CALATLANTIC BUSINESS ANALYTICS

"WE MAKE SMART PRODUCTS—INTELLIGENT"

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**A division of
H.B. Brooks International, Inc.**

Inside this issue:

INTELLIGENT VIDEO SURVEILLANCE IN RETAIL ENVIRONMENTS

CalAtlantic and its strategic technology partners have identified a persistent shift in the retail market, from the goods retailers sell towards the customers who buy them. In short, retailers are looking to be more customer-focused. The retail industry has for some years been moving away from being product centric—all about the merchandise—to increasingly customer centric.

To fully achieve this customer focus, CalAtlantic and its technology partners have observed that greater organizational alignment and collaboration is needed in retail/distribution businesses in order to seamlessly satisfy customer needs. Tight cross-functional collaboration between Loss Prevention, Human Resources, Merchandising, Sales/Service, Supply Chain/Logistics and Distribution is necessary to deliver the desired customer experience. Further, new customer metrics must be used along with traditional metrics to manage performance and guide incentives.

CalAtlantic Business Solutions are playing an increasingly prominent role in the retail community's initiatives by assisting not only loss prevention, but also broader company wide goals.

We firmly believe that we can assist retail organizations' initiatives to create superior customer experiences by:

1. **Enhancing Public Safety**: Increasing the effectiveness and scalability of loss prevention staff by providing actionable real-time alerts as well as drastically improving the process of video review. This reduces shrinkage, increases store safety, provides new training opportunities and reduces delays in incident response;

2. **Measuring Business Performance**: Providing merchandisers new performance measures to help enhance store layout, signage and product organization;

3. **Improving Customer Service**: Accelerate checkout and reduce customer service wait times through real-time notification if lines exceed a certain time period (determined by end user) and/or unattended customers waiting for service.

Executive Summary

CalAtlantic's InteleTraxs Retail Solution integrates video management and analytics software, delivers automated surveillance, processes monitoring and business intelligence reporting in one reliable, award-winning and highly cost effective open IP-based platform. (Our technology team's experience and having the opportunity to work closely with some of the world's largest retailers has developed highly effective and accurate software that leverages existing surveillance systems while adding significant value to retail stores and distribution centers.) This report discusses the business value and quantifies the return on investment (ROI) that an integrated video management and analytics solution can bring to organizations in the retail sector.
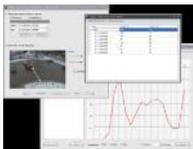
Video Management

Object/People Counting

Fast and Accurate Data Search

"Video Analytics software is based on "computer vision", a branch of artificial intelligence"

Highly accurate detection reduces missed incidents

IMPROVING THE BOTTOM LINE

What is Video Management & Analytics?

Video Management software turns CCTV video (either a live stream or recorded footage) into digitized and computerized data that can be stored, filtered, indexed and viewed for much faster data search and retrieval times. Video management software also enables applications such as remote camera control, switching camera views and other functions that no longer require dedicated hardware.

Video Analytics software is based on "computer vision", a branch of artificial intelligence that maps pictures to descriptions. Without computer vision a picture of a store aisle is a simple grid of color values. With computer vision, the aisle picture maps to an intelligent description of the scene and people in the image. The goals of computer vision are achieved by means of pattern recognition, statistical learning, projective geometry, image processing, graph theory and other related fields.

Though not a new science—research in computer vision dates back over 25 years—recent advances in the computational power of PCs, as well as computer vision technology, have allowed the science to move from theoretical science into reliable commercial video surveillance software. Moreover, because the applications of computer vision vary greatly and computational capacity continue to advance at the pace of Moore's Law, new market applications and their commercialization continue to be introduced in this rapidly growing market.

CalAtlantic's InteleTraxs software solution combines the broad functionality and ease of use of its video management with the highly accurate detection rates of its analytics. This brings unprecedented value to retail organizations enabling business intelligence gathering and security monitoring on one cost-effective platform.

From Image Capture to Image Analysis

Retail organizations record lots of video, with some large retailers recording well over 1 million hours of video per day. InteleTraxs software driven solution, with its use of computer vision technology, when introduced to current analog or IP video system architecture, can immediately upgrade an installed solution from being a simple passive surveillance system to a proactive information analysis gathering and reporting tool.

InteleTraxs Solution software, with its use of computer vision technology, sees instantly, filters extraneous data and delivers clear information in seconds. Experience has shown that the limitations of the human brain—due to its memory capacity, intrinsic biases and distractibility—limits the quality and productivity of conventional human-based video monitoring and event review. The advent of video analytics software is completely revolutionizing the way people use video. No longer is a person required to watch hours of continuous live or recorded video to analyze or identify interesting events. Rather, once the video analytics software detects unusual activity, it pushes only relevant information to the monitoring agent who can determine the appropriate response, or the software can initiate one or more automatic responses.

Revolutionizing the way people use video

IMPROVING THE BOTTOM LINE (CONTINUED)

The efficiency gains and tangible benefits from CalAtlantic's InteleTraxs software driven software to the Retail Industry are significant:

∗ **_Reduced Labor Cost:_**
Labor costs can be reduced by either increasing the surveillance capacity of the monitoring individual (e.g. more video can be analyzed per person), allowing for the redeployment of the agent to perform non-monitoring duties or remove the need for the agent entirely.

∗ **_Improve Surveillance Accuracy_**:
Unlike humans who miss over 90% of scene activity after 20 minutes of continuous video monitoring , video analytics does not miss anything and greatly reduces the number of false conclusions.

∗ **_Increase System Scalability_**:
For humans, large amounts of video data can prove to be a serious obstacle to quick, intelligent video analysis and incident response. With Video Analytics, analysis of very large amounts of video-derived data can be filtered through in a matter of seconds, reducing the need for extra personnel as an organization's video surveillance needs grow.

∗ **_Ensures Operational Compliance_**:
Unlike human based monitoring, where ensuring operational compliance is dependent on the integrity of those doing the job, Video Analytics adheres to customer defined rules and response processes. It also classifies, indexes, and archives every single scene event allowing for accurate reporting.

Video analytics does not miss behavior patterns and can automatically alert Loss Prevention

"No longer is a person required to watch hours of continuous live or recorded video to analyze or identify interesting events."

All figures in US dollars	Store Risk Category		
	High	Moderate	Low
Annual Salary of Loss Prevention Professional	$40,000.00	$40,000.00	$40,000.00
HR Overhead (FICA, Medicare, health care, etc.)	25%	25%	25%
Number of Weeks Vacation / Year	2	2	2
Average Hours Worked/Week	40	40	40
Average Hourly Wage	$25.00	$25.00	$25.00
Average time Loss Prevention spends sifting through video to find events (hour)	1	1	1
Number of searches done / week /store	14	5	2
Number of weeks in year when Loss Prevention does searches	52	52	52
Total labor hours spent searching through video data without Video Analytics	728	260	104
Cost to manually Review Video Footage /Year /Store	**$18,200**	**$6,500**	**$2,600**

This table demonstrates the impact CalAtlantic's InteleTraxs solution software can affectively save

Analytics can determine multiple events taking place simultaneously
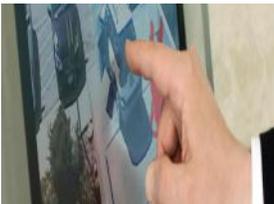
SMART SURVEILLANCE FOR LOSS PREVENTION, PUBLIC SAFETY & COMPLIANCE

LOSS PREVENTION

CalAtlantic's InteleTraxs Solution software can positively impact any retailer's loss prevention initiatives. Here are some examples:

1. Real-Time Alert of Item Removal:

InteleTraxs Solution Software can detect in real-time the removal of an item off the store shelf. This is especially valuable when applied to common theft items, such as iPods, high value jewelry, cosmetics, DVD box sets, etc. The software can distinguish between a customer who removes a single item from a shelf (normal shopping behavior) from a customer who removes five items from a shelf in a short period of time (suspicious shopping behavior).

2. Improved Case Investigations Through Advance Search:

Currently it can take retail loss prevention professionals many hours to review recorded video to find a specific incident. Not only is manual review of video data expensive, but it is highly ineffective and delays responses to events. Independent studies have concluded that a person's attention span decreases the longer the video review takes place, making successful apprehension more difficult. With the use of CalAtlantic's InteleTraxs software solution, searching through video data for events that used to take hours can now be done in seconds. For instance, with three clicks of a mouse, a user can filter through 30 days of video footage to find in seconds and receive a continuous movie of all qualifying video data. This same search without InteleTraxs advance search would require manually sifting through 720 hours of video or more.

In addition to labor cost savings with InteleTraxs, retailers further benefit by having the loss prevention staff in more customer facing situations as opposed to being in an office reviewing video.
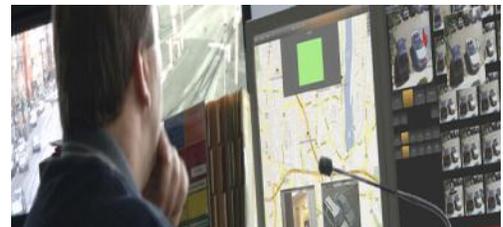
3. Public Safety:

While personal safety is priceless, there is a cost to providing a safe environment for staff and customers. CalAtlantic's InteleTraxs solution software can watch for potentially troublesome individuals/groups, vandals, movement in alarm zones and loitering without putting store personnel at undue risk during the monitoring process. At the same time, CalAtlantic's InteleTraxs video management can permanently record and index for easy retrieval, any incidents which may need real time or forensic review.

4. Compliance:

InteleTraxs solution software can also identify variant behavior from store compliance rules. For instance, the software can generate an alert when people exit the store and trigger Electronic Article Surveillance alarms, thus ensuring that store staff inspects the customers receipt before leaving the store. Activity after business hours can be flagged and often reviewed and store personnel can be observed not following protocol. Alerts such as these yield valuable information and data regarding staff adherence to corporate and individual store policies. Are receipt checks being done properly? Is there merchandise being lost due to lack of diligence by staff? Are there internal theft issues?

CalAtlantic's InteleTraxs solution software can provide answers to these questions and more.

The software can distinguish between a customer who removes a single item from a shelf (normal shopping behavior) from a customer who removes five items from a shelf in a short period of time (suspicious shopping behavior).

"Currently it can take retail loss prevention professionals many hours to review recorded video to find a specific incident."

BUSINESS INTELLIGENCE FOR MERCHANDISING & CUSTOMER SERVICE

Consumer retail behavior is affected beyond traditional marketing techniques like product placement and pricing. For any retailer, each store is the medium through which consumers connect with products. It is well-known that store layouts can affect the time consumers spend in the store, how they navigate through the aisles, and how they allocate their attention and money across departments. With the use of CalAtlantic's InteleTraxs solution software, there are new performance measures available that can add tangible, actionable insight to monitoring and evaluating store performance.

Key Performance Indicators
⇒ Store/Distribution Center Traffic
  (locally or across different stores)
⇒ Shopping path
⇒ Aisle penetration
⇒ Dwell time
⇒ Conversion rate (with integration of POS)

People counting at an entrance can serve as a measure of consumer demand or sales potential at any given time. Store traffic and conversion rates can be used for a number of applications and KPI metrics including the evaluation of store promotions and floor sales and customer service staff. When these counts are combined with POS systems, retailers can calculate purchase conversion rates, a known KPI for store productivity. By noting the dominant paths and directions that shoppers take through the store, merchandisers position signs, displays and now even video monitors to catch the customer's attention. In addition, recording how long customers spend at various locations (dwell time), marketers can identify points where shoppers will be most receptive to communication. Tracking a shopper's path through the store and monitoring which areas are trafficked help to identify new cross-selling opportunities. Video analytics can also pinpoint crowding conditions and bottlenecks in traffic flow that suggest a need to widen aisles or reposition product displays. Finally, measuring customer waiting lines at checkout and the potential to identify problems with customer service is a significant advantage.

By counting the numbers of customer who enter a store and walk through each aisle, retailers can create thermal maps showing the percentage of customers who penetrate each section of the store and provide valuable information and trend analysis regarding store traffic and flow patterns. If some sections are visited infrequently, this may suggest the need to provide navigational aids, reposition product displays and/or revise the store layout for improved traffic flow.

It is also possible to cross check the video data with observational research to get further insight. This is not available by using other methods of traffic flow analysis.

Using the outcomes of the performance measures available in CalAtlantic's InteleTraxs solution software, retail businesses can positively impact the following areas:

*Improve the shopping experience by reducing wait time: Flagging long lines or excess customer dwell times in real-time helps to reduce customer frustration and a potentially negative customer experience.

*Streamline the shopping process: Keep aisles free of obstacles and position "hot" selling lead items in an convenient and well-marked location.

*Provide sufficient time and space to buy: By highlighting crowd density and people counts, retailers can reconfigure shop layout to provide ample room to shop or ensure the appropriate sales support for complex products such as laptop computers. By eliminating crowded conditions which cause people to shop quickly and leave without buying accessories (such as batteries, extended warranties), retail stores can positively impact top line revenue and store profitability.

*Accelerate checkout and customer service: Long checkout lines can discourage customers from returning. CalAtlantic's InteleTraxs solution software can help identify excessive long wait lines and alert store managers. In less busy store areas where a full time sales associate is not justified, video analytics can automatically notify sales associates to assist shoppers. Reports can be generated which can suggest unfulfilled consumer demand caused by excessive waiting throughout the store.

Highlighting crowd density and people counts

"Flagging long lines or excess customer dwell times in real-time helps to reduce customer frustration and a potentially negative customer experience."

Understanding customer behavior allows retailers to properly layout store designs and product placement

TRANSITIONING FROM ANALOG TO DIGITAL—THE CHOICE TO MAKE

Introduction to CalAtlantic's InteleTraxs Video Analytics

Enterprises are now recognizing the importance of IP surveillance with integrated video analytics over more traditional DVR or NVR deployments as a means of reducing total cost of ownership, increasing productivity and limiting risk on Security, IT Network investment. IP surveillance deployments consisting of Video Server Software installable on CalAtlantic's Green Series (Eco friendly) hardware offers the most scalable and longest life-cycle than any other deployment. This type of deployment is established on an open, standards based architecture that enables companies to keep infrastructure expenses in control. As businesses become more network centric, IP Surveillance enables tighter integration of business processes and multiple security systems (surveillance, access, fire and burglar alarm) under one platform, which increases overall value of the video management solution.

As the popularity of video increases, this growing mass of raw video is putting increasing pressure on conventional video management and retrieval methods that are inefficient and costly. As a result, organizations are quickly embracing video analytics software, an emerging technology which intelligently analyzes video and promises to revolutionize the way in which video is archived, distributed and managed. Pure Software Video Server deployments can be easily upgraded to support this new business requirement.

Conversely, Digital Video Recorders (DVR) and Network Video Recorders (NVR) connected to CCTV cameras often consist of proprietary hardware. DVR and NVR deployment cannot be easily upgraded to support new standards and technologies such as video analytics without hardware reconfiguration or replacement. CalAtlantic's approach is to provide a software based Video Server deployment support emerging and legacy cameras to co-exist on one

platform such as USB, megapixel, network and analog cameras. In sum, software based Video Server platforms offer the greatest freedom to build a flexible, scalable and integrated deployment resulting in higher overall value and a longer lifecycle than DVR and standard NVR installations

Market Trends in the Security Industry

Recent geopolitical events and advances in technology have caused an increased global focus on physical security in both private and public environments. As a result, the security industry is experiencing three key trends:

1) *Convergence and integration of physical security technologies with other systems within the organization.*

2) *Transition from CCTV to IP surveillance.*

3) *Deployment of Video Content Analysis technology to manage exponential growth in raw video*

Convergence and Integration

Organizations are under pressure to reduce risk on Security and IT Network projects and deliver rapid return on investment. As a result, a new breed of network-centric organization is emerging whose business processes and security networks are linked. The divide between physical security solutions and other IT projects is shrinking as access control, video and intrusion detection are married with HR databases, point of sale and facility management. These new solutions are based on high-value, information based software that will support and enhance the organization's operations.

This is specifically achieved through one unified platform sharing a single user interface, centralized data management, commercial off-the-shelf hardware and a cost-effective infrastructure. Finally, as security systems are treated like most other Security and IT Network investments—responsibility, decision making and management is often multilayered involving different departments.

PRODUCT FEATURES

CalAtlantic's InteleTraxs software based Video Server platforms offer the greatest freedom to build a flexible, scalable and integrated deployment resulting in higher overall value and a longer lifecycle than DVR and standard NVR installations

"InteleTraxs can support emerging and legacy cameras to co-exist on one platform"

CALATLANTIC WILL HELP YOU STAY AHEAD OF THE FUTURE

The challenges in today's fast changing marketplace are putting increased pressure on Loss Prevention, Risk Management, Security and IT executives who are asked to deliver rapid return on investment, reduce total cost of ownership, and limit risk on IT projects. IP-Surveillance, through its use of IP cameras and Network Video Servers have significant advantages over DVR and most current NVR deployment due to its simplified deployments, ease of integration, greater application support and longer life-cycle. Some of the key advantages of CalAtlantic's InteleTraxs IP-Surveillance holds over DVRs and most current NVRs are summarized below:

Lower acquisition costs
CalAtlantic InteleTraxs solutions are installed on certified Network Server hardware meaning time is not wasted evaluating and acquiring products from new or multiple vendors. Risk Management, Loss Prevention and IT executives can safely standardize and reduce the number of hardware vendors which in turn reduces maintenance and downtime.

Greater interoperability
CalAtlantic InteleTraxs IP-Surveillance benefits from a converged infrastructure, enabling existing Risk Management, Security and IT investments to be leveraged such as cabling or database servers. DVR and most current NVR installations which normally include proprietary hardware and analog cameras cannot leverage existing investments and as a result are more costly to deploy.

Increased application support
Open, standards-based architectures and application programming interfaces (APIs) enable Video Servers to be easily integrated with other applications allowing organizations to enjoy productivity and cost benefits of an integrated system not normally possible with DVR and most current NVR deployments.

Increased flexibility
Video Server software such as CalAtlantic InteleTraxs powered by Aimetis Symphony™ software enables analog, network and megapixel cameras to co-exist on one unified platform. Hardware can be easily upgraded or tailored on a per solution basis. DVRs and most current NVRs include static product specifications which cannot be easily upgraded or customized as changing business requirements emerge.

Superior multi-site capability
CalAtlantic InteleTraxs IP-Surveillance easily allows centralized management and storage without always needing additional PC hardware required in remote locations. DVR and most current NVR deployments normally require a minimum of multiple DVRs, multiple NVRs or supporting storage devices per location, which increases maintenance costs.

Longer life-cycle
CalAtlantic InteleTraxs IP-Surveillance deployments enjoy a longer lifecycle as Network Server software and COTS hardware do not become obsolete as quickly as proprietary DVR and most current NVR products. IP-Surveillance solutions can be easily upgraded where DVR and most current NVR products normally require replacement. Further, as new enhancements emerge such as Video Content Analysis, software products running on CalAtlantic certified hardware are easily upgraded to support new applications or standards while hardened DVR and most NVR products require replacement.

Video Content Analysis (VCA) more accessible in CalAtlantic InteleTraxs deployments
VCA improves the overall effectiveness of video monitoring by analyzing and filtering video and notifying personnel as required. As a result, video is more scalable, proactive and cost effective. DVR and most current NVR products are normally less technologically advanced and will not support VCA. More importantly, as VCA greatly improves in quality and capability, DVR deployments will continue to lag behind generation to generation. These business benefits can ultimately increase productivity and reduce IT risk in an agile business environment making IP Surveillance the obvious choice.

The obvious choice for your next Video Surveillance Solution

CalAtlantic is broken down into three key divisions providing customers with dedicated service and support.

CalAtlantic Security and Management Solutions

CalAtlantic Services and Certified Product Systems

CalAtlantic Networks and Certified Product Support

IP Video Intelligence by CalAtlantic

CalAtlantic, a division of H.B. Brooks International, Inc., is considered a leader in Security and Business Analytic Solutions with over 20 years experience in service and product development.

"We make smart products—*Intelligent*"

AWARDS

Winner *Two* Consecutive Years!

2011 & 2010 Aimetis Vision Award Partner of the Year The Americas

2011 Partner of the Year Presented by Panasonic & Tri Northern

Panasonic Top Dealer 2010

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![CalAtlantic logo]

CalAtlantic introduces our newest Network Video Server and it's Green…
Business Analytics—Future Proof Intelligent IP Surveillance

Simple migration from Analog CCTV to Intelligent IP video surveillance and provide a single software platform by combining the CalAtlantic InteleTraxs Analytic Intelligence Software within our Green Eco Series Network Video Servers

VIDEO MANAGEMENT IN RETAIL

One of the most powerful benefits that CalAtlantic's InteleTraxs solution software offers retail organizations is the ability to combine business intelligence from video analytics with video management and recording in a single solution. The integration helps maximize the effectiveness of retail organizations.

Accelerate Video Access and Review

CalAtlantic's InteleTraxs solution software can be deployed to monitor and record throughout the retail value chain to distribution centers, loading docks, paths from storage to sales, POS and building entries and exits to accelerate response to suspicious behaviors or incidents:

⇒ *Quickly view suspicious events by searching video data based on customized parameters*
⇒ *Send critical scenes to a central review monitor or to local authorities in various media player formats*
⇒ *Monitor loiterers and suspicious packages left in public places or unauthorized access to restricted counters and displays.*

*Fully integrated POS data
with video images and alerts*

Correlate Surveillance with POS Data

According to a recent survey, on a per-case average, employees steal almost 5.7 times the amount stolen by shoplifters. Much of that theft occurs at the POS terminal, making it a critical area for monitoring.

CalAtlantic InteleTraxs solution software can work with leading POS and analytics vendors to integrate POS transaction data with video images and alarms or alerts for each terminal.

With these solutions it's possible to:

⇒ *Time-stamp POS transactions on the video as they are being recorded to detect employees who alter sale tags, charge lower prices, allow multiple items through, or miss items*
⇒ *Be alerted to unusual product returns*
⇒ *Identify suspicious behavior at the POS and alert loss prevention staff in real-time to prevent theft*
⇒ *Send actual images of suspicious behavior or activity to designated monitors.*

*Send instant alerts to
suspicious behavior based
upon customized
parameters*