The Top Challenges in Big Data and Analytics

Big Data Leads to Insights, Improvements & Automation

Over the past few years, there has been a tremendous amount of hype around Big Data – data that doesn't work well in traditional BI systems and warehouses because of its volume, its variety, and the velocity at which it is acquired and changed. Is the hype justified? Lavastorm Analytics believes it is.

Often Big Data has been talked about as a "problem" because it couldn't be easily processed with traditional systems based on relational databases, but it really is a tremendous opportunity to enhance and even transform how you run your business. The value of Big Data can be significant. It can lead to innovations, such as new pricing models, new ways to engage with your customers and partners, new product ideas, or new market opportunities. For example, at a recent conference, one large financial institution estimated that Big Data could help them reduce by 30-65% the time to market and cost of their strategic innovation projects.

According to Gartner Research[1], Big Data can have a major impact on your current business in three ways. It can help you:

1. **Discover hidden insights** – For example, if you consider customer survey data when investigating a high service cancellation rate, you may detect a pattern or root cause that wasn't visible before and that you can eliminate to improve retention.
2. **Improve decisions, by enriching information for decision makers** – For example, if you consider a customer's social media profile, you can get a clearer picture of that customer and their place in the world and you can use that information to improve your response to service inquiries or to prioritize fraud alerts.
3. **Automate business processes** – For example, you can look at detailed stock trading information to identify patterns that lead to poorly executed trades and automate the process so that certain steps are taken when that pattern occurs again.

Why Now is the Time to Consider Big Data

Historically IT and BI organizations have spent almost all their efforts caring for and managing a small portion of the data available to business decision makers. That portion was limited to structured data that was largely created by or stored in large enterprise systems, such as enterprise resource planning (ERP), order, or CRM systems. Other data was largely ignored or the business teams were left to figure out innovative ways to use it as best they could. That data which includes data from distribution partners, customer surveys, contracts, emails, government studies, real-time sensors, and customer social media data, has been estimated to represent more than 80% of all enterprise data. It was clear that some of the data held value, such as very descriptive information that would explain gross patterns or root causes, but it wasn't clear how to find the interesting bits in such an ocean of information and the standard relational databases

---

[1] Webinar presentation, "Getting Value from Big Data", Doug Laney, Gartner, 2011

that formed the basis of enterprise data warehouse and other BI infrastructures didn't perform well when faced with the volume, variety or speed that characterized much of that data.

A host of innovations, combined with affordable high-capacity processing power, have made it feasible to sift through Big Data and unify it with other more standard enterprise data. With more data now within reach, organizations are determining how this additional insight can improve their business processes and revamping their architectures, policies and procedures to allow them to get value from the information that is available.

Challenges for Success in Big Data and Analytics

When considering your Big Data projects and architecture, be mindful that there are a number of challenges that need to be addressed for you to be successful in Big Data and analytics. Figure 1 shows the results of a 2012 survey in the communications industry that identified the top four Big Data challenges as:

> **Data integration** – The ability to combine data that is not similar in structure or source and to do so quickly and at reasonable cost. With such variety, a related challenge is how to manage and control data quality so that you can meaningfully connect well-understood data from your data warehouse with data that is less well understood.

> **Data volume** – The ability to process the volume at an acceptable speed so that the information is available to decision makers when they need it.

> **Skills availability** – Big Data is being harnessed with new tools and is being looked at in different ways. There a shortage of people with the skills to bring together the data, analyze it and publish the results or conclusions.

> **Solution cost** – Since Big Data has opened up a world of possible business improvements, there is a great deal of experimentation and discovery taking place to determine the patterns that matter and the insights that turn to value. To ensure a positive ROI on a Big Data project, therefore, it is crucial to reduce the cost of the solutions used to find that value.

Figure 1 – Biggest Challenges for Success in Big Data and Analytics. Source: TM Forum, 2012.
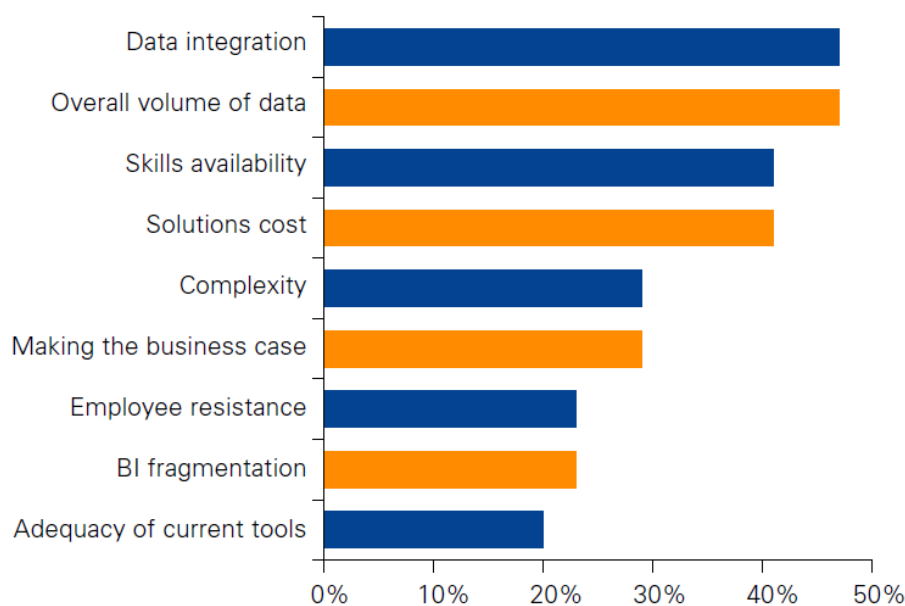
The Lavastorm Analytics Engine for Big Data Analytics

The Lavastorm Analytics Platform and its Lavastorm Analytics Engine have already been proven in demanding big data environments.   With more than 15 years of use in the communications industry, the products have generated billions of dollars in business value in the face of extremely high data volume and variety and the need for near real-time operation to minimize fraud threats.

The Lavastorm Analytics Engine's visual, discovery-based environment allows organizations to reduce analytic development time by 90% or more and harness the power of Big Data to transform their business. The core strength of the Lavastorm Analytics Engine is its ability to bring together diverse data with tremendous ease. In addition, the engine combines two unique capabilities that allow you to capture the potential value from the data:

1. **Data discovery** – You can combine large volumes of diverse data and explore it freely using a visual analytic development environment. Data discovery allows you to identify new insights or to use the enriched data to make better-informed decisions.
2. **Continuous analytics** – You can continuously run the visual analytic models that you create with the engine, allowing you to automate various analytic processes, such as data cleansing and data quality processes, and business processes.

Along with these capabilities, the Lavastorm Analytics Engine offers the following unique features to solve the top four Big Data challenges identified earlier in this paper:

Big Data Challenge	Lavastorm Analytics Engine Solution
Data integration and data quality	• Acquires virtually any source data – no overarching schema required, just join and go • Combines siloed data without requiring SQL coding • "Fine" analytic control allows you to profile, inspect, and transform data any way necessary • Automates processes, including data quality processes • Visual models expose analytic logic and create an audit trail, building trust with managers/peers
Data volume	• Desktop and server configurations provide a cost-effective solution for low-volume and high-volume applications • Storage-less analysis – data flows through the engine without being stored, preventing you from creating a separate mart where Big Data needs to be maintained
Skills availability	• Designed for business analysts, the visual development environment gives analysts the power of programmers for analytics • High-level building blocks contain pre-built analytic logic that simplifies your analysis • Visualizations and visual models help you present results to managers/peers
Solution cost	• Reduces time of analytic development by 90% or more • Small start-up costs mitigates risks – single toolset goes from desktop to data center • IT friendly – offers closed loop with traditional BI and leverages existing security infrastructure • A single solution that empowers users to get value from Big Data through insight discovery, decision making, process automation

Big Data Successes

The Lavastorm Analytics Platform has generated billions of dollars in savings for customers in the area of revenue assurance, fraud management, customer experience management, and more. Big Data projects using the Lavastorm Analytics Platform have included:

> **Real-time Fraud Detection –** Integrated more than 60 different data sources, analyzed 60 million data sets/day.

> **Revenue Assurance Solution for Pay-by-the-Drink Billing** – Processed high data volume and new data sources such as network performance data and usage data.

> **Improved Service with Net Promoter Score** – Unified customer survey data with order, install, & complaint information.

> **Optimize Stock Trade Execution for Financial Firm –** Solution queried data from MongoDB and analyzed 1 terabyte/day of trade and stock price data

Getting Started with the Lavastorm Analytics Engine

To experience the benefits of the Lavastorm Analytics Engine, request a trial of Lavastorm Desktop Professional at: http://www.lavastorm.com/products/lavastorm-desktop-professional.