



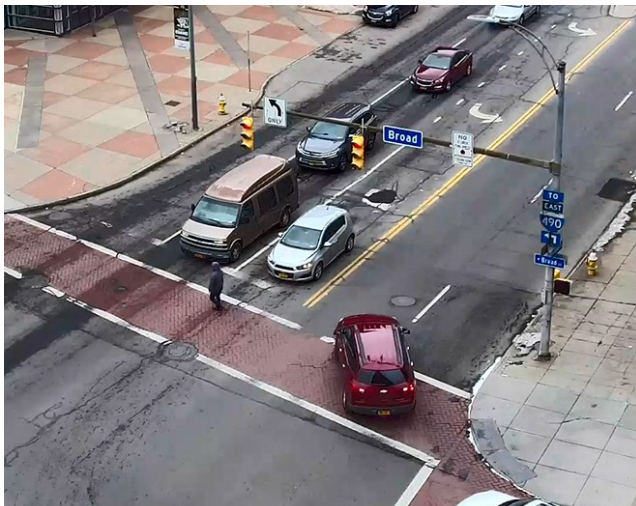
BOSCH
Invented for life

Smart intersections using video-as-a-sensor

Improve traffic flow and enhance safety for vehicles and pedestrians with intelligent camera analytics and data

The challenge

With distracted pedestrians, more bicyclists, and an increase in public transportation in urban environments, it is essential to implement strategies for enhanced safety. Additionally, traffic congestion creates inefficiencies that result in user delay and frustration, while emissions from idling vehicles harm the environment.



The solution

Built-in Video Analytics at-the-edge allows Bosch cameras to become intelligent devices that alert traffic operators to safety risks and result in improved awareness of busy intersections.

- ▶ The camera acts as an incident detection sensor while gathering statistical data on bicycle counts and average speeds to help address critical safety issues.
- ▶ Using built-in Video Analytics can detect pedestrians in a crosswalk and preempt traffic signals to enhance safety while facilitating smart intersection control.
- ▶ Integration with deployed roadside units (RSU) allow events detected by the camera to automatically send safety messages to appropriately equipped smart vehicles using dedicated short-range communication (DSRC) broadcasts.
- ▶ When alerted to nearby pedestrians, drivers can respond earlier, further enhancing safety. Camera-generated analytics metadata enables data aggregation for creating historical reporting dashboards for use in accumulating insights to improve decision-making.

Enhance intersection safety with video analytics and data for decision-making

For decades, Bosch has developed Video Analytics technology used in vehicles for driver assistance, semi-autonomous and autonomous driving, and intelligent safety systems. This same foundational image processing technology is inside Bosch IP cameras bringing intelligence to the infrastructure. Video Analytics built-in to Bosch IP cameras enables the cameras to serve as intelligent devices that provide superior video images, automated event detection for real-time alerts, and the data collection and aggregation needed for highway and urban infrastructure planning.

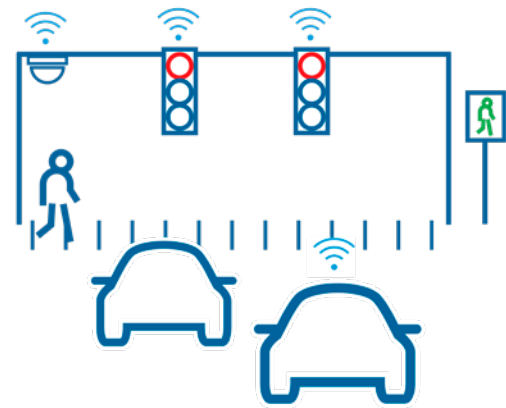
With Bosch IP cameras, analytics processing is at the edge – in the camera itself – with no central server required. This technology enables a distributed network of cameras, each acting as intelligent processing nodes with no single point of failure, delivering a cost-effective and reliable video-as-a-sensor solution. Because of this, your video infrastructure is more resilient, reliable, and meets the highest standards in end-to-end data security.

Gain valuable insights from easy access to traffic data

Traffic data such as average speeds, volumes, and GPS coordinate tracking are useful for real-time operations and planning. Bosch cameras not only give operators an impeccable view of current traffic conditions but also double as traffic sensors. The edge video analytics in the cameras can classify objects (vehicle type, pedestrian, and user-defined/trained objects), estimate their speed, and measure their dwell time – helping you understand traffic patterns, congestion points, and more.

Analyze data to extend beyond safety

Providing a complete solution, Bosch makes it easy to collect and filter data from multiple cameras and translate it into a consumable format that can feed data to interactive dashboard reports. These dashboards deliver actionable information for business intelligence purposes and implementing new policies that result in safer and more efficient intersections.



Ensure high-quality images in low light

Built-in starlight technology in our ITS cameras combined with 1080p resolution and frame rate of 60 frames per second ensures highly detailed color images in extreme low-light situations. Combined with built-in video analytics, starlight cameras can maximize low light performance in around-the-clock video surveillance, especially to increase the visibility of pedestrians at night.

Partnerships to maximize mobility, safety, and efficiency

Through partnerships with highway information solution providers, Advanced Transportation Management Systems (ATMS), and other traffic operations platforms, Bosch cameras can trigger third-party systems to notify drivers on the road, improving situational awareness and enabling them to take action earlier. Partners like MH Corbin use this real-time event data to receive camera incident detections and use this roadway data to activate a variety of signs, beacons, and in-car alerts to immediately inform motorists of potential hazards ahead. Information is also shared with traffic management centers (TMCs), increasing efficiencies and keeping highways safe.

Bosch cameras can also send data to the ATMS, such as Genetec's Intelligent Mobility portfolio. Building upon Genetec's Security Center, this solution provides dedicated traffic monitoring and management modules to traffic operators.

Bosch offers a complete camera portfolio for intelligent transportation systems. NEMA TS 2 certification confirms they meet environmental requirements for traffic applications, while NTCIP compliance ensures communication with traffic management systems.



MIC IP camera family



FLEXIDOME IP starlight 8000i



DINION IP thermal 8000



AUTODOME IP 7000i



Bosch Video Management System

Bosch Security and Safety Systems

Protecting lives, buildings and assets is our aim. Our product portfolio includes video security, intrusion detection, fire detection and voice evacuation systems as well as access control and management systems. Professional audio and conference systems for communications of voice, sound and music complete the range.

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