

# Getting Smarter on Traffic Monitoring for a Safer & More Efficient City

Three Steps City Executives Can Take  
for Better Traffic Safety







# Contents



# Traffic Safety is a Global Challenge

Around the world, cities of all sizes work to monitor traffic for a safer city and more efficient operations. However, today's growing urban areas and increased vehicle sales are making that a significant challenge.

## Cities Are Growing at an Exponential Rate

- 66 percent of the world's population will live in cities by 2050 – *United Nations*
- There will be 35 megacities with populations over 8 million by 2025, compared to 12 in 2011 – *Frost & Sullivan*

The rapid growth in traffic across the globe leads to new challenges, including high traffic fatality rates, overwhelming demand on infrastructure and negative economic impact.

## More Vehicles on the Road



Since 1990...  
**Global Car Sales  
have grown by 43%**  
– *Statista*

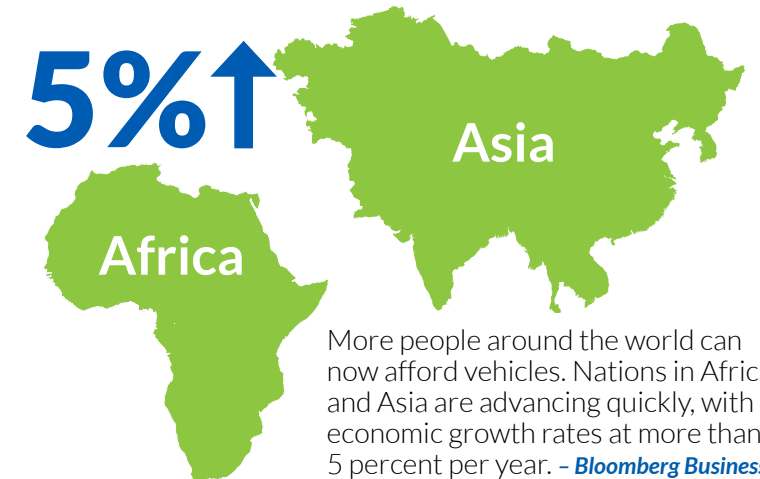
In 2014...



**2.6 new vehicles  
sold every second**

– *CNBC*

## Accelerating Growth



# Traffic Safety is a Global Challenge (cont.)

## *Traffic Fatalities*

Globally, 1.24 million people die each year as a result of road traffic accidents, according to the World Health Organization. That is one person killed every 25 seconds.

## *Overloaded Infrastructure*

Infrastructure can't keep up with the growth in vehicles, resulting in overly busy roadways and frustrated drivers. Overloaded roads and traffic jams significantly increase the number of accidents.

## *Economic Impact*

Road crashes total \$518 billion globally, costing individual countries between 1 to 2 percent of their annual GDP – *World Health Organization*



**92%** of road traffic deaths occur in low- and middle-income countries, which have only 53 percent of the world's registered vehicles. – *World Health Organization*



The total economic impact because of car crashes in 2010 was \$242 billion in the United States, **about \$900 per person.**

– *U.S. Highway Traffic Safety Administration*

# The Need for Improved City Operations

As modern cities grow increasingly crowded with people and vehicles, officials require more effective and efficient city operations. Most cities are not equipped to effectively gather and make sense of the vast amounts of data available on various aspects of city operations, including traffic safety.

## **Main Challenges**

- Some cities do not have the right technology to effectively gather traffic safety information.
- Others are coping with an overwhelming amount of data, with operators receiving information from hundreds of different sensors.
- Without actionable intelligence, real-time response to traffic and environmental incidents is a challenge.

## **Improving City-wide Traffic Safety**

Cities have an opportunity to achieve important traffic safety goals:



Reducing traffic accidents



Detecting traffic patterns and violations



Issuing fines with evidence



Improving service to citizens



Maximizing quality of life

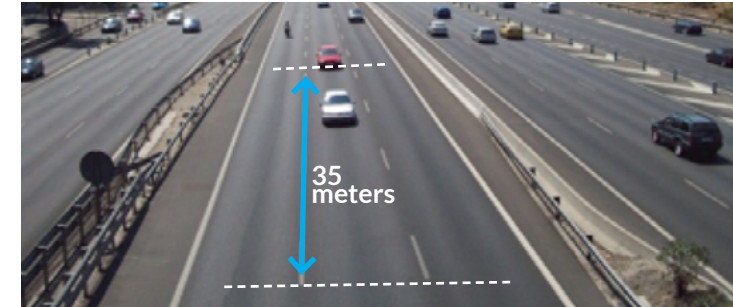
# Real-Life Use Cases

## Identifying Traffic Violations Using Video Analytics

Throughout the city, existing traffic cameras can be used with video analytics for vital, real-time data and forensic searches. Analytics can detect and track car paths within the video footage and alert officials to suspicious movements or abnormal behavior. By setting pre-defined rules, cities can extract important information about traffic and take appropriate action.

- Car driving in the wrong direction
- Calculating average speed for speeding violations
- Vehicle counts to learn of potential congestion
- Accidents
- Stopped vehicles on hard shoulders

**Example 1**  
Speed Calculation



**Example 2**  
Wrong Direction



**Example 3**  
Stopped Vehicle





## Real-Life Use Cases (cont.)



### *Detecting Suspicious Activities Through Big Data Pattern Analysis*

The world is undergoing exponential data growth. By 2020, 44 trillion gigabytes (GB) of data will exist from videos, pictures, documents, emails, text messages, and other digital sources—that's 10 times what exists today. Effective Big Data analysis allows operators to find patterns and detect risks early among this wealth of data. Operators can pinpoint threats or suspicious activity, adding value to the intelligence picture, and significantly cut the time in gaining valuable forensic evidence to aid in investigations and prosecution.

## European Country Controls Its Border Using Verint:

Given a rising wave of drug smuggling and human trafficking into neighboring European countries, Verint's solution was selected to monitor the country's borders, logging all vehicles entering and leaving the country using License Plate Recognition and Vehicle Identification Recognition systems.

### *Verint Situational Awareness Solution:*

- Collects data over months of monitoring
- Detects vehicle patterns and alerts on irregular activities
- Creates a blacklist. Any blacklisted vehicle is immediately alerted on in real-time, allowing border control forces to immediately catch the suspects









As a result, drug smuggling and human trafficking incidents were identified and caught more rapidly and security forces were able to respond in real-time.

# Three Steps to Better Traffic Safety

Monitoring traffic throughout a city to gain insights on safety and congestion requires the collection of multiple data inputs from a variety of sensors. By centralizing the data onto a single platform, cities can become more proactive, efficient and respond more quickly to incidents.

## STEP 1 Data Collection

### SENSOR

-  Video cameras & video analytics
-  License plate recognition cameras
-  Loop detectors
-  Weather, Flooding, Storm, Snow, etc.
-  Speed radars
-  Social media GPS feeds
-  Police reports
-  Smartphone app for public to notify municipality

### EXAMPLE

*Identify congestion or traffic accidents by number of cars and low speed.  
Identify cars on hard shoulders or driving in the wrong direction*

*Measure average vehicle speed to detect speeding offenders over longer distances as opposed to local measurement by speeding cameras*

*Count traffic volume*

*Detect roads under risky weather conditions to alert drivers or divert traffic*

*Automatically issue speeding tickets*

*Gain knowledge on traffic loads where other sensors do not exist*

*Know where an accident has taken place or other incidents which may cause traffic disruptions*

*Identify hazards more quickly, know where incidents are taking place*





# Three Steps to Better Traffic Safety (cont.)

## STEP 2 Data Fusion and Analysis

By integrating various subsystems and intelligently leveraging data from alerts and notifications, cities can greatly improve traffic monitoring. A unified command-and-control solution collects data from a variety of independent data inputs and aggregates it into a centralized database for unified traffic monitoring and control. The system enables insights to be extracted from massive data collections, various intelligence sources and internal, as well as external databases. By fusing and analyzing traffic data, cities can provide better service to their citizens by diverting traffic where hazards occur and rapidly react to traffic incidents that could put people's lives at danger.

## STEP 3 Actionable Intelligence Generation

Once data is collected from various sources, fused and analyzed, actionable intelligence can be generated to help predict a potential traffic hazard, detect a crime or identify a violation.

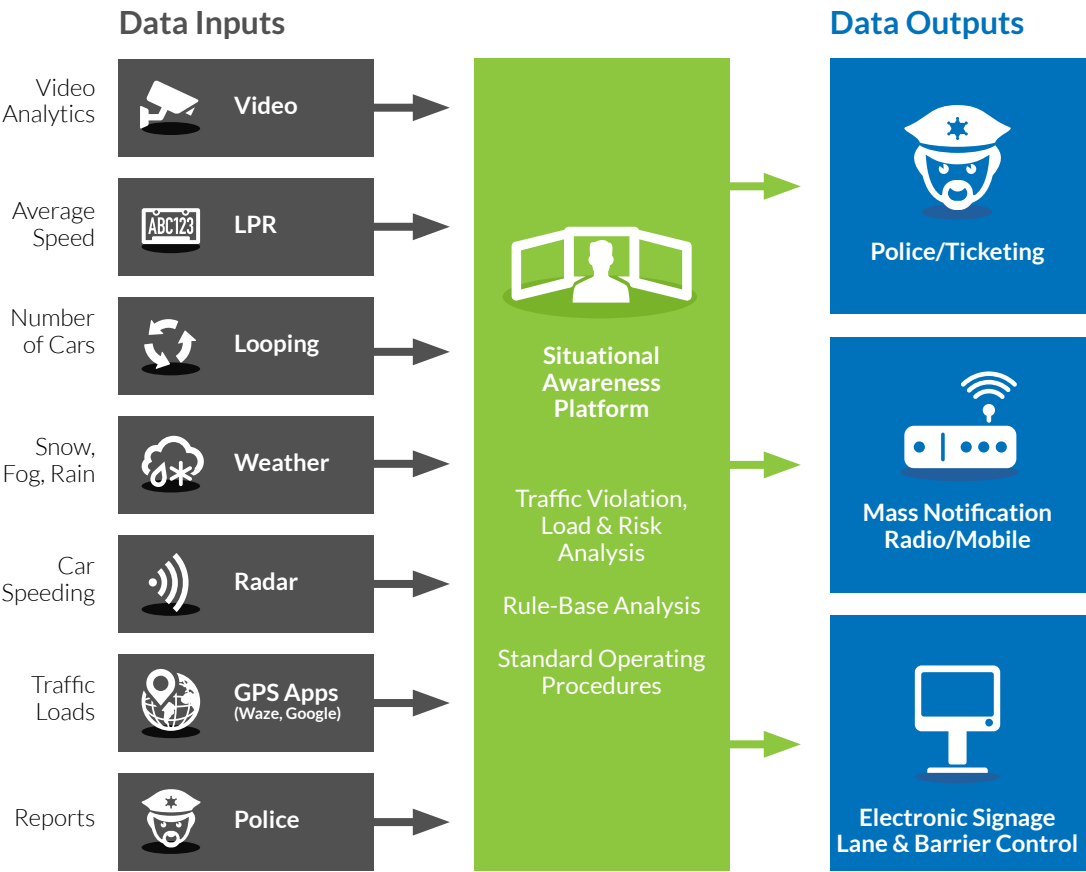
Based on the above steps, officials are positioned to better monitor and manage traffic in multiple ways. For example, violations can automatically be sent to traffic fines payment systems with the relevant footage. Officials can notify drivers of traffic congestion using road signage to divert traffic. When accidents occur, emergency services can be dispatched to the scene more rapidly.



# Improving City Operations & Better Citizen Service Through Situational Awareness

Using Big Data analysis and video analytics, cities can leverage vast amounts of data to improve city operations.

Verint Situational Awareness Solution can collect data from hundreds of various systems and sensors, including video analytics, License Plate Recognition (LPR), weather reports, GPS, police reports and more. The system processes and analyzes the data to extract actionable intelligence on traffic violations, overall traffic load and potential risks. Using rule-based analysis and referencing standard operating procedures, the platform enables faster and more effective incident response. Officials are empowered to respond quickly and appropriately to any potential traffic-related incident, for example by automatically issuing speeding tickets, dispatching police, or broadcasting messages to residents through mass notification and electronic signage to divert traffic due to road hazards or congestion.



# Understanding Your City Today & Into the Future

## *By Better Integrating and Analyzing Data, Officials Benefit in Multiple Ways:*

- ✓ Create more efficient city operations
- ✓ Optimize traffic safety
- ✓ Improve service to citizens

## *Tomorrow's Traffic Safety*

Looking to the future, better data collection, fusion and analysis also will help cities cope with increased urbanization, accelerating vehicle sales, and new traffic trends and technologies. Soon, the Internet of Things (IoT) will even contribute to traffic safety; “connected” vehicles will start transmitting data about the vehicle health, speed, congestion and location to a central command-and-control location, fusing this data to anticipate patterns and real-time events, and enable officials to respond accordingly.





# Verint® Safe City Solutions

For cities of any size, maintaining routine city life and ensuring public safety and security are top priorities. As urban areas see continued growth, smart traffic monitoring is one of the keys to creating a safer, more efficient city. By integrating data from various systems into a single command-and-control center, true situational awareness can be achieved, which enables officials to respond quickly and effectively to any traffic-related emergencies.

Verint® is a global leader in Actionable Intelligence® solutions for optimized operations and a safer world. Actionable Intelligence is a necessity in a dynamic world of massive information growth. By capturing a wealth of information from various sources, processing and analyzing it, Verint empowers organizations with crucial insights and enables decision makers to anticipate, respond and take action.

Verint's Safe City solution provides a holistic and unified approach, integrating its leading command-and-control solution with advanced early detection technologies to support the safety, prosperity and quality of service to citizens and respond optimally in times of emergency.

*For more information, visit [www.verint.com](http://www.verint.com).*



## Powering Actionable Intelligence.®

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