

CGI IoT Data Management for Smart Communities

With Kinota™ open source API

Real-time monitoring and predictive analytics using data from the Internet of Things (IoT) are quickly becoming vital for local governments and communities. CGI IoT Data Management for Smart Communities is an advanced data collection, visualization and analysis platform that helps local governments better manage resources, improve planning, make more informed decisions and improve citizens' quality of life.





ADVANCING SMART CITY MANAGEMENT

CGI IoT Data Management for Smart Communities captures IoT sensor data using CGI's Kinota, an open-source implementation of the OGC SensorThings API, and stores those data in a scalable cloud-based data repository, allowing visualization and analysis tools to provide real-time insights. Smart community applications include:

- Air and water quality monitoring and anomaly detection
- Transportation demand monitoring
- Flood prediction
- Infrastructure monitoring
- Public safety

MAXIMIZING THE POWER OF REAL-TIME DATA

Based on industry standards and best practices, CGI IoT Data Management for Smart Communities helps local governments and communities improve decision making quality, save time over traditional modeling and analysis approaches, and foster smart and connected citizen engagement.

 <p>Monitor Capture cross-media monitoring data from sensors</p>	 <p>Detect Detect real-time anomalies using threshold targets</p>	 <p>Predict Quickly capture and display prediction scenarios using machine learning</p>	 <p>Visualize Understand your data using live-streaming data dashboard</p>
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CGI IoT Data Management can help with many aspects of how communities move and work smarter for citizens. Data from indoor, outdoor or mobile sensors can be collected and analyzed to assess impacts of events and to correlate to related phenomena. Example use cases include:

- Air and water quality monitoring
- Transportation management
- Flood early warning
- Energy consumption
- Infrastructure monitoring
- Public safety
- Waste collection

KEY FEATURES

- **Architecture:** Designed for horizontal scalability based on a distributed data cluster that allows CGI to handle any number of sensors sending data multiple times per second.
- **Cloud-based data processes:** Provides a secure, scalable and fault-tolerant IoT platform running in the Microsoft Azure cloud using Azure IoT Hub to connect IoT assets. Centralized storage is provided using a fault-tolerant database.
- **Predictive analytics:** Provides predictive and batch analytics using domain-specific machine learning models. Models can be adapted for numerous prediction scenarios. Batch analytics can be developed using a fault-tolerant processing engine.
- **Rapid integration (Kinota open source API):** Provides real-time data access using Kinota, CGI's open source implementation of the OGC SensorThings application programming interface (API). CGI is piloting this open source API gateway for the City of Lafayette, Louisiana. The code will be released via GitHub in Q3 2017 for use at no cost, anywhere in the world.
- **Custom visualization tools:** Customizable web dashboards, built on top of the API, allow for visualization of real-time data and identification of trends and anomalies for multiple sensors at the same time. Analytics can be displayed using tools embedded in the CGI solution, or the client's data visualization tools (e.g., Tableau, Qlik, etc.).

CGI IN IOT, ANALYTICS AND SMART COMMUNITIES

CGI is a leader in IoT, digital insights and digital communities:

- **IoT:** IoT value is derived from combining data from Internet-connected "things" with other data in the organization to make better decisions and enable new services. CGI has pioneered IoT platforms and solutions that are advancing organizations across the globe. We work with clients to define and achieve IoT objectives and implement solutions using a business-led approach.
- **Digital insights:** Big data is a reality for government. Getting more value from data is a key element in improving citizens' quality of life and increasing the efficiency of government services. CGI helps clients capture and integrate disparate data sources and analyze big data using predictive analytics, prescriptive analytics, machine learning, real-time geo-data processing and visualization.
- **Digital communities:** Smart technology is changing the way localities run their business. But "smart" requires understanding community priorities, establishing collaborative governance, enabling transparency, and thoughtfully applying digital technologies. CGI helps clients develop scalable solutions for smarter communities. For further insight, download, "A Field Guide to Smarter Communities," co-produced by CGI and Governing Institute. <https://www.cgi.com/en/governing-smart-communities>

ABOUT CGI

Founded in 1976, CGI is one of the largest IT and business process services providers in the world. Operating in hundreds of locations across the globe, CGI helps clients become customer-centric digital organizations. We deliver high-quality business and IT consulting, systems integration and transformational outsourcing services, complemented by more than 150 IP-based solutions, to support clients in transforming into digital enterprises end to end. CGI works with clients around the world through a unique client proximity and best-fit global delivery model to accelerate their digital transformation, ensure on-time, within budget delivery, and drive competitive advantage in today's increasingly digital world.

For more information about CGI, visit www.cgi.com or email us at info@cgi.com.