

Big Analytics Redefines Enterprise Decision Making

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The field of business intelligence and analytics keeps evolving, and keeps booming in new ways. Never before has there been so expansive a choice of solutions, and so many ways to gain insights into customers, sales, markets, and processes.

The challenge is packaging the information being generated from all corners of the enterprise and beyond as rapidly as possible into formats and presentations that can guide decision makers at multiple levels. The challenge in today's BI and analytics initiatives is delivering real-time data in self-service mode to anyone who needs it.

The business need is pressing—decision makers need up-to-the-minute situational awareness in a volatile global economy. “With massive amounts of complex, fast-moving data, companies are struggling to determine the relevance of various data to specific business problems,” said Malene Haxholdt, SAS senior manager for global analytics strategy. “We expect companies to know and react to our needs instantly, no matter if we are dealing with a bank or our plumber.”

Organizations have been collecting data for years, but never before has there been such urgency to have it immediately available. “This data has typically been historic information—things that can tell us what has happened,” said Pradeep Amladi, SAP vice president of marketing for discrete manufacturing and energy and natural resource industries. “Businesses aren't interested in what was going on weeks or even days ago; they want to know what's happening now and what's needed tomorrow.”

The Internet of Things (IoT) is accelerating this drive to real-time analytics, he continued. “As products and machines get smarter—embedded with intelligent sensors—decision makers at all levels are getting more accurate, real-time understanding of customer utilization and behavior. This real-time analysis enables us to identify new and innovative services from analyses of data.” An example, Amladi said, is operational data providing an up-to-the minute picture of what's happening in a factory. Real-time analysis can assist in “preventative maintenance or replacements based on propensity for plant asset breakdown, just-in-time product upgrades, and recommendations on how to optimize product utilization.”

The need for real-time analytics has changed the BI market entirely. “Traditional BI tools have been constrained by the need to do ETL (extract, transform, load) and to have a pre-defined schema,” said Tapan Bhatt, vice president, business analytics for Splunk. Both of these requirements introduce latency in analytics. “With real-time analytics, businesses can respond much faster to refine a marketing campaign, improve customer experience, and prevent security threats.”

The BI and analytics market is also being roiled by a dramatic movement toward self-service systems. The ideal is that decision makers—even those with relatively scant programming or statistical analysis skills—should be able to pull their own data sources and assemble their own

dashboards or reports. “The results of both descriptive BI and predictive analytics need to be easily available to more people in an organization,” said Haxholdt. “Those people, often business people without the skills of a data scientist, need constant and easy access to the information in what is becoming an always-on, always connected world.”

There have been many projects encouraging self-service in recent years, but adoption of self-service tools at all levels of organizations “is now so widespread that they can no longer be ignored as guerilla initiatives,” said Jacob Saunders, national solutions director of business intelligence for Neudesic. “Maintaining accessibility, ease of use, and informality while ensuring that underlying data is accurate, timely, and semantically consistent will drive a redefinition of traditional data warehouses into data service layers, and an acceptance of bring-your-own-tool visualization.”

Self-service can take many forms. “For some, it means using predefined reports that can be invoked on a desktop by simply pushing a button,” said Rado Kotorov, chief innovation officer and VP of global product marketing at Information Builders. “For others, it involves a highly dynamic reporting environment that allows them to study data from every angle and on each level of detail. Businesses that can access and integrate the most data—and ensure data quality—are those that will allow a wide range of users to creatively work with it. This is why BI in the enterprise is becoming a big competitive advantage.”

The demand for greater ease of use and self-service is driving new types of tools, observers agree. “Data visualization has become an industry unto itself,” said Akhilesh Tiwari, global head of the SAP Practice at Tata Consultancy Services. “The reason for this is an increased demand for self-service tools available on mobile platforms. As a result, we’re seeing new sets of tools emerge to help business users analyze data themselves without having to depend on IT.”

THROW OUT THE OLD MODEL OF BUSINESS ANALYTICS

The bottom line is that the time has come to throw out the old model of business analytics, in place for decades, in which a few analysts had powerful desktop tools, while the rest of the organization made do with spreadsheets. “Traditionally, business intelligence was either limited to usage of a few real-time reports or heavily dependent on huge data warehouses,” said Tiwari. The processes were time-consuming, but that is changing now. “Competition is forcing corporations to drive business strategy and objectives through insights derived from data. And this data is often hidden in massive piles of unstructured and structured information, ranging from customer behavior and buying preferences, to product and supply chain performance. So today, immediate and executive-worthy insights have become critical,” said Tiwari.

In many ways, the big data explosion has breathed new innovation into analytics. We are entering a period that can be called the era of “big analytics,” said Haxholdt. “Over the past year, we’ve seen an unprecedented growth of data, not just the volume of data but the variety and speed at which it’s hitting.” Big analytics isn’t just analytics with more data—it introduces new ways of handling and looking at information, and, in turn, calls for new data architectures. “With deeper pools of data, predictive and analytical assessment of data has the potential to be more powerful than ever,” said Mathias Golombek, CTO for Exasol. These new analytics “require a completely new take on database and statistical software.” The old mode—a BI tool sitting on a transactional database or data warehouse—is not adequate for this approach. Computational power combined with real-time processing have given rise to in-memory analytic databases.

The Internet of Things also is shaking up the way data is analyzed. “Much of this new big data is related to events or actions, such as storing sensor readings from vehicles, players’ moves in video games, or user clicks in an application,” said Hannah Smalltree, director of marketing for Treasure Data. “It can be behavioral data—about how a person or machines behaves.” This can greatly enhance analysis by providing a detailed view of people, products, and the real-world impact of changes. “Big data and behavioral data analysis clearly offers incredible potential,” she noted.

DATA DEMOCRACY THANKS TO A NEW GENERATION OF USER-FRIENDLY TOOLS

Self-service may finally help enterprises achieve a long-elusive goal: providing analytical tools across entire organizations. Thanks to a new generation of user-friendly, intuitive, and graphical interfaces, “BI, especially self-service BI, is becoming more democratized in business,” said Kotorov. The bonus is that these new interfaces enable users “to develop and change their reports and dashboards themselves without assistance from IT.”

The new generation BI user is “the intern, CIO, and everyone in between,” agreed John Crupi, CTO of visual analytics for Software AG. “Executives want to get off the plane, fire up the iPad, and analyze data in real time without having to request reports, and are tech savvy enough to drag and drop data to get immediate answers.”

Much of the impetus for accessibility is coming from highly visual data exploration tools coming on the market. “We’re very visual creatures and a picture is often worth, and representative of lots of data,” said Stephen Kelley, chief technology officer for Hawthorne Direct. Visual analysis tools “put a visual, interactive front end on big data. The ability to see and change the results of data queries and analysis in real time is huge and opens up data analysis to anyone.”

As a result, gone are the days in which a few analysts sifted through the previous quarter’s data in search of historical trends. BI and analytics are everyone’s business. “When BI and analytics first began to emerge as a trend, companies often focused on initiatives around financial or operational,” said Paul Bennett, vice president of Hyperion Services for Velocity Technology Solutions. “More and more over the last 5 years, BI and analytics have been expanded to encompass all areas of enterprises, such as human resources, and customer service. For example, our customers are using BI tools to capture and report on things like union versus non-union headcount, employee productivity, competitor benchmarking, marketing initiative effectiveness, and many others.”

MOBILE BI BRINGS UBIQUITOUS ACCESS TO DATA

Mobile BI may be a powerful tool that will also help bring about ubiquitous access. The mobile experience is replacing the browser or desktop experience, said Theo Beack, senior VP and CTO of Vertafore. Executives and business leaders require access to insights provided from pre-analyzed data. “Mobile is making it easier and more accessible,” he noted.

However, some observers still feel that mobile BI is still in its very early stages. “Mobile BI apps are taking over desktops mostly for end users and consumers who need basic levels of BI functionality with very simple, yet powerful user interfaces,” said Oleg Komissarov, senior VP at DataArt. “For advanced, corporate business users and analysts, desktop BI tools still prevail though.” For instance, desktop Excel for such users remains king in providing well-known and comprehensive analytical functionality.

Technically, however, it may not be a great leap to move BI tools from desktop to mobile environments. “I view mobile applications as mainly the UI layer of an application stack, and are therefore completely practical for BI applications,” Kelley said. “Very few applications are standalone, so the differences between a mobile and desktop BI application are bandwidth and screen size; and mobile bandwidth is rarely an issue these days.” However, he cautioned that more sophisticated analytics may remain on the desktop for the foreseeable future. “Deep data exploration and BI development still benefits from lots of screen space and would be very tough on a small screen.

CLOUD BI ADDRESS GROWING USER DEMAND FOR ANALYTICS

As processing demands grow, along with increased numbers of users, many enterprises may seek to put more BI and analytics capabilities into the cloud. “BI in the cloud is an intuitive leap for most companies,” said Beack. “In addition, access to real-time or near real-time analytics in an always-on, mobile world is a must. It is technically challenging for many organizations to host their own BI platform, expose it for mobile or web consumption via dashboards, while protecting customer or proprietary business data.” He adds that he now sees many of his own customers running their entire businesses in the cloud.

Vendors are also moving their solutions to the cloud. “The cloud is a trend that is here to stay,” said Bennett. “The large BI software vendors are retooling their software so it operates in the cloud. The agility offered by the cloud reinforces the real-time data access trends in BI. We believe that cloud BI solutions will continue to experience tremendous growth. Big data is only going to get bigger.”

However, not everyone sees the potential of cloud BI. “Analytics in the cloud is in its infancy and will take some time to evolve,” said Tiwari. “Unless big transactional systems move to the cloud environment, I don’t believe that analytics alone will be able to support that market.”

Cloud BI adoption “has been slower than I would have predicted a few years ago,” Saunders agreed. However, he continued, “the momentum is unstoppable. The days of the ubiquitous corporate data center are numbered.” Cloud BI will increasingly be an attractive—or perhaps the only—option. “The weight of data will continue to decrease. Cloud analytics will not only be more cost-effective, but seamlessly integrate with collaboration, messaging, CRM, and line-of-business applications,” Saunders added.

Cloud BI is likely to only keep gaining converts as well. “If your traditional cloud-based system can one day make BI functionality available for you without the need of setting it up yourself, that’s obviously good news,” said Alexey Utkin, financial services practice leader at DataArt. “Moreover, certain cloud systems may seamlessly integrate with one another, thus enabling the linking of your data for BI.”

BIG DATA COMPLEXITY

Is big data opening things up, or making things more complicated? The experts are divided on this question. “Like any other innovative technology in the past, big data analytics still present a challenge for many enterprises,” said Dragan Rakovich, CTO of analytics and data management for HP Enterprise Services.

New-generation BI and analytics systems are needed to handle the scale of big data that will be part of corporate decision making. “BI and analytics are being transformed by the onslaught of new data sources,” said Smalltree. “However, collecting and analyzing data like this is a major challenge: Consider millions of vehicles sending sensor readings every minute, or billions of video game players moving through an application. The data is not just massive in size. It’s also created very rapidly, in new formats and often remotely, far outside corporate firewalls. This has created a challenge for traditional data warehouses and BI tools, which were not built for data of this format, velocity, and scale.”

New tools are coming on the market, but many early offerings required new investments in skills, resources, and training, Smalltree added. As with any transformative technology, big data analytics will require investments and disruption. “Big data doesn’t magically get transformed into information,” said Crupi. “Money needs to be spent on professionals who wrangle, cleanse, and write the code to analyze the data quickly.”

Big data “is definitely opening things up and the market has seen a slew of products cater to this demand,” said Tiwari. “For example, SAP has bet on HANA to address this space. But big data can also be overwhelming if you do not understand your business well. There has to be a very competent business and data science team in place in order to take the right data inputs, in the right context, and generate relevant insights. If this is not in place, irrecoverable mistakes can be made.”

Ultimately, the ability to manage big analytics will directly impact business success. “Companies that are able to unlock the value of their data will win and ride the next wave of innovation because they are data-driven and agile,” said Rakovich. He outlined the questions he is now seeing being asked: How do I use data to enable employees to create new innovations? How do I start today without entering in technology obsolescence risks? How do I analyze 100% of relevant data from new sources—whether human, machine, or transactional? How do I secure talent and expertise? How could I start today without making massive investments?

The new analytics means a behavioral shift for enterprises. “Companies will have to get more comfortable in making data-driven decisions,” said Amladi. “With the widespread availability of data, they will have to get better at distilling the signal from the noise. The way companies will do this is through new technology capabilities. They will need the right talent and processes to slice and dice the information to get answers to the right questions that impact their entire value chain. The past has shown us we can answer faster with data analysis, but now we need to get smarter.”