



# Top Video Surveillance Trends for 2015

This year has been one of the most interesting—and disruptive—in recent memory for both the professional and consumer video surveillance industries. A sharp decline in the cost of semiconductor components has ushered in a new era of price competition and the competitive landscape has shifted, with merger-and-acquisition activity affecting some of the leading global product and software vendors.

These changes affect the whole value chain for video surveillance. As the market becomes more commoditized, vendors are increasingly looking for ways to stand out from the crowd, either through product or service features, or with the help of channel solution partners. Differentiation will be a key market driver for almost every equipment vendor, distributor and integrator active in the video surveillance market over the next couple of years.

So what will be the big stories and trends for 2015? IT storage vendors, embedded vision, HD CCTV, smart home and wearable technologies are just some of the trends discussed in our sixth annual white paper on the key trends for the video surveillance industry. The predictions here serve to provide some guidance on the opportunities in the video surveillance industry. We hope you find them useful in planning for the year ahead:

- Star markets: The fastest-growing products and regions for 2015
- HD CCTV – The battle is on for top technology in 2015
- China takes the lead in H.265
- IT convergence in the video surveillance industry
- Why video surveillance products can resist commoditization trends
- How are the consumer and DIY categories changing?
- Driving the transition from direct channels to distribution
- New Chinese vendors eyeing fresh markets
- Body-worn cameras: a market on the move
- Embedded vision and convergence with the wider industry

If you would like to speak with one of our analysts on any of the topics covered in this white paper, or to discuss our video surveillance service offering, please contact us.

Best regards,

Jon Cropley / Principal Analyst – Video Surveillance

**For more information on this white paper, refer to the [Video Surveillance](#) research area, under the [Industrial, Security & Medical Technology](#) industry, of [IHS Technology](#).**

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# ONE

## Star markets: The fastest-growing products and regions for 2015

**Jon Cropley, Principal Analyst**

The global market for video surveillance equipment will grow by over 10 percent in 2015, IHS is forecasting. However, the total market is made up of many different products, geographic regions, and end-user sectors. Some markets will grow much faster than the average, and below are those predicted to grow fastest in 2015.

### **Products**

As predicted, there was rapid growth in demand for 180/360-degree network cameras last year and there are no signs of this slowing in 2015, when global unit shipments are forecast to grow by over 70 percent. The number of vendors offering such cameras also continues to grow, as does the number of video-management software applications supporting them. Such 180/360-degree network cameras are proving particularly suitable for sectors like retail, airports and casinos, where monitoring wide indoor areas is important.

### **Geographic regions**

In 2015, the Middle Eastern market for video surveillance is forecast to exceed \$500 million for the first time. Growth will be driven by a combination of legislation, construction and preparation for major events, including the 2020 World Expo in Dubai and the 2022 FIFA World Cup in Qatar. Even so, doing business in the Middle East is not without its challenges, and political and social tensions alike can quickly change spending priorities.

Many of the largest existing video surveillance installations in the world are in the Middle East, and numerous large-scale projects are in development. While the impact of low-cost manufacturers and falling equipment prices and has been felt across the collective Europe-Middle East-Africa (EMEA) region as a whole,

the Middle East specifically continues to have the potential for high growth. In many cases end users are expected to stick to the same budget levels, but more equipment will be bought.

### **End-user sectors**

Last year, IHS was forecasting that the city surveillance as well as the utilities and energy end-user sectors would grow quickly during 2014. Similarly, IHS projects quick growth for both sectors in 2015. One end-user sector with higher-than-average forecast growth, however, is education.

In the wake of shooting tragedies such as the Sandy Hook massacre in the United States, educational establishments are adopting security systems that allow authorities to respond to emergencies in real time. For video surveillance, this can mean that critical system features include the ability to provide automatic alerts of threats, as well as integration with other electronic security systems. Integration with access control, for instance, can mean that when an intruder is detected, doors can be locked to prevent access to buildings.

The types of threats an educational institution may encounter could change during the course of a day. In the daytime, the main issue is restricting access to appropriate individuals. At night, the main issue can often be protection against vandalism.

For 2015, the global market for video surveillance equipment in the education end-user sector is forecast to grow by 15 percent.

# TWO

## HD CCTV – The battle is on for top technology in 2015

David Green, Senior Analyst

In 2013, in a small and unfancied corner of the video surveillance market, a quiet revolution started in the world of high-definition closed-circuit television (HD CCTV). Dahua introduced composite video interface (CVI)—an analog solution—to compete with the digital serial digital interface (SDI) solutions released until then under the HD CCTV banner.

SDI had struggled since its introduction in 2009. Total unit shipments remained low, restricted by the high price and low cable reach offered by the broadcasting-based technology. Digital HD CCTV undoubtedly offered high-fidelity video images, but the costs far outweighed the benefits of keeping legacy coaxial infrastructure in all but the smallest of niche applications.

However, with the introduction of CVI in late 2013, total unit shipments of HD CCTV technology surpassed the 1 million mark worldwide for the year. IHS posed the question earlier this year: With CVI showing a strong launch and the analog rivals of analog high definition (AHD) from Nextchip, and transport video interface (TVI) from Techpoint slated for 2014, was the market finally ready for HD CCTV technology? Were unit shipments ready to su

The answer has been a resounding “Yes.” Projections show that total unit shipments of HD CCTV this year will reach just short of 4 million cameras, a staggering increase in just 12 months. So what of the next 12 months for this rapidly growing industry segment? The future lies in the outcome of two battles.

The first battle is in the fundamental form of the transmission technology: analog HD CCTV (CVI, AHD and TVI) versus digital HD CCTV (SDI). Second-generation SDI echnologies cost much less than their first-generation counterparts, with transmission distances rivaling those of the analog solutions. In a side-by-side test, the higher image quality is also clear to see. However, shipments of digital solutions are practically stagnant. While in the long term margins are likely to remain higher and suppliers may be able to make more money by targeting the more quality-conscious end-users, the biggest threat lies in their ability to compete with network cameras.

Meanwhile, end users desperate for cheap, HD video find the quality offered by analog HD CCTV solutions good enough, so the increased performance of a digital solution isn’t a critical part of the purchase decision. True, margins are significantly lower since the

price competition is fierce and the product seems set to further blur the lines between professional and consumer markets. But in the battle between analog and digital, the answer for now is clearly pointing toward analog.

The second battle lies among those three major analog solutions—CVI, AHD and TVI. Each solution has its own technical advantages and disadvantages, but the final market share may well depend largely on which manufacturers choose to back each technology. This battle is harder to predict since even the manufacturers themselves are unsure; for example, Chinese-based TVT has launched both AHD and TVI solutions this year.

CVI hit the market first and is currently reaping the rewards, but 2015 will be the first year that all three options are available to the market for the full 12 months. The battle lines are drawn, even if a clear picture is yet to emerge until 2016 at least.

As for 2015, the trend is already much clearer. Analog HD CCTV solutions are taking market share from standard analog technology. If the past year has been the breakthrough, then the next 12 months will be the true emergence of the technology as a market segment.

Demand from China has always been biggest, but expect an uptake in markets such as India and Brazil. And above all else, expect the competition to remain fierce and the battle to rage on.

# THREE

## China takes the lead in H.265

Harry Cai, Analyst

At the Security China Show held in Beijing in October 2014, H.265 was one of the most popular topics. Chinese-based HiSilicon introduced its first chips specifically for network cameras and network video recorders (NVR); and many manufacturers, including almost all tier-1 and -2 vendors, followed, showing products based on H.265 chips. Module makers like Xiongmai and Topsee quickly joined in, by developing H.265 network camera modules.

The H.265 coding standard has drawn much attention since it was officially released in early 2013. As a higher-quality image is always a priority, and with limits on bandwidth and storage capacity, an upgrade to the coding standard is an effective way to reduce the cost of the whole system. The objective performance of, and subjective feeling toward, H.265 are both believed to surpass H.264 High Profile, and the compression could be more efficient when handling higher-resolution video.

In recent years, HiSilicon has had considerable success in the video surveillance industry, so it is no surprise it has planned for the longer term, first by introducing specialized video surveillance chips. Starting with cost-effective H.264 ASIC processors for DVRs, HiSilicon had success in the DVR market with aggressive prices, fast product release and an alliance with the Chinese manufacturers that became leaders in the embedded DVR production market. Following this, HiSilicon has won share of the market for network cameras, with economical application-specific integrated circuit (ASIC) chips that have helped to drive the commercialization of network cameras.

Will this advanced technology transform the market? Based on the early experience of H.264, it takes time for the market to adopt a new coding standard. Considering that MJPEG, MP4 and SVAC in China are still preferred in some projects some 10 years after H.264 was released and upgrades since then, maybe the

more realistic question to ask is from where H.265 should start. IHS believes that even if 4K/8K is more suitable for H.265, a better plan now would be to use a lower-cost H.265 chip to enlarge the 1080p or 3-megapixel camera market. There is also much room for the H.265 coding standard to be optimized, reducing calculation complexity and enhancing coding efficiency—work that is best done by the whole electronics value chain, not just the video surveillance industry alone. With help from better 3G/4G wireless infrastructure and with more display devices supporting H.265 decoding, adoption should be quicker and wider than what was seen in H.264.

# FOUR

## IT convergence in the video surveillance industry

Josh Woodhouse, Senior Analyst

The migration from analog to network surveillance cameras has changed the way many security systems are conceived, built and managed.

With the deployment of cameras onto IT networks, the scalability and capabilities of video surveillance systems have increased dramatically. The benefits of network video surveillance are not new concepts; they have driven the transition to network equipment from the beginning. Now the video surveillance market has finally reached the point where more revenues come from network than analog equipment. IHS is observing increased emphasis on:

- Video surveillance offerings from IT companies
- Integration of different security systems
- Edge-to-core architecture
- Virtualization
- IT and security professionals in one operation

### **IT companies focus on video surveillance**

Increasing numbers of traditional IT vendors are taking note of the opportunities in video surveillance. The global video surveillance equipment and storage market is forecast to be worth over \$28 billion by 2018. IHS forecasts that by 2017, each day that video surveillance cameras are installed globally will produce 859 petabytes of data. These are big figures. IT vendors have taken note of the opportunity to help capture, manage and store this data. A few examples include:

- For storage, Western Digital, Seagate and EMC have all had dedicated video surveillance product launches
- Avaya and Extreme Networks have launched switches tailored for video surveillance
- Microsoft has introduced GSOC solutions, and increased integration of the Microsoft Azure cloud platform into systems

### **Integration of different security and safety systems**

In addition to video surveillance, other functions are increasingly being built and managed in one integrated system, including access control, intrusion detection, fire detection and suppression, and critical communications including voice over IP (VOIP).

Video is often the main driver in the integration between systems, with video essential for verification, and command and control, for other functions.

For hardware, IHS is seeing an increasing number of video surveillance hardware vendors offering access control solutions, through either their own products or partnerships.

Video management software (VMS) providers are offering integrated management in security management platforms or, through modular add-ins, in advanced VMS.

### **Edge-to-core architecture**

Historically, analog cameras have been used mostly in centralized, core deployments; the distance between camera nodes was constrained by the scalability of the underlying infrastructure.

Deploying cameras on a network, one can build highly distributed, high-channel-count systems with vast distances between cameras. Network architecture can support multiple edge systems, with the local storage and management provided at each system being linked with an interconnected system core. The core is the central administration point and can provide control and management over the entire network. Data can be moved to and from the core, and can act as a repository for data mining and analytics. The system architecture is future-proof with capacity to expand and add

additional cameras, security devices or systems with relative ease. Prime examples of these architectures include governments/safe cities and enterprise transportation installations.

The use of this architecture is increasing, as enterprise end users that realize the benefits move their legacy systems into a linked “system of systems” and edge-to-core architecture.

### **Virtualization**

The use of virtualization is a key advantage of network infrastructure, particularly in an edge-to-core system. Virtualized applications generally mean that less hardware is required to perform multiple roles. Hybrid cloud systems also bring seamless integration of edge and cloud process and storage. These capabilities reduce the total cost of ownership while providing end users with the additional security of offsite storage. The amount to which these capabilities can be used can be fully customized, depending on requirements.

### **IT and security professionals becoming one**

IT departments are gaining considerable influence in procurement decisions, and with it, a greater influence on the video surveillance market. As requirements and systems grow in scale and complexity, the market has come to rely more on IT practitioners to manage implementations and use their networking expertise to design the required architecture. IHS has observed growing collaboration and interdependence between the IT and electronic physical security companies to address the new breed of end user, particularly as a means of bridging the knowledge gap between these two disciplines.

Integrators of all types are coming to rely on manufacturers to provide product certifications, validation and general guidance with respect to sourcing decisions and the integration of products.

# FIVE

## Why video surveillance products can resist commoditization trends

**Jon Cropley, Principal Analyst**

The market for video surveillance equipment has been growing for over a decade. IHS has researched the market continuously throughout this period, and found revenues expanded by more than 10 percent per year.

Still, growth fell to less than 7 percent in 2013, and there are signs that the market is starting to become mature. This stage of a life cycle is associated with product standardization, wide product availability, well-established distribution, increasing price competition and production in low-cost locations. Late-market entrants also appear at this stage, attempting to capture market share through lower-priced offerings. All these characteristics are, to some extent, present in the video surveillance equipment market today.

Maturity of a market life cycle often brings product commoditization, and much debate has swirled in recent times about whether video surveillance products are becoming commodity items. Average prices have certainly fallen quickly in the last two years, as vendors from China have undercut their Western competitors and have increased their market share. The global average price of a network camera fell by almost 30 percent from 2012 to 2013 alone.

IHS believes that, although competition is fierce, video surveillance products will not become commodity items, and that a real difference will remain between products from different vendors, and that the market will continue to grow at a healthy rate, at least during the remainder of this decade. Five reasons support such thinking.

- Each surveillance situation is unique. One surveillance solution will perform better in a particular situation than another. Many end users and

installers remain willing to pay a premium for the best solution for them.

- Equipment vendors continue to innovate and to differentiate their product offerings. In some cases, this is through services to accompany their physical products. However, product features, such as novel uses of embedded analytics, also play an important role.
- Brand recognition continues to be important to end users and installers, who will often pay a premium for a familiar and trusted brand, particularly in large installations. They want peace of mind that if there is a security incident, their video surveillance equipment will do its job properly.
- While standardization of video transmission has been successful, much work is still required to standardize other aspects of network video surveillance, such as full compatibility with wide dynamic range and low-light imaging technologies, image stabilization and bandwidth optimization.
- There remain many geographic locations where relatively few cameras are installed. The United Kingdom is not one of them. IHS estimates there is at least one camera installed for every 16 people in the country; as a result, the U.K. is largely a replacement market. In many other countries, however, the ratio of surveillance cameras to people is currently much, much lower. Demand for cameras is forecast to grow quickly in many of them.

To be sure, the initial phase of rapid growth in the video surveillance market may be over. However, high growth is likely for many years to come, as the market is not yet fully mature.

# SIX

## How are the consumer and DIY categories changing?

**Josh Woodhouse, Senior Analyst**

The consumer and do-it-yourself (DIY) video surveillance market, which comprises equipment sold through in-store or online retailers, was worth \$953.4 million globally in 2013. This market is small when compared with the “professional” video surveillance equipment market, which was worth over \$13.5 billion in the same period. Comparison between the two markets is not often made. This is because there are largely a different set of suppliers that operate in the two markets, the products are of different grades, and there are many companies that have little interest in a market where price is so often the lowest common denominator. These reasons aside, the markets are interconnected in some interesting ways.

The consumer market does not just consist of residential end users. Commercial (small business) end-users may also purchase video surveillance equipment online or in-store from big-box retailers such as Costco. These end users may choose to purchase and install the equipment themselves or use a contractor. Such consumers, as well as commercial end users, accounted for 47 percent of consumer and DIY market revenues in 2013. Companies which traditionally focus on the “professional” video surveillance market may want to address this market and fill out the low end of their product offerings. Most notably in recent years, the two largest estimated suppliers of consumer and DIY video surveillance suppliers have been acquired:

- In October 2012, Flir acquired Lorex Technologies.
- In October 2014, Infinova announced a deal to acquire Swann Communications

The main system types sold in the consumer market are stand-alone network cameras (network cameras able to operate as a surveillance system without separate recording hardware, utilizing cloud or edge storage). or analog bundles (analog cameras sold with a DVR).

Stand-alone network cameras often appeal to a different type of end user than analog equipment. A high proportion of stand-alone network cameras, from providers such as Dropcam, are used for indoor home-monitoring applications. Smart home applications, and the increasing recognition of the surveillance category by consumers, will drive the stand-alone network camera to emerge as the dominant system type in the market, in both revenues and unit shipments.

### **A new foothold for HD CCTV**

Analog bundled systems still account for a significant proportion of the consumer market. This familiar camera and recording device bundle will remain extremely popular with consumers. IHS has also observed that the bundled selling format is increasing in the professional market, with several distributors offering DVR and camera kits. For its part, the consumer analog market will undergo a dramatic transition to HD CCTV equipment in over the next two years. The high-definition video and low cost offered by HD-CVI, HD-TVI and AHD will soon see shipments of HD CCTV cameras and recording devices surpass those of standard-definition analog.

Although the unit volumes are much higher, a similar transition may follow in the professional market—albeit at a slower growth rate.

# SEVEN

## Driving the transition from direct channels to distribution

**Niall Jenkins, Research Manager**

Video surveillance equipment sold through distribution channels was estimated to account for 55 percent of global equipment revenues in 2013 and for over 60 percent of European market revenues in the same year. Furthermore, these percentages are forecast to increase as integrators and installers take advantage of the benefits of purchasing equipment through distribution. This is a marked change from a couple of years ago, when integrators often sought to develop direct relationships with equipment vendors.

One reason for this transition is that margins are continuing to decline. In 2015, average distributor margins in the American video surveillance market are forecast to drop close to 17 percent, while in the Europe-Middle East-Africa (EMEA) region, margins are predicted to fall below 22 percent. This means the distribution channel is incredibly competitive, even when compared with purchasing equipment directly from vendors.

Margins in North America, meanwhile, are driven by competition, especially in the network video surveillance market, into which information technology value-added resellers (IT VAR) and distributors have entered. Companies coming from the IT industry are typically used to working with much lower margins than traditional security companies. The markets in Europe and Asia are predicted to follow suit, with increasing numbers of IT companies entering the market.

Distributors are also offering more. Traditional security distributors can provide financing, training and lead generation, in addition to managing the vendor relationships, dealing with import taxes and holding inventory. As systems integrators increasingly focus on recurring monthly revenues (RMR) from service contracts, the installation of equipment is seen as a necessary, but not profitable, process. Consequently,

anything that makes navigating the potential costs and pitfalls of installation easier and more predictable is welcomed by integrators.

Finally, the transition to network equipment is changing the role of the distributor. From the IT industry, in particular, IT VARs are developing bundles of products that already work together. This trend, which mirrors developments in the IT industry, is making video surveillance project installations easier for IT integrators who are more familiar with networks and switches than they are with security cameras and network video recorders. As the video surveillance market continues its transition to network equipment, this will be an increasingly important trend driving the transition from direct channels to distribution in 2015.

# EIGHT

## New Chinese vendors eyeing fresh markets

Harry Cai, Analyst

Two years ago, looking forward to 2013, IHS predicted that more Chinese vendors would take advantage of the growth of markets outside China; and that by the end of 2014, there would be less doubt that Chinese vendors were becoming more important in the global video surveillance market. IHS research on this market has, indeed, showed that the number of Chinese suppliers among the top 15 increased from two in 2011 to four in 2013, and that the top two suppliers in 2013 were both from China.

Much of the remarkable growth of Chinese suppliers has come from their success in the local Chinese market. In the last few years, heavy government investment helped the Chinese video surveillance market to grow quickly and Chinese suppliers to hone their technology. The engineering teams recruited by Chinese companies also expanded quickly, thanks to the many graduates from Chinese universities emerging every year. Some leading Chinese companies now have the world's largest teams on video surveillance R&D. With complete product portfolios and cost-competitive qualified products, more Chinese suppliers are seeking opportunities in the global market.

There are many Chinese manufacturers relying on the original equipment manufacturer/original design manufacturer (OEM/ODM) business, as China is the largest production base for the global market. However, Chinese suppliers are increasingly promoting products of their own brand to increase their profit margin, and the more powerful are even penetrating the developed markets, building their own local service and logistic teams. Some public companies are also trying to expand through acquisition, as a shortcut to expand their market reach.

With the “Silk Road Economic Belt” and “Maritime Silk Road” blueprints proposed by China's new leadership, the country is increasing its capital investment to neighboring and third-world countries. These investments will focus on infrastructure construction; security products could benefit from this. Some companies, like Huawei and ZNV (split from ZTE), could leverage the resource of their global partners and provide security solutions for many developing countries. It is quite likely, too, that more Chinese suppliers would follow.

The success of the brands of Chinese vendors of video surveillance products will thus be determined not only by the industry, but also by the general economic and political power of China. Nonetheless, there still remains a clear gap between the global giants in the market and Chinese vendors, in their ability to provide solutions outside China itself. Yet following the growth of the Chinese electronics industry in general, the gap is narrowing, and more companies will hope to export products “Created in China” rather than simply “Made in China.”

# NINE

## Body-worn cameras: a market on the move

David Green, Senior Analyst

There's no doubt that as all technology goes increasingly mobile, body-worn cameras are a rising trend in video surveillance. But who are they protecting, and how will these new video channels be managed as part of wider systems?

In early May 2014, London's Metropolitan Police announced it would be spending almost £1 million on a trial of 500 body-worn video surveillance cameras for police officers in 10 of London's boroughs. The move comes after several high-profile cases in recent years calling into question the integrity and transparency of police officer's actions—for example, the shooting of Mark Duggan (which later sparked the London riots of 2011). Trials in the United States over the last year have even led to firm orders from local or state police departments for such cameras—the partnership between the Sunbury (Pennsylvania) Police Department and Taser International, for instance.

These announcements throw up two particular points of conversation that will prove critical to the long-term success of body-worn surveillance cameras in the professional surveillance industry. First, are police officers fully on board with the technology? Second, how are these additional channels managed and the vast amounts of confidential video footage stored?

Fitting video surveillance camera systems on mobile law enforcement is not a new idea; in fact, over \$200 million was spent on these systems worldwide during 2013. However, this spending so far has been focused on in-car video fitment, motivated by the use of video as evidence in prosecution cases or to avoid malpractice lawsuits.

From a technical standpoint, body-worn cameras are not yet able to offer direct replacement of in-car video systems. But they can offer a solution to a different type of problem. The motivation is not just about showing a measurable benefit—for example, several

thousand pounds a year in avoided legal claims—but that it can help rebuild the public trust in police officers and their conduct. Body-worn cameras in this case are using video surveillance technology as a marketing tool, rather than primarily as a security system. True, individual police officers may have their own concerns as to privacy or scrutiny of their performance. But for the station or department chief, the advantages will far outweigh the individual concerns, especially if systems can be shown clearly to reduce an officer's risk in the field and improve public cooperation.

At present, a department chief is far more likely to be focused on the overall cost of ownership as well as the security and storage of the video footage. And while having hours of video coverage for every officer on the street is a perfect idea, back-end management could be a logistical nightmare. For example, would video management software be paid for by total number of channels, or by virtual channels just for the cameras in use? And can existing software match the requirements of the strict controls on the evidentiary chain of control for court-admissible video?

Providing enough storage, with the security required for law enforcement, is serious business and major players are taking note—as when Microsoft and VIEVU recently announced their partnership to develop a cloud platform capable of meeting the FBI's Criminal Justice Information Services security policies.

The technology is ready, the channels to the market are open and unit shipments are already on the rise—even if there are still some doubters as to privacy and the true intentions behind system deployments. However, with the interest of the biggest industry names and new partnerships continuing to be announced, everything points to 2015 to be the year that body-worn cameras for video surveillance break through into the big-time.

# TEN

## Embedded vision and convergence with the wider industry

**Niall Jenkins, Research Manager**

Embedded vision is not a new concept to the video surveillance industry. In fact, embedded vision technology, in the form of video content analysis (VCA), has been used in perimeter-protection applications for decades. More recently, wrong-way detection, people counting, and left-baggage algorithms have all been deployed in security and business intelligence applications.

Embedded vision is the combination of embedded systems and computer vision. Ultimately, it is a technology that allows devices to understand the world around them through video; recognizing hand gestures and faces, as well as interpreting behavior and actions. Embedded vision can be broadly classified into augmented reality, behavior recognition, face recognition, gesture recognition, and object recognition applications. Almost 5 million device shipments are estimated in the established markets of embedded vision in 2014. Video surveillance represents only around 10 percent of this number.

Historically, video content analysis has also represented only around 10

percent of embedded vision device shipments, limited to behavior-, object- and face-recognition algorithms. The supplier base has likewise remained relatively segregated from other embedded vision markets in industrial automation, automotive and consumer sectors. That is, until now.

At the Security China 2014 show in Beijing, Gosuncn, a Chinese systems integrator, presented an “augmented reality” camera. Augmented reality supplements the user’s view of the real world with computer-generated images. In the smartphone and automotive market, augmented reality can superimpose directions onto a handset or the head-up display in an automobile, making navigation around a city much easier. Augmented reality can also make virtual characters appear to interact with the real world on a gaming handset.

The augmented reality network PTZ dome camera is controlled by touch screen, with objects in the view tagged with overlays, showing longitude/latitude, distance and

orientation. These labels are shown on different layers on the screen and can be switched on or off, or selected to show a specific category (e.g., restaurants). The labels also appear and disappear as the camera zooms into the image, in the same way that street names do in Google Maps. Furthermore, users can input a street name or click a label, and the analytics will direct the cameras to locate and zoom on that object; recording can be triggered by touch screen. This functionality is embedded in the camera, and a Geographic Information System (GIS) map onscreen can show each camera’s orientation.

As we move into 2015, developments in markets such as Advanced Driver Assistance Systems (ADAS) should also filter through to other embedded vision markets. In automotive, there is a push toward autonomous vehicles where the embedded vision requirements are much higher, as any false decision could result in death. This technology will also have to analyze the foreground and the background—both of which are moving and may be poorly lit—to recognize objects and behavior, as well as to make decisions.

The automotive market has very strict qualifications and test requirements that a product needs to meet before it can be used on a car. While this level of accuracy will be expensive to develop, the potential value of ADAS systems and the self-driving car is likely to see more money spent on research and development

than in the other established markets of security, industrial automation and business intelligence. These adjacent markets should benefit from automotive developments over the medium-to-long term.