

WHITE PAPER

# Smart City Data and Analytics





With more than half of the world's population living in cities—and that number continues to grow—urbanization poses significant opportunities and challenges for citizens that live, work and travel to cities. From transportation, public safety, and housing—to energy and water usage—public agencies and city planners that lack the technology to harness citizen data are struggling to gain insights needed to implement Vision Zero plans to reduce traffic accidents, promote economic growth, optimize city functions, and generally help residents enjoy a better quality of life.

Enter the ubiquitous smart phone. Now data and analytics can harness new possibilities for insight and understanding of citizen needs. As a recognized leader in the application of big data and analytics techniques to solve practical problems related to planning and operations, Teradata extends its expertise and experience to the realms of smart cities and transportation. Teradata unlocks the secret to smart city success by helping smart cities leverage technology to deliver better outcomes for citizens.

## Citizen 360: What Is It?

Citizen 360 (and Visitor 360) is a Teradata capability that blends big data techniques with customer journey analytics and public domain expertise to empower cities to better understand its citizens, residents, and visitors. Citizen 360 is an adaptation of Teradata® Customer

*Teradata can help you to implement a Citizen 360 program that transforms your city into a true smart city one that delivers real values, benefits and greater satisfaction for citizens, residents, and visitors.*

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Journey, a robust and scalable solution that helps businesses integrate customer data, IoT sensor data, apply advanced 4D analytics, and deliver interactions to provide positive and personalized customer journeys. Applied within the context of a smart city, Citizen 360 helps government agencies and city planners understand the needs, behaviors, and demographics of its citizens, residents, and visitors—to fuel smarter decision-making and effective response strategies for better outcomes and positive citizen journeys. The term “journey” can refer to a virtual journey (as citizens interact through various touchpoints such as websites, mobile apps, or kiosks) as well as a physical one, associated with transportation.

In a smart city, a web of connectivity weaves between residents, visitors, and service providers. Citizen 360 gathers citizen and visitor data from IoT applications, sensors, and existing city partner systems, which

includes open-source data and crowd-sourced data on location from a smart phone application, or from other touchpoints such as websites, kiosks, public Wi-Fi, and other connected sources. Movement analytics data from smart phones provide an additional dimension to this data, by contributing knowledge on the trends, patterns, and trips and travel habits of groups of citizens—which can become an excellent starting point to the development of the Citizen 360 picture.

By integrating data from all available sources, Citizen 360 helps smart cities to overcome the common problem of an inability to share data because of departmental silos. Various city agencies often gather and store their own data to fit their needs. Citizen 360 breaks down data silos to bring all data together for rich, robust analytic insights that transcend individual departments or organizations.

## Citizen 360 Analytics

A Citizen 360 approach delivers value in terms of providing a detailed understanding of citizen behavior, the prevailing conditions that citizens experience, and current perception of the quality of service being offered. We can help you to utilize the following citizen experience analytics:

- Citizen trip patterns: Characterizes the daily trip patterns made by citizens within a smart city. This can include origins, destinations, routes, and modes of transportation used.
- Visitor analytics: The Citizen 360 (and Visitor 360) approach can also be extended to include visitors to the smart city. The same techniques that have been defined for Citizen 360 can be used to develop a visitor 360 view approach.

## Citizen 360: A Smart Data Management Approach

Teradata has 40 years of experience helping cities and states evolve from standalone or narrowly-focused projects to highly integrated, business-driven operations. Using a Smart Data Management approach, Citizen 360 helps drive projects to success through

data acquisition and a proven strategy that optimizes analytics to help communities derive sustainable value. Global banks, major airlines, and other industrial sectors have relied on Teradata as their trusted advisor to help their organization to make smarter, data-driven decisions. We can bring this to bear to smart cities and transportation applications and address the following:

- Handling big data
- Creating a data lake for mobility as a service
- Supporting advanced analytics
- Sharing data and analytics
- Providing the horsepower to support efficient mobility as a service operation



### Transportation and Other Services: Aligned with the Needs of the Citizen (and Visitor)

Citizen 360 handles large-scale data sets from citizen trip making that reveal insight and understanding across an entire region. Leveraging unique 4D analytics capabilities, Teradata is an early pioneer in the use of movement analytics. Combined with movement analytics data from smart phones, a new possibility is revealed—the ability to understand citizen trip making behavior to an unparalleled degree. This understanding supports the development of mathematical simulation models that synthesize a picture of citizen trip making behavior, making transportation planning efficient and aligned with the needs of the citizen.



### Citizen 360: Seamless Information Flow Between Smart City & Citizens

Citizen 360 places a focus on connectivity between smart city citizens and smart city government and services. However, this is not the end result. The expected outcome from this better connectivity is an improvement in the information flow to and from the smart city citizen. This will allow citizens to provide feedback to smart city government and to receive information on a range of services. The feedback will enable smart city services to become more efficient and effective as they can be customized to citizen needs. Information to the smart city citizen will enhance knowledge of available services and improve the user experience. At Teradata, we believe that it is vital for smart city government to have the information and insight required to manage and design the user experience within a smart city, rather than just letting it unfold.

We believe that the Smart Data Management approach is the only way for smart cities to extract the maximum value from investments in data collection and data management. Smart Data Management can take you, in the most cost-effective way—from data, to information, to insight, to actionable strategies—for smart city planning and operations.

From our perspective, Smart Data Management features the following:

- A series of planned investments that deliver immediate and clear value, while providing the business justification for further investments
- A coordinated and coherent data stream from multiple sources—including sensors, other automated sources, and anecdotal data, ingested into a single platform using advanced automation
- The establishment and management of a centralized repository or data lake that enables data to be shared and analyzed
- Support for advanced, multi-genre analytics that can be shared across the enterprise
- Support for a data market approach that enables data to be valued from a public and private perspective and provides a mechanism for a “freemium” approach to data sharing
- A scalable approach that provides immediate value and benefits, while delivering a framework that is easily expandable for future needs

## Optimizing the Citizen Journey

Teradata empowers public sector entities to achieve high-impact business outcomes. Our focus on business solutions for analytics, coupled with our industry leading technology and architecture expertise, can unleash the potential of great organizations.

## 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. Learn more at [Teradata.com](https://www.teradata.com).

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