Connecting Smart Cities to Limitless Possibilities

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Across the globe, cities are becoming more populous. By 2030, 730 million people will live in cities with at least 10 million inhabitants.

More populated cities mean more traffic and greater demand on services, such as water and electricity. To efficiently accommodate the influx of people and better serve current residents, cities must become "smarter." Smart cities use modern technologies to collect and share information, resulting in benefits that include:

- Better resource management
- Enhanced services
- Operational efficiencies
- Increased safety
- Improved quality of life
- Significant money savings

A smart city infrastructure includes the Internet of Things (IoT), sensors of many different generations, and platforms to enable connectivity, two-way data flows, and broad data sharing. The infrastructure requires a data analytic ecosystem capable of integrating massive volumes of data from a wide and ever-growing range of sources, then analyzing it and making it available to citizens and decision-makers alike across the city. The analytics go beyond simply informing smart phone apps—the analytics ultimately are about providing rich insights and giving context to questions, strategies, and opportunities.

City-Wide Enablement Via Analytics

As it stands now, many city and state government agencies cannot take advantage of these insights due to data silos. To help drive efficiencies, cities, states and locales need to knock down the silos and bring the data together in a single analytic ecosystem to help empower data driven decision making. This allows advanced analytics that produce the insights and

The New Infrastructure Bill for Smart Cities Passed in August 2021, the $1 trillion bipartisan infrastructure bill contains:

- $500 billion total in new investments
- $500 million for the Strengthening Mobility and Revolutionizing Transportation (SMART) grant program
- $39 billion in transit investments

– Smart Cities Dive

understanding needed to enable automation or inform people who can take appropriate action. High-impact outcomes are seen across the board, including in these areas:

Making Resources Sustainable

Data is essential to tracking the use of water, electricity, and other resources. Data enables benchmarking to compare usage to other cities, past usage, and how one building or household compares to another.

Preventing Crime

Analyzing historical and geographic data helps city officials and police departments predict where crime is likely to occur. Combining analytics with real-time facial recognition and license plate reading can help identify people wanted by law enforcement.

Informing Traffic Decisions

One of the most touted aspects of a smart city is improved traffic flows. Data-enabled systems that monitor congestion can help develop insights into recurring versus non-recurring congestion. Analytics and context help city officials improve traffic flows and reduce and manage incident recovery time by rerouting traffic onto adjacent roadways.

Improving Mobility

Smart parking meters and parking spots that notify drivers when they're open, automated bus location data, smart traffic signals, and other smart devices help citizens with greater mobility. While the data enables new applications, the analytics shine the spotlight on opportunities for new mobility-as-a-service options.

Companies can then offer ridesharing, shuttles, or other services. Mobility-as-a-service integrates transportation options, from public busing to ridesharing, to manage travel in the smartest way possible.

Driving Smart Transit Insights

New start-ups are driving fresh approaches to transit insights. The company Transity had its roots at a college event called HackOHI. There, the then-students responded to a Teradata Smart City Challenge by developing a data ecosystem for integrating the data needed to support mobility-as-a-service.

Transity compiles proprietary and open data about Columbus, Ohio. This includes data from Google Maps, information on where people live and work, and data about how they use transportation, such as vehicles, bikes, or city buses #(See Figure 1). The data is integrated in an enterprise-grade software platform that's part of an analytic ecosystem. This breaks down silos to bring together data from thousands of data points.

Transity, like the entire smart city approach, can change the way people think about commuting. For example, analytics on the data can show the demand for transportation in specific areas and at certain times. This can prompt people to car pool, change their commute times, or bike instead of use a vehicle.

Traditional apps deliver actionable information, such as how commutes change by time of day. Transity goes one step further by integrating additional layers of data, including commute patterns. This allows deeper insights, such as which locations would be best served by public transportation or bike paths. Transity, and other technologies that operationalize and monetize data, are poised to make significant contributions to Columbus and other smart cities.

Like a Fitbit for the City

Wireless wearable devices, like Fitbit or Apple Watch, measure data and share it with the user. The data is put into a context that exposes patterns and enables goals. Smart Data Management uses a similar concept, but on a massive scale with advanced technologies that record a vast range of activities and share the data with those that choose to connect.

Smart Data Management is the Key to the Smart City

Although many cities are interested in exploiting smart city connectivity, more than half of smart city initiatives get stalled at the proof-of-concept stage, according to Cisco. About one-third of those completed are not considered a success. That's because planners do not have a sufficient understanding of how to implement the analytic ecosystem that informs users and technologies.

What cities need is Smart Data Management—the process of integrating, storing, analyzing, managing, and sharing data through a single analytic platform. A Smart Data Management strategy secures data and makes it available for advanced analytics that detect a variety of patterns that are actionable and support automation. This strategy addresses current needs while remaining flexible and scalable to manage future needs.
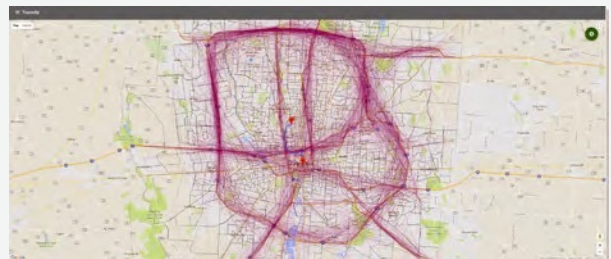

Figure 1. Vehicle journeys in Columbus; the "ground truth" of mobility choices, visible by origin, destination and mode of travel

Image: Transity from journey analytics on Teradata
Data: Cuebiq

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Creating New and Sustainable Value

Teradata has experience across IoT and related applications, deep industry knowledge, and broad expertise with complex analytics at scale. Using Smart Data Management as a focal point, we can help companies evolve from standalone or narrowly focused smart city projects to tightly integrated business driven operations.

About Teradata

Teradata is the connected multi-cloud data platform company. Our enterprise analytics solve business challenges from start to scale. Only Teradata gives you the flexibility to handle the massive and mixed data workloads of the future, today.

The Teradata Vantage architecture is cloud native, delivered as-a-service, and built on an open ecosystem. These design features make Vantage the ideal platform to optimize price performance in a multi-cloud environment. Learn more at **Teradata.com**

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