS SOLUTION

From a technology perspective, ARI used a combination of Oracle for base data; SAP ETL to reorganize and restructure the data; and SAP HANA for the in-memory analysis power. SAP's HANA in-memory technology allowed it to define the statistical analytical routines that run in real-time across multiple data points. These routines/methodologies allow it to target outlying behavior, identify trends and provide real-time recommendations. Additionally, SAP's Business Intelligence tools were used for end-user outputs; Lumira was used for data visualization; SAP Explorer was used for data mining; and Business Objects for reporting.

IMPACT

The ARI Fuel Cost Reduction Program allows the company to work very closely with its clients to deliver fuel savings while generating an additional revenue stream for ARI at the same time. Additionally, using data analytics as a tool to help companies better control their fuel spend gives the company a competitive advantage and further establishes ARI as a leader in the big data and analytics space. The overall project is a five-year initiative with a projected 30% return on investment; early numbers show ARI meeting those projections.

2

2

Steve Haindl
Executive Vice President
Technology and Innovation

ARI Fleet

Mount Laurel, NJ

Industry: Fleet Management

BUSINESS CHALLENGE

AstraZeneca is a global, science-led biopharmaceutical company that develops innovative life-changing medicines. In this highly regulated industry, it is vital to operate as efficiently as possible to maximize the availability of high-quality medicines to patients at minimal cost. This starts with having the right manufacturing capacity and plans for the future.

ANALYTICS SOLUTION

Until 2015, the network capacity design process, which determines investments, capacity and output across the 26 AstraZeneca facilities, had been expansive in time and effort and simplistic in output. To support the changing product portfolio of the company, capital decisions needed to be made quickly while analyzing multiple options and scenarios. So, as part of its operations strategy, an initiative was launched to address process shortcomings, optimize capacity plans and provide a potential benefit of hundreds of millions of dollars. After finalizing the decision criterion and algorithm needed, Llamasoft was selected as the solution provider for its accelerated data modeling capability and a robust supply chain optimizer module.

A dedicated team of experts collected detailed manufacturing data from the sites, which along with the 10-year demand forecast was used to develop and validate the base model. Then different scenarios were analyzed to evaluate potential changes to demand volume and geographic distribution, impacts of divestitures and acquisitions, and expansion, consolidation and rationalization of capacity. The rigorous analysis has provided reliable output and has opened up new options to evaluate, which were previously considered too hard to assess.

IMPACT

The solution and its implementation have been a resounding success. For the first time, this is a truly data-driven approach to long-term capacity planning. The model has been used to evaluate and recommend several network changes to best meet the long-term needs of the company and patients. The solution has not only highlighted potential financial benefit, but has been instrumental in instilling a more conscientious data-driven approach to decision making.

3

Per Alfredsson
Vice President of Global Supply Chain
& Strategy

AstraZeneca

Wilmington, DE

Industry: Pharmaceutical

AstraZeneca

BUSINESS CHALLENGE

In 2009, Texas' Bexar County Jail was beyond capacity. At that time, about 4,700 inmates were held in a facility with the capacity of 4,563. The county began to have preliminary discussions to build a new jail facility at a cost in excess of $350 million. If the daily jail population did not begin to trend lower, the Texas Department of Criminal Justice might have mandated a new facility. Thus, the county commissioners created a countywide committee to review this issue.

ANALYTICS SOLUTION

The IT Department partnered with the Bexar County Judicial Services Department to build flowcharts of the current process and future ones by deleting unnecessary steps and inefficiencies. These flowcharts of the new, innovative justice process translated into analytical dashboards. Judicial Services coordinated efforts among the county's various functional areas, such as courts, the jail, the district attorney's office and other support services to input algorithms that have allowed the county to work more intelligently across the county's integrated justice platform.

IMPACT

Information to make better decisions is now at a user's fingertips and can be secured and acted upon in a matter of minutes. This has reduced the time for each individual to receive his/her due process. Over the last several years as the many dashboards have been implemented across Bexar County, daily jail population has been trending lower each year, even though the county's population is one of the fastest growing in the United States. In all, Bexar's jail population has been reduced by over 25%. Accordingly, in addition to not having to build a new jail, the county has experienced a reduction in operating costs for food, clothing, personnel and other general fund expenses. This has allowed the county to invest in other projects for the citizens, such as roads, facilities and other needed services.

86%

62%

4

4

Catherine Maras
Chief Information Officer

Bexar County Government

San Antonio, TX

Industry: Government

BEXAR COUNTY
GOVERNMENT

BUSINESS CHALLENGE

In a tri-party repo transaction, a third-party custodial bank such as BNY Mellon acts as an agent and intermediary between the cash borrower (dealer) and cash lender (investor), facilitating settlement between dealers and investors. The tri-party agent maintains custody of the collateral securities, processes payment and delivery between the dealer and the investor and provides other services, including settlements, valuation of collateral, and optimization tools to allocate collateral.

The 2008 financial crisis revealed that the market could experience systemic problems: dealer defaults could leave investor counterparties or a tri-party agent holding increasingly illiquid collateral, leading to the seizing of the financial markets. In response, the U.S. Tri-Party Repo Infrastructure Reform Task Force, sponsored by the Federal Reserve Bank of New York, asked that BNY Mellon—a leader in the tri-party repo market, reduce the amount of intraday credit it provides to collateral providers by 90% without creating market disruption to a systemically important financing vehicle in the capital markets.

ANALYTICS SOLUTION

Working with the Federal Reserve and the industry, BNY Mellon technology and business teams aimed to identify and implement ways to take risk out of market operations by creating two types of optimization algorithm.

End state optimization leverages a mixed-integer linear programming model to identify the best end-state in terms of allocated collateral. This is based on dealer portfolio, lender preferences, security constraints and managing concentration risk.

Transition state optimization identifies an ordering of instructions to transform the portfolio from the current start state to an end state determined either by end state optimization or, in the case of rebalancing, a largely manual method.

IMPACT

The initiative to practically eliminate intraday credit risk was initially defined as a 90% reduction. BNY Mellon has exceeded the 90% goal to reduce secured credit extended in the tri-party repo market through a 97% reduction in secured intra-day credit.

5

Kevin Fedigan
Divisional Chief Information Officer
Broker Dealer Services

BNY Mellon

New York, NY

Industry: Financial Services

BNY MELLON

BUSINESS CHALLENGE

Children's Hospital of Philadelphia (CHOP) has been determined to improve its quality of care and patient outcomes through the use of data and advanced analytics. Utilization of physician notes to extract medical knowledge to support medical practice is an area of current research interest. It implemented in its operational environment a text analytics solution to assist in the detection of a venous thromboembolism (VTE) based on unstructured data (physician note/report). Hospital-acquired VTE is currently considered the second most common contributor to harm in hospitalized pediatric patients, secondary only to central line associated infection, and is the current focus of national prevention efforts.

ANALYTICS SOLUTION

Current mechanisms to identify VTE events are limited and depend on manually generated clinical lists as well as post discharge ICD-9/10 review. Both processes are time consuming, error prone and do not provide immediate event identification. For this business challenge, CHOP applied natural language processing (NLP) to radiologists' reports and found that NLP offers a fully automated solution that quickly analyzes complex batches of physician notes and offers a high level of accuracy in identifying and tracking patients with hospital-acquired VTE. The process runs on a scheduled batch on a daily basis and is available to physicians to consult as a decision support tool.

IMPACT

CHOP found that the use of NLP technology applied to radiologists' reports can identify inpatients with VTE with a high sensitivity and specificity. In addition, the use of NLP identified VTEs in a rapid, automated fashion that clinicians can potentially use to optimize workflow and generate real-time alerts for VTE related QI efforts. For its implementation from July 2015 to March 2016, it processed a total of 6,373 radiology reports from 3,371 hospital encounters. The hematology VTE surveillance team clinically identified 117 patients during the study period. The inference engine correctly identified 97 of the 117 patients with a sensitivity of 82.91% and specificity of 97.51%.

6

6

John Martin
Senior Director of Enterprise Analytics

Children's Hospital of Philadelphia

Philadelphia, PA

Industry: Healthcare

The Children's Hospital
of Philadelphia®

BUSINESS CHALLENGE

Citrix is an industry recognized analytics pioneer in B2B marketing and has a very large installed base of customers. Sales reps have to call them one-by-one to make cross-sell or upsell offers. This process has two major drawbacks—first, product offerings may not be relevant to customers, thus decreasing customer satisfaction; second, sales reps have to make a large number of phone calls to land one deal, a very inefficient process.

ANALYTICS SOLUTION

As head of advanced marketing analytics at Citrix, Liao introduced a big data, cloud-based analytics platform to predict cross-sell and upsell. This tool, powered by a third party big data analytics software provider, takes the entire installed base data (existing customers), along with their purchase history and product ownership data, to match with external data it collects from the Internet cloud (including blogs, websites, news, press releases and social networks, etc.) and various commercial and government databases. Once matched, the tool automatically creates machine learning models to predict customers with the highest possibility to respond to specific product offerings. Only the customers with the highest probability of making a purchase are sent to sales reps through a native integration to Salesforce.com. This greatly increases sales reps' productivity as they now convert more customers by making fewer phone calls.

IMPACT

The solution went live in mid-2016. Initial results showed dramatic improvement to business performance. The conversion rates of targeted groups are 250-350% higher than nontargeted groups. The total pipeline finances generated is also significantly higher. Because the solution provides a fully automated analytical platform, it is easy to scale, and easy to use by sales reps who may not have any data science background. Potential pipeline finances generated could go as high as $800 million per year once the tool is fully operationalized.

March Liao
Director of Advanced Marketing Analytics and BI

Citrix

Santa Clara, CA

Industry: Software

CITRIX

BUSINESS CHALLENGE

The City of Boston faces a tremendous number of transportation-related operational challenges on a day to day basis, with considerable impact on people who live, work, and travel in the city—from double-parked commercial vehicles during rush hour to construction on roadways. The city is also tackling a host of high-impact strategic initiatives, seeking to transform what transportation looks like over the long term, considering safety, the environment, the economy, and livability.

ANALYTICS SOLUTION

Boston has tackled these numerous operational and strategic transportation challenges in agile ways, both leveraging novel data sources and better utilizing data it already collects. A key data sharing partnership with traffic and navigation app Waze through its Connected Citizens Program allowed the city to ingest and analyze a real-time stream of alerts and traffic jam data, which it used to enhance daily operations and better measure congestion over time. The Vision Zero Task Force also took a data-driven approach to identify high-risk sites for the siting of speed calming measures, using unsupervised learning techniques on crash data and constituent concerns to do so.

IMPACT

The City of Boston's data-sharing partnership with Waze has had a practical impact not just on operations but also more broadly on its ability to conduct and evaluate experiments quantitatively over large temporal and spatial scales. It can conduct analyses that would have been otherwise infeasible—such as looking at the entire Seaport over the span of a year to quantify the impact of its rapid development ex post facto. In general, more rigorous experimental evaluation and data-driven initiatives mean an expansion in the kinds of work the city does and the ability to identify what does work. Moving forward, Boston is growing the reach of this approach to multiple fronts within transportation beyond congestion in motor vehicle traffic, including safety, sustainability, and equity.

Jascha Franklin-Hodge
Chief Information Officer

City of Boston

Boston, MA

Industry: Government

BUSINESS CHALLENGE

The city's challenge was to implement the Clean Streets initiative, an executive directive of Mayor Eric Garcetti, to put 5,000 more trash cans on Los Angeles' streets, create a block-by-block cleanliness rating system, and deploy a new Clean Street Strike Team to target hotspots and improve the overall cleanliness of the city.

ANALYTICS SOLUTION

The City of Los Angeles developed CleanStat, a comprehensive street-by-street cleanliness assessment system. Modeled after LAPD's CompStat, CleanStat provides quarterly, block-by-block assessments of the entire city to build data and identify trends in street cleanliness. The system uses dashcam video footage and GIS data to map, assess and grade the degree of cleanliness of each street, alley and sidewalk in the City of Los Angeles. In the quarterly assessments, the city's Bureau of Sanitation drive all of L.A.'s public streets and alleys (traveling over 22,000 miles) and gave each block a "cleanliness score" from 1-3:

1. Clean
2. Somewhat clean
3. Not clean

These scores and the related formula are available to every Angeleno at: www.cleanstreetsla.org/cleanstat/

The individual segment scores are then aggregated into operational grids used by the department to assess trends and deploy newly funded Clean Streets teams.

IMPACT

The data helps city leaders target additional resources to neighborhoods with the greatest need for cleanup, and ensure the overall cleanliness of Los Angeles.

Of the 39,915 road segments scored in the baseline assessment, 61% were rated clean, 35% were rated somewhat clean, and 4% of total street segments were rated unclean.

By implementing a data-driven approach, the Bureau of Sanitation is now able to focus on key areas like:

- Clean routes to schools: Prioritizing cleanliness around key community assets like schools and parks, the city can focus services and ensure a safe and clean environment for children.

- Preventing illegal dumping: Analyzing trends, the city of Los Angeles can identify illegal dumping hotspots like freeway off-ramps, where enforcement tactics can be deployed to deter future occurrences.

- Deploying trash bins effectively: Identifying persistent areas of litter, the city can install new trash receptacles in areas where they are needed most.

9

Eric Garcetti
Mayor

City of Los Angeles

Los Angeles, CA

Industry: Sanitation

BUSINESS CHALLENGE

Clarivate Analytics' business is primarily supported through subscription revenue. Clarivate's sales reps interact with their customers on a regular basis, but didn't have an efficient way to determine the risk of attrition of these customers.

ANALYTICS SOLUTION

Clarivate Analytics determined it should use SAP's Business Objects program, and a single report to identify a retention risk score was developed by leveraging spending information, usage trends and other behavioral data. Data sources come from Clarivate's CRM, entitlements and various usage systems and are mastered against a unique account ID number. The mastering process was extensive, as all parent/children/sibling accounts also needed to be included and different products use different Adobe usage systems. Partnering with the Product and Sales teams enabled a scoring algorithm to be created. While the score is a numerical value, the end result for the user is a color in the RAG rating system (Red for high risk, Amber for neutral risk and Green for low risk). However, sales reps who would most benefit from this are not SAP Business Objects users; therefore, the report is integrated into Salesforce.com. This enables a sales rep (or any user) to click on any account record to call up the report and identify their risk score. One tab of this multi-tab report is dedicated to explaining how the score is calculated for complete transparency.

IMPACT

This analytics method takes the guesswork out of how Clarivate Analytics can best serve its customers and improve its revenue stream. Clarivate has not done a case study on the exact impact this has had; however, its retention rate (customers who renew their subscription) has increased significantly.

10

Christine McKay
Director, Marketing Analytics

Clarivate Analytics (Formerly the IP & Science Business of Thomson Reuters)

Philadelphia, PA

Industry: Information

Clarivate Analytics | Formerly the IP & Science business of Thomson Reuters

BUSINESS CHALLENGE

Comcast employed a multivariate test (MVT) in direct mail to re-energize existing efforts to acquire a strategic segment. Initial testing had been implemented two years prior, but shifting competitor strategies necessitated a strategic refresh as legacy campaigns focused primarily on winning back customers.

ANALYTICS SOLUTION

To address the challenge of accelerating acquisition, Comcast employed the MVT project. This type of experimental design radically increases the power of direct marketing, enabling the company to test over 1,250 possible combinations of attributes using less than 50 different mail versions with a partial factorial design. Once the test objectives are fully defined, Comcast's analytics team works to create an experimental design that would ensure the optimum combinations of test cells are included to maximize the combinations of attributes to be tested. Once data is collected and cleansed, statistical analysis and regressions are performed to understand the elemental contribution of each tested attribute. Identifying "winning" attributes across various customer segments/markets allowed Comcast to develop full-potential marketing strategies tailored to the specific needs of various segments.

IMPACT

Overall, optimal combinations of attributes lifted responses by more than 50% among the tested segment. Test results were implemented across the organization to help improve existing campaigns. From a single test, the organization had not only a new stable of champions, but also a strategic plan for how to sustain the lift and maximize the impact across various customer segments.

11

11

Dan Keir
Senior Director, Direct Marketing

Comcast

Philadelphia, PA

Industry: Media

COMCAST

BUSINESS CHALLENGE

The Comptroller of Maryland (COM) is a statewide elected official tasked with the administration of Maryland's taxes. Critical to its success is the accurate and prompt processing of tax refunds, all while providing excellent customer service. Tax refunds in Maryland average $1,100 and are often a critical component to taxpayers' financial stability; refunds are generally treated as an expected source of income each year, as well as a mechanism to deliver the single most effective anti-poverty tool available to government, the earned income tax credit. Taxpayers count on COM to deliver.

Like most financial enterprises that operate in the digital world, COM is under attack by those looking to commit fraud. For government tax agencies, this has materialized as tax refunds claimed using stolen identities by nefarious organizations. To put the incidence in perspective, the federal government estimates that in 2013 fraudsters targeted $30 billion in tax refunds, 19% of which the IRS paid out.

ANALYTICS SOLUTION

COM has consistently expended resources to identify fraud. The historical approach involved several dozen standalone metrics. That approach yielded between $2 million and $5 million annually, but was achieved by reviewing 110,000 returns per year with a 5% accuracy rate. However, as the perpetrators of this type of fraud have proliferated in recent years and their methods have become highly sophisticated, COM sought a new strategy. Over the last several years it has implemented and refined an analytical approach. It now utilizes an ensemble learning analytical model.

IMPACT

In the most recently completed tax year, this led to the identification of $38.6 million in fraudulent tax returns. Equally important, the company's accuracy rate improved to 55%. In fact, COM discovered that amount by reviewing nearly 35,000 tax returns.

12

12

Andrew Schaufele
Director, Bureau of Revenue Estimates

Comptroller of Maryland

Annapolis, MD

Industry: Government/Taxes

COMPTROLLER
of MARYLAND
Serving the People

BUSINESS CHALLENGE

One of the biggest challenges associated with protecting endangered animals is documenting their population numbers and gaining accurate information about their status. Automated cameras are needed to monitor conditions and capture data about what takes place, but sorting through the cameras' images is an enormous undertaking. Conservation International works in protected areas globally where it deploys 60 camera trap points per protected area and leaves them at a location for about 30 days. With this effort, the cameras snap between 20,000 and 40,000 images. The technical challenge is analyzing the huge volume of data collected by the cameras and sensors and obtaining accurate animal counts and extent of area occupied. A significant hurdle exists in trying to process all the data with a limited IT infrastructure – something the staff have had to tackle manually.

ANALYTICS SOLUTION

Using Wildlife Picture Index Analytic System, a custom software solution, Conservation International sorts through the data, identifies patterns, and generates statistical models. To enhance image and data processing capabilities, the organization uses statistical modeling to generate animal population data based on the geometric mean of specific species.

IMPACT

Conservation International is now able to sort through the data and get to meaningful results more quickly. Currently, the organization uses a single dashboard to conduct simulations and explore visualizations in order to better understand trends and conditions. It also aids policymakers and others in developing and managing wildlife and ultimately benefits millions of people who depend on tropical forests for their livelihoods. The data-driven approach has produced valuable results, and the organization now has an IT infrastructure that allows resources to be used more effectively to accomplish its mission.

13

13

Jorge Ahumada
Executive Director, TEAM Network

Conservation International

Arlington, VA

Industry: Conservation

CONSERVATION
INTERNATIONAL

BUSINESS CHALLENGE

The challenge that most of DataRPM's customers—asset-based businesses ranging from manufacturing to utilities to healthcare and smart cities, among many others—commonly face is how to do Predictive Maintenance (PdM) and scale on production from the huge amount of data generated by the sensors in the Industrial IoT. The key challenges in doing PdM for IoT are:

- The traditional approach of monitoring one sensor at a time and manually writing alert rules doesn't scale

- The sensor data is extremely noisy, as different sensors generate data-different instances and at different frequencies

- There is no labeled data to train machine learning models for supervised learning

- Statically generating models does not work, as they become obsolete by the time they are operationalized

ANALYTICS SOLUTION

DataRPM's solution delivers a cognitive predictive maintenance platform that automates data science using meta-learning, which is an actively researched area and the next frontier for machine learning. Meta-learning is about training machines to do machine learning, just like data scientists work, by running multiple different experiments and from each of those experiments extracting meta-data about the characteristics of the dataset, the features used, the algorithm applied, the hyper-parameters selected and the result of the objective function (error, accuracy, precision, recall, etc.). The machine learns from these experiments continuously and becomes smarter over time to be able to identify which combinations of features, algorithms and hyper-parameters are going to deliver the best ensemble of predictive models for predicting everything from asset failures/breakdowns, inventory and resource optimization, quality and warranty issues, and risks.

IMPACT

Across various customers, DataRPM has seen on an average:

- 30% cost savings for predictive maintenance

- 300% increase in prediction quality

- One-thirtieth the time it takes to do analysis manually

Sundeep Sanghavi
Chief Executive Officer

DataRPM

Redwood City, CA

Industry: Predictive Analytics

⊄ DATARPM

BUSINESS CHALLENGE

Eurpac Service Inc., distributes and merchandises leading consumer products, serving manufacturers such as Sony, Disney, L'Oreal and Microsoft to a variety of retailers globally, operating more than 2,000 retail outlets. Eurpac's Business Analytics Director, Shelley Rohlik, and her teammates were tasked with fueling three years of rapid growth through internal efforts and acquisitions. Rohlik and her colleagues supported the merger of four disparate field service teams into one global retail team offering superior in-store service, for less cost, with an unmatched level of communication to client manufacturers and retailers.

ANALYTICS SOLUTION

Eurpac's goal is to deliver superior "Retail IQ" by creating superior insight on every product, in every store, every day. First and foremost, Eurpac's approach is not a standalone. The analytic solution was, and is, a cornerstone of its operators' everyday approach to produce tactical advantage, operational efficiency and strategic position in the marketplace. The solution employed a myriad of techniques in a distinct combination to create the solution set tied into Eurpac's process flow steps applied to every product category: distribution, unmatched speed to shelf, in-stock rate of all product placements, and strong brand awareness.

IMPACT

Retail IQ is a game-changer on several levels, both qualitative and quantitative. The qualitative impacts are strategic position, trading partner relationships, and talent acquisition and retention. In quantitative terms, Retail IQ is equally impactful: Revenue is up; client portfolio and top line increased and expenses are down. The Retail IQ analysis did not just improve Eurpac's organization. The largest retail customer—one with 3,000 suppliers—recognized five of its 3,000 suppliers for exceptional performance in 2015. Three of the five awards went to Eurpac. This analytics project has provided Eurpac with extraordinary results.

15

15

Shelley Rohlik
Director of Business Analytics

Eurpac Service, Inc.

Dallas, TX

Industry: Retail

EURPAC
SERVICE, INC.

BUSINESS CHALLENGE

As part of the company's marketing strategy, one of Farmers Insurance Group's goals is to focus on understanding how long it will retain specific customers and how its business can grow with them. Personalization has become a major initiative for the company, with the aim of better knowing its customers in order to target them with effective, tailored messaging.

ANALYTICS SOLUTION

Farmers uses historical data to determine what appeals to customers and predictive analytics to project that into the future and determine the right products and messages for them. It helps to ensure appropriate spending and optimize what the company offers in the market. Experimentation is a key part of advancing the company's knowledge, whether that's a change in ad spend or more personalized messaging. Technology is also critical.

IMPACT

The company's approach introduces a more in-depth understanding of customer needs, from buyer hesitancies to breadth of offerings. Predictive tools have enabled Farmers to improve personalization for overall strengthened communication and more informed marketing decisions.

16

16

Chris Ciccarello
Director, Marketing Analytics

Farmers Insurance Group

Woodland Hills, CA

Industry: Insurance

FARMERS
INSURANCE

BUSINESS CHALLENGE

Over the past four years, fraudsters have upped the ante in payment card fraud. First, fraud patterns began changing more rapidly. This reduced the effectiveness of analytic models, which required time and expense to update with each new fraud pattern. Second, card issuers started to experience cardholder retention issues when they declined more transactions in an attempt to reduce fraud.

ANALYTICS SOLUTION

FICO developed a patented Adaptive Analytics technology and multilayered self-calibrating analytics for deployment into its FICO Falcon Fraud Manager platform, which protects 2.6 billion payment cards worldwide. This solution can leverage a client's fraud experience in near real-time to adjust model weights without the need for time-consuming off-line training.

FICO also created a patented technology called Behavior Sorted Lists, which identifies an individual cardholder's specific spending patterns at preferred merchants and preferred merchant types. Falcon models ingest this behavior, identify whether the cardholder is in-pattern, and use that information when evaluating the likelihood of fraud. This evaluation happens within 50 milliseconds of a card swipe—one-sixth the time it takes to blink.

IMPACT

The implementation of the innovative analytics in FICO Falcon Fraud Manager enabled card issuers and payment processors to combat the constant barrage of payment card fraud attacks. By adding Adaptive Analytics, one large U.S. debit card issuer realized an 18% improvement in real-time fraud dollars detected, and a relative reduction of 11% in account false positive ratio, saving millions of dollars per year and improving the customer experience for its cardholders. One international card issuer has experienced a 17% reduction in false-positive cases with no negative impact on the real-time fraud detection rate. For transactions that occur at a cardholder's favorite merchants, bank clients have seen a reduction in false-positive occurrences of 35-50%, contributing to significant increases in customer satisfaction.

Scott Zoldi
Chief Analytics Officer

Fair Isaac Corp. (commonly known as FICO)

San Diego, CA

Industry: Enterprise Software

FICO

BUSINESS CHALLENGE

As Foursquare grew its digital advertising business, the company found many clients facing a challenge around real world measurement, specifically how to tie success of digital advertising campaigns to in-person store visits.

ANALYTICS SOLUTION

In February, Foursquare launched Attribution, an analytics-based solution that measures the success of any digital ad campaign in the real world in real time, allowing advertisers to optimize campaigns mid-stream.

Foursquare leverages data from over 50 million monthly active users on Foursquare and Swarm to help advertisers better understand their influence on target audiences. Ad campaigns that run with Attribution can measure how effective digital ads are at driving foot traffic into stores compared to a control group that has not been shown a particular ad. Attribution measures incremental lift; behavior of new vs. lapsed customers; as well as chain, competitor, category and taste affinities.

IMPACT

In the first few months after launching Attribution, Foursquare quickly signed over 55 different brands, publishers, agencies and programmatic partners. Attribution's real-time data has helped brands both large and small to measure how effectively they can reach customers with their brands or platforms.

Foursquare has seen the success of these campaigns and Attribution's insight firsthand. One example is a campaign with Flipboard that used Attribution to measure the performance of ads for a major national retail brand. Through this test, Flipboard was able to demonstrate that the brand's ads drove 12% incremental lift in visits to retail locations within a week.

Attribution has had a clear impact on Foursquare, further defining the company's role in the advertising technology industry and deepening the company's use of meaningful location intelligence and analytics.

18

18

Steven Rosenblatt
President

Foursquare

New York, NY

Industry: Advertising Technology

FOURSQUARE

BUSINESS CHALLENGE

General Dynamics Mission Systems merged two large and equally sized units into one, starting Jan. 1, 2015. This new company was geographically dispersed (12,500 employees in 100 locations and 19 countries), with varying cultures, benefits and HR programs. Challenges were to build a common set of HR processes and analytics, win over a skeptical techie crowd, drive employee engagement and retention, and make sure a newly formed leadership team had data and analytics to conduct evidence-based decision making.

ANALYTICS SOLUTION

The company developed and deployed a series of approaches common to the two units, including ways to count, track and analyze employees hired, promoted and terminated. They merged diverse PeopleSoft databases and developed a common hierarchy nomenclature that allowed the companies to be treated as one for data and analytics purposes. Additionally, General Dynamics developed a family of "Workforce Demographics" reports to depict data by various slices over time and executed a common Employee Engagement Survey to gauge the state of the employee value proposition and areas to improve. The company also harmonized the new hire and exit surveys to a set of common questions, with outputs of simple graphics and heat maps.

IMPACT

General Dynamics has leveraged analytics to understand its workforce and guide program and process design. IPTs and functional units developed and deployed common process and improvements based on "key drivers of engagement" from analytics. Examples include a competency self-assessment module, benefits adjustments based on specific survey questions, a long-term incentive program, enhanced employee recognition programs and expanded community investment. Since the start of 2016, voluntary attrition is down 18%. Headcount is up 4% in the past 12 months, a reversal of annual declines in recent years. Employee productivity is up 32% since the two companies were merged. Positive response to "your overall work experience with the organization" has gone up 5% from 4Q2015 to 1Q2016.

19

19

Philippe Wiener
Director, Human Resources Systems
& Analytics

General Dynamics Mission Systems

Greensboro, NC

Industry: Defense

GENERAL DYNAMICS
Mission Systems

20

20

Beena Ammanath
Executive Director, Predix Data Science

General Electric

San Ramon, CA

Industry: Industrial IoT

BUSINESS CHALLENGE

General Electric spends approximately $40 billion in direct materials sourcing and has hundreds of ERP systems across its different business units. As the systems and business units are fragmented and operating in silos, they often have multiple contracts with the same supplier for delivering same or similar products. Supplier partners are restricted to a particular GE business they cater to and do not have visibility into the needs of other GE business units that might need the same or similar product, leading to multiple contracts, negotiations and a duplication of effort for both sides. There was a significant opportunity to bring all the businesses and systems together and identify opportunities to unify sourcing efforts, which would benefit both GE and its supplier partners in multiple ways.

ANALYTICS SOLUTION

With the help of machine learning and analytics, this solution analyzed entire GE industrial direct materials sourcing, drove a new level of transparency and visibility to all GE business units, the parts they need, price points, to enable better negotiation and transparency with GE supplier partners. It also helped supplier partners to work with multiple GE business units for same or similar parts.

Examples of solutions implemented:

- Image analytics of parts for design similarity, when the part name/descriptions are not matching, to identify similar parts being sourced from different vendors

- Enterprise-wide search for all sourcing teams across GE, to search for part/supplier and the price point being offered in the past, for efficient future purchase decision leveraging Natural Language Processing

- Identification of suppliers providing same parts across contracts and businesses through big data engineering and machine learning algorithms

IMPACT

GE: Estimated productivity gains of up to several million dollars through analytics initiatives around supplier mastering, parts harmonization and payment terms mastering.

Supplier Partners: Transparency and visibility to other GE business unit needs via semantic search tool and enabled scale economy through additional orders for the same part.

BUSINESS CHALLENGE

GlobalHealth aimed to uncover data insights for the purpose of improving patient and member outcomes. The organization's goal was to better understand its members' needs through the use of predictive and prescriptive analytics.

ANALYTICS SOLUTION

GlobalHealth worked with VitreosHealth, an analytics provider, to analyze its data sets and build algorithms to segment members who may be at risk of health emergencies.

GlobalHealth ran tests to assess the accuracy of its predictive model. The model considers predictive risks such as disease-specific, composite and utilization risks combined with outcomes like hospitalizations and emergency room visits to understand a member's state of health. Members were categorized as either critical, high utilizers (of benefits), hidden risk or healthy and unknown (e.g., new and young members with short medical histories). VitreosHealth ran the data through regression analysis tests and clinical team members vetted the diagnosis codes.

In one instance, it was discovered that a small percentage of members were being incorrectly identified as chronic diabetics. These members may have been subscribed a steroid and had blood tests taken shortly after and were recorded as having high or low blood sugar levels, which thereby triggered a diagnosis code for hypertension or prediabetes. The algorithm was adjusted and fine-tuned to ensure that data was being interpreted in a precise way.

IMPACT

GlobalHealth launched its proactive outreach program in January 2014. Since then, the company has seen an 18 percent reduction in emergency room encounters and can predict nearly 70 percent of its hospital admissions. The organization has nearly 50,000 members and has contacted approximately 7,000 members through its outreach program.

Dave Thompson
Senior Vice President and Chief Operating Officer

GlobalHealth

Tulsa, OK

Industry: Health Maintenance Organization

Global
Health

BUSINESS CHALLENGE

As an arts service organization advocating for the cultural community, the Greater Philadelphia Cultural Alliance has traditionally been challenged by the lack of reliable data, leading to false assumptions about the scope and impact of the arts. This had real implications in how it is perceived by the public (the arts are elitist, groups are dependent on large donors and cultural leaders are not good business managers). It also impacted its ability to secure greater investment in the arts by civic leaders.

ANALYTICS SOLUTION

The Greater Philadelphia Cultural Alliance's portfolio research series was a game changer for its field. These reports, including its recent national study, Portfolio 2015, Culture Across Communities, for the first time documented the scope and impact of the arts in a reliable and compelling way. The portfolio synthesizes thousands of data points about the arts—financials, programming, and fundraising—and provides an evidence-based narrative that trumps misconceptions about its field. When a state legislator wants to put a tax on the arts or a city council member is unwilling to preserve funding for the cultural fund, the Greater Philadelphia Cultural Alliance is able to use the analytics in Portfolio to show that its efforts would negatively impact well-run, small, community-based organizations that provide accessible arts experiences throughout the region. Based on its analytics and advocacy, city officials now support the Greater Philadelphia Cultural Alliance's research and work with them to document the impact of the arts in their districts.

IMPACT

The Greater Philadelphia Cultural Alliance's thoughtful approach to cultural data and analytics, particularly its 2015 national report, has been a game changer putting them on the national stage for arts research and cultural advocacy. The Alliance has been invited to participate in national convenings such as the National Arts Marketing Project and the recent Wallace Foundation convening on audience research (Wallace Foundation's "Road to Results"). It has also resulted in the Alliance providing custom consulting not just for cultural groups but also for civic groups including the Center City District, University City District and others.

22

22

John McInerney
Vice President, Research & Communications

Greater Philadelphia Cultural Alliance

Philadelphia, PA

Industry: Nonprofit Cultural

BUSINESS CHALLENGE

Spring is harvest season in central Florida, but also the time when rattlesnakes form dens under fern crops, putting urgent pressure on local hospitals and healthcare providers to have highly perishable anti-venom on demand. The amount of anti-venom needed is difficult to determine, but it's not something that can be left on the shelf—a supply chain challenge. This is only one example of the supply challenges H. D. Smith faces on a daily basis. With data dispersed across multiple subsidiaries and warehouses, getting it in one place for analysis was a time-consuming challenge.

ANALYTICS SOLUTION

H. D. Smith began using FusionOps, a cloud application with built-in supply chain analytics that guide global enterprises in reducing cost, increasing revenue and improving customer service. The platform enables the wholesaler to better anticipate and meet demand and offer service levels it couldn't have previously. It also uses prescriptive analytics, allowing simulations of different scenarios for a better understanding of the pros and cons of alternative decisions.

IMPACT

After implementing FusionOps, H. D. Smith:

- Has had better insight into service exceptions

- Creates dashboard to guide daily efforts, using the data as needed

- Has a new understanding and anticipation of demand

- Keeps its inventory better aligned with what it will actually sell and when

- Has achieved a reduction in inventory on hand and an improvement in service levels

- Is able to meet demand 98.5% of the time, beating its target every time

- Uses visual tools that have increased efficiency and saved time

- Uses software that enables more collaboration among partners, including key customers and suppliers

Kyle Pudenz
Senior Director, Purchasing

H. D. Smith

Springfield, IL

Industry: Pharmaceutical

BUSINESS CHALLENGE

Health Care Service Corporation was faced with the challenge that traditional evaluations of fee-for-service costs do not adequately capture the performance of providers. More robust cost measures are needed, balanced with measures of quality and accurate coding. This is complicated by the fact that patient care is often provided by an array of primary care physicians, specialists, hospitals and ancillary providers. As such, a holistic view of costs across episodes of care is required. Equally important are the connections and interactions among providers and the impact those have on member care and network performance.

ANALYTICS SOLUTION

A phased approach was taken with separate projects for each dimension of cost efficiency, clinical quality and coding accuracy. The first phase focused on efficiency by bundling claims into episodes of care, then comparing the cost of attributed episodes for each provider to similar episodes treated by peers. Providers' connections to other providers, as evidenced by shared patients, were also analyzed to gain insight into the overall impact of network composition. Predictive modeling is used as a means to understand potential drivers of performance, such as group and hospital affiliations. A full suite of reporting is being developed to provide transparency and help providers understand their results with actionable insights to improve. Lastly, results are incorporated into tools that simulate the performance of alternate networks and the impact of modifications to existing networks. The coding accuracy phase of this project has been completed, and the clinical quality phase of this project is underway, led by HCSC clinical leaders in collaboration with a broader community of industry clinicians working to identify appropriate metrics and data sources.

IMPACT

This solution greatly enhances HCSC's ability to improve member care and reduce costs by developing high performing networks, modifying care patterns, engaging and educating providers to enhance performance, improving transparency and identifying opportunities to implement alternative payment models.

Gary Stanford
Vice President & Actuary, Network Analytics

Health Care Service Corporation

Chicago, IL and Richardson, TX

Industry: Insurance

HCSC
Health Care Service Corporation

BUSINESS CHALLENGE

Independence Blue Cross experienced the challenge of individually targeting Medicare Advantage (MA) marketing materials in an evolving and increasingly competitive healthcare landscape. MA products are very stratified, and individuals select products for a range of reasons. This means that to market MA plans effectively, a successful campaign must contain an appropriate product and tailored message for each individual. Given budget and development constraints, how could Independence segment the prospect list so that each individual received the most relevant material?

ANALYTICS SOLUTION

A multistep process centered around the k-means clustering algorithm with product prediction inputs was used to estimate an individual's product choice and content preferences. The data set consisted primarily of third-party prospect data purchased by Independence. While some of these records could be linked to existing Independence members, the majority could not. The predictive model was trained using the Independence members' product selection information. The models were deployed to output the probability that a prospect would select a given plan. Then k-means clustering was used to segment the prospect list.

IMPACT

Overall, the MA annual enrollment period was a success. Independence's net MA membership increased by over 7,000 new members. Given confounding factors like new product offerings, benefit changes and rate adjustments, campaign success cannot be solely attributed to the segmentation efforts. However, since the inception of the use of segmentation, a reduction in cost to acquire as well as member churn has been realized. For model improvement, analyses to measure accuracy of predicted plan selection within each cluster were performed. The predicted choice was compared to actual plan selection. For five of the six clusters, the model's outputs were highly predictive of plan choice. This year modifications were made to the cluster for which actual plan enrollment did not reflect the model predictions.

Ashley Masterson
Manager, Medical Cost and Business Analytics

Independence Blue Cross

Philadelphia, PA

Industry: Healthcare

Independence ✚

BUSINESS CHALLENGE

Intel's supply chain is a global and complex capital-intensive network, requiring many specialized materials and highly complex manufacturing processes, while having short product life cycles. Manufacturing lead time is routinely measured in months, while customers demand order flexibility to be satisfied in mere days. Intel benchmarked and aligned its key supply chain metrics and concentrated focus on satisfying its customers. Now, its performance metrics are mainly APICS SCOR metrics (e.g., Perfect Order, Order Fulfillment Lead Time, Inventory Turns and Asset Utilization).

ANALYTICS SOLUTION

Advanced analytics had a very clear connection to selecting the most salient cross-supply chain metrics, including improving system predictability, increasing agility, reducing inventories and improving customer satisfaction. As such, Intel tracked, aligned and improved the most impactful "Tier 1" metrics that steered operational excellence in core business and provided insight into developing future lines of business. Intel's analytics team provided advanced data models to help its supply chain to make better and more effective decisions.

Intel has built advanced analytical capabilities in-house by hiring right, funding and leading advanced university research, and training and building an internal team of data scientists with diverse skillsets. These scientists regularly evaluated and employed advances in technology such as big data, cognitive computing, ML/AI, text mining, agent-based modeling and simulation.

IMPACT

By adopting a new mission, Intel's alignment, focus and discipline allowed it to continuously progress and improve, moving to attain standing as a world-class supply chain. Developing and mastering the analytical techniques to forecast, plan and align cross-functional supply chain metrics enabled millions of dollars in savings (e.g., avoiding purchasing capital equipment, reducing inventory levels and inventory obsolescence, and considering system-wide optimal trade-offs). Similarly, advanced analytics solutions enabled Intel to capture millions (potentially billions) of dollars of revenue through improved customer satisfaction, increased agility and faster time to market.
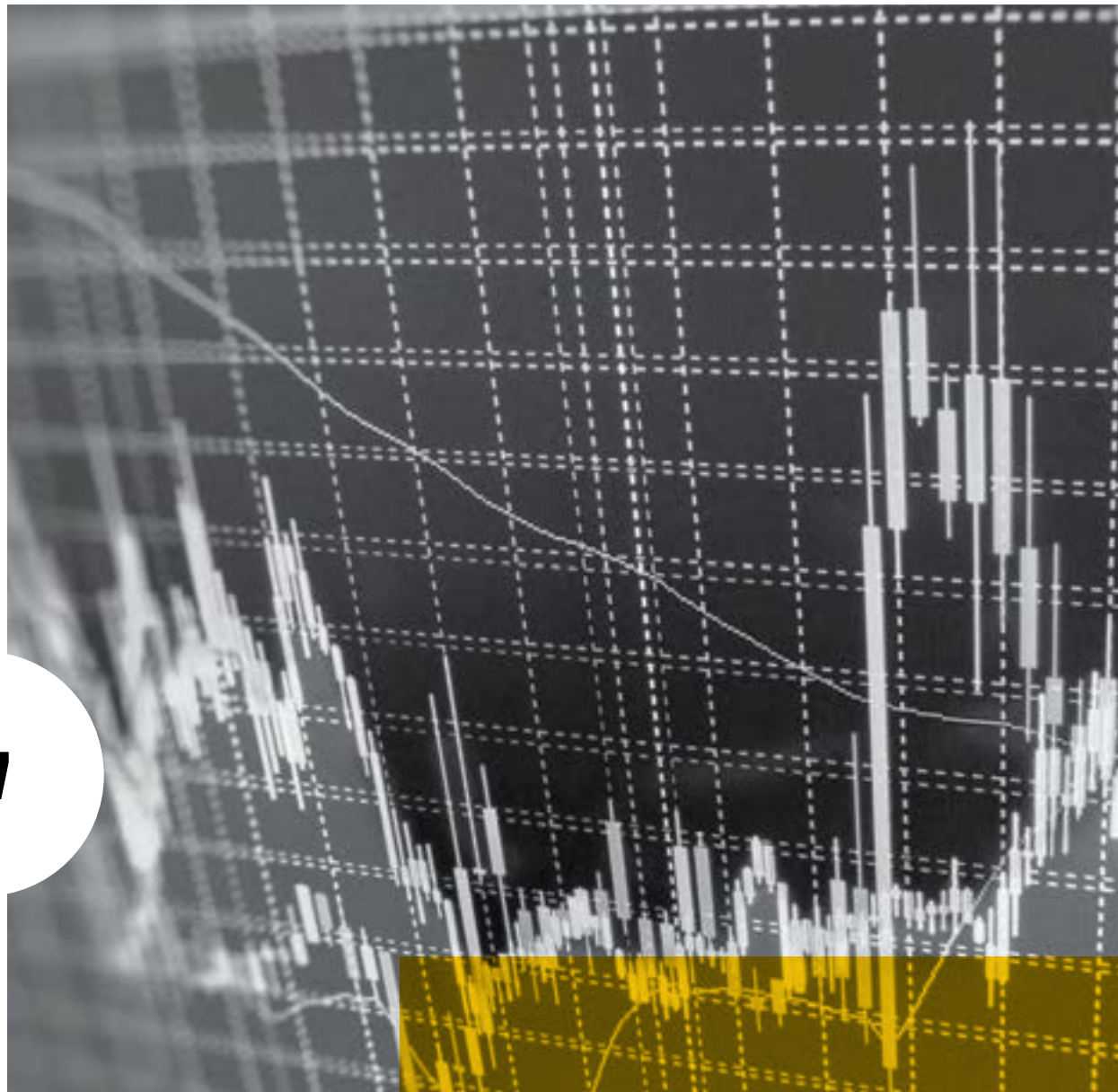
Mani Janakiram
Director, Supply Chain Strategy & Analytics

Intel Corporation

Chandler, AZ

Industry: High Technology

BUSINESS CHALLENGE

The pace and complexity of biochemical research is increasing rapidly. Although the industry is data rich, transforming complex data sets into actionable knowledge remains a challenge—particularity for small-to-medium-sized biotechnology companies (SMBCs). The needs of innovators today extend far beyond using a single mining algorithm and a spreadsheet. To remain competitive, a researcher requires an analytics system that can address complex questions across multiple data types and process scales without the need for programming, continuous IT support or prohibitively expensive data science teams. A business challenge for IOMICS has been the design of an affordable yet highly automated analytics system that will allow SMBCs, and all scientific innovators, to compete effectively.

ANALYTICS SOLUTION

To address this challenge, IOMICS developed the FUSION Analytics Platform™, a cloud-based software system for prescriptive analytics and rapid prototyping of advanced decision models. FUSION is different by design. FUSION employs multiple artificial intelligence strategies and over 80 semantically integrated data sets to extract meaning from a broad range of chemical and molecular data types. FUSION is a highly automated system that utilizes the most effective machine learning techniques, including deep learning, along with powerful new algorithms for data quality management, automated data staging and model development, and integrated high-performance GPU computing. FUSION is a complete biochemical analytics solution accessed from the desktop.

IMPACT

FUSION is purpose-built for biochemical design and toxicity screening, modeling biological response and patient state analytics. One of the most important deployments of the FUSION Analytics Platform in 2016 is in translational medicine. FUSION is currently mining one of the world's largest open-access repositories of cancer research data. This initiative has resulted in the identification of multiple molecular phenotypes of interest to both drug development companies and forward thinking clinicians interested in predictive healthcare analytics at the point-of-care. FUSION is helping to democratize science by allowing a greater number of academics and SMBCs to compete at the highest levels of biochemical research.

Joseph Gormley
Chief Technology Officer, Senior Software Architect
and
Daniel Corkill
Chief Science Officer, Senior Data Scientist

IOMICS Corporation

Cambridge and Worcester, MA

Industry: Science / Healthcare

IOMICS
INTELLIGENT ANALYTICS

Charlie Sung Shin
Senior Director, CRM & Analytics

Major League Soccer

New York, NY

Industry: Sports

BUSINESS CHALLENGE

Major League Soccer aimed to maintain and increase a broad base of supportive fans—an important component in the success of each sports team. MLS' goal was to foster and nurture fan affinity by enhancing efforts using marketing analytics.

ANALYTICS SOLUTION

The organization developed a four-phase predictive analytics approach to move fans from one phase to the next, based on a series of activities.

1. Data acquisition: The goal of the first phase was to collect information and other attributes that will help establish and enhance the relationship with the fan.

2. Fan engagement: Communications with the fan base became more personalized, based on enhanced fan profiles as a result of the data acquisition. Fan communication is driven by "Fan Journey" across various channels (email, paid digital/social, SMS, app notification) leveraging different data variables (location, club preference, click data, custom scores, etc.).

3. Monetization: Based on fan profiles and transaction histories, MLS used predictive analytics to identify the best offers for customers in an effort to increase ticket, merchandise and digital subscription sales.

4. Loyalty: MLS utilized fan behavior data to identify the club affinity, which showed a strong correlation with engagements. An increase in engagements leads to an increase in monetization and, ultimately, an increase in customer lifetime value.

IMPACT

Based on email response data, the personalized email approach yielded a 39% increase in unique click rate versus the static email. In addition, sales per email increased by 234% when offers were personalized to the recipient based on key attributes identified through predictive analytics.

BUSINESS CHALLENGE

A single product being produced and shipped internationally can involve over a dozen supply chain parties and hundreds of supply chain events. While large global companies often spend millions on systems to provide supply chain visibility, Matson saw an opportunity to "level the playing field" for small and midsize companies by providing a single, global, cloud-based supply chain platform via a powerful, intuitive and universally accessible interface. Matson's challenge was to transform large amounts of data from multiple parties and systems spread around the globe into a solution to improve supply chain performance for these target customers.

ANALYTICS SOLUTION

Matson's cloud-based analytics solution, "Supply Chain Analyzer," was built to provide a single, mobile dashboard that enables supply chain executives to manage its supply chains more strategically from order creation through to final delivery. Matson involved customers throughout the development cycle, ensuring that Supply Chain Analyzer was both powerful and easy to use in order to help ensure adoption. By making sense of this vast amount of data, Supply Chain Analyzer empowers executives with strategic insights into its global supply chain performance via a single interface that runs on any desktop or mobile device.

IMPACT

Matson Logistics (ML) Supply Chain services were first introduced in 2013. The Supply Chain Analyzer first went live in 2015 and has been a strategic differentiator, enabling ML Supply Chain to close and grow significant new business. ML Supply Chain has grown its revenues and operating income significantly over the past two years, and in virtually every significant piece of new business won, Supply Chain Analyzer has been a critical component in the customer's decision. Matson has solved the big data analytics problems for small-to-medium size global enterprises through Supply Chain Analyzer.

Peter Weis
Vice President and Chief Information Officer

Matson, Inc.

Oakland, CA

Industry: Transportation and Logistics

Matson.

BUSINESS CHALLENGE

In the past, determining surgical costs at Mercy Health was an unstructured, manual process. At the time, surgeon preference cards and product contracts (which contain supply cost) were the only methods available to determine the cost of surgical procedures. Without data as evidence, there were varying opinions as to the best practice, price and product for a given procedure. As a result, there were significant variations in the cost per surgical case across Mercy.

To support Mercy's strategic goals related to cost, service and quality, and help Mercy pioneer a new model of care while balancing financial pressures due to changes in reimbursement, perioperative leaders set out to find new ways of monitoring, measuring, comparing and improving the cost and delivery of surgical procedures while increasing patient satisfaction and creating an exceptional experience.

ANALYTICS SOLUTION

In order to automate the delivery of information in a way that could be easily understood and consumed, Mercy created a set of analytic dashboards that transformed the information delivery experience for the user. These dashboards built on a high performing in-memory data platform allowed for very large data sets to be aggregated and rolled-up into high level metrics, but also allowed for the drill-down into transaction level detail. Each dashboard also included a data exploration tool that allowed users to explore and self-discover the data beyond what was provided in the dashboard. The dashboards were also designed to highlight opportunity and variation in practice. This approach to delivery enabled perioperative leaders to focus on where they could have the greatest impact rather than low value opportunities.

IMPACT

Using key cost and outcome data related to surgical procedures across Mercy, they achieved $9.42 million in cost reduction, eliminated or minimized the use of certain surgical products, reduced variation, established best practices across perioperative departments and ensured quality post-operative outcomes for patients.

30

30

Curtis Dudley
Vice President, Performance Solutions

Mercy Health

Industry: Healthcare

Mercy✝

BUSINESS CHALLENGE

Crafted five years ago, the Navis vision for big data and analytics included a strategy to integrate all IT operations data sources defined in its enterprise application portfolio. As a software solutions provider, Navis' "software factory" is its differentiator, providing continual challenges that identify customer value opportunities derived from integration of data from multiple internal use systems. Optimizing the utilization of these resources requires a modern strategy on how to bring together these various IT capabilities. Navis strives to put the days of regional operational views of details in the past. The solution: Capture and analyze all flavors of IT data—operations, utilization, performance, manpower and financial—to create holistic IT insights.

ANALYTICS SOLUTION

Navis has made a significant investment in the rollout of Birst as the enterprise analytics solution. Leveraging this investment means Navis can continue to use existing people and processes already committed to its data management vision. With the recent adoption of OpsDataStore, an ingenious solution that enables and simplifies the complex process of IT Operations Analytics, Navis will now be able to systematically improve the speed of its decision making around IT resource consumption and allocation.

IMPACT

By introducing OpsDataStore into its global IT enterprise operations environment, Navis is able to elegantly manage its distributed virtualization resources with insights into service delivery, resource utilization and asset accountability. Optimized utilization is achieved from prescriptive assignment of virtual environment resources for solutions development across its solutions lifecycle: engineering, customer support and professional services. Transparency is achieved by reporting out how well a subscribing development team can predict that resources are never oversubscribed or sit idle. Full accountability means reporting back to the business unit management the proficiency of its teams—via true total cost of ownership—in maximizing the value of resources allocated to its business.

31

31

Dave McCandless
Vice President, Information Technology

Navis

Oakland, CA

Industry: Logistics / Cargo Management

NAVIS

BUSINESS CHALLENGE

Navistar, as other manufacturers, needs to support its products in the field. The product is trucks, and the key measure of success is uptime—the proportion of time that a truck is operable rather than in the shop for repairs. From an analytics perspective, the challenge is detecting problems in the vehicle before customers experience it.

ANALYTICS SOLUTION

Navistar uses a remote diagnostics system: OnCommand Connection. The system gives the company access to vehicle and engine data, on all makes and models, by interfacing with telematics systems that fleet customers use such as PeopleNet and Omnitracs. From an analytic perspective, the IoT data is available to train machine learning models to predict which vehicles are at risk and which components are potentially problematic. The analytics team developed algorithms to detect emerging problems in as few as five vehicles in a population of tens of thousands. The algorithm predicts the lifetime failure rate and sets alerts on future risk instead of focusing on historical experience. In addition, the team uses AI techniques to predict which individual vehicles based on IoT sensor data are highest risk for the resulting failures.

IMPACT

OnCommand Connection has allowed Navistar to achieve the following successes:

- Detection of major issues for customers occurs four to six months earlier using a predictive model of failures for more than 40,000 combinations of diagnostic trouble codes by make, model and year of vehicle

- Using dozens of "synthetic" fault codes to communicate to customers to make proactive repairs

- Identifying the top fleets starting to experience issues and contacting customers to set up proactive repairs and part changes before failure

Dan Pikelny
Vice President, Analytics

Navistar

Lisle, IL

Industry: Manufacturing

NAVISTAR®

32

BUSINESS CHALLENGE

In 2014, nearly one dollar out of eight distributed under Unemployment Insurance (UI) programs in the U.S. went to someone who was ineligible, resulting in over $4 billion of erroneous payments. Fraud and criminal schemes account for less than 5% of the total cost. In an effort to tackle the 95% of activity that results in improper payments, the New Mexico Department of Workforce Solutions (NMDWS) aimed to enhance program integrity, reduce overpayments without impacting eligible claimants and increase collection efforts.

ANALYTICS SOLUTION

In April 2015, NMDWS implemented the Improper Payment Prevention Initiative (IPPI), which combined insights from predictive analytics and behavioral science to successfully increase honest reporting while reducing improper payments.

NMDWS, in collaboration with Deloitte Consulting LLP, identified the key reasons, including individuals not performing required work searches and not properly reporting earned income while on benefits. The predictive model was developed based on patterns of past overpayments using predictive equations and suggests who is at a higher risk for an overpayment. By combining predictive analytics and behavioral science techniques, NMDWS implemented various forms of messaging, including certification boxes and pop-ups to remind claimants to review its information for accuracy and completeness, and a commitment mechanism when claimants log their work search activities.

IMPACT

Favorable results include: claimants who see a message are 40% less likely to commit fraud, and those who see the best-performing message are almost twice as likely to report earnings (avoiding an overpayment). By using the model, NMDWS investigators have been able to find 28% more overpayments with the same level of staff, and find them faster. People are getting back to work faster, too, with a 15% shorter time on benefits. These results add up to significant savings for New Mexico, without taking away benefits from eligible claimants or impacting staff time.
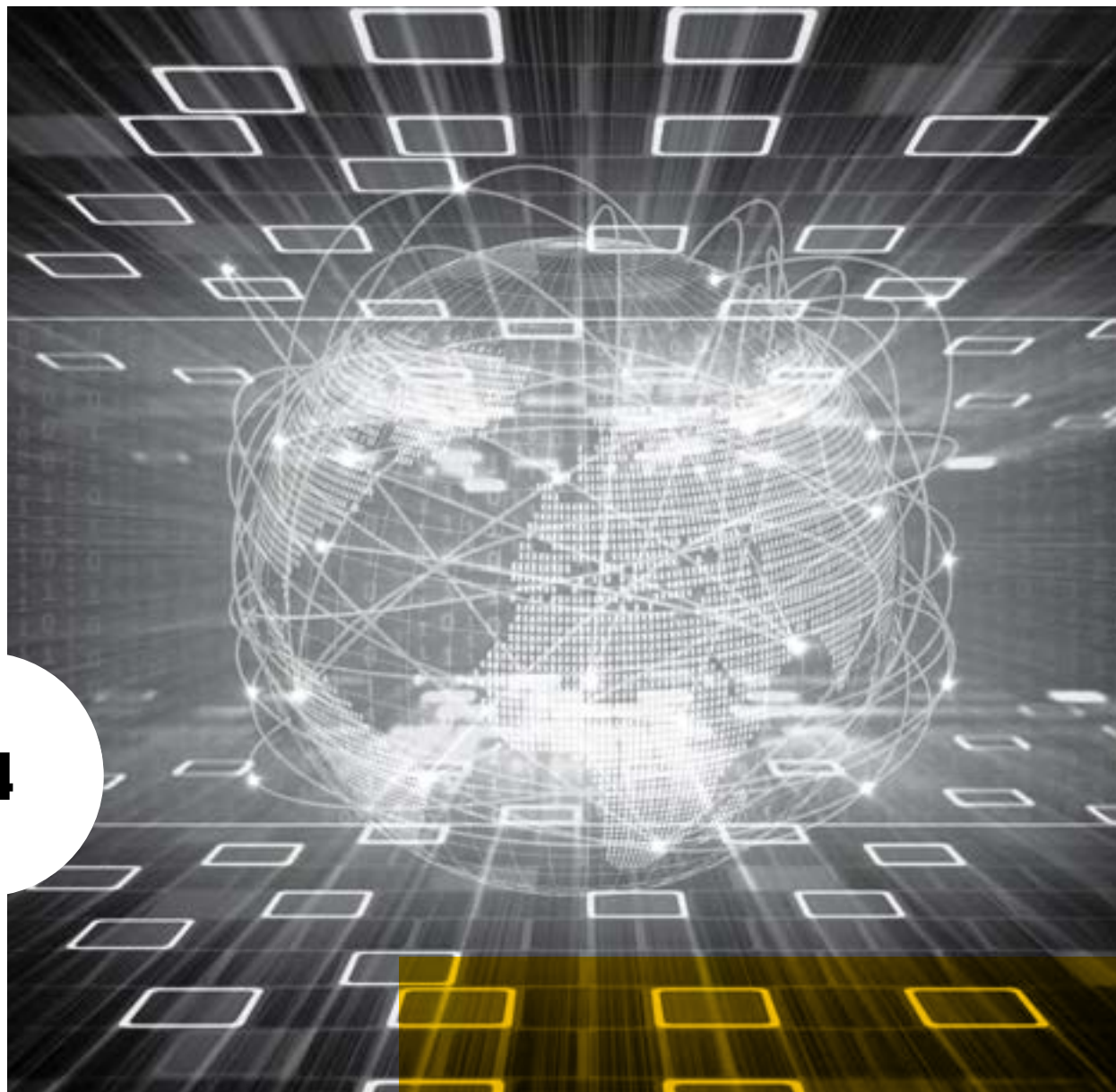
33

33

Accepting as Organization

New Mexico Department of Workforce Solutions

Albuquerque, NM

Industry: Government

New Mexico Department of **WORKFORCE SOLUTIONS**

BUSINESS CHALLENGE

Oak Labs works to redefine the way both retailers and shoppers think about the physical retail store. As consumers become increasingly savvy and their expectations of constant connectivity continue to accelerate, one can look at the physical retail space and be astounded at how little has changed in the last 100 years. Retailers continue to look to their online properties as the key to customer insight, and have yet, to date, truly understand and capture the analytical potential of brick-and-mortar stores.

The first challenge Oak Labs has tackled as a company starts in the fitting room. The Oak Mirror has been developed to create incredible customer experiences, expedite in-store operations and provide unprecedented data to its retail partners. Knowing that the fitting room was previously a black box for retailers, Oak Labs is now able to collect a quantity and scope of data about customers, merchandise and store associates that have never existed before.

ANALYTICS SOLUTION

The Oak Mirror is a hybrid mirror and touchscreen that allows shoppers to change lighting, request additional colors and sizes in a particular garment, or "Complete the Look" with a variety of accessories and additional articles of clothing—all without leaving the changing room.

In addition to creating transformative user experiences, the Oak Mirror uses RFID to detect merchandise brought into the fitting rooms. This allows Oak Labs to share real time data and intelligence to retail partners, enabling them to make more informed decisions around store operations, staffing, training, product merchandising and so much more to optimize conversion and sales.

IMPACT

Oak Labs' first launch partner was Polo Ralph Lauren. In its U.S. pilot, Oak Labs found that 84% of shoppers engaged with the technology. Additionally, shoppers who deeply engaged with the Oak Mirror spent 59% more than those who did not.

Healey Cypher
Chief Executive Officer / Founder

Oak Labs, Inc.

San Francisco, CA

Industry: Technology / Software

OAK LABS, INC.

BUSINESS CHALLENGE

When Oberweis Dairy began operating a call center for customer questions and concerns about products and services, the company was overwhelmed with data and needed a better way to tune in to the voice of its customers. In particular, the company wanted to understand why there was attrition in customer use of the dairy product home delivery service.

ANALYTICS SOLUTION

Oberweis turned to a text analytics service to gain insight on call center conversations. The company was able to uncover two factors contributing to increased customer dissatisfaction and attrition. The text analytics system identified a specific promotional strategy – free delivery for six months – that resulted in greater customer attrition. Customers complained about being charged after the six month free period ended. Oberweis addressed this by offering a discount on delivery rather than making delivery complimentary, which improved customer retention.

The text analytics system also identified a common theme among Oberweis customer complaints. Many customers complained that their milk had been delivered with "cream on top" and that the milk "looked funny." Human analysts were then able to connect the dots and identify a batch of milk that had not been homogenized and was causing the negative feedback.

IMPACT

The insights gained from using text analytics helped Oberweis make important changes to tactics and respond to customer concerns. The company was able to improve customer retention and identify areas where improvements can be implemented to address customer feedback.

35

Bruce Bedford
Vice President, Marketing

Oberweis Dairy

North Aurora, IL

Industry: Dairy

OBERWEIS.

BUSINESS CHALLENGE

One of the fundamental tasks of child welfare is to respond to reports of child abuse and neglect and assess the safety of children. Workers are required to make sometimes life-and-death decisions within tight time frames and account for a great mass of detailed information. Oklahoma Department of Human Services has a track record of adopting innovations in data and technology to solve problems in child welfare and other human services.

ANALYTICS SOLUTION

For this particular challenge, Oklahoma DHS formed a partnership with Mindshare Technology and Eckerd Family Services to implement Rapid Safety Feedback, a state-of-the-art predictive analytics program, to draw attention to high-risk cases. Data developers identified 15 data points correlated with increased risks to children. These data points produced a report of children known to child welfare living with a heightened risk of serious injury. This report alerts Continuous Quality Improvement (CQI) staff members who then work with supervisors and child protective workers to identify immediate actions to assure safety of those children.

IMPACT

Using predictive analytics for high-risk cases improves and supports safety decisions made by workers. Rather than learning from past tragedies, a rapid safety report can alert workers to the potential for tragedy before it happens. This data, along with coaching, adds an extra layer of protection for the children served and provides support for the child welfare workforce.

Ed Lake
Director

Oklahoma Department of Human Services (DHS)

Oklahoma City, OK

Industry: Social Services

BUSINESS CHALLENGE

A large customer of Owens Corning sells a significant percentage of its core products in stores across the U.S. Owens Corning's salesforce for this customer monitors sales and takes action at stores that need attention. The scope of stores to monitor by the sales teams tends to be fairly large and varied.

The sales managers had to manually search through point of sale (POS) data to find stores with unusually low/high sales. They also had to navigate multiple detailed reports, and it was time consuming and inefficient. For example, 10 percent of the stores would generally take between six and seven hours. Visiting all stores frequently was not possible, leading to missed opportunities and timely action.

ANALYTICS SOLUTION

Sales managers needed an alert to focus on specific stores to analyze/visit and to ask the right questions of the right store. The solution built was an easy-to-use report/analytics called the "Fish Finder." The solution was built with statistical analysis on the POS data from each store, with detailed analysis on an individual store level.

Each week the sales managers receive an email alert with a list of stores with statistically high or low sales—the outliers. The outlier report was integrated into a front-end Power BI-based analysis that included visual geo-analytics, regression and trending, and drill down capabilities for finer details.

IMPACT

Owens Corning's use of Fish Finder provided the following successes:

- Increased accuracy of finding stores with problems: From many to only 15-20 stores with outliers in sales

- Shortened time for analysis: From eight to 10 hours of data crunching to 15 minutes to review outliers

- Speed to action: Reduced from weeks to minutes

- Differentiation: Knowing more about Owens Corning products sold in stores, helping customers win business

- Productivity of commercial teams: Stories about how Fish Finder is making a difference

Malavika Melkote
Leader, Analytics Center of Excellence

Owens Corning

Toledo, OH

Industry: Manufacturing

BUSINESS CHALLENGE

Pershing's challenge was to help financial advisers differentiate their practices by offering unique solutions to better serve their clients. The presentation of these opportunities had to be simple and intuitive, allowing advisers to easily identify revenue-generating opportunities. Pershing also had to make it easy for advisers to provide supporting information when presenting these ideas to clients.

ANALYTICS SOLUTION

Pershing introduced OpportunityView for Fully Paid Securities Lending, which allows high-net-worth investors with stable positions in fully paid-for securities to loan securities to Pershing. This new dashboard uses advanced analytics to identify high-net-worth clients with fully paid-for securities whose demand has exceeded their supply. Each client's position is graphically presented based on the size of the revenue opportunity.

In addition to the size of the potential opportunity as of the last business day, the dashboard summarizes historical data to illustrate the potential across the last three months. This historical perspective is powerful and illustrates the daily value of the potential opportunity compounded over time. The dashboard also provides a graphical look-back on the income earned by clients who have opted into the fully paid securities lending program, allowing financial advisers to understand and measure the realized benefit to their clients.

Lastly, the dashboard allows associates in the home office of each broker-dealer to scan all advisers and identify those who have the most clients with potential opportunities. This view is impactful for two reasons: to position the fully paid securities lending program to introducing broker-dealers not yet participating; and to allow introducing broker-dealers that are participating to identify their financial advisers who have the most opportunities. The home office uses this information and suggests advisers use the dashboard to capitalize on the opportunities.

IMPACT

Within six months of the launch, enrollment in Pershing's Fully Paid Securities Lending program is up 6% across introducing broker-dealer firms and 11% across end investors enrolled.

Ram Nagappan
Chief Information Officer

Pershing LLC, a BNY Mellon company

Jersey City, NJ

Industry: Financial Services

Pershing
Advisor Solutions®
A BNY MELLON COMPANY

38

38

BUSINESS CHALLENGE

During the 2015-16 NBA season, Philadelphia 76ers capped off three seasons of very low win totals. Therefore, the organization knew there would be an immense challenge upcoming in renewing season ticket members residing in the volatile Philadelphia sports market. Additionally, the Sixers Retention Team was small compared to industry standards. With six representatives for over 8,000 season tickets, optimizing efforts would be critical during the renewal period, especially since it takes the Sixers over four weeks to work through its accounts and reach out to all season ticket members. The Sixers Analytics Team was tasked with helping maximize the renewal rate.

ANALYTICS SOLUTION

To address these challenges, the Analytics Department, led by Braden Moore, gathered all available demographic and psychographic information available. The team ran the consumer data through machine learning processes and developed a two-pronged model set, which consisted of a logistic regression as well as a decision-tree model.

IMPACT

The roll-out process included an individualized attack plan for each retention rep based on the model results. This enabled the team to better understand the intricacies of the retention process, and focus its time more effectively and efficiently on difference-making touch points during the offseason. The changes instantly increased the speed of initial sales. The team improved on first-week accounts renewed, seats renewed, and overall revenue by 3-4%, respectively. The Sixers increased the renewal rate of rookies by 3%, and second-year accounts by over 5%. The Sixers Service and Retention Team exceeded NBA projections by 13% and is currently ranked Top 10 in the NBA. The current renewal rate is second among all non-playoff teams, and 19% ahead of the next non-playoff team. Most impressively, the Sixers Service and Retention Team was also ranked No. 2 in customer satisfaction among NBA teams in season ticket member surveys.

Braden Moore
Director of Analytics and Insights

Philadelphia 76ers

Philadelphia, PA

Industry: Sports

BUSINESS CHALLENGE

SquareTwo Financial is a leader in the highly regulated, $100 billion asset management and recovery industry. Until recently, SquareTwo Financial relied on its network of partner law firms to help work with consumers to find payment solutions to their outstanding debt obligations. However, recent regulatory changes mandate that companies in the asset management and recovery industry can no longer allocate accounts to law firms for collection efforts if there are not also plans to pursue litigation on those accounts.

ANALYTICS SOLUTION

Anticipating upcoming regulatory changes, Trevor Giampietro and the analytics team began reviewing various types of data about SquareTwo Financial's accounts in the fourth quarter of 2015. Using the traditional test-and-control methodology, Giampietro gathered a pool of accounts with similar characteristics, split them in half, and tested the results of pursuing litigation as part of the collection process versus not pursuing litigation. Although the goal is to always resolve an account amicably and without litigation, Giampietro hoped this information would provide some insight into when the company might be more successful by pursuing litigation at the end of the negotiations and whether this might help the company recoup some of the lost monthly cash flow due to regulatory changes.

IMPACT

The changes SquareTwo Financial made have resulted in a four-times increase in liquidations in comparison to how similar accounts have historically performed. As a result of this analysis, 90% of the accounts that the company used to liquidate through the law firm channel will now be processed in the new channel, which will enable the company to triple the revenue that it previously received from that 20% of its business. SquareTwo Financial's goal is always to resolve an account without having to pursue litigation, but the company now operates with a much better understanding about how to proceed if litigation is, indeed, required.

Trevor Giampietro
Vice President of Velocity and Inventory
Management

SquareTwo Financial

Denver, CO

Industry: Financial Services

square two FINANCIAL

BUSINESS CHALLENGE

The North Face customers primarily purchase product once per year and do not come back every year to purchase additional product. With the company's strong focus on winter jackets, ski jackets and warm fleece, customers of The North Face were purchasing what they needed to stay warm in winter but not much in spring or summer. The North Face realized that in order to build repeat customers, it needed to push beyond the traditional winter market, identify what other activities its customers were doing with the product, and create targeted marketing based on activity, not just purchase history.

ANALYTICS SOLUTION

The North Face focused on enhancing customer engagement and collecting additional data by creating a loyalty program: VIPeak Rewards. The program is designed for members to earn redeemable "PeakPoints" for every dollar spent and for participating in outdoor activities. Data from sales, web searches, event registrations, competitions, surveys and other sources is analyzed to build deeper, more meaningful relationships with fans of the brand. The company examined customer behavior data to understand the activity categories those customers were most interested in. Standard RFM analysis of past transactions was applied so top potential customers could be identified. Once top customers were identified, The North Face layered in activity data to create effective targeting based on what customers do, and not just what they buy.

IMPACT

The company's efforts resulted in a dramatic increase in repeat and cross-category purchases, with the same customers buying from The North Face more than once. The North Face has been able to increase both the annual frequency of purchase and the year-over-year return purchase behavior of the VIPeak Rewards customers. In addition, the lessons learned with the top loyalty members are now being applied to nonmembers to identify top prospects across the whole direct-to-consumer base.

Ian Dewar
Senior Manager, Consumer Lifecycle

The North Face (part of VF Corporation)

Alameda, CA

Industry: Apparel/Outerwear

BUSINESS CHALLENGE

After the global financial crisis of 2007-08, Toyota Financial Services saw record numbers of customers falling delinquent on their auto payments. The company set three objectives for analytics: minimizing credit losses, controlling operating expenses, and improving market share by allowing the company to lend to a wider spread of customers. An important goal was to keep as many people in their vehicles as possible. Toyota needed to get better outcomes for its collection efforts, helping customers avoid repossession or credit impacts as a result of their delinquencies, while still profitably growing its lending portfolio. Toyota Financial Services needed to target the correct customers to most efficiently reduce delinquencies and keep the most customers in their vehicles.

ANALYTICS SOLUTION

Toyota turned to FICO for assistance. The partners combined statistical modeling, forecasting, predictive modeling and optimization into a single framework to develop a Collections Treatment Optimization (CTO) program that integrated decision management, reporting and advanced analytics for a data-driven, scientific and customer-centric approach to collections.

IMPACT

In its first year, the CTO program helped more than 1,700 customers stay in their cars and 10,000 customers avoid reaching a stage of delinquency that would affect their credit. Keeping delinquent customers in their cars and working out payment options has avoided millions of dollars in losses. It has also reduced the company's operating expense ratio by allowing Toyota to grow its portfolio by 9% without adding collections headcount. Toyota can now tie future lending decisions to its collections abilities and put more customers behind the wheel of a Toyota.

42

42

Jim Bander
National Manager, Decision Science

Toyota Financial Services

Chandler, AZ

Industry: Auto Financing

TOYOTA
FINANCIAL SERVICES

BUSINESS CHALLENGE

Trustmark Voluntary Benefit Solutions is a division of Trustmark Co. Trustmark offers universal life, disability, critical illness and accident insurance at the worksite through payroll deduction. One of the challenges faced across the organization is commonly expressed as "we have lots of data but minimal meaningful information." The challenge facing Trustmark is that data is in silos across multiple functional departments, limiting cross-functional access to data and sources, and stymying comprehensive analysis. Increasing pace of business and deluge of available data, insights are often delivered too late, reducing business values.

ANALYTICS SOLUTION

The objective of this initiative is to provide a business intelligence solution to help produce better business decisions via timely, accurate and more comprehensive analysis of available Trustmark data. The benefit of this capability cultivated a data-driven culture within Trustmark. The executive sponsor was the senior leadership team of Voluntary Benefit Solutions, who were responsible for the overall direction of the project. A data governance board provided direction and overall approval of business terms and common definitions. The project was executed by various business areas and IT shared-services functions. The organization was able to leverage an agile-like project management approach with iterations delivering keys metrics every six to eight weeks.

IMPACT

The initiative brought significant improvement and impact on providing "just-in-time" information to the Trustmark business stakeholders with ability to drill down to detailed information. Within months of displaying past-due bill metrics on a dashboard, the past-due bill metric was decreased by 18%, significantly reducing the amount of past due bills. The detailed tracking and trending of the payment processing data provided a mechanism to reconcile millions of dollars in missing payments for the finance department. The intangible result achieved was that it enabled each functional business area to establish ownership, accountability, and a cleansing process of its data sources to provide better downstream analytics.

43

43

Eshwar Pastapur
Vice President and Chief Information Officer of Trustmark Voluntary Benefit Solutions

Trustmark Insurance Co.

Lake Forest, IL

Industry: Insurance

Trustmark
Companies

PERSONAL. FLEXIBLE. TRUSTED.

BUSINESS CHALLENGE

U.S. Army soldiers faced with conducting combat operations in Afghanistan have numerous logistics challenges. One major challenge is maintaining complex electronic weapons systems and equipment used to conduct operations against the enemy and provide critical life-support functions. On-site technical assistance for power grid optimization and system diagnostics is costly, as representatives require transport via helicopter or vehicle convoy and their availability is subject to weather, terrain, altitude and threat constraints. Another major challenge is reducing fuel consumption and the corresponding need for resupply convoys.

ANALYTICS SOLUTION

The CECOM Training Support Division developed CEDATVLAR (CECOM Equipment Diagnostic Analysis Tool, Virtual Logistics Assistance Representative) to address the on-site needs of soldiers in theater by mitigating knowledge gaps in the operating environment.

IMPACT

CEDATVLAR has proven to reduce troubleshooting time and increase accuracy. This directly translates into higher equipment availability and significantly reduces the risk for soldiers in combat. The total cost savings from personnel reductions alone since 2013 are $20 million per system VLAR, with projected future annual savings of $10 million per system.

The Headquarters Power Optimization pairs loads to generators and turns off unneeded generators, reducing fuel consumption costs and saving lives. CECOM conservatively estimates cost savings in battalion headquarters at $3 million per year across the Army, a 17% reduction in generator fuel consumption.

As CECOM implements the optimization at brigade headquarters scale, the team anticipates increased savings as a percentage of fuel consumption due to an exponentially increased solution space. In combat operations, reductions in fuel consumption will reduce the requirement for fuel resupply convoys. This reduction will ultimately save soldiers' lives as the frequency of exposure to ambushes and improvised explosive devices (IEDs) decreases.

CEDATVLAR enables cost savings and avoidance by reducing the Army's logistics footprint: leaner sustainment personnel strategies, optimized fuel consumption, and better repair and supply decisions, all made possible by reducing uncertainty at the tactical edge.

44

Liz Miranda
Acting Director, CECOM Integrated Logistics Support Center (ILSC)

U.S. Army Communications-Electronics Command (CECOM)

Aberdeen Proving Ground, MD

Industry: Military

U.S. ARMY
**COMMUNICATIONS-
ELECTRONICS
COMMAND**

BUSINESS CHALLENGE

University of Colorado Health (UCHealth) is a nationally recognized system of hospitals and clinics based in Colorado. One of the system's locations, University of Colorado Hospital, has one of the busiest infusion centers in the region. Its growth has exceeded 14% over the past two years, resulting in high utilization, excessive wait times, patient dissatisfaction and staff overtime. A solution was needed to increase access and improve the patient experience without adding infusion beds and chairs.

ANALYTICS SOLUTION

UCHealth found that solution in a cloud-based, machine-learning, predictive analytics capability from LeanTaaS called iQueue. Taking scheduling data from the Electronic Health Record (EHR), iQueue uses lean principles and advanced data science to examine and optimize scheduling parameters, and the technology then builds predictive models to forecast usage patterns and allocate infusion time efficiently across the day of week and hour of day. The optimized scheduling templates are then built and hardwired back into the EHR.

IMPACT

In less than three months, the cancer center was already seeing impressive results:

- 33% reduction in patient wait time during busiest time of the day

- 20 hours per month reduction in overtime hours

- Increased patient satisfaction

- 7% increase in daily volume

This solution did in months what would have taken years using a traditional analytics and process-improvement initiative. The implementation proved so successful that it was scaled to five more infusion centers within UCHealth, encompassing 140 infusion beds and chairs.

More recently, UCHealth and LeanTaaS have partnered to apply the same lean and predictive analytics approach to the perioperative area with the goal of improving operating room block and room utilization by 5% in the coming year. These initiatives prove the power and potential of excellent clinicians and operational leaders combined with solid, consistent processes and next-generation tools.

Steve Hess
Chief Information Officer

University of Colorado Health

Aurora, CO

Industry: Healthcare

UNIVERSITY
of COLORADO HEALTH

BUSINESS CHALLENGE

To achieve continual quality and process improvement while ensuring financial stability, the University of Mississippi Medical Center's (UMMC) goal was to become a learning health system with the ability to generate a clinical evidence base and determine areas with opportunities for improvement.

ANALYTICS SOLUTION

UMMC created a Center for Informatics and Analytics to reinvent itself as a knowledge-driven health system, utilizing predictive and descriptive analytics and data governance. The center used a combination of outsourcing and homegrown analytics focused on use cases rather than comprehensive data management. Its logical data warehouse model combines internal data lake structure with external Hadoop high-processing computing and machine learning.

To assist with its initiatives, UMMC used an honest broker team—a group of people specially trained in security and privacy with the responsibility of ensuring compliance with all data releases and data aggregations.

Using analytics, UMMC:

- Looked into multiple systems to see whether physicians are answering queries to determine if benchmarks were being met to ensure an accurate case mix index

- Used its billing and coding systems to identify additional opportunities to turn information into data visualizations, allowing the center to work directly with UMMC physicians to improve patient care and revenue cycle processes

- Focused on physician engagement and making more robust use of problem lists, using predictive analytics in the treatment of pressure ulcers and a descriptive analytics approach around treatment and preventable complications

IMPACT

- Improved documentation, leading to enhanced CMI, reduced accounts receivables and several million dollars in return

- $500,000-$1 million savings for the institution due to decreased pressure ulcers

- More than $3 in return for every $1 spent on the Center for Informatics and Analytics activities

John Showalter
Physician, Chief Health Information Officer

University of Mississippi Medical Center

Jackson, MS

Industry: Healthcare

THE UNIVERSITY OF MISSISSIPPI
MEDICAL CENTER
EDUCATION · RESEARCH · HEALTHCARE

BUSINESS CHALLENGE

E-commerce presents new challenges, as deliveries are less dense and customers demand personalization. In addition, the United Parcel Service (UPS) maintains a well-paid, unionized workforce. To address these challenges and maintain its industry-leading position, UPS has employed advanced analytics solutions into its operations technology systems.

The challenge is especially large when UPS' scale is considered: 16 million packages are delivered daily by 55,000 drivers. Constraints can change by driver, geography, day and season.

ANALYTICS SOLUTION

UPS uses an advanced optimization system known as On-Road Integrated Optimization and Navigation (ORION). ORION uses UPS' rich data foundation to provide an optimized manifest to its drivers, helping it meet the complex task of efficiently meeting customer needs while following all service commitments and business rules.

The key for ORION is the use of operations research and advanced analytics to identify and capitalize on small efficiencies throughout the drivers' day. It uses the power of data and heuristics to calculate the best route for the day's need.

ORION looks at over 200,000 different options for a given day before picking the best choice and does so in less than 10 seconds. ORION allows drivers to focus on safety and customer service rather than making every routing decision.

IMPACT

ORION completed deployment in 2016 and is saving 100 million miles driven annually. This equates to an annual reduction of 10 million gallons of fuel and 100,000 metric tons of carbon emissions. UPS saves between $300 million and $400 million annually because of ORION. ORION demonstrates UPS' long-term view and commitment to innovation. The project took over a decade from conception to the completion of deployment. Ultimately, its success was due to the dedication and determination of thousands of UPSers.

Jack Levis
Senior Director of Process Management

United Parcel Service

Timonium, MD

Industry: Transportation/Logistics

BUSINESS CHALLENGE

USAA serves the military community through provision of a full range of highly competitive products and services. USAA's complex sales funnel includes more than 150 products sold and serviced through different methods and channels. Before creating the Enterprise Sales Funnel (ESF), it relied on user-defined applications to measure its marketing and sales processes, which proved resource intensive and left little time for analysis or optimization of a customer's experience.

ANALYTICS SOLUTION

ESF has provided transparency to a traditionally murky process and is enabling leaders to align when addressing concerns. The new tool leverages contact data and product interest activity across derived metrics and channels. Activity is sessionized and classified by product, channel and a "funnel metric" for each acquisition step, and conversion rates are calculated at each level and for the overall store, where sessions are viewed by various data dimensions. ESF provides insights including purchase timeframes, close rates and cross-channel behaviors. Customer "thread" activities are summarized into a six-node path, which allows data to be compared and summarized at the customer level.

IMPACT

Amid steady growth in USAA membership, ESF has allowed USAA to keep marketing as a percent of product revenue stable for the past three years and has led to a decrease in the cost to sell/market a product in the past year. ESF facilitates weekly reviews of its sales performance, and when variance to plan is out of tolerance, allows for identification of portion(s) of the sales process and delivery channels that need attention. Its analytics enable cross-channel insights that serve as the basis for studies identifying sales process insights. For instance, USAA's 2016 Auto Insurance Redesign analysis used the activity and the customer-centric funnels to identify areas of improvement in deploying new digital auto insurance capabilities, resulting in a single source of truth, enabling strategic sales decision-making.

48

**Christina Holleman
Assistant Vice President, Marketing and
Strategic Insight Delivery**

USAA

San Antonio, TX

Industry: Financial Services

BUSINESS CHALLENGE

Wunderman's client is Canada's largest full-service airline and the fifteenth largest commercial airline in the world, with operating revenues of more than $12 billion. The client needed a customer engagement platform and customer insights partner that could manage and derive insight from a complex array of customer data. In particular, they were focused on implementing a solution that could help them retain high value members, reduce offer cannibalization and stimulate traffic through analytical insights.

ANALYTICS SOLUTION

Wunderman delivered a CRM Data Warehouse with three years of history that included:

- An identity management solution providing a 360-degree view of the customer

- A customer lookup report for CSRs to quickly determine compensation when a customer complaint is received

- An analytical mart for building predictive models

- Enterprise-scale email solution and migration

Wunderman built attrition models using historical flight behavior data to identify the customers most likely to reduce the number of flights with the airline. Customers with high model scores were targeted with email campaigns for bonus miles offers to incentivize them to increase their purchasing frequency, which produced an incremental lift in bookings.

IMPACT

Recent email testing using an attrition model developed by Wunderman, in conjunction with the airline's loyalty program, increased seat bookings at a rate of 5.8 to 6.6 percent. The program is building loyal customers and stimulating more frequent travel on the airline. Ultimately, what matters to consumers who book air travel is that the information they provided during the booking process is accurately and securely managed and used to ensure their trip is hassle-free. From the airline's perspective, getting this right every time is not just an operational objective, but also a marketing requirement in the face of a highly competitive market.

Yannis Kotziagkiaouridis
Global Chief Analytics Officer

Wunderman

Richardson, TX

Industry: Global Digital Agency

WUNDERMAN

BUSINESS CHALLENGE

Each year, corporations spend billions of dollars on regulatory fines, legal fees and other compliance-related costs. Many of these expenses stem from hidden problems lurking in email and other unstructured data sources. In many cases, these problems, which include product defects, fraud, bribery, improper sales practices, corruption and other illegal activities, could have been prevented and/or detected at a much earlier stage. Additionally, the explosive growth of email and other corporate data, combined with more aggressive enforcement by government regulators, has significantly raised the stakes for legal and compliance departments.

ANALYTICS SOLUTION

Xerox empowers companies to detect hidden compliance risks and avoid excessive legal costs. It builds advanced predictive/early detection algorithms powered by analysis of prior compliance and legal databases, reflecting billions of attorney and expert decisions.

Xerox maintains petabytes of data on behalf of its banking, manufacturing, pharmaceutical, defense, medical device, technology and other corporate clients. This data includes thousands of individual databases reflecting over 20 billion attorney and compliance expert determinations. These cases span a wide range of subjects, including mortgage fraud, product liability, white collar crime, antitrust and competition, FCPA, intellectual property, complex litigation, export control, employment law and securities regulation.

The company's technology, including Xerox's proprietary Analytics Hub, consolidates data hosted across corporate technology platforms. Critical insights are extracted from emails, voicemails and instant messages, employee collaboration platforms and CRM systems. Xerox applies a variety of custom algorithms and techniques, including advanced machine learning, text analytics, natural language processing, sentiment analysis, audio analytics and anomaly detection. Features used for modeling incorporate text, metadata, prior expert and attorney determinations and additional engineered features. Xerox leverages a worldwide team of data scientists, technologists and other experts.

IMPACT

Xerox's solutions enable corporations to make realistic risk assessments and prevent reputational risk, excessive legal spend and regulatory fines.

Rob Hellewell
Vice President, Data Analytics
and
Karl Sobylak
Senior Director, Data Analytics

Xerox Legal Business Services

Washington, DC and Albany, NY

Industry: Legal Services

DREXEL UNIVERSITY LEBOW COLLEGE OF BUSINESS

Bridging Practice and Theory

SUMMIT 2017

Call for Proposals

LeBow's Business Analytics Solutions Center and the Bridging Practice and Theory Summit (BPTS) foster the continuing development of the business analytics field, particularly focused on expanding the links between research and its practical implementation.

BPTS is seeking proposals, authored by a team of at least one practitioner and one faculty member, that address issues related to the alignment of business strategies and analytics. Select submissions will be compiled for inclusion in "Aligning Business Strategies and Analytics: Bridging Between Theory and Practice."

Topics include, but are not limited to, the following:

* Analytics and leadership issues, e.g., tensions among the CEO, CIO and CDO

* Factors which promote or deter analytics usage in the organization

* Analytics organizational structures and their impact on decision making

* Effective communication of analytical insights such as storytelling and visualization

* Methods of aligning metrics and strategies

* Issues related to analytics-based project management

THOMAS J. HINDELANG

BPTS
Bridging Practice & Theory

For more information and to submit a proposal, visit lebow.drexel.edu/bpts or contact bpts@drexel.edu.

Transform industry.

Transform industry with a Doctorate of Business Administration from LeBow. This part-time executive doctoral program is designed to equip executives and senior managers like you with methods to address complex industry and organizational challenges.

DREXEL LEBOW
DOCTORATE IN BUSINESS ADMINISTRATION

lebow.drexel.edu/dba

Engage With Us

Engagement with Drexel LeBow leads to strong, strategic relationships between students, faculty and industry. By joining forces to create mutually beneficial relationships, organizations that partner with us gain access to our world-class research, highly skilled and motivated students and alumni and innovative programming offered both on campus and online.

- Corporate Relations and Executive Education
- Innovation Accelerator Projects
- Business Consulting Projects
- Recruitment
- Research Collaboration
- Center for Corporate Governance
- Institute for Strategic Leadership
- Solutions Centers (Neuro-Business and Business Analytics)
- Events
- Student Mentorship Opportunities
- Advisory Board Membership

DREXEL UNIVERSITY
LeBow
College of Business

LeBow.Drexel.edu/corporateservices

Call for
2017 Nominations

Accepting nominations starting January 16, 2017

lebow.drexel.edu/analytics50

DREXEL LEBOW | CIO.COM

Analytics
50
—2017—

DREXEL LEBOW | CIO.COM

Analytics|50