Datameer
stay curious

What is **Big Data Analytics**?

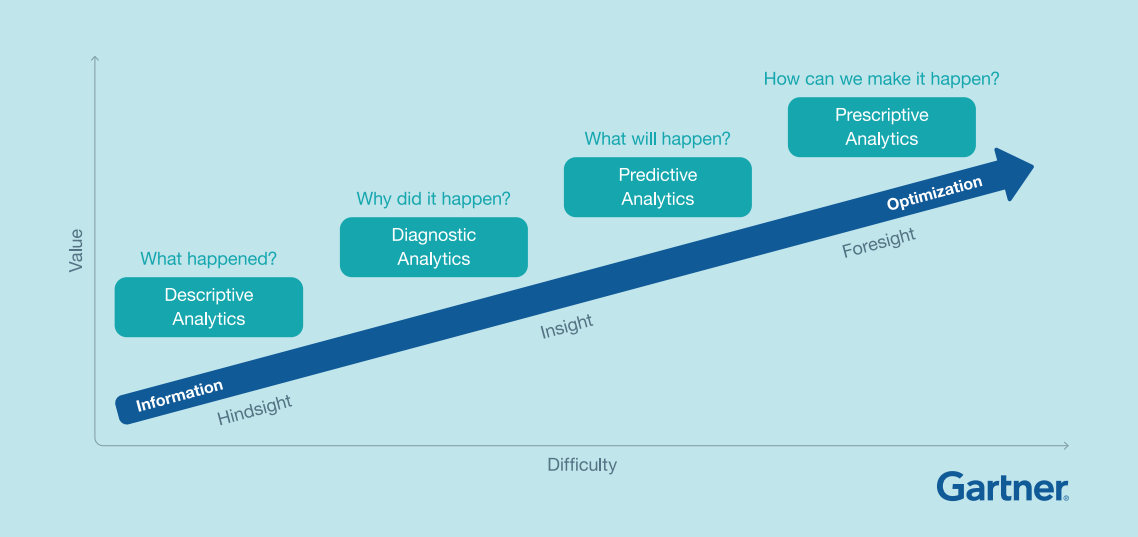
Many definitions on the topic of big data focus on a bottom-up view, using the 3 Vs of the data — volume, variety and velocity. Our customers define big data analytics from a top-down view:

> Answering a new range of diagnostic questions about your business using more data and sophisticated analytics to deliver actionable results to your business teams.

You may start with a general question, one your traditional descriptive analytics has revealed. Big data analytics lets you explore the deeper diagnostic questions — some of which you might not have thought about asking — to reveal a new level of insight and identify steps to take to improve business performance.

What **Questions** Do Big Data Analytics Answer?

This Garner chart reveals a business-analysis view on big data analytics:



Think of each of these areas as building blocks that expand your analytics. Big data analytics plays a vital role in expanding the analytics from a backward, reactionary approach to a forward, action-oriented method.

Descriptive Analytics

Many organizations have spent years generating descriptive analytics — answering what happened questions. This information is valuable, but only provides a high-level, rearview mirror view of the business performance.

Diagnostic Analytics

Most organizations start to apply big data analytics to answer diagnostic questions — how and why something happened. Some might also call this behavioral analytics. Diagnostic analytics with big data helps in two ways: (a) the additional data brought on by the digital age eliminates analytic blind spots, and (b) the how and why deliver insights that pinpoint actions to take.

Predictive Analytics

Answering the how and why questions will reveal specific patterns to identify that detect when outcomes are about to occur. Predictive analytics builds upon the diagnostic analytics to look for these patterns and see what will happen. Machine learning is also applied to continuously learn as new patterns emerge.

Prescriptive Analytics

At the next level, prescriptive analytics will automate decisions and actions — how can I make it happen? Building upon the previous analytics, neural networks and heuristics are applied to the data to recommend the best-possible actions that drive desired outcomes.

Big data analytics makes three new levels of analytics possible:

✓ Diagnostic ✓ Predictive ✓ Prescriptive

Big data delivers the granularity and orientation around results necessary to find patterns to drive actions that create the right outcomes.

Popular questions that companies answer with big data analytics include:

- Which channels are the most cost effective for customer acquisition?
- How can I get customers to increase purchase sizes?
- How do customers behave before they churn?
- Which areas have the capacity to roll out new IP services?
- Which events occur before equipment fails?
- How can I extract more oil or gas from existing wells?
- Why do certain assets have a large impact on our risk?
- Which customers are exhibiting signs of payment fraud?

The **Benefits** of Big Data Analytics

A big data analytics platform is designed to add value to your organization in three ways.

1. Answer New Business Questions

Business leaders can finally answer a new range of diagnostic questions that reveal deeper insights into behavior and performance to drive actions that create more profitable customer relationships, improve operational execution and reduce business risk.

2. Produce More Results

Agile, self-service analytics makes BI and analyst teams more productive, enabling them to answer questions faster, deliver more information to data-starved business teams and eliminate analytic backlogs.

3. Put Your Insights to Work

Insights are only valuable if they can be used daily by the business teams. Operationalized big data analytics offers the scale and governance to continuously deliver fresh analytics results to the business, driving the everyday actions they take.

Big Data Analytics
Use Cases

Financial Services

- With switching costs and brand confidence at an all-time low, financial services firms use big data analytics to build customer relationships across the entire lifecycle of acquisition, engagement and retention.
- Increasing regulatory requirements and the risk of fines are driving financial service institutions to invest in big data analytics to ensure compliance and reduce risk.
- With competition ever increasing, financial services organizations use big data analytics to identify new products and services to reach new customers and create new revenue streams.

Telecommunications

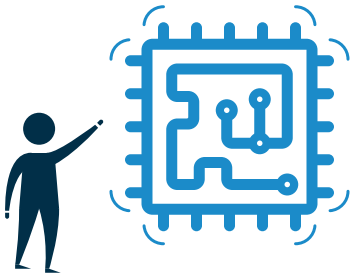
- Competition for consumers drives communications service providers (CSPs) to invest in big data analytics to build stronger relationships with existing customers and acquire new ones in cost-effective ways.
- With networks and services becoming more complex, CSPs are using big data analytics to identify areas of improvement and the most financially prudent capital investment.
- CSPs use big data to identify new products and services, as well as the most effective ways to roll out new services, to drive incremental revenue streams.

Retail

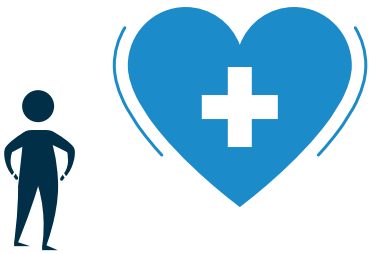
- Most retailers have a handle on the “What’s selling?” question. They’re applying big data analytics to understand why consumers are buying and then tailoring their responses to influence sales.
- The omni-channel customer journey is elusive to many retailers, driving them to use big data analytics to better understand customer behavior and influence to drive actions that influence more profitable outcomes.
- Faster product life cycles and ever-complex operations cause retailers to use big data analytics to understand supply chains and product distribution to reduce costs.

Technology

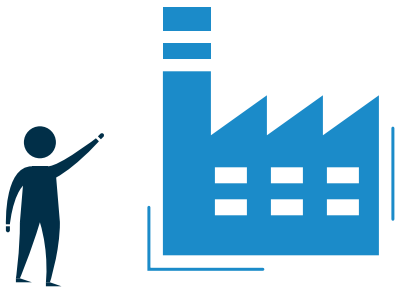
- Technology firms use streams of product data to understand how customers use their products so they can create stickier products.
- The same product and usage information allows firms to use big data analytics to identify ways to optimize service delivery, increasing customer satisfaction and lowering costs.
- Technology companies also use big data analytics to identify key customer attributes to reach like-minded customers and identify opportunities for upselling.



Healthcare



- Large healthcare groups use big data analytics for population health analysis to predict epidemics, cure disease, improve quality of life and avoid preventable deaths.
- Traditional healthcare providers are using applying data from medical devices, doctor’s notes, lab results and more to drive big data analytics that improve patient care and increase efficiency.
- Insurers and healthcare providers use big data analytics to streamline payment processes and better monitor for claims fraud.

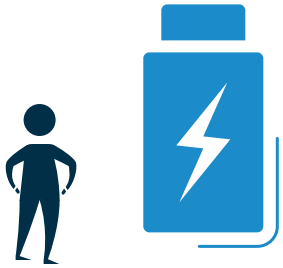


Manufacturing

- Manufacturers use big data analytics to identify patterns and relationships among discrete process steps and inputs, and then optimize the factors that improve efficiency.
- By using big data analytics on a growing flow of real-time sensor and machine data, manufacturers can improve yields, increase quality and ship products on schedule.
- Manufacturers optimize supply chains and logistics with big data analytics by analyzing supplier and logistics tracking data with cost and historical logistics data.

Energy

- Oil and gas companies collect and use big data analytics on sub-surface and geographic characteristics to improve geology interpretation, new well delivery and well optimization.
- By using big data analytics on well and reservoir data, energy firms can predict their performance and production, and identify ways to optimize future production and hydrocarbon delivery.
- Energy companies are using big data analytics on assets and equipment for predictive maintenance and optimal use of assets to reduce capital expenditures.



Five **Reasons** Why Big Data Analytics Delivers Better Results

A valuable set of big data analytics will deliver greater accuracy, depth and relevance.

1. Use More Data

Big data analytics allows you to use not just a greater volume of data, but also a wider variety of of data — different formats and structures. Adding more data to the analytics makes the results more detailed, helping find deeper answers and eliminating blind spots.

2. Data Discovery

The big data discovery process allows an analytic-to- iterative approach to data. Using a technical feature called “schema on read”, analytic models are dynamically adjusted to the data, rather than forcing the data into a pre-formed structure. This allows data to guide analysts to the data, rather than force the data into a pre-determined answer.

3. Advanced Analytics

Big data analytics offers more advanced analytic functions that can identify new patterns and trends hidden in data. Path and graph analytics, statistical functions, correlations, dependencies and algorithms find previously undiscoverable answers.

4. Actionable Outcome

Discovering how and why certain events occurred allows business analysts to identify both positive and negative outcomes. This encourages teams to identify the best actions to create positive outcomes and what actions can eliminate the negative ones.

5. Delivery of Results

Traditional BI was designed to deliver dashboards and visualizations — it was a tool for analysts. Now, the combination of creating actionable data and being able to integrate with downstream business applications allows big data analytics to deliver the real information business teams need to take action.

How to **Implement** Big Data Analytics

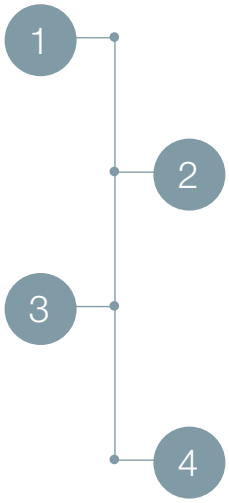
Business objectives and answers to questions are the primary drivers of big data analytics. Understanding these needs is an essential part of any process to implement big data analytics in your company. A process to deliver success at your organization involves four components.

Use Case Discovery

The business, analyst and IT teams should work together to identify the key big data use cases. Hold a use case discovery workshop to uncover the attributes of key use cases (data sources, potential business value and ROI, barriers to implementation) and help prioritize implementing the use cases.

Answer Discovery

Bring the data from all sources into your big data analytics platform, prepare it and use data discovery and advanced analytics to let the data reveal answers. This is often an iterative process by which the analyst fluidly moves between the data integration, preparation and analysis steps to discover answers.



Proof of Value

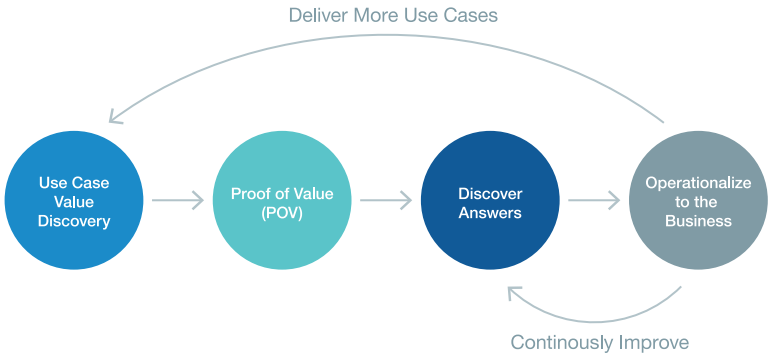
Using some of the data, use data discovery for the top priority use case to find new patterns, outcomes and opportunities hidden within the data. Use this to demonstrate the fit and value of your analytics and build a projected ROI model for business teams to evaluate.

Operationalization

After finding the analytic patterns, deploy the analytics to the business teams. This involves defining and implementing the attributes of the repeated process that will produce results, including job execution, data retention policies, security models and integration with downstream applications or tools used by the business users.

As the business uses analytics, you should continuously measure progress in well-defined time frames. New data will be generated, creating the need to re-visit the analytics to continuously improve them.

In parallel, go back and discover the next groups of high-priority use cases with the business teams. In many cases, the new use cases should leverage existing data and analytics from existing use cases.



How to **Discover** Answers With Big Data Analytics

Discovering answers in big data analytics is not the same process as it is with traditional BI. The volume of data and variety of potential dimensions make a rigid data discovery process impossible.

Big data analytics requires a fully self-service platform that allows an analyst to perform the end-to- end analytic cycle. This eliminates process delays such as waiting for IT to deliver data, streamlining the delivery of big data analytics.

Integrate

The digital age is generating vast volumes of data in many different formats. Big data analytics simplifies the integration steps by connecting to and understanding the data the analysts require.

Prepare

Analysts can spend up to 80 percent of their time preparing their data for analysis. With vast volumes and a variety of big data, an analytic platform needs to help the analyst cleanse, transform and organize their data faster and easier.

Analyze

Answering “how” and “why” questions on big data requires a vast number of analytic functions that range from simple aggregations to advanced algorithms. A strong big data analytics platform must make it easy to apply these functions to find patterns deep within the data.

Visualize

Big data analytics requires a new range of visualization capabilities that can show signals within the noise. Visualization must be easily applied to the analytic result sets to show both analysts and business teams new trends and patterns.

Iterative and Experimental Discovery Process

Big data analytics requires a fluid data discovery experience that allows analysts to have the different phases of the cycle open at the same time. It should be possible to make iterative tweaks to any of the steps while seeing the upstream and downstream impacts. This allows the analyst to quickly run through experiments to find answers without having to switch context.

As analysts perform big data discovery, they experiment with each phase of the cycle. They may start by bringing in and integrating specific datasets, preparing the data and then running a set of analytic functions on that data. As they see the visualization, they may not find the answers.

They might need go back and clean the data, for more data preparation. Maybe they need a different dataset. There is a chance the analytic functions need tweaking. Or, it could be a combination of these items.

Big data analytics allow analysts to quickly cycle and iterate through these steps to find answers to complex questions at the speed of thought.

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