



## Analytics in Action with Teradata Business Analytics Consulting



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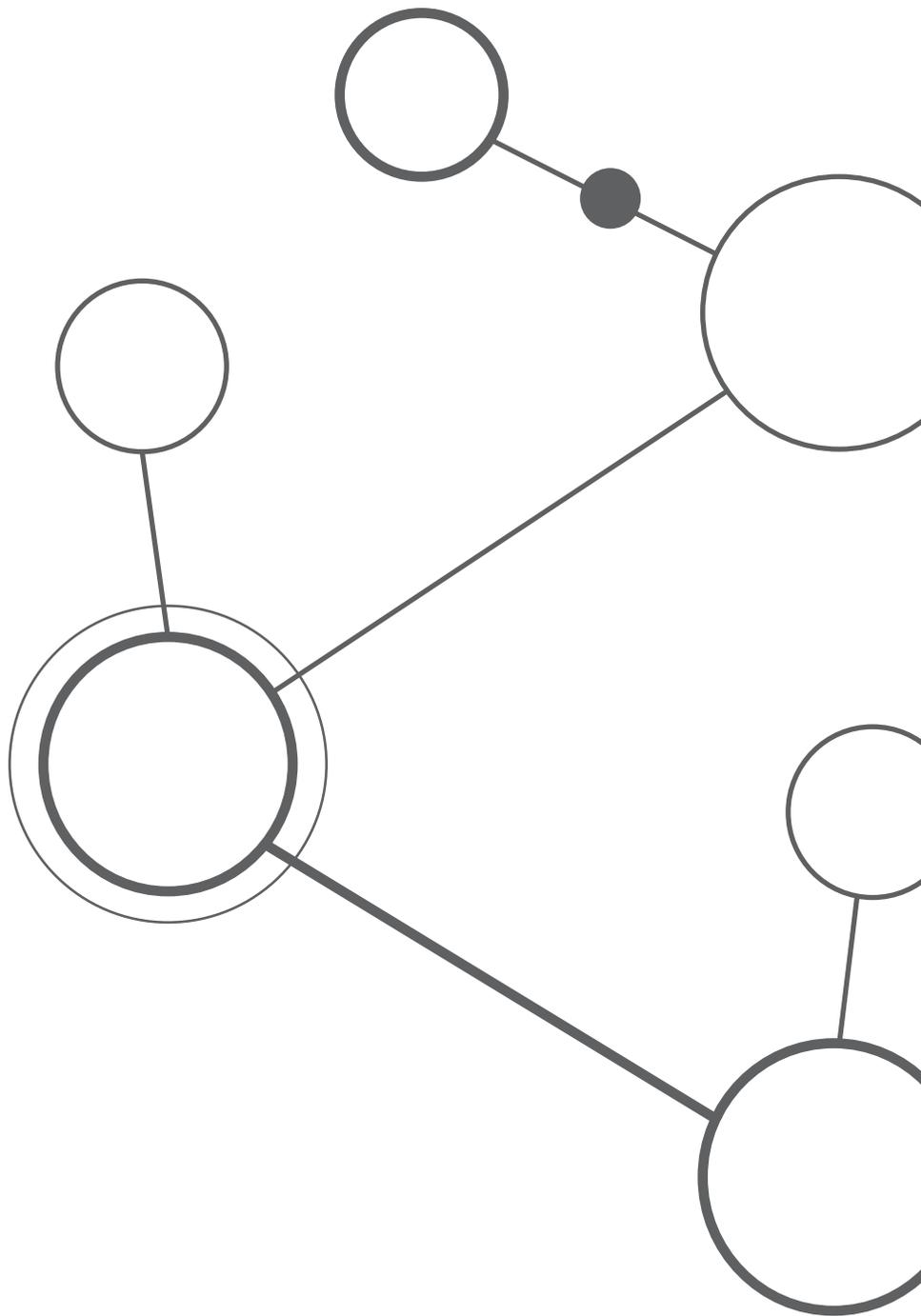
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This study examines the business value that Teradata business analytics consulting engagements generate for their client companies. Based on case studies from different industries, key insights and trends behind this value generation are documented. We conclude with recommendations for pursuing successful business analytics consulting engagements.

## Focus

The focus for this study is the emerging business analytics consulting practices, whose objective is to build effective business solutions, resulting in specific business outcomes, and generating tangible business value. These practices are enabled by innovative technology for data integration and data analytics that improve effectiveness of core business processes for a company. The business systems of today are global and complex in their reach and operation, resulting in a rethinking of business analytics consulting for strategic initiatives.

In the early days, consulting services were centered around supplying skills for specific technologies. As the industry matured, consulting services for those technology-specific skills developed into commodity decisions, like buy-versus-lease for securing office space. Hence, issues arose around offshore consulting that focused on cost reduction and timely delivery.

In modern times, consulting services face business systems that are vastly more multifaceted and dynamic. It is difficult and often unproductive to specify the technology skills required because of the diverse variety and rapid evolution of those skills. Further, today's business systems have evolved into unique and adaptable infrastructures, evolving over decades of legacy decisions to be configured to support a wide range of purposes. Finally, today's business systems are deluged by a stream of new data about customers and other business factors, along with emerging analytic tools that can predict business impacts reliably.

These changes are pushing consulting services to a higher level. These new services are called business analytics consulting since analytics is often the technology catalyst enabling new innovative business solutions. The value is generated from the ability to adapt existing technology and leverage new data toward desired business strategies, often transforming the basic fabric of the company's business.

## Experiences

This section documents the experiences of several companies who engaged with Teradata business analytics consulting projects at this higher level. The following cases indicate the nature and motivation of these companies for employing consulting services.

- **Global Mobile Telecommunications:** Going digital to market retail products and banking services (B2C)
- **National Grocery Retailer:** Know customers better than anyone else (B2C)
- **Global Biopharma:** Better relations among its consumers and providers (B2C and B2B)

These examples represent companies of various sizes and industries, along with differing business challenges. The common characteristic is that they employed Teradata business analytics consulting for critical business initiatives requiring significant changes to their business processes. This study probes the business and technical factors that motivated these companies to adopt these services and the resulting value derived.





## Global Mobile Telecommunications

An international telecommunications firm provides voice and data mobile services for a dozen markets in Europe and Asia. The case is about one national subsidiary supporting mobile telecom services to millions of subscribers in thousands of cities with thousands of cell towers across the country.

## Global Mobile Telecommunications



### Business Challenges

- Going digital to market retail and banking



### Business Problem

- Understanding mobile customers



### Business Solution

- Contextual marketing using web interactions
- Insight-driven marketing campaigns
- Intense work sessions designing KPI



### Business Value

- KPI for improving digitalization and increasing users
- Handling billions of telecommunications daily without affecting workloads
- Integration with IDW to link KPI to revenue
- Daily dashboards showing subscriber behavior

“This was about 4TB per day, and we did not have any platform that could ingest that data or apply any analytics to that data.”

– Global Mobile Telecommunications Company

## Business Problem

The subsidiary is vigorously promoting ‘going digital’ by providing access to the internet from smart phones and applications like Facebook and YouTube. It is the vision of the subsidiary to empower its customers by providing access to information through the internet. In addition, they are aggressively leveraging their telecom services to market retail and banking services via online advertising.

The company has developed a contextual marketing (CM) capability that customizes customer interactions based on the context of their relationship with the company. The business objective is to understand customer behavior and preferences to increase customer engagement and purchasing likelihood. The CM application supports integrated campaign management with customer segmentation, next-best offer, and outbound campaigns.

A recent CM enhancement is the use of deep packet inspection (DPI) that analyzes subscriber data embedded within internet packets flowing through the cellular network. This data provides insights about the usage of domains (i.e., Google, Facebook), applications (i.e., Skype, Viber), formats (i.e., text, audio, image, video), and browsers (i.e., Safari, Chrome). When combined with existing subscriber and device information from their integrated data warehouse (IDW), the company can monitor business indicators about data volumes, subscriber counts, days of usage, revenues, internet product performance, and acceptability.

Once the DPI data is transformed into this multi-dimensional format, key performance indicators (KPIs) can be calculated and displayed, giving insights into subscriber behavior that could drive marketing campaigns and other interactions.

The problem is, DPI analyses generate huge volumes of data. Their previous technology was not capable of capturing and processing the voluminous DPI data. Over four terabytes of highly detailed unstructured data are generated daily resulting in processing of ten billion records daily. This exceeded the capacity of their previous systems to ingest and store the data, along with the ability to clean, parse, and format the data. In addition, the IDW must be an essential component for calculating the KPI analytics and reporting the results.

## Business Solution

The first step was to define the business objectives in terms of specific KPIs linked to revenue. Increasing the volume of subscriber transactions was not as important as understanding impacts on profit and costs.

A series of intense workshops was conducted to identify the KPI that would drive the utilization of this new data. Business users from several marketing groups, along with business analytics consultants from Teradata, were involved in these workshops. Both groups had to expend considerable effort to build the required linkages among data and platforms to realize the business objectives. The first iteration of sourcing DPI data used conventional Teradata 6xxx machines. However, this solution did not cope with the increased load from the new 3G cellular data.

The next iteration was to install a Hadoop platform to capture the daily log stream and to perform descriptive analyses to categorize data unique to their customers' interactions. The combination of business users with external consultants enabled the company to evolve this system rapidly, despite facing a steep learning curve. Think Big, a Teradata company, contributed specific technical Hadoop expertise on data integration handling billions of transactions daily without affecting their existing workloads. Business analytics consultants from Teradata were also involved, not only to configure Teradata products, but more importantly to integrate the diverse technologies within the existing technology.

It was soon realized that the business value is dependent on the IDW providing the contextual data (e.g., characteristics of specific customers) to create KPIs meaningful to the business. An infrastructure is then needed that would distill customer interaction data on Hadoop and migrate it into the IDW environment for reporting and analysis.

The DPI solution is generating several dozen dashboards daily, such as data volumes per hour across several dimensions. As a self-service function, the solution is supporting 15-20 persons in the commercial and customer-lifecycle marketing teams.

To enable the solutions described here, the company has evolved its enterprise data warehouse into a hub for several core business processes, such as revenue assurance, customer segmentation, device usage, and subscriber lifecycles.

This configuration enables the company to ensure daily reporting and current KPI dashboards, while ingesting many terabytes daily for device and web interactions, along with processing analytics for a broad spectrum of business use cases. This spectrum is shifting the company from reporting and OLAP analyses to performance metrics and advanced analytics.

With Teradata Unified Data Architecture™, the company can process data that they couldn't before.

## Success Factors

A key success factor was the engagement with external analytics consulting to provide strategic business insights and specific technical skills not otherwise available within the company and in a timely manner. There was also a strong collaborative effort between business and technical persons. Finally, efficient data integration of Hadoop with the IDW was an essential bridge for generating business-relevant results, such as revenue impacts.

## Business Value

Because of the consulting engagement that designed revenue-based KPIs and implemented infrastructure upgrades, the company recently went into production with the new CM application, generating campaigns to all customers using the digital channels including self-service mobile apps like Facebook. The contextual marketing solution, driven by predictive models, enable the company to formulate the next-best offer (NBO) to suggest suitable products to the customer. Based on their segment and affinity, customers are presented with specific offers with the intent of enhancing the pickup rates of those products.

The KPI dashboard is currently used daily by 15-20 persons responsible for Internet marketing, digitalization, commercial clients, and product lines.

The KPI information distributed via regular reports is now updated daily, instead of once or twice per week, giving timely reports to the business users. Running in mini-batches, the weblog data is stored, extracted into the IDW, and KPIs calculated so that the business is looking at daily results.

Business users can now see insights into the details of subscriber behavior. For example, any user using Facebook is also highly likely to use YouTube. This insight resulted in a marketing promotion that offered a discounted rate on both Facebook and YouTube, and the company was able to increase revenue for that data usage.

The expectation is that the KPI dashboard with its direct linkage to company revenue will enable the company to do business in new areas, once fully incorporated into their business practices.

“Analytics of this data is being tied with all revenue, all usage, lifecycle recharges—all core business data for telecom.”

- Global Mobile Telecommunications Company

## The Future

The company is proactive with inventing new services, driven by new opportunities enabled by analytics, data warehousing, and large volumes of new live data, along with a new generation of innovative customers.

The company is moving into the mobile financial sector by acquiring a bank to process bill payments and to offer loans. In addition, the company has realized that the analytic infrastructure built for contextual marketing can be applied to other use cases, such as the communications network analytics for planning and operations. Other business areas opened by analytics are Internet of Things (IoT) support and digital media provider (DMP) to market media ads placement.

The company realizes the huge potential to serve their expanding market of innovative customers, like using IoT products to manage their vehicles. They are excited about the positive impacts that this cutting-edge technology will have on the entire country.





National Grocery Retailer

A national grocery retailer emphasizes trust and sustainability in its large chain of diverse supermarkets throughout the country. The company, with its long history and thousands of employees, has grown to service millions of customers generating over twenty million transactions per week.

A key business strategy is a commitment to know its customers better than anyone else. New initiatives for digital apps, such as online coupons, are being discussed.

## National Grocery Retailer



### Business Challenges

- Know customers better than anyone else



### Business Problem

- Upgrade antiquated infrastructure
- IDW lacked detailed data about customers



### Business Solution

- Upgrade IDW with retail LDM
- Adopt agile development methodology
- Teradata consulting for lift-and-shift to IDW
- Use of Wherescape® for metadata management
- Monthly agile sprints for incremental design



### Business Value

- Dashboards improved for quicker decisions
- Agile development to deliver solutions incrementally
- Collaborative management of data definitions
- Successful transition from older system

Good news is that you see your customers often. The bad news is that you see your customers often!

## Business Problem

For decades, the company has been strong in reporting key business operations. However, the company is currently limited by logical design weaknesses within their IDW and by processing and storage capacity with their older database platform.

The key problem was their limited ability to integrate data going forward. To support online buying, they needed to integrate data about groceries with books and videos, all of which were in different databases. The company needed to assess their relationship with individual customers in terms of transaction activity and pricing. They also needed to collect data about their loyalty program from POS terminals and blend with data about weather and socioeconomic demographics.

A key issue is which products should be 'ranged' (placed) into which stores to reduce stock—especially in smaller stores. Based on demographics and seasonality, the limited shelf space should be filled with the optimal mix of canned products, for example, balanced by generic vs. premium, glass vs. plastic, small vs. large, single vs. multipack, fat free, organic, and other variables. Further, certain items are loyalty products, for which their absence is deeply noticed by a dedicated, small group of consumers.

Another issue involves pricing and promotions. Do consumers purchase based on products that they want to buy or on products that are cheapest on discount? Further, the company must understand the dynamics of how the promotion is perceived by the consumer. Determining what is the base level of sales if the promotion was not offered is critical, because the promotion may increase sales in promoted items, but cause larger decreases in other sales. The company is considering the effects of various variables, such as bank holidays and warm weather, all of which require more data processing and storage capacity.

The company realized that a major transformation in business processes is required if the company is to understand the changing preferences of its customers and to streamline the shopping experience. The focus has evolved toward molding their IDW around a suitable logical data model (LDM) for a retail business, especially for customer data.

## Business Solution

Because of the huge effort required for this transformation, the company knew that their conventional waterfall development methodology would be inadequate to deliver desired solutions. There was a long history of IT projects that were not delivered on time and within budget, resulting in a reluctance of company management to fund future projects.

The company decided to adopt the agile development methodology to rapidly generate solutions that deliver business value incrementally and consistently. If the value was not delivered, the project could be quickly terminated, and alternatives pursued. Hence, progress can be continually monitored monthly, while demonstrating to management as moving toward business objectives.

Over the past year, the lift-and-shift migration to a Teradata Data Warehouse Appliance 2800 has progressed smoothly. The company adopted the Teradata Retail LDM as their “starting point” for the IDW logical transformation. As tools for agile IDW development, Wherescape 3D is used to profile and document existing data, along with planning a migration to the Retail LDM. Plus, Wherescape RED is used as the agile development environment for generating and deploying the new LDM increments.

Teradata business analytics consultants worked with the company’s BI team. Most of this effort was the educating and mentoring of company developers in the new agile methodology and its tools. Through monthly agile sprints, the IDW environment is evolving steadily toward a solution to their business objectives. Further, members from Teradata Think Big suggested innovative configurations for a scalable analytical Hadoop platform to capture and analyze new datasets flowing from upstream systems.

## Success Factors

First, agile methodology for data integration and design was essential. Further, the required cultural shift of their development practices to agile methodology was attributed to the effective mentoring by Teradata business analytics consultants. On-site education and joint working teams instilled new agile concepts and taught new agile tool skills (like Wherescape). In addition, the use of experienced consultants as team leads allows them to support the more junior members and bring them up to speed.

Second, Teradata business analytics consultants supported the migration effort by supplying a team of data modelers and developers to augment the company’s developers who had ‘day jobs’ from which it was hard to pull their attention. The migration effort required specialized knowledge and skills that their developers did not possess, but which they are acquiring over time.

## Business Value

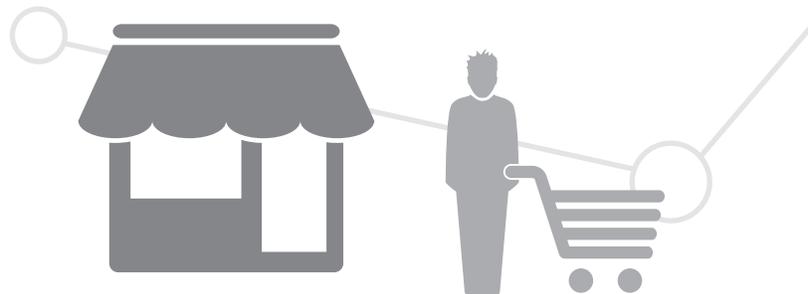
One benefit is the improvements in dashboards so that stores can make their decisions more quickly. Another is a series of analyses focused on their agricultural supply chain from potatoes to cattle. By analyzing the effects of various details like food types, storage, and chemicals used, the company is bringing locally grown food at high quality and lower prices to their stores. For example, cattle have been analyzed in terms of breed, carcass size, age, and feed so that ranchers can reduce their costs of raising cattle to a certain size and age.

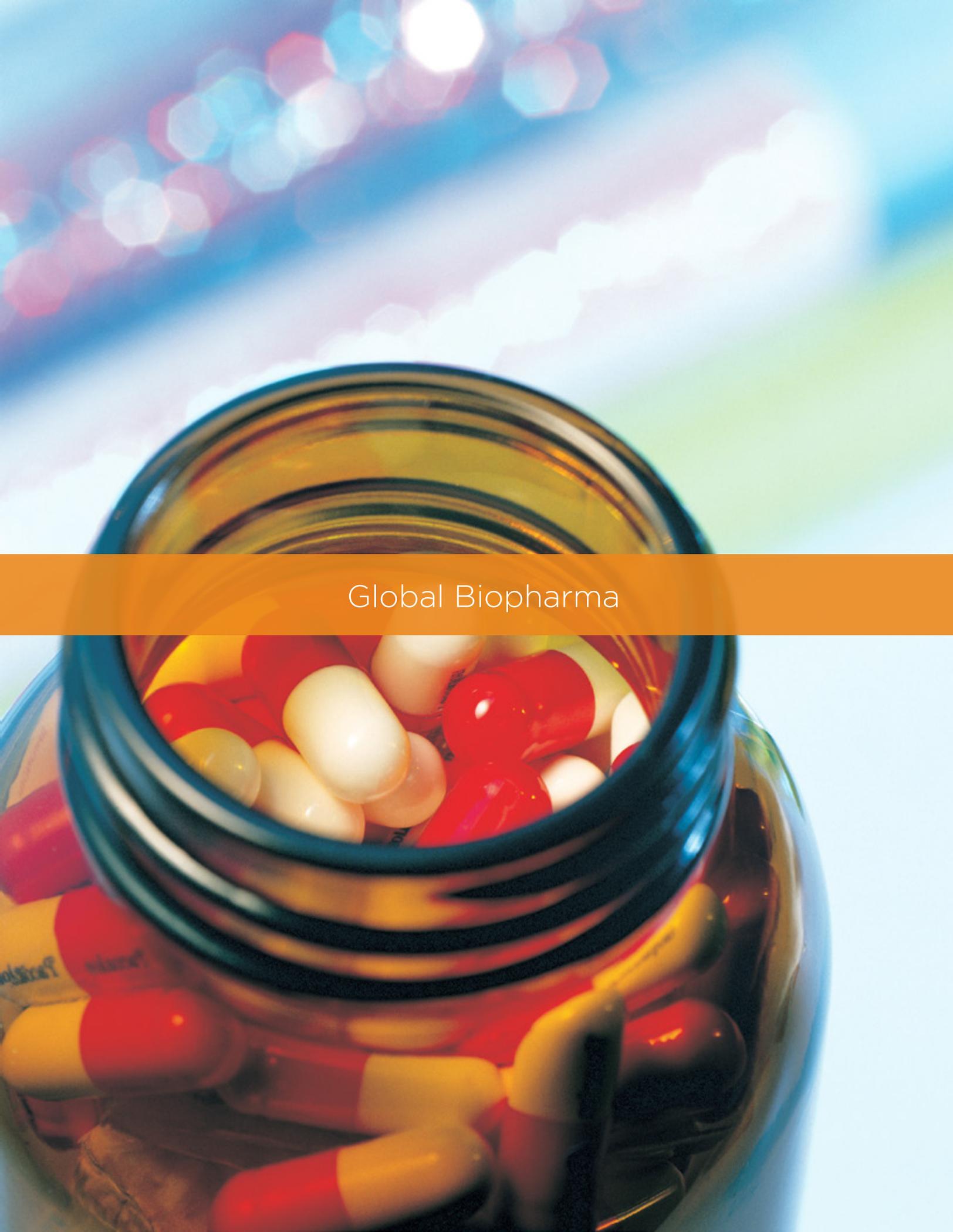
The use of Wherescape has introduced greater data governance as a side benefit. Besides its value as a productivity tool for data integration, Wherescape creates a collaborative framework to manage data definitions, both technically and business-related.

They can support the more junior members and bring them up to speed.

## The Future

The company, and especially the IT group, is reenergized with the exciting ability to ask questions and learn new insights about the business. In fact, this ask-learn cycle is now institutionalized into two-week agile sprints as intense high engagement sessions with business users focusing on specific business questions.





Global Biopharma

A multinational biopharmaceutical company develops and markets drugs for serious medical illnesses. They realized that their future depended on having timely relations with their entire ecosystem from consumers to healthcare professionals (HCP).

## Global Biopharma



### Business Challenges

- Closer relations among consumers and healthcare professionals



### Business Problem

- Multiple outsourcing vendors administering campaigns
- Siloed data prohibiting coordinated campaigns
- Long delays in feedback from previous campaigns
- Inability to tailor and tune campaigns on-the-fly
- Separation of personal data from production systems



### Business Solution

- Integrated end-to-end marketing campaign solution
- Phased approach from transition from old to innovation of new
- Long-term single 'trusted advisor' consulting team
- Managed cloud to separate on-premises systems
- Agile campaign management response to customer details



### Business Value

- Smooth transition to in-house campaign management
- Enhanced campaigns entirely managed by the company
- Managed cloud services separate from main IT systems
- Discovery of major problem ignoring one-third of service requests
- Identification of abuse by enrolling for multiple co-pay cards
- Integrated data enabling advanced campaign functions

## Business Problem

In the past, the company has pursued a cost-reduction strategy that outsourced their campaign management system to several marketing service providers. Although typical within their industry, this outsourcing strategy has limited the ability of the company to manage campaigns and to interact directly with consumers and HCPs.

For instance, one problem was that the company would receive feedback about a campaign months later, after which the next campaign was launched. Thus, the feedback loop was out-of-sync to properly plan and refine new campaigns. Campaigns were too general and lacked product and consumer specifics because of limited coordination with external campaign specialists and limited integration among multiple databases. Because the company was isolated from campaign development, they had limited ability to respond to changing business conditions by tailoring and fine-tuning campaigns on-the-fly.

Finally, the company realized that they couldn't capitalize on the growing direct-to-consumers and direct-to-HCP opportunities in revenue and health wellness, such as patient therapy adherence (i.e., assisting patients to remember to take their medications and do at-home treatments).

## Business Solution

The company decided to bring their entire campaign marketing system in-house. Since the marketing department was only experienced with simple campaigns within an outsourcing model, they lacked the definition, sequencing, technology, and even advocacy for this transition. Hence, the company embarked on a search for the "best-in-breed" business and analytics consulting firm to deliver on their stated objectives. This search included finding a data management vendor to integrate and govern data within a life sciences regulated environment.

After evaluating several leading firms, the company determined that Teradata was the only firm that offered the full spectrum of technology and services required. The company initiated the transition by selecting Teradata for business analytics consulting services, along with the acquisition of Teradata Campaign Information Management (CIM) and Reference Data Management (RDM), all supported with Teradata Managed Cloud Services.

Teradata was the only firm that offered the full spectrum of technology and services required.

For any company, it is difficult to unravel a complex infrastructure that has evolved over many years. They decided to follow a workflow in phases: in-source transition implementation, campaign improvement, steady-state operation, and then innovation.

Starting with a simple conversion of the old system, RDM performed the function of data cleansing and harmonizing to create the master data used in campaigns. A guiding principle was that the RDM would not allow data below a certain quality metric to be used, thus enforcing the industry regulations.

Early RDM investigation soon discovered that a third of consumer service requests were out-of-sync among the data silos, resulting in termination of financial and reminder services. This faulty logic was remedied with new governance rules implemented by RDM within the integrated data warehouse, enabling better responsiveness to consumer engagement. RDM has also identified consumers trying to abuse the system by enrolling into multiple co-pay card services through different channels and various vendors, along with implementing a corrective action workflow.

The Teradata consulting team provided the strategy, analytic architectural and marketing campaign program level support, leveraging onshore and offshore resources. Teradata marketing campaign experts worked side by side with the company's marketers to provide insights and to run campaigns.

Based on their experiences across other companies and industries, the Teradata consulting team shared insights and best practices for leveraging RDM's capabilities. Thus, the joint design team was able to formulate a solution to a recurring problem for the distribution of co-pay cards and medical items to consumers.

The new campaign management solution is accepted company-wide and operationally, running as a Teradata cloud-based managed service.

## Success Factors

The key factor was the use of RDM to consolidate, standardize, and de-duplicate consumer records to create a 'golden' consumer master record that contained the latest consumer preferences from across various channel partners and vendors. Likewise, the creation of the master record for HCP has helped the company facilitate consumer and physician education, by integrating data from many external partners.

With master data built in a scalable, sharable manner using RDM, project development time was streamlined, reducing the time it took to get the new system up and running. Channeling the data aspects of the project into the RDM software capabilities also reduced project risk.

The integrated master data drives efficient campaigns, via Teradata CIM Application, and interactions across the web, call centers, events, and related third-party business partners. Teradata executes these marketing campaign capabilities for the company as a cohesive program. The result is an informed consumer and physician, leading to healthier outcomes.

Teradata excels where data complexity abounds.

Further, the company does not have to coordinate multiple firms and interconnect multiple approaches because they utilize one firm, Teradata, for their software, cloud services, and especially their expertise in data integration and campaign marketing.

In summary, this case illustrates that Teradata excels where data complexity abounds.

## Business Value

Rather than gearing up for the few, big campaigns whose results are months to quarters away, campaign management is becoming a fluid, continuous process. Timelines for campaigns have come dramatically down. The number of detailed campaigns and targeting capabilities has significantly increased. This fluid process includes the analysis of campaigns in-flight, which allows fine-tuning as they are occurring, rather than waiting for campaigns to end.

As noted previously, the specific benefits realized in the initial phases of this project are:

- Smooth transition to in-house campaign management from multiple outsourcing vendors
- Simplified and enhanced campaign management entirely under company's control
- Reliable, secure, and managed cloud services separate from main IT systems
- Discovery and resolution of a major problem that ignored one-third of service requests
- Identification of consumers abusing the system by enrolling for multiple co-pay cards
- Integrated, clean and timely data that enabled implementation of advanced functions

Campaign management is becoming a fluid continuous process.

In addition, campaigns are now customized to specific customer preferences in terms of content, medium, timing, and duration.

The company had previously determined best practices for patient therapy adherence from the data, but had been unable to act. For example, three weeks after a certain common treatment, patients need triage regarding the next step in their treatment. If this step is not performed, there is a high potential for problems. Now, the company can launch a complex campaign to aid these patients, an action not possible previously.

The company is now able to explore the connections between genetics and demographics, which has the potential to redefine the company as to the proper way patients relate to advanced treatments.

Now, the company fully understands the business value of their data and continues to create new programs that further leverage that value.

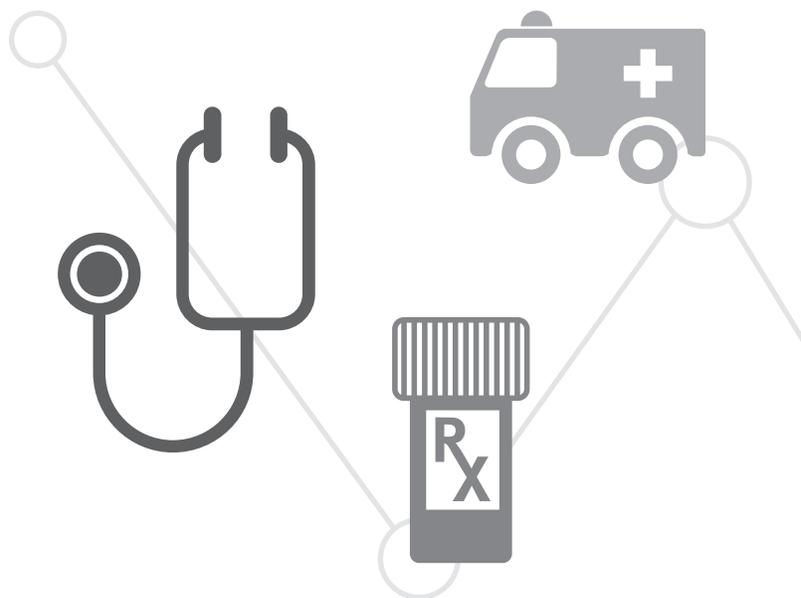
## The Future

The company is now moving toward automated campaigns that tightly couple interactions with their customers in real time. Campaigns can follow the lifecycle of a customer or brand, supporting a natural brand lifecycle with relevant messaging to maximize customer interaction at key milestones.

The benefits of data governance using Teradata RDM technology are beginning to impact all future project planning by providing clean, governed, accessible corporate data that is synchronized enterprise-wide. RDM is supporting and shaping the essential discipline to obtain a single, consistent view of an enterprise's core business entities—customers, products, suppliers, employees, and others.

The company is initiating the innovation phase with future sessions of Teradata's Rapid Analytic Consulting Engagement™ (RACE™) to increase capabilities for their revitalized marketing campaign system by utilizing advanced analytics and data visualization to predict impacts from planned campaigns.

In the future, the company will market and launch products with a constant emphasis on real-time interaction with patients and enhanced marketing analytics, thus reducing costs, optimizing campaigns, and assisting consumers and healthcare professionals.



## Themes

This section examines the recurring themes that motivated these companies to engage with business analytics consulting professionals for critical business initiatives.

### Customer as the Focus

All three companies faced business challenges pursuing a better understanding of their customers. The telecom company was expanding into digital services for cell customers; the retail company was concerned about promotions and product placement for grocery customers; the biopharma company was grasping its complex ecosystem of consumers and providers. The companies aimed toward variations in campaign management for finer granularity in their messaging and closer interactions with their customers.

Within the last five years, there has been an explosion of digital communications that has fundamentally changed customer interactions from the days of neon signs and printed flyers. Besides being more frequent, interactions are also more detailed. If those details are reliably transformed into meaningful interactions by core business processes, companies understand customer preferences—and customers may actually believe that the company cares about them.

There is a deeper implication. As digital communications evolved for other key business entities, like IoT networks in distribution and manufacturing, the same surge will occur in business opportunities that drive business processing with greater specificity and hopefully greater effectiveness.

**Ask...** Over the coming years, how will interactions with your customers change? How can you achieve a better understanding of your customers, based on those interactions? How can you transform that understanding into more responsive business processes, like campaign management?

**Ask...** Over the coming years, how can you translate your experience with customer interactions into other business functions, like distribution and manufacturing? Can you enhance your business processes to interact more effectively with your distributors and suppliers?

**Ask...** How can business analytics consulting services propel your company in answering the above questions? What factors will be key to the success of those engagements?

### Creating Evolving Solutions

All three companies were motivated to create solutions to solve their business challenges, requiring adapting existing technology to achieve their objectives. The telecom company explored the opportunities of deep packet inspection in web interactions to understand customer behavior. They were driven by agile workshops designing KPIs related to business factors and then figuring out how to process the data to calculate those KPI. The retail company employed a more traditional development to upgrade their infrastructure and then used agile workshop to improve business issues, like promotions, ranging, and beef production. The biopharma company also performed a traditional upgrade of infrastructure, then used agile methodology for incrementally improving their campaign management practices.

The goal of creating evolving solutions becomes the journey, not the destination.

In summary, all of these companies have been building systems toward a pre-specified design for decades. Today, these companies are creating solutions toward an evolving design.

The goal becomes the journey, not the destination. Note two key differences in this transformational shift:

First, the objective should not be to build systems for data processes, which assemble new technology cheaply and reliably. Instead, the objective should be to create solutions to business problems, which leverages current technology quickly and effectively. The assumption, perhaps requirement, is that the current technology is flexible to be adapted, i.e., configured or extended, to a wide set of problems.

Second, the objective should not be to build pre-specified systems as the culmination of a project, much like constructing a large skyscraper. Instead, the objective should be to create incremental solutions to an ever-changing set of business problems. Business users should experience a flow of work-in-progress solutions enabling a few new capabilities on a rapid development cycle. This incremental approach allows everyone to learn what works and what does not work. The design evolves as users learn new business insights and refine their business objectives. Often, that learning leads to innovations that could not be imagined otherwise.

**Ask...** How could your company be more agile in its development of business applications? What would be the specific business issues that you would target? Will your technology infrastructure allow you to be agile in addressing those issues?

**Ask...** How can third-party consulting services enable your company to be more agile in pursuing those business issues?

## Data Integration as the Gate

Along with efficiently storing and processing that data, the ability to integrate 'new data with old' is the gate to realizing business initiatives. The telecom company faced this gate in early stages of ingesting four terabytes of web data daily, along with filtering through that massive data across time to find the business-relevant data. In addition, the KPIs are all linked to revenue, implying that flexible linkage into their IDW was essential. The retail company faced this gate in upgrading their IDW with an enhanced data model for retail activities, without which they could not ask key questions about their customers. The bio-pharma company faced this gate when transitioning from an inadequate, outsourced campaign management service, which required new cloud-based infrastructure with MDM support.

Why is data integration so critical to these initiatives? Previously, data was scarce and internally created. The implication is that older business systems could assume that there existed a single version of the truth (SVT) around which the logical data warehouse could be effectively designed. This assumption has served industries well over several decades.

However, data is now plentiful and globally streaming! The data about business environments is ample and detailed, enabling companies to have deeper understandings of its business and, thus, achieve unique competitive advantage. In addition, analytics is leveraging all that new data to train models to 'generalize beyond known data' to predict business behavior reliably and at scale.

Data is now the fuel for innovative business initiatives, while data integration is the carburetor that controls the value generation from that data.

Data is the fuel for innovative business initiatives.

**Ask...** Does your current infrastructure have adequate storage and processing capabilities to support agile data integration, especially of new social media or IoT data? Can it handle the kinds of business initiatives described above?

**Ask...** How can third-party consulting services enable your company to be more effective in this next generation of data integration, with technology, tools, skills, and best practices?

## Recommendations

This section suggests recommendations for managers to leverage business analytics consulting for strategic initiatives, building upon the previous cases and themes.

### Be Aware

Be aware of how other industries are leveraging new data and advanced analytics to change core business processes with customers, suppliers, and others. By contrasting situations in dissimilar industries, you will spark ideas for your company to differentiate itself within its industry.

Pay special attention to how the new data emerged and is integrated into existing infrastructure. Also, pay attention to how (and why) this data was integrated with existing data within your data warehouse. Finally, pay attention to how that data was presented in dashboards and analyzed via machine learning algorithms.

### Think Continuous Improvement

It is a journey, not a destination. Shift your thinking from building systems toward a pre-specified design to building solutions toward an evolving design. A solution is never finished because business environments are ever changing and the technology is ever evolving. Success depends upon the cultural, not technological, evolution for your team. Judge progress based on the ability to learn specific business insights that continually improve ways of serving customers. For example, the conversations should not be about how to get data out of Hadoop, but how to better serve customers at store #123 who are vegetarian.



Rapidly create the first stage of the analytic application that realizes some tangible business value. Then, incrementally refine using agile methodologies, while generating new insights and learning best practices for your business.

### Data Brings Specificity

Think of data as the fuel that drives specificity into business processes via analytics. Without specificity, your company would treat everyone (and everything) the same. For example, without specificity, every customer would receive the same promotion via the same email, and every product would be advertised the same across all media channels.

### Focus on Core Competences

Focus on your core competences that support your core business, expending internal resources toward that goal. Shop for agile resources and services in non-core areas, such as analytic applications that require various technologies and skills difficult for a company to maintain internally.

The good news is that advances in data integration and data analytics have enabled an expanding array of new business practices that can be executed at scale to enhance core business processes.

Business value is derived, not from the technology-specific skills, but from the ability to drive innovative business strategies by adapting existing infrastructures, sustaining incremental improvement, and leveraging new data. As illustrated by these companies, the proper set of consulting services can be a springboard for realizing those business strategies.

### About the Methodology

The methodology for this study is to report accurately and objectively on experiences of pioneering companies, based on anonymous interviews with knowledgeable persons. The intent is to contribute to professional education—to share experiences and best practices with other professionals so that we can mature as an industry, amid escalating business challenges and rapidly evolving technology.

The authors are Richard Hackathorn of Bolder Technology, Inc., and William McKnight of McKnight Consulting Group.

We appreciate the insights shared by the professionals who were interviewed. And, we also appreciate the sponsorship of this study by Teradata Corporation, permitting open and independent access to its customer community.

## About Bolder Technology

Bolder Technology, Inc., is a twenty-year-old consultancy focused on Business Intelligence and Data Warehousing. The founder and president is Dr. Richard Hackathorn, who has thirty years of experience in the Information Technology industry as a well-known industry analyst, technology innovator, and international educator. He has pioneered many innovations in database management, decision support, client-server computing, database connectivity, and data warehousing.

Richard was a member of Codd & Date Associates and Database Associates, early pioneers in relational database management systems. In 1982, he founded MicroDecisionware Inc. (MDI), one of the first vendors of database connectivity products, growing the company to 180 employees. Sybase, now part of SAP, acquired MDI in 1994. He is a member of the Boulder BI Brain Trust (BBBT). He has written three books and has taught at the Wharton School and the University of Colorado. He received his degrees from the California Institute of Technology and the University of California, Irvine.

## About MCG Global Services

William McKnight is President of McKnight Consulting Group (MCG) Global Services ([mcknightcg.com](http://mcknightcg.com)). He is an internationally recognized authority in information management. His consulting work has included many of the Global 2000 and numerous midmarket companies. His teams have won several best practice competitions for their implementations and many of his clients have gone public with their success stories. His strategies form the information management plan for leading companies in various industries.

With a client list that is the "A list" of complex, politically sustainable and successful information management, McKnight Consulting Group (MCG) has broad information management market touchpoints. MCG services span strategy, implementation and training for turning information into the asset it needs to be for your organization. The company strategizes, designs, and deploys in the disciplines of Big Data, Data Warehousing, Analytic Databases and Business Intelligence.

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