Big Data and Beyond: Future-Proofing Data Management and Architecture Investments

IDG Survey Provides Insights into the Current State of Organizations' Data Management Strategies and Plans to Adopt Advanced Data Management Solutions

A confluence of trends and emerging technologies is affecting the role of data analytics in business today as well as the fundamental ways companies do business. This, in turn, is amplifying the importance of better data management. Master data management (MDM), which enables companies to get a grip on business-critical data about customers, products, suppliers and more, is specifically affected by the increase in volume, velocity and variety of data we are seeing today.

To understand the challenges faced by businesses in the midst of this data evolution, Deloitte and Informatica joined with IDG Research to survey IT organizations on their data management and architecture (DM&A) strategies. With more than half of the C-level, management and IT professionals surveyed expecting investments in data management to increase over the next 12 months, it is clear that DM&A is a priority.

However, implementing a DM&A initiative requires overcoming several hurdles. As evidenced by the 28 percent of respondents who are looking for a replacement to their existing data management program, many legacy DM&A systems are not built for big data. When choosing a new solution, IT organizations must consider the growing role and importance of the cloud and how emerging technologies are influencing the master data paradigm. In addition, organizations must implement a DM&A initiative that evolves alongside big data analytics. Only then can they be assured of the ability to leverage new data types in the future to maintain a competitive advantage.
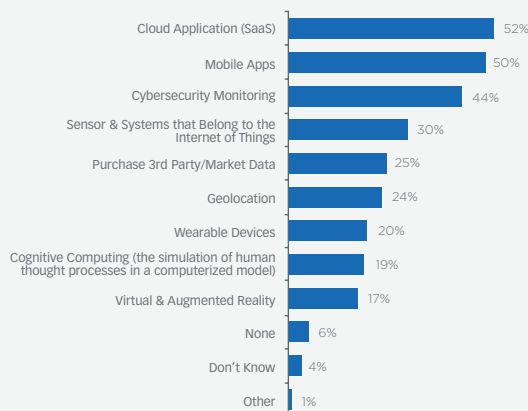
This white paper explores current trends in DM&A strategies and investments based on key findings from the survey. It also offers suggestions on modernizing the DM&A initiatives that enable organizations to take advantage of big data opportunities and future-proof their architecture.

» Big Data Opportunities

Data is changing, and it shows no sign of stopping. Along with that change, the scope and scale of data are continuously increasing. Companies are leveraging new technologies to get valuable insights from this data about their IT infrastructure, internal users, customers and the business environment. Survey respondents reported that over the next 12 months, several technology disruptors will have an impact on the data ecosystem. Software as a service (SaaS) applications, mobile applications and cybersecurity monitoring top the list of technologies. But that's not all. Other data types on the horizon include sensors and systems that belong to the Internet of Things, geolocation, wearable devices and cognitive computing.

Technologies That Will Impact or Feed Organization's Data Ecosystem Over the Next 12 Months

Technology	Percent
Cloud Application (SaaS)	52%
Mobile Apps	50%
Cybersecurity Monitoring	44%
Sensor & Systems that Belong to the Internet of Things	30%
Purchase 3rd Party/Market Data	25%
Geolocation	24%
Wearable Devices	20%
Cognitive Computing (the simulation of human thought processes in a computerized model)	19%
Virtual & Augmented Reality	17%
None	6%
Don't Know	4%
Other	1%

Informatica   CIO Strategic Marketing Services   Deloitte.

All this data opens the door to new business opportunities. Organizations are hoping to derive a variety of insights from data over the next 12 months, including:

- Information to help meet compliance requirements
- A better understanding of customers and their purchase behavior patterns, to create a more informed marketing strategy
- The detection of security risks

Companies recognize these opportunities, as shown in their investment plans. Among the companies represented in the survey, 77 percent are either looking to invest in DM&A solutions for the first time or want to replace an existing solution that does not scale to meet business needs.

But to capture the desired insights, data must be properly managed. The survey showed that 60 percent of the respondents expect their companies to increase data management solution flexibility over the next 12 months to tackle multiple business problems. Ideally, companies can start small and grow quickly as they realize business benefits. A single, flexible platform can help organizations manage a variety of business-critical data as their needs evolve, including the customer, product, supplier, location and other business-critical domains.

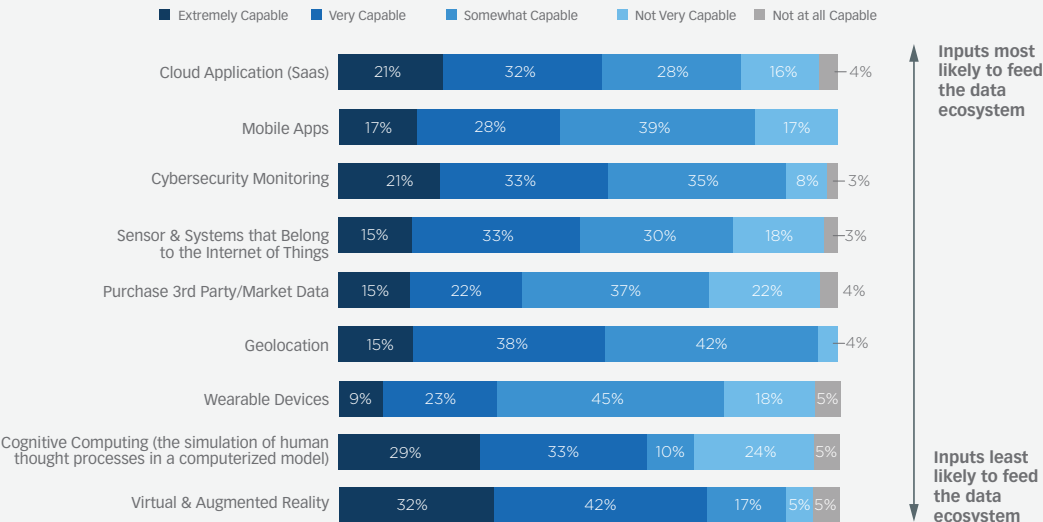Cloud adoption is also affecting data management—more than half of the survey respondents plan to integrate data management with cloud applications. This is no surprise. Many businesses today find that their use of cloud applications has grown to include Salesforce, Workday, NetSuite or other SaaS applications in addition to traditional on-premises applications such as SAP and Oracle. It is difficult to share effectively and use valuable business data throughout the organization when the data, applications and processes between cloud and on-premises systems are not synchronized.

» Big Data Challenges

Unfortunately, many companies are not equipped to take advantage of the opportunities inherent in the era of big data. Most notably, various data types fall outside the scope of many data management solutions that organizations have currently deployed. This is most frequently the case for data associated with technology disruptors: social data, cybersecurity monitoring data, sensory device data, metadata and public or open data. In addition, less than half (45 percent) of the respondents feel that their current DM&A strategy is highly capable of mastering mobile applications. In these cases, organizations end up with data that is incomplete, inconsistent, ungoverned and unprotected.

The use of traditional data management approaches, which are manual and complex, makes it difficult to cope with big data's velocity and volume. The majority of the respondents reported that at least some manual

Rating of Organization's Current DM&A Strategy in Terms of Ability to Master Various Data Inputs

Legend: ■ Extremely Capable ■ Very Capable ■ Somewhat Capable ■ Not Very Capable ■ Not at all Capable

Data Input	Extremely Capable	Very Capable	Somewhat Capable	Not Very Capable	Not at all Capable
Cloud Application (Saas)	21%	32%	28%	16%	4%
Mobile Apps	17%	28%	39%	17%	
Cybersecurity Monitoring	21%	33%	35%	8%	3%
Sensor & Systems that Belong to the Internet of Things	15%	33%	30%	18%	3%
Purchase 3rd Party/Market Data	15%	22%	37%	22%	4%
Geolocation	15%	38%	42%		4%
Wearable Devices	9%	23%	45%	18%	5%
Cognitive Computing (the simulation of human thought processes in a computerized model)	29%	33%	10%	24%	5%
Virtual & Augmented Reality	32%	42%	17%	5%	5%

Inputs most likely to feed the data ecosystem

Inputs least likely to feed the data ecosystem

processes are still in place for managing and storing both internal and external data. Approximately one-fifth use mostly manual processes. As long as traditional processes are in place, organizations will likely struggle to realize business value from their big data projects. The processes simply take too long. Repeatable, reliable and sustainable processes are required for companies to realize real value from big data.

Only about half of the respondents said their current DM&A solution addresses data integration—which is vital for making sense of the variety of data available to them. Less than half (45 percent) said their solution addresses MDM. This is also key. As data flows through cloud and legacy systems, errors multiply. Data is duplicated or entered incorrectly. Organizations need a centralized, integrated repository that creates the best version of the truth for master data.

Finally, rapid changes in data and data analytics make it difficult for organizations to keep up with business demands. Nearly half of the respondents reported that the business perceives data management investments as mostly reactive to either business or IT needs. As long as IT is reactive, companies cannot keep pace with—much less get ahead of—the competition. Organizations must modernize their DM&A strategies if they want to seize big data's opportunities, which include:

- Competitive advantage in the demanding business environment we live in today
- Reduced time to market while introducing new products and services
- Reduced security risk amid growing data privacy threats and regulatory requirements

» Characteristics of a Modern DM&A Strategy

To understand how organizations can best meet today's data management challenges, one only has to look at organizations that are perceived as being mostly proactive in their data management investments. Besides keeping abreast of emerging technologies, these organizations are more likely to report that integrating data management with cloud applications and technology disruptors is part of their strategy, with more than half of them reporting that this is the plan for their company.

» The Cloud

These organizations recognize that no cloud application stands alone. For example, leads are often

imported from a marketing automation system into Salesforce, and Salesforce is often connected to a financial system for invoicing. In this process, data gets funneled through three separate applications. Cloud integration and data management solutions help prevent errors from occurring in any one of these systems. They enable organizations to easily manage business processes to ensure that they always have a unified, trustworthy version of the data. For example, prebuilt connectors can deliver plug-and-play integration, so key transactional and historical data from each application is readily available in one dashboard.

As organizations consider a new DM&A solution, they must also take into account how it will be deployed. Many organizations are adopting "cloud first" strategies in which cloud-based solutions are adopted wherever possible. It is no surprise, then, that many organizations are moving DM&A to the cloud. The most typical deployment preference among those planning new deployments over the next 12 months is the hybrid model, with 59 percent of the respondents selecting that option and only 20 percent opting for cloud-only.

Organizations specifically choose a cloud-based solution for ease of use, integration with external data sources, cost effectiveness and reliability. But the hybrid deployment model offers other advantages as well. It ensures that organizations can access data wherever it resides—whether in the cloud or on-premises—with the flexibility to deploy a range of integration and data solutions. In addition, organizations can leverage the resources and metadata from multiple environments and leverage the value of a federated environment.

Respondents expect their organizations will migrate away from on-premise to a hybrid MDM deployment strategy. In fact, a hybrid model is the most typical preference among those planning new deployments over the next 12 months.

» Technology Disruptors

Organizations are also looking at ways to incorporate technology disruptors into their DM&A strategy. Mastering data inputs from sensors and systems that belong to the Internet of Things is top-of-mind for three-quarters of the respondents, and nearly 20 percent of all the organizations represented see virtual and augmented reality influencing their ecosystem. But data from the myriad sensors, devices and other new technologies adds to the challenges that organizations face in managing their data. To truly harness this data and achieve more-robust insights at the pace and scale that is needed, organizations are turning to disrupters like machine learning, cognitive computing, and text analytics to be integrated into their DM&A strategy.

Technology disruptors can allow an organization to exceptionally improve their ability to manage data in ways that were not possible before, as the constraints on people and their data expertise is now being supplemented by new capabilities that are advancing data management. These new solutions provide opportunities to integrate and understand customers in entirely new ways, enabling organizations to increase analytical value, harness each interaction, and build intimacy with customers. It is critical that organizations utilize these new technology disruptors to advance how data is managed and consumed.

» Features and Capabilities

Proactive organizations are more likely to have certain capabilities woven into their DM&A strategies. These include big data and text analytics as well as predictive analytics. These investments help organizations uncover hidden connections, unseen correlations, customer preferences and other meaningful information in their data. Next-generation data analytics go a step further and predict future behaviors from existing data. When used to drive decision making, these insights can help organizations discover new business opportunities and achieve significant competitive advantage.

The barrier between humans and technology is thinning, and the need for usability is going beyond static reports to user interaction through modeling and visualization. More than half of the survey respondents reported plans to use cognitive analytics and machine learning to meet data challenges. Visualization tools enable users to see connections between operational and business activities and identify patterns, trends and outliers they may not notice otherwise. Visualization tools also enable users to create interactive reports that allow easier exploration of hidden insights in big data.
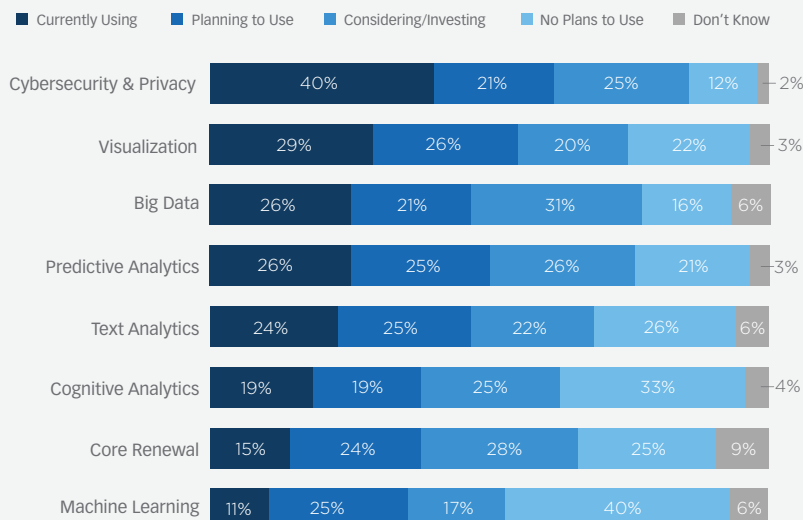
Finally, organizations making proactive investments in their DM&A strategies are reducing their dependencies on people and manual processes by applying technology disruptors to consolidate, validate, enrich and consume their data. By implementing a modern DM&A solution, organizations can more quickly and accurately clean up data. As a result, they benefit from improved data quality and can focus internal resources on more-strategic projects.

» Conclusion

Digital transformation has made it imperative for organizations to invest in DM&A. A modern DM&A strategy enables organizations to effectively manage and analyze all the data in their purview. But

Use of Disruptive Technologies Over the Next 12 Months to Solve DM&A Challenges

Legend: ■ Currently Using ■ Planning to Use ■ Considering/Investing ■ No Plans to Use ■ Don't Know

Technology	Currently Using	Planning to Use	Considering/Investing	No Plans to Use	Don't Know
Cybersecurity & Privacy	40%	21%	25%	12%	2%
Visualization	29%	26%	20%	22%	3%
Big Data	26%	21%	31%	16%	6%
Predictive Analytics	26%	25%	26%	21%	3%
Text Analytics	24%	25%	22%	26%	6%
Cognitive Analytics	19%	19%	25%	33%	4%
Core Renewal	15%	24%	28%	25%	9%
Machine Learning	11%	25%	17%	40%	6%

equally important, organizations need to become proactive in their DM&A investments so they can be ready for emerging technologies as they come along. Most organizations cannot afford—financially or strategically—to frequently reinvest in DM&A solutions to accommodate changing data.

Organizations can address many of these issues by putting DM&A in the cloud. A hybrid deployment helps ensure that organizations can leverage data wherever it resides. This will become increasingly important as more workloads and data are moved to the public cloud and are integrated with on-premises systems. A cloud-based solution also helps ensure that the organization will benefit from the provider's latest developments and innovations.

Current DM&A strategies, by and large, must be modernized if organizations stand to benefit from big data. Otherwise, next-generation big data workloads and data types will be too complex to access, ingest, process, and deploy. The path to modernization is clear: Organizations need disrupting technologies and capabilities as part of a solution that enables integration, MDM and data quality. Only then will they be positioned to sustainably and repeatedly deliver business value.

How Deloitte and Informatica Can Help

Together, Deloitte and Informatica help organizations deploy DM&A strategies and solutions that enable them to harness big data's value today while being prepared for the future. Informatica aligns its product strategy with customer needs to ensure that it delivers what organizations require to benefit from their data, including a full suite of capabilities and cloud integrations. Deloitte brings deep experience in analytics and information management to client engagements, along with practical know-how from being a leader in Informatica MDM implementations. Together, Deloitte and Informatica help organizations build a future-proof DM&A strategy that can unlock the value of data.

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Deloitte provides industry-leading Audit, Consulting, Tax and Advisory services to many of the world's most admired brands, including 80 percent of the Fortune 500. Our people work across more than 20 industry sectors to deliver measurable and lasting results that help reinforce public trust in our capital markets, inspire clients to make their most challenging business decisions with confidence, and help lead the way toward a stronger economy and a healthy society.

About Informatica
Informatica is a leading independent software provider focused on delivering transformative innovation for the future of all things data. Organizations around the world rely on Informatica to realize their information potential and drive top business imperatives. More than 5,800 enterprises depend on Informatica to fully leverage their information assets residing on-premise, in the Cloud and on the internet, including social networks.

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