

Waste Management Using Big Data Technology

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ABSTARCT:-Our everyday data processing activities create massive amounts of data. Big data can help companies better manage and reduce waste, as well as increase recycling rates. When we throw garbage and trudge the can to the end of the driveway once per week, it gets magic taken away and it's gone. Then we tend to repeat once more week then week, uncertainly. Except it's not gone. Grocers Can use Big Data, Analytics to Reduce Food Waste

Keywords:-Big Data, Analytic, optimize ,Data Collection,.

I. INTRODUCTION

Supermarkets and grocery stores are significant contributors to the 34 million tons of food waste in landfills that release harmful methane gas into the environment. Some of the many key elements that lead to the generation of this excessive food waste include consumers' demand for an abundance of fresh products, confusing sell by dates, damaged shipments of products and over-purchasing resulting in additional spoiled and non-purchased foods. It's a complex issue that involves complicated logistics, costs significant amounts of money and greatly impacts our environment.

Big information provides United States with info that permits United States to higher address business issues. When executives area unit authorised with period of time elaborated analytics, they will additional with efficiency benchmark their performance metrics, implement best practices and build company-wide changes to enhance potency and gain.

II. OPTIMIZING YOUR GARBAGE TRUCK

The multi-billion dollar residential waste management "industry" (both public and private entities) presents a substantial opportunity for innovation through the application of data-based solutions to collect waste more efficiently and improve utilization of waste collection resources. Significant, yet variable, resource inputs (trucks, labor, and fuel being most directly relevant) offer direct cost savings for municipalities or commercial entities able to gain efficiency in applying those resources. This segment is ripe for innovation for several reasons. Globally, urbanization continues to be a trend, with increasing populations living in ever closer proximity. The composition of waste continues to change between recyclables, compostable waste, and landfill waste. As such, resources for the collection, sorting, and disposal of solid waste continue to move towards increased categorization. Lastly, the waste management industry appears to be receptive to

disruptive efforts, as evidenced by cities such as New York that are undertaking significant waste reduction measures.

Solution

The Utilize existing data available from GPS and scale sensors on-board collection trucks to collect, analyze, and employ information regarding individual or street level solid waste production to more efficiently employ waste collection resources (trucks, labor, fuel, time, etc). Armed with an informed picture of the specific house, street, or neigh borhood-level of solid waste production, which would become more informed over time with ongoing data collection, the public or private solid waste collection entity could then optimize its resource acquisition, retention, maintenance, and utilization. Each entity could optimize for route length, "truck-sized" routes (in pounds of waste), a specific shift length, distance traveled, cost, or other desirable optimums.

Data Collection

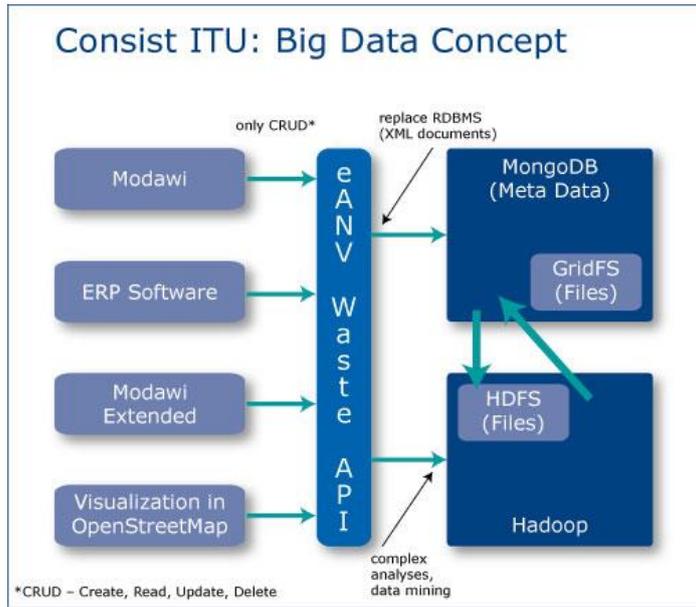
Modern collection trucks are currently equipped with on-board scales, GPS systems, and vehicle monitoring systems. The on-board scale is used primarily to help drivers comply with weight restrictions (e.g. small bridges and weight restricted roads) and avoid exceeding the vehicle weight rating. GPS data includes time and location and, in turn, speed and number stops. The on-board vehicle monitoring system provides fuel usage data, engine RPMs, and speed. Data from each of these sensors and systems could be downloaded from each truck periodically for analysis and incorporation. Any trucks lacking these features can be readily upgraded at a low cost. This data, merged in the appropriate way, could produce a data set which readily lends it self to powerful resource optimization algorithms.

Exhibit 1: A theoretical example of one truck's weight over a work day. Increases in weight allow one to deduce the amount of waste collected at each stop. Merging this data with time-stamped GPS and operational truck data would allow one to deduce the amount of garbage collected at the block, street, or even individual building level (contingent on scale accuracy).

III. BIG DATA SOLUTION FROM CONSIST ITU

Consist ITU has based their Big Data solution on open source – the well-known Mongo DB and the Hadoop ecosystem. Access is provided through our eANV-Waste API.

if the storage of the maximum amount info as attainable is in question, then it may be hold on within the intrinsic GridFS (FS=file system) of Mongo DB. Access to the systems is provided through Modawi or, if Modawi is not available, the ERP software can also call up the functions of the eANV -Waste API directly.



In the extended version (called here through Modawi-Extended or a visualization), additionally to the CRUD practicality, complex reports based on Hadoop are also available. In this state of affairs, the eANV-Waste API stores the information and documents within the HDFS to form them on the market to Hadoop Make a call.

IV. Advantages of Big Data

Better decision-making

In the New Vantage Partners survey, 36.2 % of respondents aforementioned that higher decision-making was the quantity one goal of their massive information analytics efforts. In addition, 84.1 % had started operating toward that goal, and 59.0 % had old some measurable success, for associate degree overall success rate of sixty nine percent. Analytics will offer business decision-makers the data-driven insights they have to assist their corporations contend and grow.

Increased productivity

A separate survey from trafficker Syncsort found that fifty nine. % of respondents were victimization massive information tools like Hadoop and Spark to extend business user productivity. Modern massive information tools square measure permitting analysts to research a lot of information, a lot of quickly, that will increase their personal productivity. In addition, the insights gained from those analytics typically enable organizations to extend productivity a lot of loosely throughout the corporate...

Reduce costs

Both the Syncsort and the New Vantage surveys found that big data analytics were helping companies decrease their expenses. Nearly six out of ten (59.4 percent) respondents told Syncsort big data tools had helped them increase operational efficiency and reduce costs, and about two thirds (66.7 percent) of respondents to the New Vantage survey said they had started using big data to decrease expenses. Interestingly, however, only 13.0 percent of respondents selected cost reduction as their primary goal for big

data analytics, suggesting that for many this is merely a very welcome side benefit..

Disadvantages of Big Data

Need for talent

Data scientists and big data experts are among the most highly coveted and highly paid workers in the IT field. The At Scale survey found that the shortage of massive an enormous a giant knowledge ability set has been the amount one big knowledge challenge for the past 3 years. And within the Syncsort survey, respondents hierarchical skills and workers because the second biggest challenge once making an information lake. Hiring or coaching workers will increase prices significantly, and also the method of exploit massive knowledge skills will take appreciable time.

Data quality

In the Syncsort survey, the number one disadvantage to working with big data was the need to address data quality issues. Before they can use big data for analytics efforts, data scientists and analysts need to ensure that the information they are using is accurate, relevant and in the proper format for analysis. That slows the reporting process considerably, but if enterprises don't address data quality issues, they may find that the insights generated by their analytics are worthless — or even harmful if acted upon.

Cyber security risks

Storing big data, particularly sensitive data, can make companies a more attractive target for cyber attackers. In the At Scale survey, respondents have consistently listed security as one of the top challenges of big data, and in the New Vantage report, executives ranked cyber security breaches as the single greatest data threat their companies face.

FUTURE ENHANCEMENTS

- GIS-based Visualization

Geographic information systems (GIS) are widely used for mapping and analyzing spatial data; GIS has recently gained popularity in urban planning, environmental planning, traffic monitoring, and transportation mode .

- Computational Intelligence Algorithms for Smart City Big Data Analytics

Computational intelligence algorithms, such as neural network, genetic algorithm, artificial bee colony and particle swarm optimization, cuckoo search algorithm, flower pollination algorithm, chicken swarm optimization, and bat algorithm, are effective, efficient, and robust in knowledge engineering, which comprises soft computing, machine learning, and data mining (Jin et al., 2014

V. CONCLUSION

The significant increase in connected devices in urban cities has led to the rapid growth of data, which has elicited the attention of many researchers in different research domains. This paper aims to offer a comprehensive view of the role of big data in a smart city. In this context, we discussed the enabling technologies used in the smart city. The future business model and architecture with the aim of managing big data for smart city were also proposed, and the applications of the smart cities

in which big data analytics can play an important role were discussed. Different case studies were also examined. Finally, several open research challenges were explained to provide the research directions to the new researchers in the domain. Big data can play an important role in terms of gaining valuable information and for decision-making purposes. However, big data research in a smart city is in its infancy and the discussed challenges that remain to be addressed make it a practical field

VI. REFERENCES

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