



AbacusTM

Incident Detection and Data Collection
Using Existing Traffic Cameras

Innovation for better mobility





Save Lives, Cut Costs, and Lower Risk

Lives are lost, people are injured, and millions of dollars are spent each year on the aftermath of vehicle incidents and accidents on roads, bridges, and in tunnels.

While measures are being taken to make vehicle passageways safer, accidents will occur. The costs of congestion, while not as well publicized, can be enormous and include lost productivity, economic costs, added fuel costs, pollution, and absenteeism. Structural damage from severe accidents can easily reach tens of millions of dollars, especially in tunnels. Reputations are on the line too, because all too often government officials and agencies are not scrutinized until something catastrophic happens, then the public seeks to place blame.

The answer to incident problems is to improve emergency response times and reduce the risks and cost of increased congestion and pollution. Officials need to know that a problem exists. The quicker a paramedic can arrive, or law enforcement can reroute traffic, the more lives and money can be saved.



Abacus is an affordable solution to cut costs and improve traffic flow. Taking advantage of existing traffic cameras monitoring roads, tunnels, and bridges, or by adding new cameras, Abacus can detect incidents and accidents to help alleviate the pain of these unfortunate events. Plus, Abacus can collect traffic data to secure funding, plan for growth, and manage maintenance, budgeting, and resource allocation. Abacus does it all!

Data Collection

To meet federal, state, or provincial requirements for Average Annual Daily Traffic (AADT) and other counts, and get funding for new construction projects and upgraded technologies, Abacus can collect the necessary traffic data. With years of experience solving traffic problems, Iteris can help reduce congestion and improve traffic flow. Now the agency can have it all, from real time video from the street, to incident detection and data collection to meet government mandates.



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Intelligence Using Existing Equipment

Abacus takes advantage of an agency's existing installed fixed or Pan-Tilt-Zoom camera feeds, which are already monitoring roadways, tunnels, and bridges. When not being actively used for surveillance, these cameras can be transformed into valuable tools for traffic data collection and incident detection. The ability to use nearly any traffic camera means cost-effective and accurate data collection without the setup and calibration required when installing new sensors.

Abacus provides real-time data collection and incident detection.

- ▶ No more costly and labor-intensive manual counts
- ▶ Easy set-up minimizes employee exposure in the field
- ▶ System can include a dedicated server for easy installation and configuration
- ▶ Immediate data access and remote control
- ▶ Affordable, leveraging existing infrastructure



Abacus as a Subscription

In addition to being able to use existing camera infrastructure with an Abacus installation, customers can now acquire all of the benefits of Abacus on a subscription basis, where they only pay for what is needed and there is no hardware, upgrades, or maintenance and support to worry about.





Automated Incident Detection

Many agencies can't live without vital traffic incident notifications. Detecting accidents and alerting Traffic Management Center operators automatically, make it possible to do more with less. Abacus makes it possible to detect stopped vehicles, accidents, debris, and other hazards. Early detection can mean the difference between life and death; between quick emergency help, or hours of congestion. Consider the benefits of installing an Iteris' Abacus™ system in order to be more responsive and efficient. What impact could it have on an agency's reputation for solving traffic problems?

Globally, crashes cost motorists billions each year. The statistics are clear. A quick response to debris in the road, the detection of an auto accident, and the reduction of traffic congestion, are vital to preserving life and cutting the high cost of driving and highway maintenance.

Abacus continuously monitors video feeds for incidents and can act as a digital video recorder to record incidents or work with existing DVR units. The system can provide notification of an event using e-mail, SMS text messaging, or via an XML interface. The types of incidents which can be detected for immediate notification include:

- ▶ Stopped vehicles
- ▶ Roadway debris
- ▶ Wrong way drivers
- ▶ Pedestrians
- ▶ Slow vehicles

Features

- ▶ Abacus works with existing fixed or Pan-Tilt-Zoom (PTZ) Cameras
- ▶ Works with analog or digital video feeds
- ▶ Streams video feeds from multiple cameras simultaneously
- ▶ Auto-Calibrating
- ▶ Provides real-time data and incident detection
- ▶ Collection and storage of traffic data
- ▶ Alarms to alert Traffic Data Center staff of incidents (On-screen, Phone, Text, Email)
- ▶ Recording, storage and recall of traffic incident video and timing data

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Traffic Data Collection and Reporting

The traffic data collection capabilities of Abacus can provide a continuous feed of data similar to other technologies, but with the added benefit of being able to see the camera image and assess the situation. In this way, a single camera can act as both a surveillance and data collection device, while monitoring for incidents. Iteris' Abacus provides the following information using XML schema:

- ▶ Volume (reported in vehicles per minute)
- ▶ Speed (reported as the average vehicle speed during the reporting interval)
- ▶ Occupancy (reported as a percentage)
- ▶ Classification (based on relative size of vehicles)



- ▶ Browser-based Graphical User Interface with event alerts and logging
- ▶ Abacus comes installed on its own dedicated traffic data collection appliance
- ▶ No supplemental programs to buy or upgrade
- ▶ Windows and Linux compatible

- ▶ Multi-user configuration with authorization levels
- ▶ Expandable and scalable system with modular design
- ▶ Open architecture allows easy integration with traffic management systems
- ▶ Web services API



Complete Traffic Analysis

All of the information that is being collected by video cameras, incident detection software, mapping systems, and data collection software is of limited value unless it is put to work. From data interpretation, to designs for better traffic flow, or recommendations for cost-saving technology deployment, Iteris can help.

Often our analysis and recommendations lead to an improvement of the agency's reputation for making changes that improve lives. Commute time, safety, quality of life, and quality of environment are high on nearly every citizen's list of priorities and government agencies have the power to affect change for the better with a little help from Iteris.



Abacus™ Technology

Iteris' Abacus uses a unique blend of Artificial Intelligence and video detection algorithms that allow either fixed or Pan-Tilt-Zoom (PTZ) cameras to be used for data collection and incident detection without the fixed detection points. The system tracks all vehicles as they move through the camera's field of view (FOV) regardless of direction, lane straddling, or lane weaving. As a result, all information is captured and incidents can be detected easily by identifying anomalous driving behaviors that would be impossible to detect when using fixed detection points.



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Technical Specifications

Video Feeds:	Up to 12 per system
Network Connectivity:	2 x 10/100/1000 Mbps
Communication:	TCP / IP
Form Factor:	19" rack mount data collection appliance chassis
Weight:	20 kg
Processors:	Intel Xeon processors
Operating System:	Linux
Memory:	1 Gb per channel
MTBF:	>80,000 hours
Remote Support Enables:	Yes
Interface:	Web & console
Alerts:	Screen / e-mail / SMS

Data Communication Protocol:	
Data Archiving:	MySQL
Data Communications:	Open XML data feed
Update Frequency:	> 15 seconds (customizable)
Data Verification:	Enabled

Typical Camera Specifications:	
Camera Classification:	Fixed or Pan-Tilt-Zoom
Format:	1/4" interline transfer CCD, NTSC or PAL
Resolution:	NTSC (470 lines) or PAL (520 lines)
Lens Angle of View:	54 degrees
White Balance:	Auto
Signal to Noise Ratio:	>50 dB
Spectrum:	Color or black & white



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