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Inspire the Next

SOLUTION BRIEF

Smart City Operational Intelligence for Smarter Communities

Use video analytics to improve efficiencies, drive innovation and improve safety for people and drivers

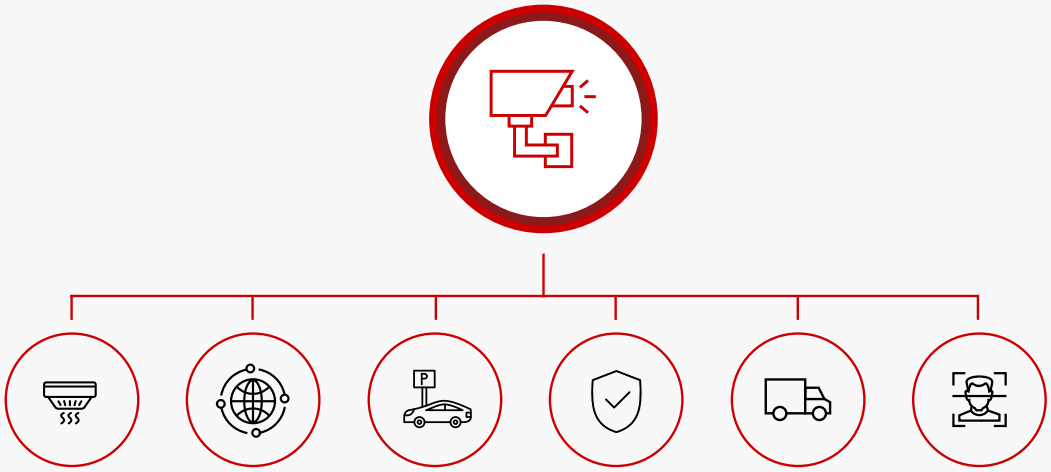
At the core of the promise of smart cities and the Internet of Things (IoT) is data. Data can give us the insights we need to make our cities and businesses more efficient and successful. As cities seek to be more competitive and respond to growing populations, they must maximize the efficient use of resources to help people to move around the city quickly and efficiently, make the most effective investments from public funds, and keep people and property safe. Transportation departments, ports, colleges, hospitals, retailers and other businesses alike all need to maximize efficiency and keep people safe – all while respecting citizens' demand for privacy.

One of the most underutilized sources of data in our cities and businesses today is video. That's because traditional video security systems were designed to provide a person with a view into many areas at once. But today's video analytics technology allows public or private organizations to transform the data provided by cameras into valuable operational intelligence that improves urban planning, creates more efficient traffic flows and yields a variety of civic and social improvements. Video analytics also helps businesses drive sales conversions based on customer behaviors, get products to market faster, and improve ROI.

Are You Gaining the Full Value From Video Data?

With a growing number of video cameras in retail stores, office buildings, parking lots, traffic lights, factories and other areas throughout a city, video data is constantly being captured and stored. While many of these systems were designed to help enhance security, they can also offer valuable data to support operational intelligence.

By applying analytics to video data, organizations can gain insights to understand customer behaviors, improve efficiencies, drive innovation and improve the public space, transportation, and business experience.



Core
- Activity
- Camera Tampering
- Direction
- Idle Object
- Smoke Detector
- Throughput
- Zone Intrusion

Facilities
- Coverage
- Dwell
- Input/Output
- People Counting
- Capacity
- Enter/Exit
- Loitering
- No Activity
- Object Taken
- Queue

Parking
- Enter/Exit
- Parking Spot Occupancy
- No Exit
- No Parking Zone
- Short Term Parking
- Speeding Vehicle
- Stopped Vehicle
- Wrong Way

Safety
- Capacity
- Crowd Density
- Enter/Exit
- Idle Vehicle
- Input Output
- Left Object
- Loitering
- No Activity
- No Exit
- Object Taken
- Proximity
- Speeding Vehicle

Transportation
- Enter/Exit
- Pedestrian Counting
- Speed Detection
- Vehicle Counting
- Congestion
- No Exit
- No Parking Zone
- Pedestrian Activity
- Stopped Vehicle
- Wrong Way

Face
- Face Detection
- Face Matching

Video analytics can determine the number of people walking nearby or within a location, foot traffic patterns, stores, and public environments such as transportation centers, metro, and bus terminals.

Transform Video Data into Operational Insights with Hitachi Video Analytics

With a growing number of video cameras in retail stores, office buildings, parking lots, traffic lights, factories and other key areas throughout a city, valuable video data is constantly being captured and stored. While many of these systems are used to enhance security, they also offer valuable data to support operational intelligence. By applying computer vision and analytics to video data, public and private organizations can gain the insights they need to understand customer behaviors, improve efficiencies, drive innovation, and deliver a more effective transportation experience.

To complement Hitachi Video Analytics, Hitachi Visualization Suite integrates video with data feeds from 911 calls, weather reports, crime statistics and other disparate systems into a single pain of glass web-based interface that delivers immediate, actionable insights.

Operations Intelligence for Smart Cities

Hitachi Video Analytics delivers the operational intelligence required to help cities relieve congestion in urban zones and drive greater business efficiencies.

- **Activity Visualizer:** Automatic motion duration analysis displays the degree to which areas are frequented. This information is used by smart cities for urban planning to understand flows of people and vehicles, and by businesses to strategically position products, evaluate popularity of displays and determine other marketing initiatives.
- **People Counter:** Uses a 3D sensor to automatically count people passing through a defined area of a video stream with 99% accuracy. This real-time information enables organizations to identify and optimize high-use spaces.
- **Queue Detector:** Detects overcrowding by analyzing groups of people waiting in line, including the crowd and their pace of motion. The solution also estimates crowd density, average waiting time and alerts operators if a defined queue length is reached.
- **Reporting:** Analysis results are available as interactive statistical reports and can be sent via email at scheduled dates and times. Results can also be exported as CSV files.

Operations Intelligence for Traffic Optimization

Traffic intelligence is key to the realization of smart cities, as mobility in urban areas and commuting corridors are essential to urban vibrancy.

- **Traffic Analyzer:** Counts vehicles on highways, city streets and at premises with carpools or parking garages. It's capable of counting to four lanes of vehicles, while categorizing these vehicles into two-wheel, passenger car and bus/truck.
- **Parking Space Analyzer:** Detects occupied parking spaces, analyzes how long a vehicle has been parked, identifies vehicles in no-parking zones and the data can be used to guide drivers to the next vacant parking space or improve enforcement efficiency.
- **Vehicle Counter:** Automatically counts and classifies vehicles that pass definable areas on a traffic lane. All results are statistically evaluated and exported to support traffic planning and vehicle control.
- **Direction Controller:** Detects objects that move in a restricted direction, immediately alarming operators, such as a vehicle driving the wrong way or a person entering through an exit. Identifies even slight movements, whether it's used indoors or outdoors.

Ensure Privacy Protection for Citizens and Minimize Liability for Organizations

For public organizations in government and education, as well as enterprises in healthcare, transportation, retail and elsewhere, ensuring the privacy of citizens, students, patients, or customers is a requirement for video capabilities. With 3D LiDAR Sensors, organizations can prevent unnecessary intrusions into personal privacy without compromising other video analytics or the ability to utilize security video for public safety.

Lidar technology is similar to radar or sonar, but instead of using radio or sound waves, it measures the time of flight (ToF) of laser points to build three-dimensional, real-time information about the physical world. This technology has been widely used in autonomous vehicles (AVs) and geographical mapping from drones. And new innovations have dramatically reduced costs to enable lidar for use in smart spaces such as retail, airports, event spaces, facilities, healthcare campuses and so forth. With the addition of machine learning techniques, this data can provide a wealth of valuable insights for enhancing operations, safety, and customer experience.

Hitachi 3D Lidar Sensor offers granular resolution and close-range data that can be stitched together from multiple devices to provide full coverage.

Operational Intelligence Applications for Hitachi Video Analytics

The use cases below demonstrate how Hitachi Video Analytics uncovers valuable operational intelligence through innovative technology.

Smart Transportation and Transit

- Reduce overcrowding on platforms.
- Optimize traffic policy and transit resources to keep people moving.
- Better understand flows and patterns of people within and around stations.
- Improve safety on tracks and at intersections.

Smart City Public Space and Infrastructure Management

- Understand public usage and ROI of public space and infrastructure by counting people, analyzing foot and vehicle traffic.
- Helps businesses optimize their location and messaging.
- Provide data and insights to downtown businesses to help them succeed and drive economic growth.

Business Intelligence for City Focused Retailers

- Gain valuable insight into customer behavior and preferences.
- Determine where, when, and how many people walk by or enter the store, how they move about once inside, and where they spend the most time.
- A/B test real-world retail similar to websites to optimize layouts, messaging, and products on display.

The Hitachi Video Analytics Advantage

Insights from video feeds are only as accurate as the supporting analytics. By applying intelligent analytics, Hitachi Video Analytics far surpasses conventional technologies to provide the highest accuracy available. Unlike most video analytics that offer only a single algorithm for all video content analysis applications, Hitachi Video Analytics uses unique, next-generation algorithms specific for each application or scenario. When it's combined with advanced particle tracking and noise filtering, this approach delivers an extremely low false positive rate and unparalleled analysis results.

Hitachi's family of video analytics solutions help government organizations and businesses create safer, smarter and more efficient communities, services, and public spaces. From automated security solutions that protect people, property and critical infrastructures, to operational business and traffic intelligence, along with privacy protection that ensures compliance with regulations – Hitachi Video Analytics has you covered.

Next Steps

Smart, connected cities are no longer a future promise. Hitachi is helping cities become smarter today. Using IoT and proven technologies like video analytics, smart cities are driving operational intelligence that increases efficiency and safety, improving the way people work and live.

ABOUT HITACHI VANTARA

Hitachi Vantara, a wholly-owned subsidiary of Hitachi Ltd., delivers the intelligent data platforms, infrastructure systems, and digital expertise that supports more than 80% of the fortune 100. To learn how Hitachi Vantara turns businesses from data-rich to data-driven through agile digital processes, products, and experiences, visit hitachivantara.com

Learn More →

Smart Spaces are emerging all around us, becoming safer, more sustainable, and improving our experience, while driving efficiency.

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HV-CBE-SB-Smart-City-Operational-Intelligence-for-Smarter-Communities-19Dec22-A