

: *What is big data?*

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Big data is an overused and somewhat confusing phrase. Big data is characterized by high volume, lower structure and high variety, high velocity, and high volatility. Descriptive terms like unstructured data, process data and machine data are often more useful for information technology (IT) professionals (Power, 2014).

Big data is more than extremely large data sets, sometimes called the volume data dimension. Big data is more than an increase in unstructured data, the variety dimension. Data stores do contain many differing data types that are structured and unstructured. Big data may be accumulating quickly and in real-time, but high velocity data is only part of what has changed. Big data is coming from many networked devices and social media, but heterogeneous sources and the varied nature of new data sources only add to the complexity of data storage and analysis. Big data is volatile and less predictable, but that is more a function of the data environment where the data capture occurs. Big data often is captured at the source, but that does not guarantee the accuracy or veracity of the data. Finally, big data is not always valuable. Value comes from analysis and relevance to tasks. Big data has a cost and the more data captured the higher the cost of storage and curation.

Big data comes from many sources including Internet of things (IoT) devices such as mobile devices, aerial drones, remote sensing devices, software logs, surveillance cameras, microphones in homes/public places and as part of phones, radio-frequency identification (RFID) readers, and cars, fitbits, airplanes and an increasing host of human used artifacts.

The big data market includes sales of hardware, software and professional services. The scope of the term big data has expanded over the years. Big Data refers to the data itself and to technologies that capture, store, manage and analyze big data. A recent market intelligence and research report from SNS Telecom & IT (<http://www.snstelecom.com>) estimates spending on Big Data technology is expected to surpass \$65 Billion by the end of 2018. "These investments are further expected to grow at a CAGR of approximately 14% over the next three years, eventually accounting for more than \$96 Billion by the end of 2021."

Walmart. According to Mark Ibbotson, Walmart (walmartlabs.com) is innovating with new wireless technologies, including smart phones. For example, MyProductivity became available in 2016 on the smartphones of every member of Walmart's in-store management team across the United States. Managers can gain access to sales, replenishment, warehouse or other data. Walmart also enhances real-time supplier data through its SPARC (Supplier Portal Allowing Retail Coverage) app, which enables suppliers to gain overviews of what products are on the shelves at any given time.

Disney Theme Parks. The Walt Disney Company uses a wireless-tracking wristband called 'MagicBand'. The goal is to improve the guest experience and create a complete data trail of visitors. MagicBands are linked to a credit card and function as a park entry pass as well as a room key. They are part of the new MyMagic+ system. Joining is still completely voluntarily, however, visitors who join have many advantages such as avoiding some lines, pre-booking rides, changing reservation on-the-go via smartphones, and more. The MyMagic+ system helps Walt Disney collect real-time location data, purchase history, riding patterns and more. Walt Disney is building a gigantic database to help manage a theme park, cf., Marr (2017).

Some generalized uses of big data that have created value include: Network Performance and Coverage Optimization, Customer Churn Prevention, Personalized Marketing, Tailored Location Based Services, Fraud Detection, Predictive Aircraft Maintenance and Fuel Optimization, Autonomous and Semi-Autonomous Driving, Streamlining Vehicle Recalls and Warranty Management, Fleet Management, Usage Based Insurance, Predictive Aircraft Maintenance and Fuel Optimization, Air Traffic Control, Customer Retention and Personalized Products, Risk Management, Fraud Detection, Credit Scoring, Intelligence Gathering, Energy Saving Opportunities, Preventing Injuries, Identifying Learning Patterns, Enabling Student-Directed Learning, Drug Discovery, Design and Development, Clinical Development and Trials, Population Health Management, Personalized Healthcare and Targeted Treatments, Proactive and Remote Patient Monitoring, Energy Optimization and Fault Detection, Intelligent Building Analytics, Urban Transportation Management, Optimizing Energy Production, Water Management, Claims Fraud Mitigation, Customer Retention and Profiling, Risk Management, Asset Maintenance & Downtime Reduction, Quality and Environmental Impact Control, Optimized Supply Chain, Exploration and Identification of Natural Resources, Audience and Advertising Optimization, Channel Optimization, Live Sports Event Analytics, Detecting abusive content, Cyber Crime Mitigation, Crime Prediction Analytics, Video Analytics and Situational Awareness, Tax Collection and Fraud Detection, Economic Analysis, Predicting & Mitigating Disasters, Customer Sentiment Analysis, Customer and Branch Segmentation, Price Optimization, Personalized Marketing, Optimizing and Monitoring the Supply Chain, In-Field Sales Analytics

Big data is about us and what we do and what happens in our environment. Big data is also about providing input to help manage our lives and our World.

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