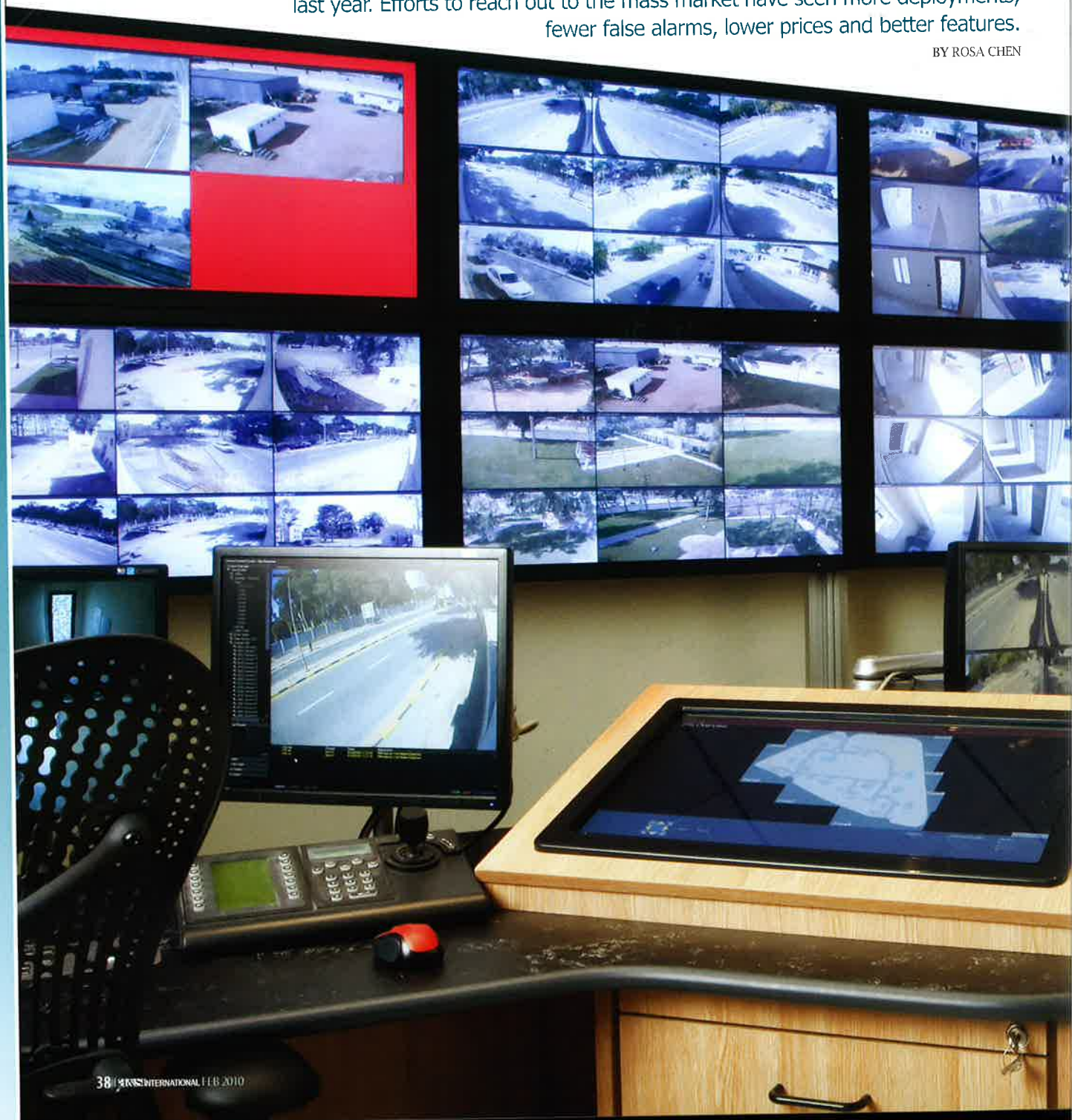


Putting Analytics under the Microscope

Despite criticism, video content analysis has made commendable progress in the last year. Efforts to reach out to the mass market have seen more deployments, fewer false alarms, lower prices and better features.

BY ROSA CHEN



Video content analysis (VCA) struggles to live up to user expectations. Experts emphasize the importance of understanding each technology's strengths and limitations.

VCA is a high-profile video tool with exaggerated claims. Users expect Hollywood special effects to be physically possible today. "It may sound strange, but some people have the impression that VCA can view things the camera can't see,



Daniel Horan
Integrated Systems Specialist, SimplexGrinnell
(a division of Tyco Fire & Security)



Niall Jenkins
Market Analyst at IMS Research



Dirk Owerfeldt
Senior VP of Viasys Intelligent Video

like an object left behind a trash can," said Daniel Horan, Integrated Systems Specialist, SimplexGrinnell (a division of Tyco Fire & Security).

VCA has enjoyed growth in the last few years, but industry efforts to set benchmarks for criteria and deployment have been scant. A complication is that software functionality varies, making it difficult to measure analytics against a uniform set of standards.

"It's hard to regulate VCA because each manufacturer has its unique technology and adheres to different standards," said

Patrick Lim, Director of Sales and Marketing at Ademco.

Standard bodies such as PSIA and ONVIF are expected to form open standards, enabling easier integration of third-party analytics into video management platforms.

MARKET

In 2008, the VCA market was worth US\$138 million, including security, business intelligence and traffic management, said Archana Rao, Senior Analyst of Frost & Sullivan. The Americas represent the lion's share.

VCA can be split into two categories: software and devices. "By 2013, more than 450,000 channels of analytics will be embedded in cameras, encoders, DVRs and NVRs," said Niall Jenkins, Market Analyst at IMS Research. Manufacturers will develop 60 percent of these channels, with the remaining channels supplied by specialist VCA vendors.

By 2010, the overall video surveillance market is expected to exceed \$2.6 billion, with VCA as the fastest growing segment. "The masses, roughly 70 percent of the market, will start with advanced motion detection and the technology will soon become a commodity," said Dirk Owerfeldt, Senior VP of Viasys Intelligent Video.



VERTICALS

As analytics aid operators in large video installations, its main deployments cover transportation, government and commercial applications. For government and transportation projects, stringent requirements demand good references, high accuracy and speed of detection, fair pricing and minimum false alarms, Rao said.

Government markets are well-suited for perimeter protection applications and have the financial resources to purchase high-end analytics, Jenkins said.

The largest market for intelligent surveillance devices in 2008 was traffic monitoring. "This is a great fit for VCA because objects tracked are usually of uniform size and moving at predictable speeds in straight lines," Jenkins said.

Commercial users are coming to the fore. With prices lowering, small-to-medium businesses (SMBs) can use analytics to streamline management and enhance security.

Retail is a popular application.

Analytics monitor high-value and high-theft retail areas for people reaching over the counter, customer traffic, line queuing and so on, said Gadi Piran, President of OnSSI.

Several vendors have teamed up with camera manufacturers to offer embedded retail solutions. "The market is big enough for us and our partners, and we saw an opportunity. A big project can involve thousands of cameras," said Rikard Berthilsson, CEO of Cognimatics. With shopping malls, embedded analytics for people counting allow more scalability than server-based analytics.

SYSTEM ARCHITECTURE

Be it edge, server, in between or hybrid, the system architecture depends on user requirements. The entire solution must address issues relating to accuracy, bandwidth and processing power.

Edge-based analytics do not create



Gadi Piran
President of OnSSI



Rikard Berthilsson
CEO of Cognimatics

traffic on the network because it analyzes images directly in the camera or device, Owerfeldt said. Only when an alarm goes off does a message go over the network to the video management system (VMS). Analytics on a server require all footage to be sent over the network.

However, edge-based analytics have limited processing power. "Many high-quality VCA algorithms have demanding processing requirements, and most embedded processors do not have the performance needed," said Justin Schorn, VP of Product Development at Aimetis. Less processing power means accuracy may be diminished.

Most edge devices need to be configured individually, increasing installation time and cost.

As camera and chip technologies improve for storage and processing power, embedded analytics will see more uptake.

New "in between" solutions for embedded analytics are making their way into the market. Users, who wish to expand their surveillance system and add analytics without switching out existing equipment, can choose to host analytics on routers, said Bob Cutting, VP of Product Management at ObjectVideo.

Hybrid deployments embed analytics at both the edge and the



▲ For government projects such as airports, stringent requirements demand good references, high accuracy and speed of detection, fair pricing and minimum false alarms. (Image courtesy of i0mniscient)

server. The VCA administers preliminary analytics, then sends the data to the back-end for more sophisticated analysis. "We require roughly 15 percent of the processing power of an average DSP-based camera, and at the back-end, one server can analyze up to 200 cameras," said Zvika Ashani, CTO and co-founder of Agent Video Intelligence.

MINIMIZING FALSE ALARMS

With 3-D analytics, parameters can be set to define the distance of an object to the camera, making the camera aware that objects get smaller as they travel further away from the camera, Owerfeldt said.

Nuisance alarm reduction goes beyond simple masking and filtering for size. For complex, outdoor environments, the system must know what it is looking at. "Our analytics recognize headlights from a train, and differentiate tree movement from people," said Rustom Kanga, CEO of iOmniscient.

False alarms of less than 5 percent to even 1 percent have been



▲ Analytics can be deployed at perimeters, to detect unauthorized intrusion. (Image courtesy of Viysis Intelligent Video)

published by vendors. However, installers report wider margins. "Even achieving 70- to 80- percent accuracy is acceptable, and results are a lot better than systems with no analytics deployed," Horan said.

Good VCA systems have extensive functions for integrators to define and manage false alarms, which need to be defined for users. "If the VCA detects an object being thrown over a fence, but security personnel found that object to be a large empty box, the alert should not be defined as a false alarm," Lim said. "You would want the camera to pick this up, despite the fact that this time it was just an empty box."

USER FRIENDLINESS

Analytics must be easy to install, adjust and operate by users with different levels of software knowledge. Vendors have developed question-based wizards to help users through the installation and configuration phase in a few short steps, Schorn said.

"We offer an immediate preview of the setup results in terms of detection, suppression and other key performance indicators in graphics, as well as in the camera image," said Katharina Geutebrück, MD of Geutebrück.

MOVING FORWARDS

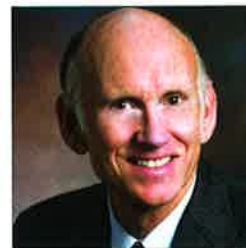
VCA is expanding beyond security into other applications, including parking occupancy monitoring, man



John Romanowich
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Bill Bozeman
President and CEO of PSA Security



Katharina Geutebrück
MD of Geutebrück

overboard detection on sea vessels and industrial processing for flame detection, said John Romanowich, CEO of SightLogix. This indicates the huge and yet untapped opportunities that security providers can explore.

However, for growth to take off, it is important for the market to demonstrate the ROI potential of VCA installations. As large video surveillance equipment manufacturers continue to promote intelligent video, the average channel price is forecast to decline significantly, Jenkins said. This price drop will aid the adoption of VCA.

"Originally the developers of analytics oversold and underproduced," said Bill Bozeman, President and CEO of PSA Security. "In the last year, false alarms and deployment difficulties have been improved to the point where intelligent video capabilities are deployable by the traditional system integrator, and provide true value to users." **ANS**