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BRAINSHORING SERVICES

Data analytics

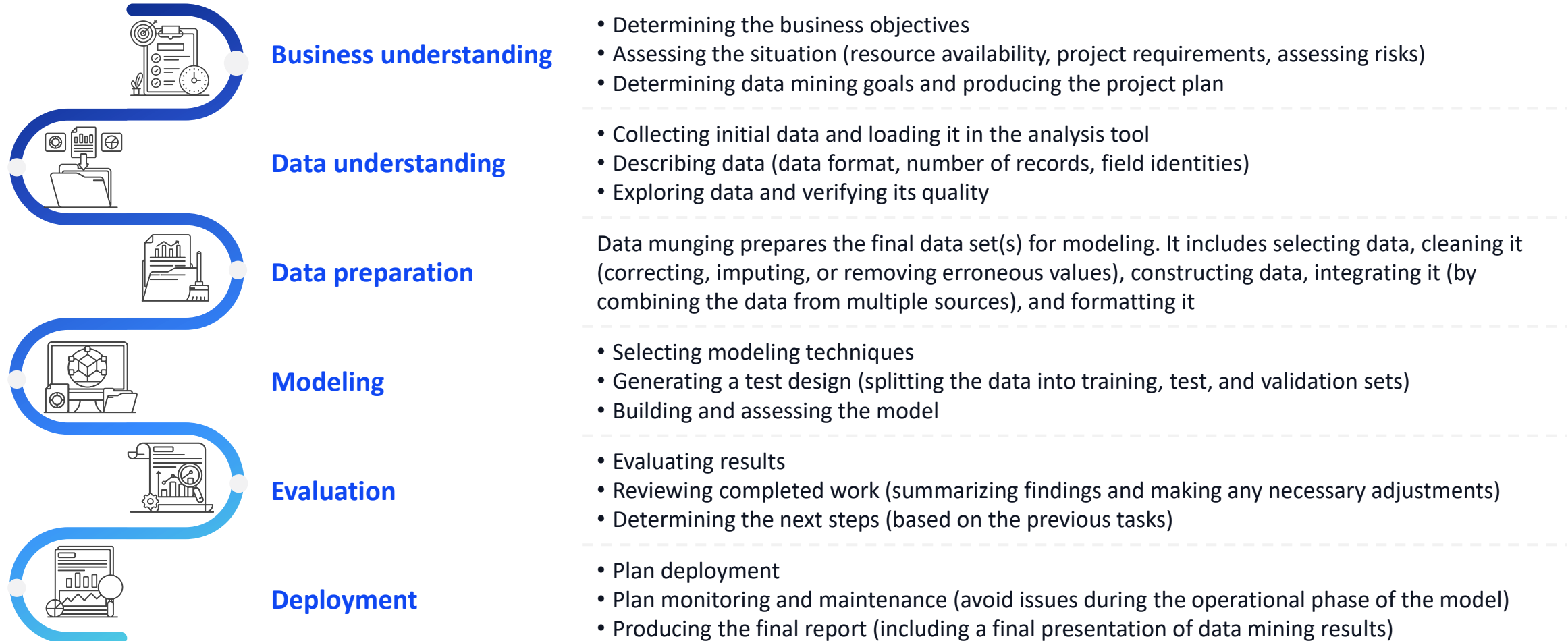Overview, applications, and benefits

Table of content

Introduction

Data analytics is the process of analyzing data in order to answer questions, extract relevant insights, and identify trends. It can help optimize processes and increase efficiency. Companies leverage data analytics in a variety of areas, including budgeting and forecasting, risk management, marketing and sales, and product development.

In the last two years, companies have been forced to adapt quickly to major disruptions and evolving customer needs. These developments, along with increased competition and digitalization, have highlighted the importance of data analytics to make better decisions.

The data analytics process involves identifying the business objectives, gathering the data, processing it, evaluating the results, and creating the final report

Business understanding
- Determining the business objectives
- Assessing the situation (resource availability, project requirements, assessing risks)
- Determining data mining goals and producing the project plan

Data understanding
- Collecting initial data and loading it in the analysis tool
- Describing data (data format, number of records, field identities)
- Exploring data and verifying its quality

Data preparation

Data munging prepares the final data set(s) for modeling. It includes selecting data, cleaning it (correcting, imputing, or removing erroneous values), constructing data, integrating it (by combining the data from multiple sources), and formatting it

Modeling
- Selecting modeling techniques
- Generating a test design (splitting the data into training, test, and validation sets)
- Building and assessing the model

Evaluation
- Evaluating results
- Reviewing completed work (summarizing findings and making any necessary adjustments)
- Determining the next steps (based on the previous tasks)

Deployment
- Plan deployment
- Plan monitoring and maintenance (avoid issues during the operational phase of the model)
- Producing the final report (including a final presentation of data mining results)

Businesses leverage data analytics for various purposes

Anomaly detection
Spotting anomalies in data sets for fraud detection and cybersecurity

Pattern recognition
Identifying customer purchasing behavior patterns helps develop relevant marketing strategies and ensure supply chain reliability

Predictive modeling
Applying machine learning and other algorithmic approaches to large data sets to predict market trends and customer behavior
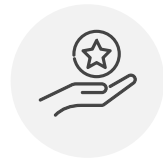
Recommendation engines
Building detailed profiles of individual customers and tailoring products and services to their specific needs

Classification & categorization
Sorting through large amounts of data and categorizing or classifying it based on learned characteristics, which is especially useful with unstructured data

Sentiment & behavioral analysis
Categorizing customer sentiment and behavior and tracking how they change over time

Conversational systems
Training systems on large amounts of texts to derive conversational patterns from the data

Autonomous systems
Making the development of autonomous vehicles, AI-powered robotics, and other intelligent machines more feasible

Data Analytics provides valuable insights that improve decision-making and overall business efficiency

Improving the customer experience
Tailoring the customer experience, building stronger connections, and increasing overall satisfaction

Enhancing security
Diagnosing the causes of past data breaches by processing and visualizing relevant data

Streamlining operations
Improving operational efficiency and predicting future problems within a company

Data analytics benefits

Minimizing financial loss
Guiding business decisions and minimizing financial losses

Saving time
Spending less time on manual tasks and focusing more on value-added work

Improving market predictions
Identifying emerging market trends by collecting and analyzing data on a larger scale

Sources: Press search

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6
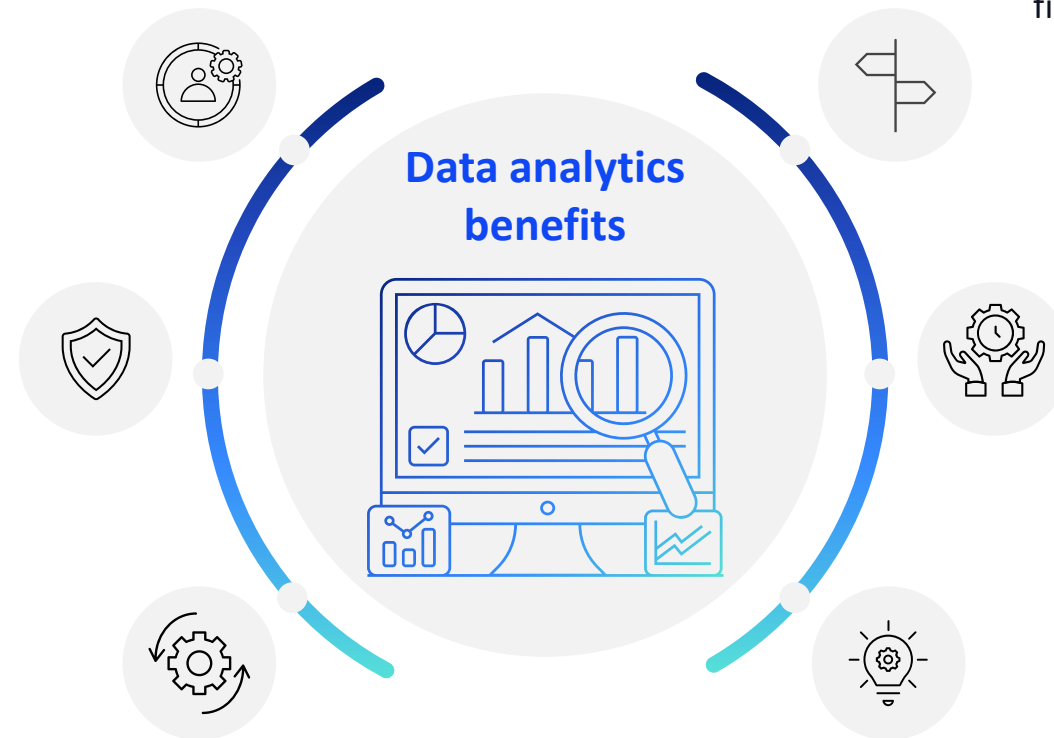
Various approaches to data analytics include looking at what happened, why it happened, what is going to happen, or what should be done next

Descriptive

This type of data analytics helps compare past results, identify anomalies, and distinguish strengths and weaknesses
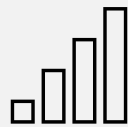
Diagnostic

Diagnostic data analytics is the process of examining data to understand cause and effect, or why something happened

Predictive

Predictive data analytics involves using current or historical data to predict future actions

Prescriptive

This type of data analytics examines results from other analytics and gives guidance on how to reach a specific answer

Sources: Oracle, Press search

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Healthcare, transportation, financial services, and energy are some of the main sectors leveraging data analytics

In **healthcare**, data gathered from patients regarding their experiences with medical practitioners can be analyzed to reveal areas for improvement. Data analytics can predict trends in the spread of illness, allowing hospitals to adequately prepare. It can also accelerate drug discovery and development. For example, AstraZeneca used data and machine learning to build a recommendation engine that empowers scientists to more easily uncover new novel drugs quicker, cheaper, and more effectively.

In **transportation**, the daily collection of data helps the industry with traffic management. Transportation analytics can help detect routes affected by traffic, closures, or development and construction and suggest alternate routes.

In the **energy** sector, analytics solutions are driving optimizations in day-to-day operations. Energy companies are also using predictive modeling to improve equipment reliability and reduce the cost of unpredictable reactive and downtime maintenance.

In **financial services**, data analytics can help enhance risk assessment and better detect fraud. In **banking,** analytics can be used to assess the risk profiles of credit applicants in detail and improve credit assessments. In the **insurance** industry, data analytics can be used to prioritize insurance claims, resulting in faster settlements. Analytics can also help mitigate claims fraud and make better-informed underwriting decisions. For example, AXA UK uses data analytics to improve its claims process and speed up decision-making. During a pilot test, the company reported around a 25% reduction in claims being re-routed and substantial cost reductions.

Sources: Press search

Case study: A self-service solution to improve Enel Green Power's failure detection and reduce downtime

Situation
- Enel Green Power is a company dedicated to the development and operation of renewables around the world
- EGP's management has found itself spending too much on maintenance needs across their facilities, with no advance notice of failures

Challenge
- Enel is the 2nd largest utility in the world, with over 42 GW of energy under management
- The challenge was finding the best way to monitor and perform maintenance on their geothermal plants located 1700 feet underground at 310°F

Solution
- Implementing a self-service solution that monitors electrical and operating data to detect signature anomalies and automatically reports those back
- Auto-generated reports describe the anomalies, summarize the data, and allow users to immediately take corrective actions in less than 4 weeks

Results
- A reduction in downtime of 90%
- Increased supply chain management and internal communication
- 54-day advance notice of failures
- Streamlined the detection-to-repair process

Case study : Self-service analytics to provide insights on customer data and minimize risk

Situation
- Rabobank is one of the largest financial services institutions in the Netherlands
- The bank needed access to high-quality, accurate, and timely customer data

Challenge
- Providing these insights required sophisticated and timely data analytics at scale
- The bank lacked the ability to stream and analyze data in real time

Solution

Using a Cloudera platform, the bank was able to create a new data lake that would allow its employees to run faster queries across a single SQL interface, including both historical and real-time data

Results
- Rabobank can now detect warning signs of client default in the very early stages
- Managers can access an in-depth overview of customer data

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Case study: Eliminating shadow IT by facilitating self-service analytics

Situation
- Cardinal Health is a multinational healthcare services company
- After a series of acquisitions, the company had a fragmented set of systems that made managing and accessing data complicated

Challenge
- The company's antiquated systems weren't sufficient for modern self-service analytics
- The company needed to forecast six months in advance to make sound business decisions, but business analysts across different business lines didn't have easy access to data for analytics and reporting

Solution
- The company chose to leverage Google BigQuery and AtScale's Semantic Layer, which allows business users to access data using the business intelligence tool of their choice, including Excel and Tableau
- By implementing a semantic layer, the company is now able to more easily share this disparate data to generate better overall business insights

Results
- Using this solution has enabled the company to eliminate the shadow IT applications that business analysts had previously relied on
- The solution also simplified self-service data analytics sourcing from numerous data systems for more accurate reporting
- Cardinal Health has been able to scale the rollout to over 200 users and expects to have over 1,000 business users leveraging self-service analytics

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Sources: AtScale "Cardinal Health: Driving Advances in Healthcare Through Self Service Data Analytics"