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Big Data with IOT (Internet of Things), IOE (Internet of Everythings): A Review

V. Vinothini
Assistant professor, Prist University, Madurai Campus, TamilNadu, India

Abstract: ***Big data is a challenging task as it involves a large distributed file system which should be fault tolerant, flexible and scalable. Big data refer to data sets that are not only big, but also high in range and rate which makes them complex to handle using common tools and technique. The internet of things (IOT) and big data together. Internet of things is a promising paradigm in the integration of several technologies and communication solution. Internet of things is aggregating and compressing massive amounts of low latency machine-generated data. Internet of everything (IOE) is a concept that extends the internet of things (IOT) emphasis on machine-to-machine communication to describe a more complex system that also encompasses people and processes.***

Keyword:-Big data, Internet of things (IOT), Internet of everything (IOE)

I. INTRODUCTION

A. Big data

Big data is a term that describes the large volume of the data both structured and unstructured that inundates a business on a day to day basis. But it's not the amount of data that's important. It's what the organization does with the data that matters. Big data can be analyzed for insights that lead to better decisions and strategic business moves [1].

Big Data the information comes from various, heterogeneous, autonomous sources with complex relationships and continuously growing up to 2.5 quintillion bytes of data are created daily and 90 percent data in the world today were produced within the past two years [2]. The need of big data generated from the large companies like Facebook, Yahoo, Google, and You Tube etc. Google contains the largest amount of information. So there is the need of big data analytics that is the processing of the complex and massive dataset. Big data related to the service of internet campiness grow rapidly [3].

1) *Five V's Big Data Characteristics:* Big Data generators must create scalable data (Volume) of different types (Variety) under controllable generation rates (Velocity), while maintaining the important characteristics of the raw data (Veracity), the collected data can bring to the intended process, activity or predictive analysis/hypothesis (Value). Indeed, there is no clear definition for 'Big Data'. It has been defined based on some of its characteristics. Therefore, these five characteristics have been used to define Big Data, also known as 5V's (Volume, Variety, Velocity, Veracity, Value), as illustrated in Figure 1 below [4].

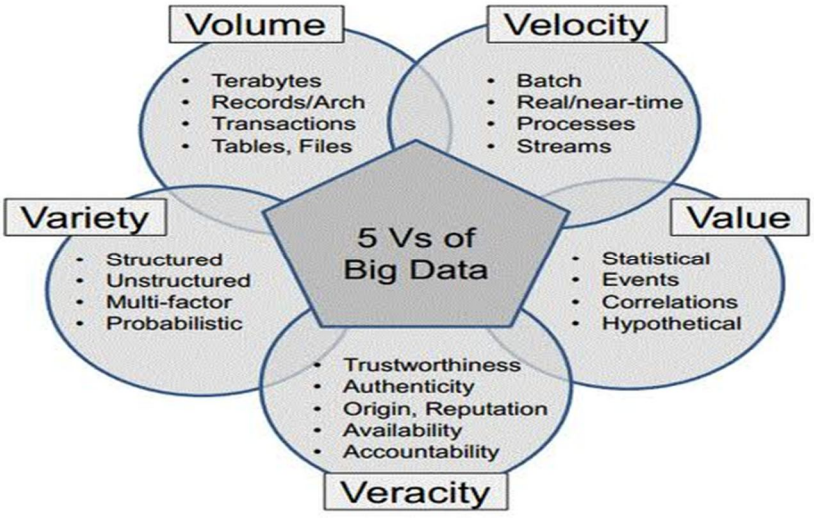


Fig.1. 5 V's of Big Data

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a) *Volume:* Data is ever-growing day by day of all types MB, PB, YB, ZB, KB, and TB of information. The data results in large files.
b) *Variety:* Data sources are extremely heterogeneous. The file comes in various formats and of any type; it may be structured or unstructured, such as text, audio, videos, log files and more.
c) *Velocity:* The data comes at high speed, sometimes 1 minute is too late, so big data are time sensitive. Some organisations data velocity is a main challenge.
d) *Value:* It is the most important V in big data. Value is main buzz for big data because it is important for businesses, IT infrastructure system to store large amount of values in the database.
e) *Veracity:* The increase in the range of value typical of a large data set. When we deal with high volume, velocity and variety of data, the all of the data are not going 100% correct, there will be dirty data.

II. INTERNET OF THINGS (IOT)

The Internet of Things (IOT) is the original paradigm that is rapidly gaining ground in the scenario of modern wireless telecommunications. The basic idea of this concept is the pervasive presence of a variety of things or object around us such as Radio- Frequency Identification (RFID) tags, sensors, actuators, mobile phones, etc. Which, through unique addressing schemes, are able to interact with each other and cooperate with their neighbors to reach common goals [5]. The Internet of Things gives us an opportunity to construct an effective administration, application, for manufacturing, lifesaving solutions, proper cultivation and more.

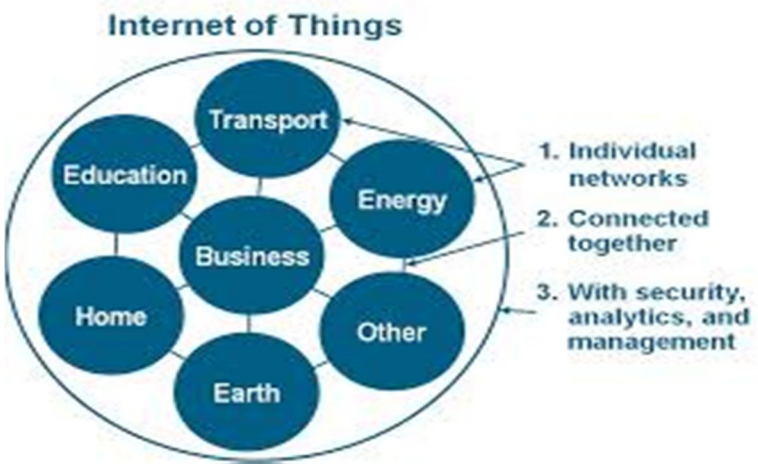


Fig: 2 Internet of Things

The very first definition of IoT derives from a "Things oriented" perspective the considered things were very simple items: Radio – Frequency Identifications (RFID) tags. The terms "Internet of Things" is, in fact, attributed to the auto id labs [6].

III. INTERNET OF EVERYTHING (IOE)

The Internet of Everything (IOE) is bringing together people, process, data, and things to make networked connections more relevant and valuable than ever before- turning information into actions that create new capabilities, richer experiences and unprecedented economic opportunity for businesses, individuals, and countries", (Cisco 3013) [7 8].
In simple terms: IOE is the intelligent connection of people, process, data and things.
The Internet of Everything (IOE) describes a world where billions of objects have sensors to detect, measure and assess their status; all connected over public or private networks using standard and proprietary protocols [9].

A. *Pillars of The internet of Everything (IOE)*

1) *People:* Connecting people in more relevant, valuable ways
2) *Data:* Converting data into intelligence to make better decisions
3) *Process:* Delivering the right information to the right person (or machine) at the right time
4) *Thing:* physical devices and objects connected to the internet and each other for intelligent decision making often called internet of thing (IOT) [10].

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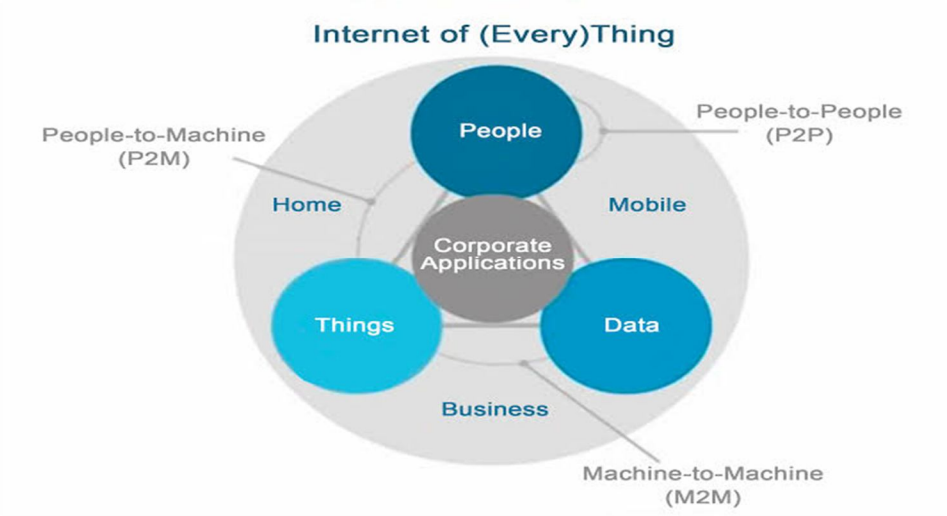


Fig: 3 Internet of Everything (IOE)

IV. CONCLUSION

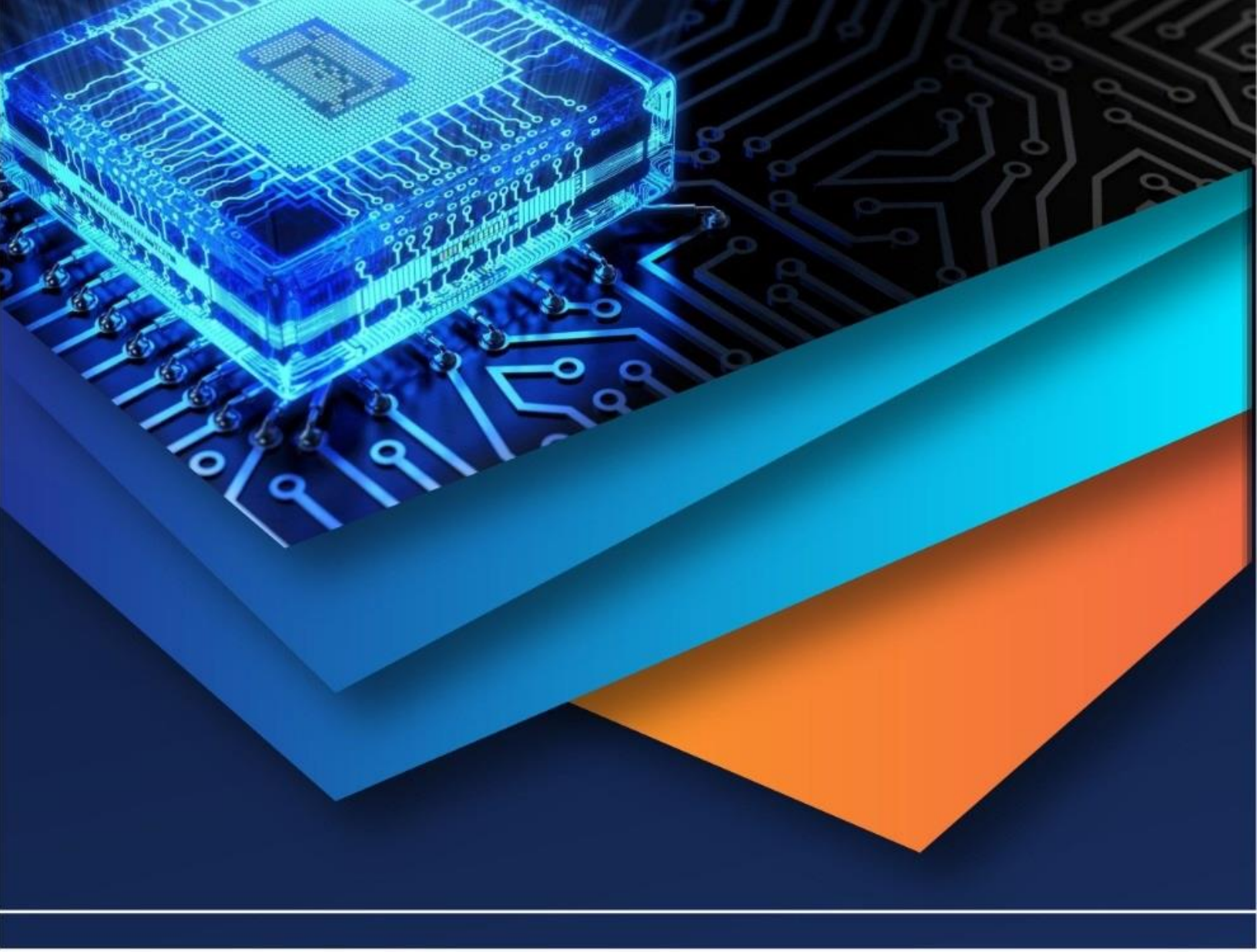
Big data will not only have the social and economic impact but also influence everyone's ways of living and thinking which is just happening. Big

data technologies we are capable to provide more relevant and accurate social sensing feedback to better understand the society at real-time. The IOT application, in the next years addressing such issues will be a powerful driving factor for networking and communication research in both industrial and academic laboratories. Both CISCO and QUALCOMM have been using the term "internet of everything" (IOE). However QUALCOMM's use of the term has been replaced by the "internet of things" (IOT) by others. CISCO's usage has a more comprehensive meaning.

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