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SOLUTION BRIEF

Data-Driven Transportation Departments

From renewing your vehicle registration online to checking for road closures and delays through an app, today's technology is rapidly changing our lives and influencing how we interact with government agencies. Because of this shift, government organizations are increasingly using data to improve efficiencies, enhance safety, and deliver an improved overall citizen experience. As they seek to implement data-driven programs, one area where this change has been the most impactful is within transportation. The primary role of a public transit or transportation department is to provide the most cost-effective and efficient ways for citizens to move about, both in their local communities as well as across the country. It has become critical for public sector organizations to understand transportation patterns and develop a plan for how best to support the needs of an ever-changing and growing population on the move. With a focus on supporting local roads and interstates, public transit vehicles, parking, pedestrian safety and the like, governments use data to determine ways to optimize traffic patterns, reduce congestion, improve safety, and most efficiently schedule and route public transit options.

Governments can also use this data for overall city planning to ensure that other services like food and shopping are optimized based on traffic and commuting. To do this effectively, many public sector transportation departments rely on real-time monitoring of surface movement in the form of sensors that can provide much needed information about what is working and what needs to be changed to meet citizen needs.

Cloudera Enterprise, powered by Apache Hadoop, provides public sector policy makers with a secure platform to capture, store, process, analyze, and provide a complete view of relevant transportation data to inform every decision. Unlike other data analytics solutions, Cloudera's platform allows agencies to ingest both structured and unstructured data from a variety of sources to support informed decision-making on anything from transit planning and demand modeling to vehicle predictive maintenance to highway monitoring during inclement weather or natural disasters.

By centralizing data and analytics on a secure and scalable platform, public sector organizations can better understand the transportation needs of the citizens they serve and find ways to optimize investments of limited tax dollars, create optimal transportation experiences for citizens, and enhance the overall public trust.

Planning and Demand Modeling

When seeking to understand the overall transportation needs of citizens, government agencies must factor in a number of different types of data, from traffic patterns to emergency routes and public transit demographics to weather. Increasingly, these data sources are being monitored by sensors that generate a large amount of valuable data to be ingested and analyzed. As the Internet of Things continues to enable the widespread increase of sensor data coming from vehicles, roads, parking garages and the like, agencies are looking for better ways to plan for the future. Among other things, governments must have access to citizen data around travel behavior such as records of reported trips, modes of transportation and usage, and the demographic and socioeconomic characteristics of households and individuals, combined with weather and past incident use data. By using data, agencies can generate a precise awareness of the customer demand, whether it be for buses, trains, speed lanes, parking, and more. They can also track routes for efficiency across multiple modes of transportation and ensure the presence of bike and pedestrian space throughout cities. Information gathered through data can impact planning for future transit routes, inform about the need for increased frequency on existing train routes, and help governments adequately plan for the size of vehicles needed.

Cloudera provides public sector organizations with a secure, centralized repository of data sets to build and analyze a complete profile of transit data that cuts across every channel. Organizations can analyze interactions that span structured and unstructured data with leading business intelligence

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Magnify Analytic Solutions delivers a self-serve, 360-degree customer view to Fortune 100 clients like Chrysler, DuPont and Ford. Magnify has built broad expertise processing large datasets for customers to support things like business-to-consumer (B2C) online marketing contests and product giveaways. Magnify recently managed an automotive client's customer relationship management (CRM) system and evolved it into a centralized data hub delivering a 360-degree view of customers, encompassing broad data types from different sources, including vehicle information from local motor vehicle departments, dealer distribution statistics, and parts data from services organizations. Magnify now offers clients a web-based solution through which they interact directly with Hadoop.

Source: http://www.cloudera.com/content/dam/cloudera/Resources/PDF/whitepaper/WP_Business-Value-EDH.pdf

(BI) tools or simple search. Analyzing these richer omni-channel profiles enables the team to optimize each engagement. Benefits include investing in the right dialogue with individual citizens, providing the right service at the right time, and lowering the total cost of engagement and support.

Proactive and Predictive Maintenance

A large portion of any transit budget is allocated to the ongoing maintenance of everything from vehicles to roads, and it's critical for government agencies to optimize resources to ensure that citizens can have access to the most convenient and cost-effective transportation solutions. Whether the agency has responsibility for local or national transportation, there is no doubt that employing the use of big data will provide a better understanding of where maintenance is needed and how to effectively manage the process to increase uptime and lower costs. Sensors can provide some of the most useful insights to governments, and being able to ingest and analyze that data allows for targeted action. When using big data, equipment sensors can be analyzed in real time, bringing much needed intelligence to government organizations. For example, this information can be used to anticipate faults at the individual component levels, such as brakes or at a stretch of tracks, or wear and tear on highways. Agencies can then schedule maintenance precisely at the right time. Such measures taken too early can be unnecessary and expensive whereas, if they are done too late, they can be costly and disruptive to citizen services.

Build Public Trust

Providing a safe and expedient transit system through the use of data, and one that can evolve as the needs of citizens change, presents government agencies with an opportunity to build public trust. This desire to enhance the lives of citizens has government officials focused on determining the best course of action during man-made and natural disasters, as well as planning for expected transit challenges like major events and seasonal changes in population. All of these decisions impact the daily lives of constituents, and public sector leaders are increasingly aware of how the results of their actions can either build or erode public trust. Allowing citizens to participate in a dialogue with government through multiple channels of communication can greatly enhance decision-making and provide a more complete picture of transportation needs. Furthermore, opening additional channels of communication, and seeking to understand and act on the data they provide, can help transform public transit organizations and enhance support from the citizen base.

Summary

Across the public sector, leaders within transportation agencies and transit authorities seek to identify the needs of the population they serve and determine how to best deliver those solutions both safely and cost-effectively. This is a very difficult task, as gaining that insight requires bringing together a variety of data sets that reflect the unique and changing needs of a region. While analytics teams are a great start, it's important that data and analytics embed themselves within every organizational decision. With more and more digital interactions being captured by a variety of applications, it is critical to make sure that government organizations have the ability to take advantage of this information. From building smart cities that enhance citizen experiences to addressing the need for inclement weather or natural disaster road conditions, Cloudera has your data and analytics needs covered.

About Cloudera

Cloudera delivers the modern platform for data management and analytics. The world's leading organizations trust Cloudera to help solve their most challenging business problems with Cloudera Enterprise, the fastest, easiest, and most secure data platform built on Apache Hadoop.

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