ISSN: 2393-8528

IJICSE
Open Access

Contents lists available at www.ijicse.in

International Journal of Innovative Computer Science & Engineering

Volume 4 Issue 3; May-June-2017; Page No. 35-38

INTERNET OF THINGS THROUGH BIG DATA ANALYTICS – A SURVEY

SARALA.R

Assistant Professor, Department of Computer Science,

KG College of Arts and Science

rsarala3011@gmail.com

Received 21 March 2017; Accepted 29 April. 2017

ABSTRACT

In this paper, review the background of internet of things and big data. The internet of things (IoT) and big data are two of the most-talked-about technology topics in recent years. This survey shows the usage and impact of internet of things using big data and analytics. *Keywords*:

Keywords: Internet of Things, Big Data, Big Data Analytics

1. INTRODOCTION

1.1 INTERNET OF THINGS (IoT)

The Internet of Things (IoT) is a significant topic in technology industry, policy and engineering and has become headline news in both the specialty press and the popular media. This technology is personified in a wide spectrum of networked products, systems and sensors.

The advantage of advancements in computing power, electronics miniaturization, and network inter connections to offer new capabilities not previously possible. A plenty of conferences, reports, and news articles discuss and debate the potential impact of the "IoT revolution" from new market opportunities and business models to concerns about security, privacy, and technical interoperability.

The large scale performance of IoT devices promises to change many aspects of the way we live. For consumers, new IoT products like Internet enabled appliances, home automation components and energy management devices are moving us near a vision of the "smart home'', offering more safety and energy competence.
Other personal IoT devices like wearable fitness and health monitoring devices and network enabled medical devices are transforming the method healthcare services are delivered. This technology promises to be favorable for people with disabilities and the elderly, enabling improved levels of liberty and quality of life at a reasonable cost[1].

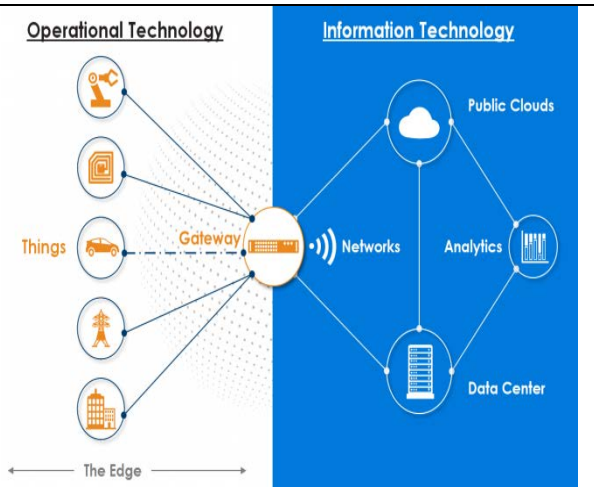

Figure 1: Internet of Things Basics

The figure1 shows the operational technology of IoT. IoT systems like networked vehicles, intelligent traffic systems, and sensors surrounded in roads and bridges move us closer to the idea of "smart cities'', which help decrease congestion and energy consumption. IoT technology offers the possibility to convert agriculture, industry, and energy production and distribution by raising the availability of information along the value chain of production using networked sensors. However, IoT raises a lot of issues and challenges that need to be measured and addressed in order for possible benefits to be realized.

Essentially, the internet society cares about the IoT as it represents a growing aspect of how people and institutions are likely to interact with the internet in their individual, social and economic lives. If even reserved projections are

Corresponding author: SARALA.R |

correct, an explosion of IoT applications could present a primary shift in how users connect with and are impacted by the internet, raising new issues and different dimensions of existing challenges across user concerns, technology, policy and law. IoT also will likely have unstable consequences in different economies and regions, bringing a diverse set of opportunities and challenges across the globe.

1.2 BIG DATA

There is no solid and rapid rule about exactly what size a database needs to be in order for the data inside of it to be considered "big." Instead, what usually defines big data is the need for novel techniques and tools in order to be able to process it. In order to use big data, need programs which span numerous physical and/or virtual machines working collectively in concert so as to process all of the data in a reasonable span of time.

Getting programs on several machines to work together in an efficient way, so that each program knows which components of the data to process, and then being proficient to put the results from all of the machines together to make sense of a huge pool of data takes special programming techniques. Since it is normally much faster for programs to access data stored locally instead of over a network, the allocation of data across a cluster and how those machines are networked together are also significant considerations which must be made when thinking about big data problems.

The uses of big data are nearly varied as they are huge. Prominent examples you're probably already familiar with including social media network analyzing their members' data to be taught more about them and attach them with content and advertising relevant to their interests. The search engines looking at the relationship between queries and results to give better answers to user's questions.

Two of the major sources of data in huge quantities are transactional data, including everything from stock prices to bank data to entity merchants' purchase histories and sensor data, much of it coming from what is generally referred to as the Internet of Things (IoT). This sensor data might be something from measurements taken from robots on the manufacturing line of an automaker, to position data on a cell phone network, to instantaneous electrical usage in homes and businesses, to passenger boarding information in use on a transit system.

By analyzing this data, organizations are able to be taught trends about the data they are measuring, as well as the people generating this data. The hope for this big data analysis are to provide more customized service and increased efficiencies in suchlike industry the data is collected from.

2. HOW THE INTERNET OF THINGS (IOT) CHANGES BIG DATA ANALYTICS

Sensors and things operate at the edge. Things are any item we can attach a sensor. The edge is where find Operational Technology (OT). It includes manufacturing plants, cars, electrical grids, and train tracks. The operational technology engineers and operators have been using sensor data for decades. But now Information Technology (IT) is now pitching in to help out. Gateways are routers and servers that connect the OT to IT systems [2].

Big Data and IoT are two sides of the same coin. By way of easy connectivity among humans and devices (IoT), speed of data generation is receiving multi-fold (Big Data), growing exponentially in volume and is getting more difficult in nature. We can help our organization to gather, understand and analyze this data across industry to give us a upper edge in this competitive world utilizing the best of the people, processes, practices and platforms.

2.1 KEY FACTORS

There are a few key factors when it comes to big data are collection and access of data, storage of data, privacy of data and processing of data. IoT and big data mutually are creating a culture towards understanding of value of data. Insights from it can permit you to make better decisions deepening customer engagement, optimizing operations, preventing threats and capitalizing on new sources of revenue.

2.2 DATA PRODUCERS

Data is being formed by various things around us at a continuous rate. Every digital process and social media replace produces it. Systems, sensors and mobile devices pass on it. Big Data is arriving from numerous sources at an alarming velocity, volume and variety. To extract significant value from big data, we need best possible processing power, analytics capabilities and skills.

2.3 APPLICATIONS

On a broader scale, the IoT can be applied to things like transportation networks, smart cities, energy grid etc. Its application can help us decrease waste and progress efficiency across the spectrum, thus helping us understands and improves how we work and live[3].

3. THE IMPACT OF THE IOT ON BIG DATA

The IoT is on its way to appropriate the next technological revolution. The impact will be felt across the full big data universe, forcing companies to upgrade existing tools and processes, and technology to evolve to accommodate the extra data volume and take advantage of the insights. Let's take a nearer look at the different ways in which the IoT will impact big data.

3.1 DATA STORAGE

When speak about IoT, the primary things that come to mind is a vast, continuous stream of data hitting companies' data storage. Data centers must equip to handle this supplementary load of heterogeneous data. In the response to this straight impact on big data storage infrastructure, numerous organizations are moving towards the platform as a service model as an alternative of keeping their own storage infrastructure.

3.2 BIG DATA TECHNOLOGIES

When selecting the technology stack for big data processing, the incredible influx of data that the IoT will distribute must be kept in mind. Organization will acclimatize technologies to map with IoT data. Network, disk and computer power all will be impacted and should be considered to take care of this novel type of data.

From the technology viewpoint, the most significant thing is to receive events from IoT connected devices. The devices can be associated to the network using wi-fi, bluetooth or another technology, but must be capable to send messages to a broker using some well-defined protocol.

Once the data is established, the next consideration is the technology platform to store the IoT data. Several companies use Hadoop and Hive to store big data. Although for IoT data, NoSQL document databases like Apache CouchDB are further suitable, since they offer high throughput and very low latency. These types of databases are schema-less. These databases support the flexibility to attach a new event types without difficulty.

3.3 DATA SECURITY

IoT data will need organizations to make a few fundamental changes to their security landscape. As the IoT evolves, an unmanaged number of IoT devices will be connected to the network. These devices will be of special shapes and sizes and placed outside the network, capable of communicating with corporate applications. Therefore, each device should have recognition for authentication purposes.

A multi-layered security system and appropriate network segmentation will help prevent attacks and keep them from scattering to other parts of the network.

3.4 BIG DATA ANALYTICS

Managing and extracting value from IoT data is the biggest dispute that companies face. Organizations should set up a appropriate analytics infrastructure to analyze the IoT data. And they should consider that not all IoT data is important.

A proper analytics platform should be based on the three parameters: performance, right size infrastructure and future growth. For performance, a server, a single tenant physical server dedicated to a single customer, is the best fit. For infrastructure and future growth, hybrid is the best approach[4].

An IoT device generates permanent streams of data in a scalable way and companies must hold the high volume of stream data and complete actions on that data. Constructing an analytics solution to handle the scale of IoT data should be done with these differences.

4. CONCLUSION

In this paper, survey the uses and impact of the IoT using big data analytics. The development of the IoT heralds a new age of technology, and organizations that wish to play a part in this new era will have to change the way they do things to hold new data types and data sources. These changes likely are just the foundation. As the IoT grows and businesses grow with IoT, they will have many more challenges to solve. Both IoT and big data will take a vital role in the development of technology.

REFERENCES

1. http://www.informationweek.com/mobile/mobile-devices/ google-iot-can-help-the-

disabled / a/d-id/1319404; and, Domingo, Mari Carmen. "An Overview of the Internet of Things for People with Disabilities." Journal of Network and Computer Applications 35, no.2 (March 2012): 584–96. doi:10.1016/j .jnca. 2011.10.015.

2. http://data-informed.com/how-the-internet-of-things-changes-big-data-analytics "How the Internet of Things (IoT) changes Big Data analytics" by Dan Graham August 9, 2016.
3. www.atlassystems.com\big-data-iot
4. Data Informed - Big Data and Analytics in the enterprise – "The Impact of the IoT on big data" by Kaushik Pal, September 10, 2015.