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# SMART CITIES USING BIG DATA ANALYTICS: A WAY AHEAD FOR WORLD

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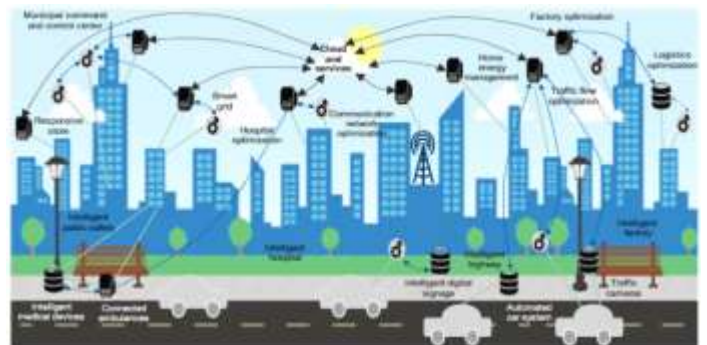
## ABSTRACT

**Objective:** Many governments migrating their country to smart cities to enhance the quality of life with technology IOT and big data analytics.**Analysis:** Different sectors need to be concentrated and analyzed appropriate analytical tool for each sectors.**Findings:**Every sector is equipped with an sensor, mostly input source of data unstructured data. Apache hadoop can be used for storing enormous amount of data. Apache hive or Apache pig is processing the data. Apache spark is used for processing real time data**Improvement:**Creation and maintenance of data ,moving forward the cities to smart cities.

**KEYWORDS:** Apache hadoop, IOT ,Big data

## 1. INTRODUCTION

Smart city is a major combination IOT and big data analytics. IOT is a source of data. In this decade,everything is equipped with a sensor for real time monitoring[5]. Smart city enhances the quality life of our citizens. There are many areas to be concentrated to convert the city as a smart city. Main areas need to become smarter is an smart education, smart transportation,Smart Energy management,Smart Waste management, Smart Health care,Smart environment[1].



## 2. SMART EDUCATION

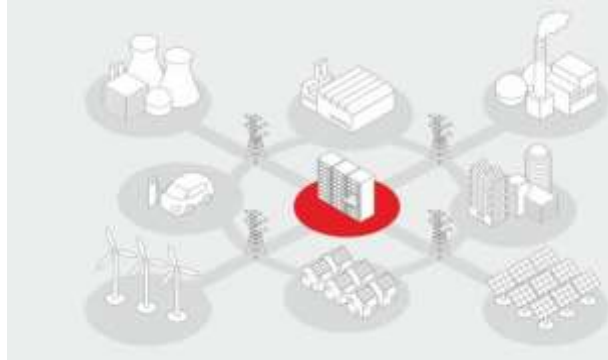
Education is a major key area, to scale about a country. Smart education is migration from traditional text book learning to e-learning. Students can learn from e-materials and they are allowed to do their assignment as e-assignment. Faculty also assessing the student with the help of an apps. For storing an e-material there is a need for huge servers. Apache hadoop can be used for storing materials[3].

## 3. SMART TRANSPORTATION

Traffic is major problem, in this decade. Traffic can be monitored and regulated with RFID tags. It will send an geo location of the vehicles to an central processing unit ,on processing the data we can congested area. Citizens can also view the traffic congestion with the help of smart phones , it will exact traffic condition of the city. Smart parking can also made with the help of mobility and sensors. Nearest parking slots can be identified with the help of sensors[3].Cars which is embedded with sensors ,reduce the accidents in roads. Here data which is received is an realtime data, Advanced big data analytics spark is used for processing these data.

## 4. SMART ENERGY MANAGEMENT

Smart grid mainly reduce electric consumption of a city. Automation off street lights,can reduce the electricity consumption. Street automatically off when there is no persons in street and light gets on depends upon the availability of persons. Every home can be equipped with smart meters. It will digital information , shows the exact real time energy usage of house-hold person. More accurate bill is generated with the help of smart meters and automatically it will send to the supplier.



## 5. SMART WASTE MANAGEMENT

Garbage collection also generating data.Garbage containers embedded with sensors, it will inform the container level for every collection. This will be more eco-friendly because there is no overflowing of smelly waste. Another way to attain the waste management is ,Resident's who is disposing the waste, need to use an chip card in the containers.And also each house can have garbage

disposal units, garbage collected from the units and send to the garbage treatment centers. These garbage were used for generating an electricity.

## 6. SMART HEALTH CARE

Data received from the EMR and electronic health care records allows us predict the treatment for common health issues. Smart wearable's and real time health monitoring system , monitors the health condition of the patient regularly.Data received from the EHR technology is also, detecting fraud claim in health care insurance company. Apache hadoop and Apache hive can be used storing and processing the data. Apache spark can be also used for analyzing the real-time condition of patient.

## 7. SMART ENVIRONMENT

Smart weather forecasting is for automatic monitoring of weather condition with the help of sensors. This will inform hazardous condition of environment to the people. It also improves the country's agriculture.

## 8. CHALLENGES IN SMART CITY

**8.1 Volume of data:** Every sector is generating data, for processing those need to be stored. But Traditional way of storing, can't be opted. Apache hadoop can be used for storing data

**8.2 Velocity of data:** Mostly data are received from the sensors ,web sites and social media. Speed of the web logs is more. There is no traditional system to handle the high velocity data.Apache spark can be used for processing the streaming data.

**8.3 Variety of data:** Data sources are different in nature as structured , semi structured and unstructured data. Traditional data mining tools cannot process all these types of data. Apache pig is meant for handling all these types of data.

## 9. WAYS OF HARNESSING DATA

Processing of data is done in parallel manner and in memory-computing process is done for streaming data's[9]. Mostly the web logs and sensor data are real time data. Apache hadoop is meant for batch processing system. Apache spark is in-memory computing process, it will keep the data in memory itself and processing it. It can also be used on top of hadoop when the storage of data is more[3].

## 10. CONCLUSION

IOT and big data is the essential component for smart cities. Data generated by a city is more when the population of the city is more. All the sectors are digitized,variety of data is increased. Smart city generation is integrated with hadoop. Data confidentiality and security is biggest issue for government to achieve smart city.This shows new way of illustrating the smart city and contribution of big data analytics to the smart city. Cities that are

started migration to smart city are advancing the society to smarter future.

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