Teradata and Cisco: Unlocking The Value of Data for Smart Communities

SMART CITIES

Together, Teradata and Cisco empower communities and operators of urban services to make smarter, data-driven decisions that improve efficiency, enhance public safety, generate better citizen and visitor services, and create new revenue streams.

Data is the foundation of value creation in today's digitally enabled society. Smart Communities recognize that their data has real value which can enable new services and capabilities to better serve citizens and visitors, efficiently and profitably. Accomplishing this requires a comprehensive and robust data integration, smart data management and analytics ecosystem.

The Challenge: Putting IoT Data to Work

The more IoT devices a city deploys, the greater the opportunities for harnessing massive amounts of real-time data to optimize resources, improve infrastructures, enhance residents' quality of life and create sustainable economic development, among other high-impact outcomes. However, the challenge is that most IoT devices are deployed as point solutions, and the data they generate stays in silos.

The Solution: Teradata and Cisco

Disparate data silos must be integrated to reveal insights about a city as a whole. Only then can the data be used effectively to drive predictive and prescriptive decision-making for a variety of urban services, including lighting, parking, traffic and waste management, citizen engagement, safety and security.

Teradata is among the first enterprise analytics platforms to be integrated with Cisco Kinetic for Cities to provide the data integration and analytics capabilities required for smart data management.

Cisco Kinetic for Cities

Cisco Kinetic for Cities provides a horizontal, data aggregation platform—one tailored specifically to the needs and challenges of cities and communities. It enables the collection, aggregation, normalization and movement of data from connected things to IoT applications and systems across the ecosystem.

Smart Data Management

The Need

Data collection and management within a city is often decentralized and stored in departmental silos, where each city manager creates a "cockpit" of data and a set of tools for managing specific city facilities. This approach makes it difficult, if not impossible, to generate a city-wide view of the data.

The Solution

Smart communities must optimize analytics and apply the insights to develop appropriate responses and strategies. The Teradata approach to Smart Data Management is to establish, develop and connect data management capabilities across a smart city.

The Benefits

- Unify data across domains
- Obtain deeper insight and context
- Perform analytics and make decisions in real-time
- Deploy to meet current needs while building for the future

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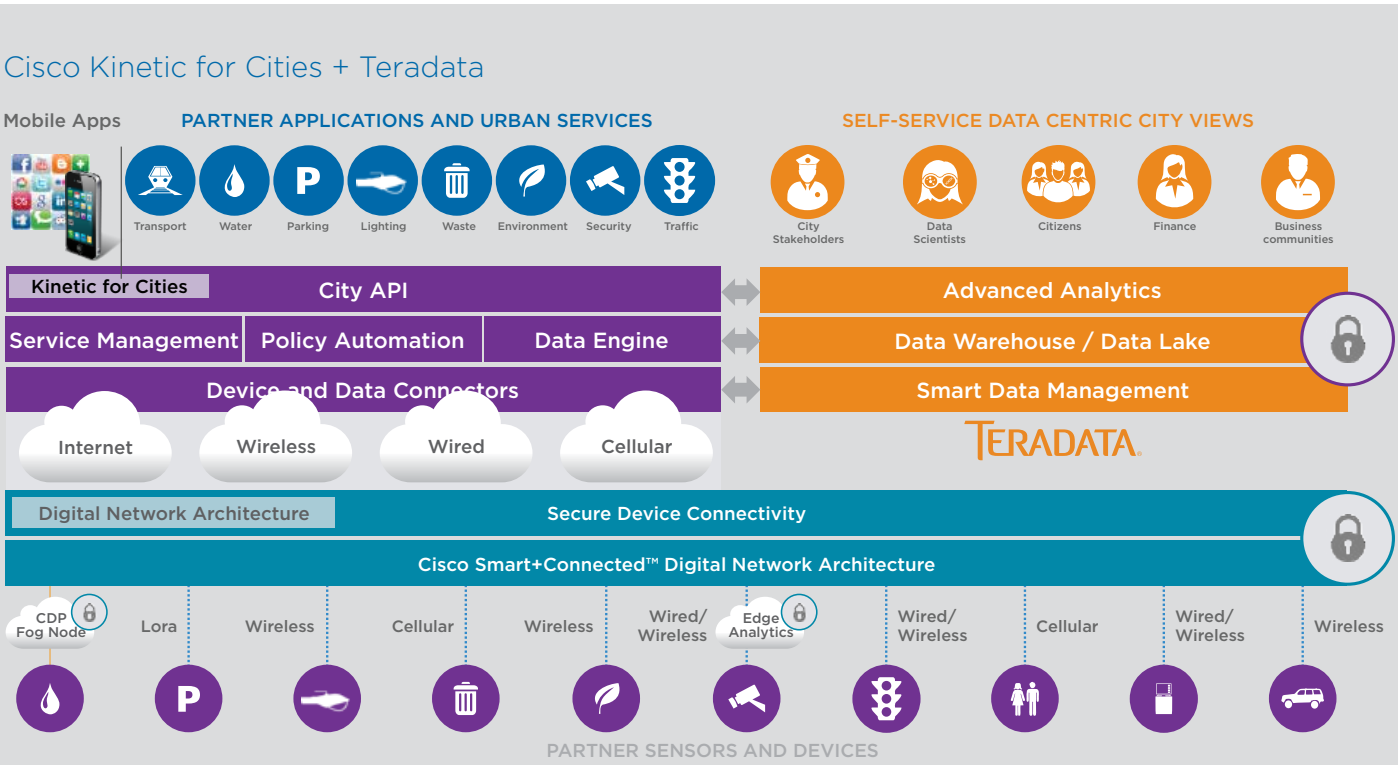

Figure 1. Teradata is among the first enterprise analytics platforms to integrate with Cisco Kinetic for Cities to provide smart data management.

Teradata seamlessly extends the Cisco Kinetic for Cities platform to provide smart data management, including analytics, persistent data lifecycle management and data enrichment, that delivers business insights to cities and communities.

Why Teradata for Smart Communities

Teradata helps some of the world's most successful companies, communities, cities and states make sense of some of the largest and most complex data sets.

Teradata helps its customers evolve from standalone or narrowly focused analytics projects to highly integrated, business-driven operations. Our experience with IoT applications, deep industry knowledge and broad expertise with complex advanced analytics at scale uniquely positions us to help communities derive sustainable value from their Smart Community investments.

Business Outcomes

Gartner defines a smart city or community as "an urbanized area where multiple sectors cooperate to achieve sustainable outcomes through the analysis of contextual real-time information, which is shared among sector-specific information and operational technology (OT) systems." (Go-to-Market Lessons for IoT Vendors from Four Smart City Projects in Asia/Pacific, 2017)

But, where to start? Teradata and Cisco have identified the following use cases as excellent starting points that can be leveraged together for broader outcomes.

Citizen 360

This solution enables cities to better match services to demand and more precisely quantify the economic impact of citizen behavior including tourism. It combines a variety of analytic and data management tools and techniques against multiple large data sets to achieve

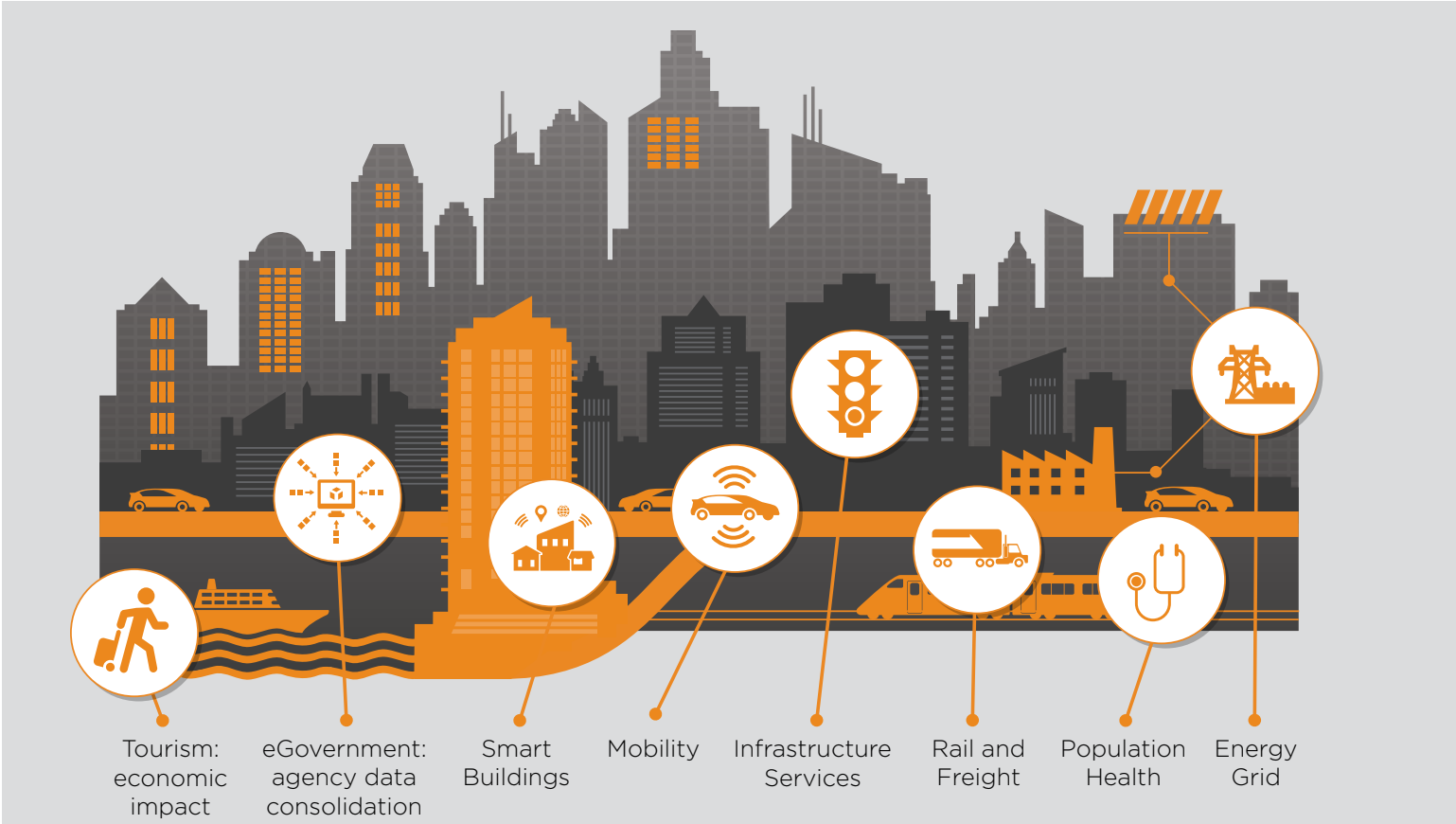

Figure 2. A smart city is one that connects information and communication technologies across sectors.

a comprehensive view of a citizen's or tourist's needs and behavior, the prevailing conditions these individuals experience, and the current perception of the quality of services being offered.

Mobility as a Service (MaaS)

This solution involves the integration of a range of transportation services into a single menu that is available on demand. This can include public transit, car and bike sharing, car rental, parking, or any combination therein. An important objective is to present the transportation user with the best value proposition for the time of travel. At a minimum, MaaS requires the acquisition and management of data from traffic management sensors and centers, public transit operations, ride sharing operations, parking operations and car rental operations.

Urban Accessibility

This solution provides tools to measure the effectiveness of smart city transportation services for both public and private modes. These may include average travel times, percentage of population within a certain distance of a transit stop and other measures for which data has been readily available. The direct measurement of accessibility up until this point has been a challenge giving the lack of suitable data. The advent of movement analytic data from smart phones provides new options to assess the quality of urban transportation using observed data and in a direct manner. This is important since many smart city programs have objectives that relate to improving urban mobility and accessibility since these are essential components in raising the quality of urban life.

Transit Optimization

With this solution, a city can optimize its transit services (e.g., bus stop locations, service frequency) based upon an accessibility index. This allows for more cost-effective and efficient transit within a city, and provides data for related long-term planning and investment.

Teradata Technology Enablers

Teradata Analytics Platform

The Teradata Analytics Platform provides a modern analytical environment that integrates commercial and open source analytics, including AI, with the Teradata Database. With this robust analytics platform, users can rapidly build and deploy descriptive, predictive and prescriptive analytic solutions to enable autonomous decision-making.

4D Analytics

Teradata is the first to offer 4D analytics capability. These advanced analytics combine three-dimensional geospatial location data with the fourth dimension of time, which is especially relevant to edge computing applications that exist to manage constantly changing time and location variables. By integrating these capabilities, primarily geospatial, temporal and time-series data, into the Teradata Analytics Platform, Teradata is enabling communities and other businesses to operationalize enhanced IoT analytic use cases.

Teradata Integrated Data Warehouse and Teradata Database

Built on the world's most powerful database, Teradata data warehousing solutions are what the world's largest and most competitive organizations use for actionable insights and decision-based analytics. Designed and built with parallelism, Teradata can scale to more than 100 petabytes on a single system without losing performance.

Teradata Everywhere™

The best database is also the most flexible database. With Teradata you can deploy both the architecture and business models you want, with cloud or on-premise hardware (or mix and match them) while incorporating data gravity and future-proofing your analytical environment. Teradata Everywhere is a flexible, agile, scalable way to de-risk major decisions and ensure a high return on your analytic investments.

Teradata Listener™

Teradata Listener unifies the big data ingestion process by capturing multiple, high-volume data streams continuously from a variety of sources, and persisting them into your data store(s). Listener is an intelligent, self-service solution for ingesting and distributing extremely fast moving data streams throughout the analytical ecosystem, making it ideal for ingesting IoT feeds from Cisco Kinetic for Cities.

About Teradata

Teradata (NYSE: TDC) helps companies achieve high-impact business outcomes. With a portfolio of cloud-based business analytics solutions, architecture consulting, and industry-leading big data and analytics technology, Teradata unleashes the potential of great companies. Visit **Teradata.com**.

About Cisco

Cisco (NASDAQ: CSCO) is the worldwide technology leader that has been making the Internet work since 1984. Its people, products, and partners help society securely connect and seize tomorrow's digital opportunity today. Discover more at **thenetwork.cisco.com** and via Twitter at **@Cisco**.

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