

WHITE PAPER

The New B2B: Business Transformation Through Big Data and Analytics

Sponsored by: Dell

Dan Vesset
January 2016

IDC OPINION

What role does Big Data play in today's business transformation efforts? Does the ability to collect, manage, and analyze Big Data make a difference? Does it create differentiation among organizations? These questions are being raised in boardrooms and datacenters by corporate executives, line-of-business managers, and IT leaders. Such questions point to a healthy turn of events in a market that until now has been dominated by hype and inflated expectations and promises.

Today, a new, more pragmatic view is taking hold, dominated not by discussions about volume, velocity, and variety of data but by discussions about value — the ability to generate actionable insights and deliver them to all the relevant stakeholders inside and outside the organization. These stakeholders are not only a few executives or a select group of data scientists but all decision makers in different roles who make strategic, operational, or tactical decisions. Only a few of them are analysts, but that doesn't mean they shouldn't and can't benefit from the analysis and insights derived from Big Data.

This new pragmatism is manifested in both business decisions and technology decisions. Gone are the days of endless arguments about the superiority of either relational or nonrelational technologies — the reality is that the emerging Big Data architecture encompasses the best of both; gone are the days of worshipping a single data scientist with statistics, computer science, and business skills. The reality is that "Big Data is a team sport" in which business and IT executives, managers, staff, and even external stakeholders all have key roles to play.

This team requires excellence not only in analytics but also in data integration, preparation, processing, and management and in ensuring that information is securely delivered to people and systems that make decisions and take actions. Gone also are the days of highlighting only the volume or variety or velocity of data — the reality is that Big Data represents a combination of all three. But most importantly, Big Data represents a new pace of change where a growing number of organizations are embracing new analytics, new data types, new users, and new metrics and key performance indicators.

This latter trend — the new ways of measuring and managing the organization — drives the latest business transformation and operational efficiency efforts. On the surface we're still talking about customer engagement, supply chain, fraud, risk, asset, or employee management — the names of the core processes haven't changed, but how they are performed is changing radically as organizations embrace digital transformation, the Internet of Things, cognitive computing, and robotics and employ all the elements of what IDC has termed the 3rd Platform — the platform that includes cloud, Big Data and analytics (BDA), social, and mobile — to derive new business value in all commercial, nonprofit, and public sector industries.

Among the key vendors enabling organizations to derive value from Big Data is Dell — one of the few solution providers that can deliver — along with partners — on a broad range of Big Data and analytics infrastructure, software, and services. Dell's Statistica analytics and Toad business intelligence software; Dell's Boomi integration software; data management software from partners such as Cloudera and SAP running on Dell's storage, networking, and PowerEdge server infrastructure, which derives its computational horsepower from the company's close collaboration with Intel; and the broad range of Dell professional services is enabling a rapidly growing list of clients to transform their businesses Big Data and analytics.

IN THIS WHITE PAPER

In this white paper, IDC uses extensive case-based and survey research to highlight the value that Big Data and analytics bring to the current cycle of business transformation. The white paper points to best practices in utilizing BDA technology and processes to move along a maturity and capabilities curve to achieve a state of continuous, previously unachievable business value. The white paper reviews the BDA solutions provided by Dell to help organizations looking to acquire, deploy, and use such technology to maximize their investments in Big Data, technology, processes, and people.

BIG DATA: THE END OF HYPE

What is Big Data? How big is your Hadoop deployment? How many data scientists do you employ? These questions and many similar queries have been the focus of conversations and presentations at Big Data, data management, and analytics conferences; in companies' conference rooms; and even in boardrooms. Other "arguments" in recent years have included heated discussions about the benefits and shortcomings of relational database management systems (RDBMSs), NoSQL databases, and the Hadoop framework.

Today, the conversation has shifted. There is universal recognition of the value of a broad range of information management and analytics technologies to address various BDA workloads and use cases. It's no longer about RDBMS versus Hadoop but about implementing a new architecture that is extending tried and tested technologies and techniques with new technology depending on the data, users, and types of analytics being supported.

IDC research shows that in the past 12–24 months:

- 90% of large and midsize organizations in the United States have expanded the type of analytic techniques they use, often from descriptive to predictive analytics and, in a growing number of cases, to prescriptive analytics.
- 77% of the organizations have expanded data types and sources that are analyzed.
- 76% have expanded the number of users with access to Big Data and analytics solutions or the outputs from those solutions.
- 74% of organizations have started using new metrics and KPIs, suggesting a new willingness to question the status quo, to measure their organizations differently, and to ask new questions.

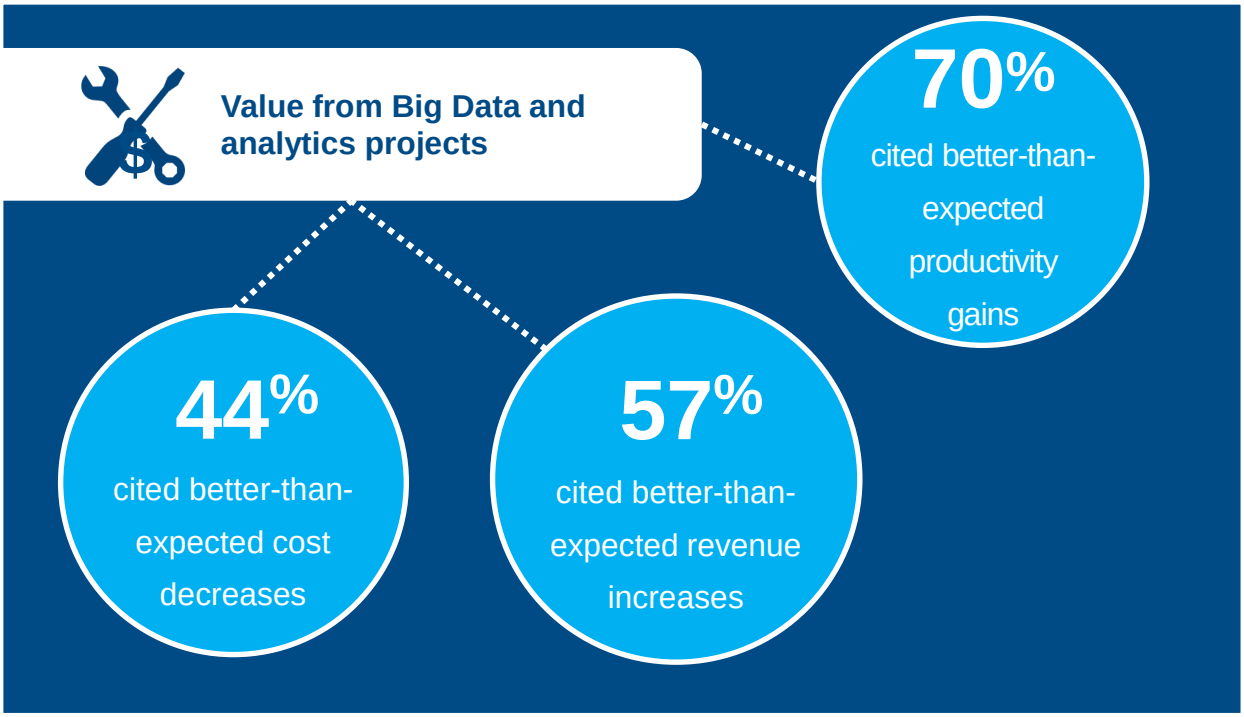
These factors and the solutions to address this change are transforming organizations — large and small — in meaningful ways. A recent IDC BDA maturity benchmark study found that of the

organizations that executed BDA projects in the recent past, 44–70% achieved better-than-expected outcomes in the benefits categories (see Figure 1).

FIGURE 1

Big Data and Analytics Project Benefits

Q. Thinking about recent Big Data and analytics projects in your organization in aggregate, which statement best describes the level of results achieved for each of the three listed benefit types?



Note: Data shows the percentage of surveyed organizations citing better-than-expected benefits in the listed categories.

Source: IDC's *Big Data and Analytics MaturityScape Benchmark Survey*, 2015

These benefits highlight the business transformation opportunities available to organizations investing in appropriate technologies, processes, data, and people.

BIG DATA AND ANALYTICS CUSTOMER NEEDS AND OPPORTUNITIES FOR BUSINESS TRANSFORMATION

Today, worldwide spending on BDA solutions, including software, infrastructure, and services, exceeds $100 billion annually. BDA solutions are becoming widely deployed to address a range of decision support or decision automation needs across industries. These deployments span three primary use case types:

- Performance management focuses on addressing decisions about past performance as well as planning functions by managers and executives.
- Operational intelligence focuses on tactical decision making by frontline employees through sense and respond functionality.
- Discovery and exploration focuses on discovering strong signals among broader data sets to drive more accurate predictive models.

Across these user needs, BDA solutions are being applied to business transformation processes related to supply chain optimization, customer sentiment analysis, asset performance monitoring, predictive maintenance, fraud prevention, supplier network analysis, customer behavior analysis, expert identification, IT operations analytics, and many others.

One example comes from the manufacturing supply chain sector where Omneo, a platform offered by Siemens Inc., has transformed BDA capabilities and thereby is enabling customers to do the same. By deploying a new solution developed on a Hadoop platform of technology from Dell and Cloudera, the company allows its customers to gain a comprehensive view of their complex supply chains and to better manage product quality risk. Some of the benefits attributed to the new solution are the ability to access relevant information from a wide range of sources faster and avoiding costs related to product quality issues. One of Omneo's clients reported a decrease in the time to analyze factory test data from 10 days to less than a day; another cited cost savings of about $20 million annually because of new insights that were previously out of reach due to a combination of lack of relevant data and unsuitable technology.

Another example comes from financial services, where Danske Bank, a Nordic financial services firm, was looking to improve the delivery of actionable (timely and accurate) information to its employees working on lending and customer engagement decisions. A critical factor to achieve this goal was to increase the speed of developing and delivering analytic models. Historically, this had been a labor-intensive and time-consuming process that included business analysts developing analytic models and then handing them to the IT group for manual coding and delivery to operational systems. The bank turned to Dell's Statistica advanced analytics software, which the company's modeling team now uses to develop advanced analytics models and deploy the models into production. The solution combines internal customer transactional and interactional data with external data from credit bureaus. Statistica allows the bank to run 20,000 credit decision calculations each day while enabling analysts to efficiently update the models periodically. Danske Bank cited a 50% reduction in the model development time, resulting in more actionable information and measurable improvements to business and customer satisfaction.

Danske Bank cited a 50% reduction in the model development time, resulting in more actionable information and measurable improvements to business and customer satisfaction.

IDC estimates that in aggregate, the extra value assigned just to productivity gains that are derived through business transformation by organizations that are more analytically oriented and data driven is $430 billion over the next five years. This figure does not take into account the extra benefits of increased revenue or decreased costs.

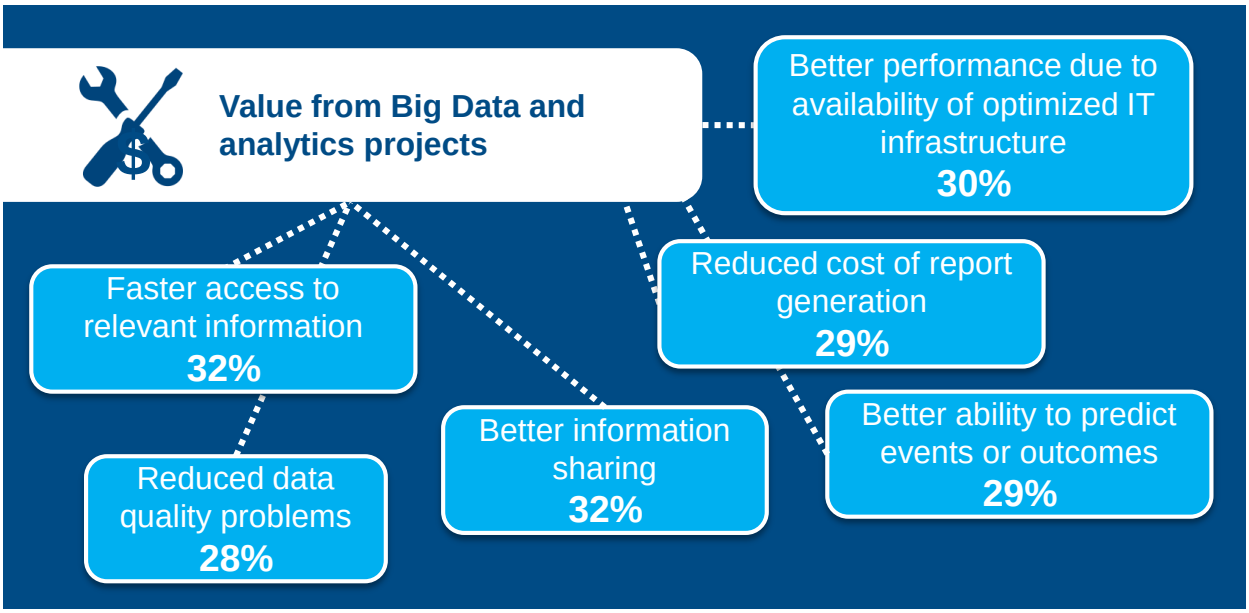
In another study, IDC found that knowledge workers (employees who are connected to the Internet and use a computing device to find, create, share, access, or enter information or data electronically in the course of performing their job) spend on average about 16% of their time per week on gathering information: searching, retrieving, and browsing internal and external information. These knowledge workers can't find the information they are looking for 44% of the time. The financial impact of time wasted by knowledge workers due to problems with data access becomes significant when we examine the problem on an organizationwide basis. If we assume (based on U.S. Bureau of Labor Statistics data) an average workweek of 41.8 hours and an annual salary per knowledge worker of $80,000, then the cost assigned to the time wasted on searching but not finding information is $5,700 per year per knowledge worker — an organization plagued by the lack of relevant data, technology, and processes employing 1,000 knowledge workers wastes over $5.7 million annually searching for but not finding information.

A key characteristic of these organizations and others that are more successful than their peers in achieving desired business transformation through BDA is their process of benefits and outcomes measurement. Most organizations today have a strong belief that there is value in Big Data, but only a few have the skills, discipline, processes, and tools needed to back up this belief with evidence. It's ironic that in the application of information management and analytics technology, the ability to analyze the benefits of this technology is still nascent. IDC research shows that these most advanced and most future-ready organizations are four times more likely to have ongoing assessment, revision, and learning built into decision making across the organization. Organizations can and do measure business benefits but also solution utilization, data quality, system performance, and quality of analytic models (see Figure 2). They also take a step further and use the findings from the ongoing measurement to revise their processes and operations in response to new information.

FIGURE 2

Improvements Tied to Big Data and Analytics Projects

Q. By what percentage has your organization's Big Data and analytics strategy improved each of the following metrics?



Source: IDC's *Big Data and Analytics Adoption Survey,* 2015

CUSTOMER CHALLENGES

To achieve the full benefits of business transformation, organizations need to overcome a number of challenges, including but not limited to technology challenges. IDC market research finds that organizations that take a balanced approach to investment in the strategy, people, processes, data, and technology for BDA are 1.5 times more likely to reap the full potential of business transformation benefits. Organizations often focus only on one of these dimensions, which creates misalignment in the overall organizationwide ability to support or automate decision-making processes. For instance, organizations with deep expertise in technology can find themselves unprepared for the efforts needed to change organizational behavior, and those with ample human resources for analytics may find they are lacking access to relevant and timely data.

Some of the specific challenges cited by organizations highlighted in this document and those surveyed by IDC point to the inability to support the growing demand for self-service analytics. Only 12% of organizations indicated that data is always available to their internal users on demand, as soon as it is created, and only 18% of organizations completely agreed that data is timely – even when real time is not the goal.

Koehler Paper Group, a German manufacturer, was looking to improve the response time and level of data granularity of its existing SAP-based data warehouse and analytics system. The company turned to SAP's latest in-memory data management platform, HANA, deployed on Dell infrastructure. The benefits of the technical simplification of the database environment that came with this in-memory system were

accompanied by several business benefits. The company was able to quantify productivity gains that resulted from faster access to data from inventory management, sales, and financial accounting systems. And speed of data access was only one of the benefits. The new solution also enabled the collection of more granular data that didn't need to be pre-aggregated to overcome the previous system's performance limitations. Procurement data with millions of data points can now be analyzed at a level that was not feasible in the past. The company is also in a strong position now to start on the journey toward its version of the IoT use cases. Plans are in the works to start ingesting and analyzing data from plant equipment — a process that was practically impossible with the previous generation of technology, according to company staff. The goal for this effort is to prevent manufacturing plant stoppages and manage maintenance more effectively.

Lack of actionable information and a culture where analytics and data-driven decision making are not promoted by top executives are also often cited as challenges. In these cases, outputs of BDA solutions are not as impactful as they should be. Only 27% of organizations indicated that outputs or results of data analysis exert significant influence on decision makers. A key lever to increase this percentage is the promotion of a data-driven culture by executives and other top managers.

The University of Iowa (UI) Hospitals and Clinics identified the challenge of reducing surgical site infections — an issue for all hospitals. UI's surgical team worked with the IT group to deploy a new predictive analytics solution from Dell that would allow doctors to access highly personalized information on a mobile app or in the browser. Predictive analytics were not new to UI; however, the previous desktop software was no longer keeping pace with growing distributed data integration and analytics demands. Nor was the previous software able to ensure that results of analytics were delivered in a timely manner to surgical teams. After UI implemented the new solution, the newly available information identified the likelihood of an infection occurring based on predictive analytics performed on a combination of historical and live patient data. UI's medical staff has been able to reduce surgical site infections by 58% and substantially decrease the cost of care. The new solution also enables the hospital to store predictions in its database for future analysis and to aid in follow-up patient care. This type of knowledge capture is an invaluable tool for ongoing improvement of analytic models and decision-making processes.

UI's medical staff has been able to reduce surgical site infections by 58% and substantially decrease the cost of care.

Other challenges, such as incomplete data and data of poor quality, impede the ability of analysts to combine data in new ways or analyze all of the relevant data. Only 15% of organizations completely agreed that the data available for their decision making is of high quality, and only 27% indicated that all of the relevant internal and external data is of the necessary granularity.

Merkle, a consumer marketing solutions provider, found that its existing data management and analysis solution was not equipped to support massive amounts of new data that the company wanted to process to develop better marketing campaigns for clients. It needed a scalable, cost-effective way to capture and analyze large amounts of structured data (such as customer addresses) and unstructured consumer data (such as behavioral and social data). To support its new Big Data solution, the company turned to Dell for a Hadoop cluster based on Dell and Intel technologies. The cluster was built using Dell's reference architecture. Merkle has been able to use its Hadoop cluster to build a new marketing solution, the Foundational Marketing Platform, which provides the company's clients a much greater level of visibility into marketing campaigns and media spend. Merkle's clients are also benefiting from enhanced predictive models designed to anticipate consumer behaviors. As a result, Merkle is helping its clients position new marketing campaigns more effectively while it has decreased the total cost of ownership of the analytic solution by 60% and improved data processing time by a factor of 10.

Merkle is helping its clients position new marketing campaigns more effectively while it has decreased the total cost of ownership of the analytic solution by 60% and improved data processing time by a factor of 10.

DELL SOLUTIONS FOR BIG DATA AND ANALYTICS

Dell is one of the largest IT vendors providing technology solutions that can help organizations transform their businesses through Big Data and analytics. The company is not new to BDA solutions. Its history with Hadoop started in 2009, and in 2011, Dell published its first reference architecture with Cloudera and Intel. Over the years, Dell has expanded from a leading provider of BDA infrastructure to a software and services portfolio that addresses a broad range of analytics, data management, data integration, and infrastructure customer requirements.

Today, Dell collaborates with customers to define their use case before beginning their BDA journey. Once the use case is defined, Dell works to provide the necessary components to implement the solution. With a portfolio that includes a broad range of fit-for-purpose software, infrastructure, and services options for its customers, Dell delivers a combination of its own offerings and those in partnership with some of the leading IT providers in their respective technology categories. These solutions take on multiple forms such as reference architectures, engineered solutions, appliances, and discrete infrastructure and software components. The Dell BDA solutions address all the key layers of the Big Data architecture:

- **Analytics and business intelligence:** Dell Toad and Dell Statistica product suites with a broad range of functionality for reporting, multidimensional analysis, data and text mining, and predictive analytics
- **Data management:** Dell Toad data management and administration software as well as Dell-engineered systems and appliances with Hadoop vendor Cloudera and Intel, and several leading database software providers
- **Data integration:** Dell Boomi suite of data and application integration software
- **Big Data and analytics infrastructure:** Dell storage and networking hardware, and Dell PowerEdge servers, powered by Intel, which delivers the performance and computational horsepower needed to process, assemble, convert, integrate and, ultimately, transform data from information into insights

Importantly, Dell also provides support services and systems integration services to augment clients' internal staff or relationships with other consulting firms.

CHALLENGES AND OPPORTUNITIES FOR DELL

Dell, like other vendors in the BDA market, faces a competitive environment and will need to keep pace with the rapidly changing BDA technology landscape. It will need to continue to differentiate itself not only based on technology but also based on professional services, including those for deployment and ongoing management of BDA solutions. Dell's commitment to the BDA market through a growing portfolio of technologies and services, as well as the positive experiences of a growing number of customers, will continue to present the company with opportunities to help drive value from Big Data for years to come.

RECOMMENDATIONS FOR ACHIEVING BUSINESS TRANSFORMATION THROUGH BIG DATA AND ANALYTICS

The era of Big Data has brought us new technologies and new opportunities to leverage data, people, and technology to gain insights and use those insights to drive business transformation. However, for those transformations to lead to business value, organizations must overcome several current technology and organizational challenges. Organizations looking to enhance or extend their Big Data and analytics capabilities should consider the following:

- **Recognize the range of requirements and use cases, and deliver fit-for-purpose technology that empowers a wider range of employee roles.** Some users will require information based on descriptive functionality, while others will require information to be based on predictive or prescriptive functionality. There are still many distinct segments of end users, such as data scientists, business analysts, operational employees, and managers (and several subsegments within each of those segments), but there is also a growing tendency for blended roles. BDA is a "team sport," and organizational structure, behavior, and technology must accommodate this reality.
- **Establish common data integration, management, governance, and security processes.** Rapid growth in cloud-based BDA solution deployments, availability of greater varieties of data, and the emergence of an economy based on data monetization will require a sharp focus on these steps of the BDA process. These processes will enable an effective self-service analytics environment.
- **Ensure that your team includes not only capable data scientists and business analysts but also capable data architects and data preparation experts.** The emerging BDA information management architecture is expanding from the commonly used relational data warehouses to Hadoop, NoSQL databases, and streaming analytics technology. The rest of the BDA technology stack has to accommodate this information management platform expansion, and in most cases, strong data architects are needed to accomplish this task.
- **Enable operationalization of analytics by ensuring that the results of analysis reach the appropriate operational systems and employees.** Analytics is not an end in itself but a step in the process of decision making and execution. BDA solutions need to ensure that actionable information is securely delivered to the full range of operational or transactional solutions.
- **Assess your organization's opportunity to monetize data and analytics.** The ability to take advantage of Big Data and analyze it effectively can not only support internal decision making but also help launch new lines of business and revenue streams. Dell customers such as Siemens and Merkle, as well as a growing number of companies across industries, are prime examples of companies deploying new BDA solutions to address the needs of their external clients in a specific industry (e.g., manufacturing) or business function (e.g., marketing).
- **Consider solutions from Dell when assessing your next set of BDA requirements.** With a growing portfolio of infrastructure, software, services, and partnerships, Dell has demonstrated a successful history of supporting clients' business transformation efforts.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-insights-community.com
www.idc.com

Copyright Notice

External Publication of IDC Information and Data – Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2016 IDC. Reproduction without written permission is completely forbidden.

