Arecont Vision®
Panoramic Camera Technology

An Examination of Arecont Vision SurroundVideo Panoramic 180° and 360° Multi-Sensor Multi-Megapixel Cameras

12.4.17 v1

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Introduction

Arecont Vision leads the way in megapixel video. We are a U.S. company with headquarters, research and development, and manufacturing operations in Glendale, California. We design and build award-winning IP network megapixel cameras that are customer-proven for video surveillance requirements around the world.

Arecont Vision introduced the industry's first two megapixel (2MP) network camera to the surveillance market in 2004, followed by the introduction of the first multi-sensor panoramic network cameras in 2006. The company continues to innovate, proudly bringing new and enhanced Made in USA cameras to the surveillance market every year.

We maintain our leadership of the rapidly growing multi-sensor market we created, despite the many copycat products that imitate our innovation and designs today. The SurroundVideo family is more capable than ever, and the 5th generation offers models with more choices, faster frame rates, advanced low light capabilities, and in new dome enclosures that are only half the size of other panoramic cameras. SurroundVideo G5 also incorporates new features that simplify and speed installation while reducing the cost to customers.

SurroundVideo cameras offer ease of installation, smaller sizes due to miniaturization of components, a cyber-hardened architecture, integration with most leading VMS and NVRs, and are customer-proven in hundreds of thousands of installations around the world.

To learn about the panoramic multi-sensor technology that makes Arecont Vision unique, and how customers use SurroundVideo products, please read on.

For interactive information about Arecont Vision SurroundVideo multi-sensor multi-megapixel technology and products, please visit the SurroundVideo family online at:
https://www.arecontvision.com/landing-pages/surround-video/overview.php

Panoramic Multi-Sensor Technology and Arecont Vision

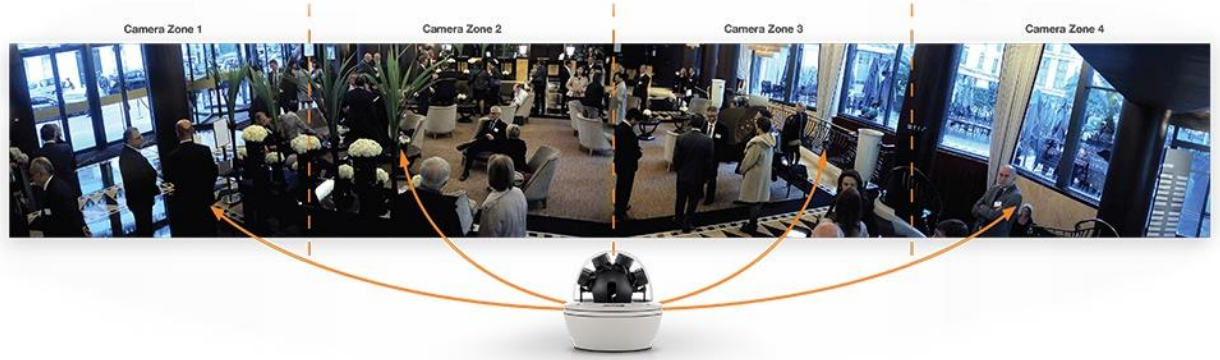
The capabilities of our multi-sensor, multi-megapixel panoramic cameras continue to grow with SurroundVideo G5. This 5th generation family was introduced in 2015, and simplifies and speeds installation with remote focus of all four megapixel sensors in each camera. SurroundVideo G5 offers 180° panoramic cameras, including a model with STELLAR low light technology. G5 brings double the frame rates of earlier SurroundVideo models.

Another important new series is SurroundVideo G5 Mini, released in 2016. G5 Mini offers the same enhanced frame rate as the G5 series family, but does so with the industry's smallest sized four sensor panoramic camera enclosure. G5 Mini is only about 50% of the size of most other SurroundVideo models, allowing the newest SurroundVideo series to blend into the background better than ever before, and to be installable in ever-smaller spaces. Both 180° and 360° panoramic models are available in the SurroundVideo G5 Mini series.

Security Products MAGAZINE 2015 NEW PRODUCT OF THE YEAR

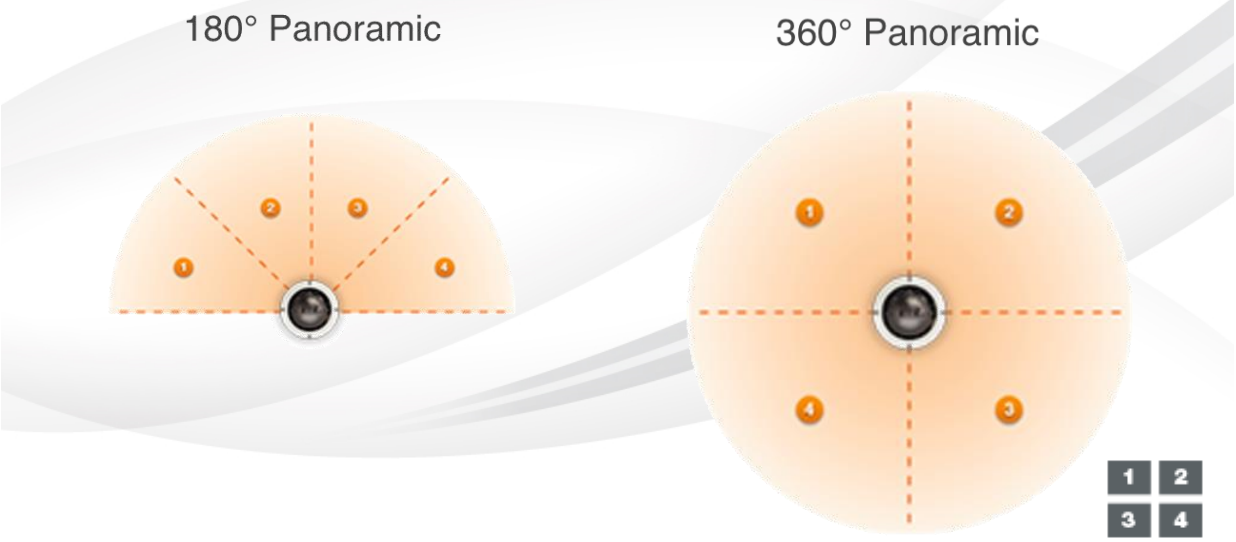
Security Products' GOVIES 2015 Government Security Awards

Arecont Vision SurroundVideo multi-sensor multi-megapixel cameras have four individual sensors in a single bubble housing. Four sensors are ideal for most panoramic requirements, since they offer superior pixel density, image clarity, and coverage angles to multi-sensor cameras with fewer sensors. Panoramic models are available with either 180º or 360º fields of view in 5, 8, 12, 20, or 40MP resolution choices across several SurroundVideo families.



A single SurroundVideo sensor camera replaces multiple fixed-view or pan-tilt-zoom (PTZ) cameras. SurroundVideo provides outstanding ultra-high definition video and images while delivering non-stop coverage of the entire scene from four zones.

Recording or viewing the entire field of view can continue while any part of the image is digitally zoomed in. Fewer video monitors are required to provide a comprehensive view of an entire area for simplified monitoring, making it easier for the security staff to maintain complete situational awareness.



Comparing Multi-Sensor Coverage with Standard Resolution Cameras

An Arecont Vision SurroundVideo 180° multi-sensor panoramic camera can provide coverage of an entire area with up to 40MP (4x10MP).

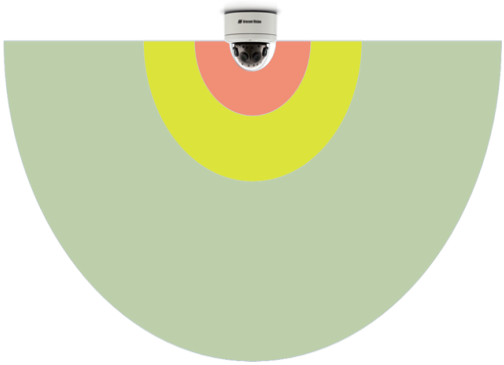
On the table below, standard resolutions are shown in gray (lower left corner of each) in a comparison of coverage to panoramic technology in light blue (upper image).

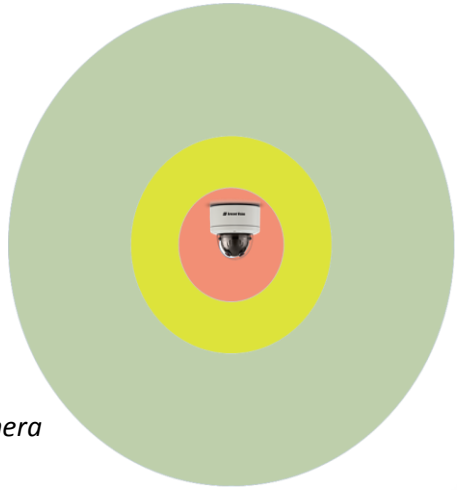
CIF – PAL
CIF - NTSC

Panoramic Technology versus PTZ

Panoramic multi-sensor cameras began to replace pan-tilt-zoom (PTZ) cameras following their initial introduction by Arecont Vision in 2006. This pioneering multi-sensor technology offers more advantages than ever as new features and capabilities are added.

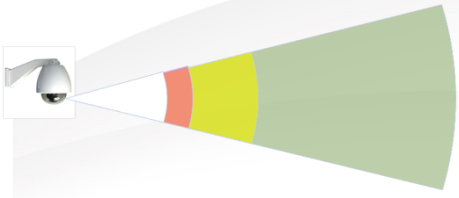
- **Cover the Full Scene -** *A multi-sensor panoramic camera monitors the entire 180º or 360º scene, even when it is digitally zoomed in by an operator on a specific area for either live or forensic viewing.*





ABOVE & LEFT - *A SurroundVideo panoramic 180º or 360º camera provides constant area coverage.*

- **Intermittent PTZ Coverage -** *PTZs are typically manually operated or run on a programmed routine to cover the entire area under surveillance by the camera. The unfortunate result is that a PTZ is focused on the wrong spot most of the time, since the camera is only able to monitor what it is currently focused on. This is known as the telescope effect.*



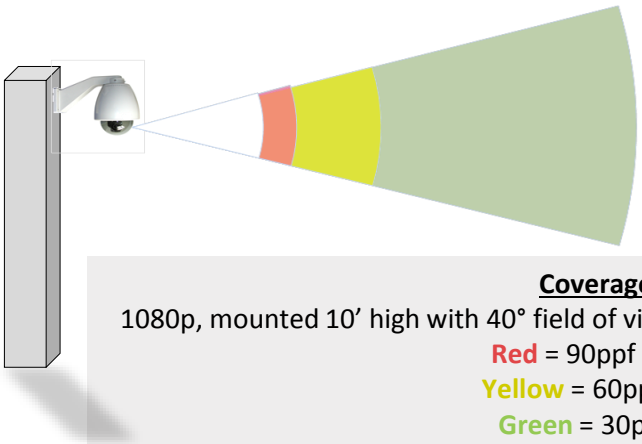
LEFT - *A PTZ views a specific "cone" of 40º coverage as it moves throughout the area it monitors. Areas that the cone does not currently cover are not able to be monitored or recorded. Parts can wear out or need adjustment due to constant movement, adding cost to the initial purchase price.*

PTZ Coverage

- 40º of 360º view of area = 11% of area covered at any one time
- 40º of 270º view of area = 17% of area covered at any one time
- 40º of 180º view of area = 22% of area covered at any one time

To learn about resolutions and SituationalPlus, visit https://goo.gl/xYowQF

Panoramic Technology versus PTZ



Typical 1080p PTZ Application

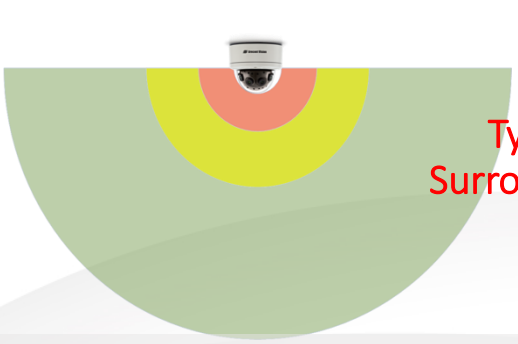
Coverage example:
1080p, mounted 10’ high with 40° field of view(FOV) - optic coverage may vary with zoom
Red = 90ppf (Identification)
Yellow = 60ppf (Recognition)
Green = 30ppf (Detection)
Max range shown @ 117’ , FOV width at max = 64’

Pro:

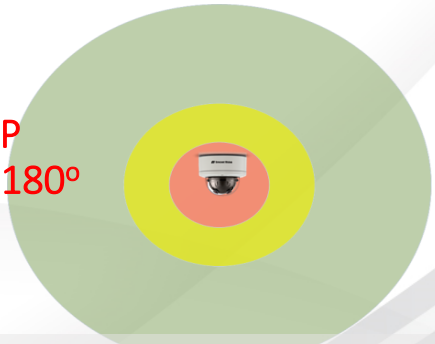
- Good optical zoom in professional-grade cameras (lens dependent)
- Can cover a large area (360°) with a single camera

Con:

- PTZ only sees where its looking at any one point of time (telescope effect), not entire area of coverage
- Many mechanical parts (potential failure & maintenance issues/cost)
- Needs tour or live operator to control position



Typical 20MP SurroundVideo 180º or 360º



Coverage example:
20MP, mounted 10’ high with 180° FOV
Red = 90ppf (Identification)
Yellow = 60ppf (Recognition)
Green = 30ppf (Detection)
Max range shown @ 110’ , FOV width at max = 220’

Coverage example:
20MP, mounted 10’ high with 360° FOV
Red = 90ppf (Identification)
Yellow = 60ppf (Recognition)
Green = 30ppf (Detection)
Max range shown @ 42’, FOV width at max = 84’ over 360°

Pro:

- Can cover 180° or 360° field of view continuously
- Good situational awareness
- Good digital forensic zoom
- No moving parts

To learn about SituationalPlus, visit https://www.arecontvision.com/landing-pages/situational-plus/overview.php

Continuous Panoramic Coverage

Arecont Vision panoramic multi-sensor cameras provide continuous 180º or 360º coverage of the entire scene while providing outstanding HD image clarity, even when zoomed in. Overall viewing and recording is not interrupted while zoomed into anywhere in the scene.

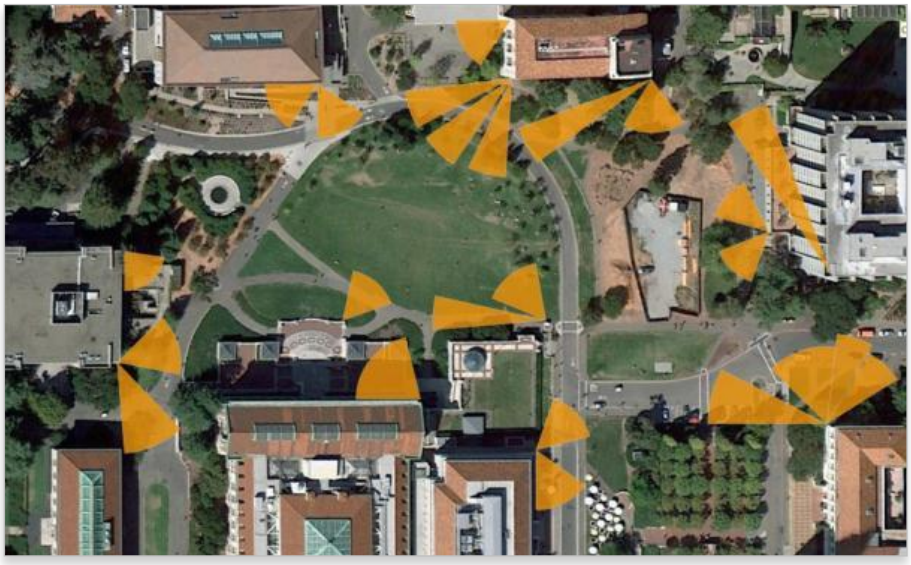
ABOVE - *Situational awareness of the entire scene with a SurroundVideo 180º panoramic camera is demonstrated in this retail store image.*

ABOVE - *Digitally zoomed Image for one of the four sensors from the SurroundVideo panoramic camera provides outstanding image quality.*

The Arecont Vision SurroundVideo multi-sensor panoramic series can dramatically reduce the number of fixed or PTZ cameras required for a surveillance project while significantly increasing both coverage area and overall situational awareness. This is demonstrated in the following customer project example.

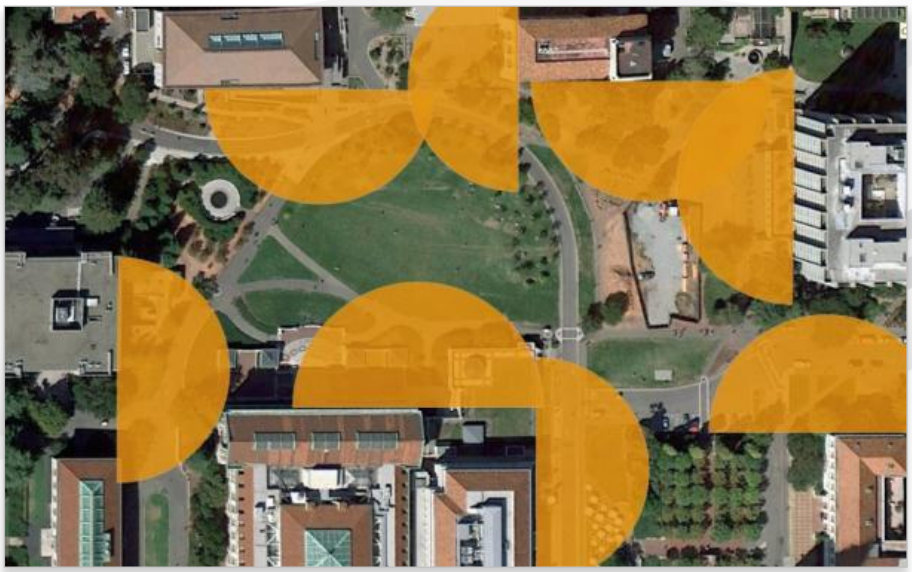
Individual Analog Cameras

24 single-sensor cameras cover this public area with about 8,000,000 pixels



Arecont Vision SurroundVideo Panoramic Megapixel Cameras

8 panoramic cameras, each 8MP, deliver better coverage with 96,000,000 pixels (and even more with available higher resolution SurroundVideo models)



Economics of SurroundVideo Megapixel Cameras

For about the same price as an analog system, a surveillance system using Arecont Vision SurroundVideo panoramic megapixel cameras greatly increases coverage, image quality, and video storage capacity.

Analog			
	Qty	Cost	Extended
Dome 768 x 494	24	$250	$6,000
16 Channel DVR	2	$2,785	$5,570
DVR Lics	Incl.	Incl.	Incl.
Cables	24	$150	$3,600
Power Supplies	24	$20	$480
Labor (2hr/cam)	48	$95	$4,560
30 Days Storage (2TB drives)	Incl.	Incl.	Incl.
Total System	**10 MP**		**$20,210**

IP VGA			
	Qty	Cost	Extended
Dome 640 x 480	24	$400	$9,600
Server	1	$3,000	$3,000
Lics & Server	24	$120	$2,880
Cables	24	$100	$2,400
Switch	1	$500	$500
Labor (3hr/cam)	72	$95	$6,840
30 Days Storage (2TB drives)	1	$200	$200
Total System	**8 MP**		**$25,420**

Megapixel			
	Qty	Cost	Extended
Panoramic 8,192 x 1,536	8	$1,300	$10,400
Server	1	$3,000	$3,000
Lics & Server	8	$120	$960
Cables	8	$100	$800
Switch	1	$500	$500
Labor (3hr/cam)	24	$95	$2,280
30 Days Storage (2TB drives)	15	$200	$3,000
Total System	**96 MP**		**$20,940**

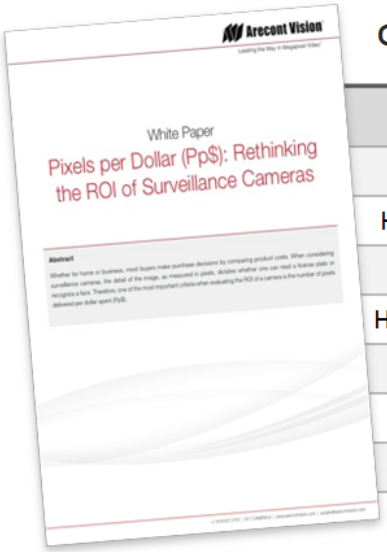
Cost estimates based on web search, Integrator average value.

Internet pricing shows that megapixel camera systems can be about the same or lower price than analog and IP VGA solutions. The megapixel solution provides far more pixels of coverage for detail, and more available storage for vide retention.

Changing the math with updated or discounted pricing does not dramatically change this generic pricing comparison.

Arecont Vision multi-megapixel cameras provide better image quality and superior return on investment (ROI) than lower resolution camera choices. For example, a 10MP camera provides more than 18,000 pixels per dollar (Pp$) while a VGA-resolution camera offers only about 1,500 Pp$.

The chart below examines this in more detail.



Cost Effectiveness Among Various Camera Resolutions

Class	Resolution	Pixels	Pixels per $1
VGA	640x480	307,200	1,536
HDTV 720p	1280x720	921,600	2,836
1.3 MP	1280x1024	1,310,000	4,039
HDTV 1080p	1920x1080	2,073,000	5,891
3MP	2048x1536	3,145,728	7,149
5MP	2592x1944	5,038,848	10,179
10MP	3648x2752	10,039,296	18,438

Pixel per $ (Pp$) calculation is derived by dividing the number of pixels by the price of a typical indoor dome camera, lens, and housing.

Download the Pixels per Dollar whitepaper: http://www.arecontvision.com/whitepapers/.

Additional resolutions are available from Arecont Vision models including 8, 12, 20, and 40MP with an even wider range of available pixels per dollar.

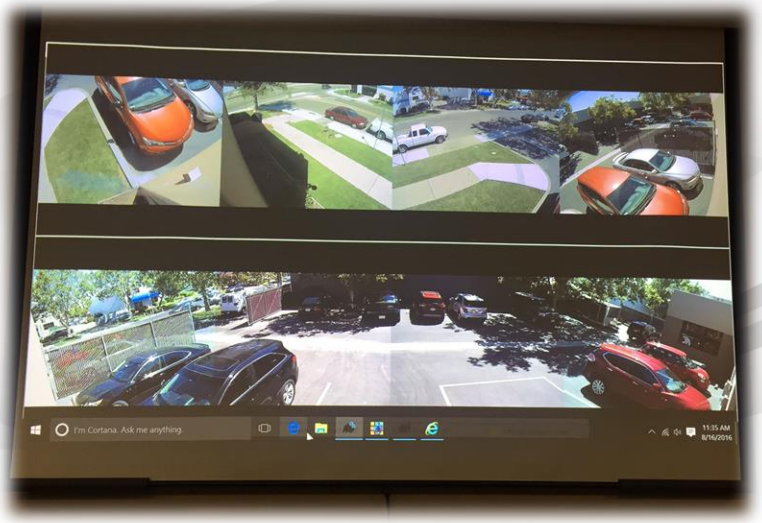
A single SurroundVideo panoramic camera may be used to cover the same field-of-view as several standard resolution cameras, reducing the number of cameras required while increasing video coverage, situational awareness, and image clarity.

Using fewer cameras translates into less complexity and significant infrastructure cost savings with less labor, cables, mounts, housings, VMS/NVR license fees, and maintenance for additional return on investment.

Studies show that security operations staff typically lose focus within 20 minutes or less during their shifts due to the many video screens and separate images that must be monitored. With individual cameras, it is hard to maintain situational awareness and very easy to miss an incident in process.

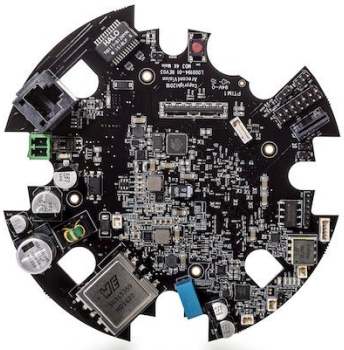
LEFT - *Multiple individual video monitors in a security center.*

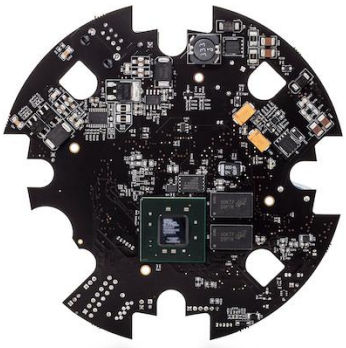
SurroundVideo panoramic cameras help to eliminate attention span challenges while dramatically increasing situational awareness. Instead of monitoring multiple screens watching for an incident to occur or be flagged by the video management system (VMS) or network video recorder (NVR), SurroundVideo cameras can stream an entire 180º or 360º scene on a few large video displays. This can dramatically reduce the overall number of monitors to be viewed, simplifying the task for the security operations staff. Any incident can be zoomed in by using VMS or NVR software without interrupting video from the entire scene or recording for non-stop situational awareness.



LEFT – *Fewer multi-sensor cameras are required to cover a wider area, providing superior and continuous situational awareness.*

At the core of every Arecont Vision camera is a field programmable gate array (FPGA) integrated circuit mounted on an Arecont Vision-designed Printed Circuit Board (PCB). The individual PCBs vary based upon the camera design, capabilities, and features of the individual Arecont Vision megapixel camera. The in-house developed Massively Parallel Image Processing (MPIP) architecture runs on the FPGA, ranging from our MegaVideo single-sensor to our most advanced SurroundVideo multi-sensor platforms, now in their 5th generation.

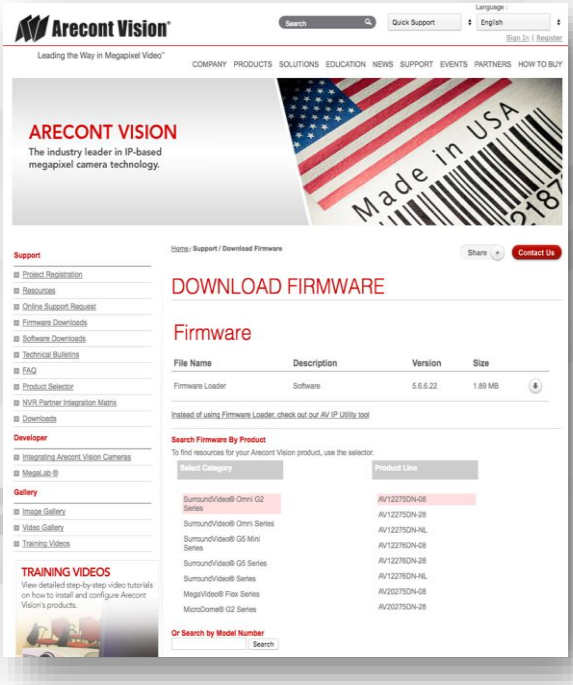




Field Upgrades

Arecont Vision megapixel cameras can be updated as our R&D teams and our Technology Partners develop new features, image quality improvements, reduced bandwidth algorithms, security enhancements, and much more.

By enabling new features to be added or updates made, this unique ability of Arecont Vision cameras improves the return on investment by further increasing the product lifespan.



Learn about Arecont Vision firmware and the Technical Assistance Center
https://www.arecontvision.com/resources.php

Arecont Vision cameras are protected to safeguard against cybersecurity risks.

When a hacker accesses an Internet-connected device such as a camera, NVR, or server that is running Linux or another common operating system, it can be at risk. A cyberattack often begins with a malicious virus being loaded that infects the system via the operating system. In some types of attacks, this if often a ”bot” (short for “robot”) shell script.

This script can then be used to take over the device. The bot can then launch various cyberattacks on other network-connected devices such as for Distributed Denial of Service (DDoS), ransomware, or false identity/network intrusion attacks. Other approaches can also be used to attack network enabled devices that rely on common operation systems and plug-in 3rd party application code.

Arecont Vision megapixel cameras do not have these vulnerabilities. This is because each of our cameras uses an FPGA IC on which we run our in house developed, proprietary Massively Parallel Image Processing architecture. We do not run common operating systems such as Linux, which are employed by other camera vendors. Known avenues of attack are eliminated by using this model.

Should a hacker illicitly gain access to an Arecont Vision camera or obtain the user ID and 16-digit ASCII password to log into a camera, the attack effort would be extremely limited in its success. The attacker would be able to view the camera’s internal web browser, and the camera’s settings could be modified.

A hacker would not be able to repurpose an Arecont Vision camera for a cyberattack. For example, the hacker, virus, or bot would be unable to load and run a shell script to maliciously attack other networked devices, either on the local network or across the wider Internet.

Anything that the hacker or bot could do would be limited to that particular Arecont Vision camera, rather than becoming an entry point for further cyberattacks.

To learn more, download the Arecont Vision and Cybersecurity White Paper at:
https://www.arecontvision.com/whitepapers/#

Easy Installation

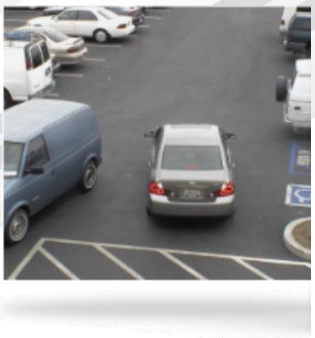
SurroundVideo G5 Mini - The SurroundVideo G5 Mini is very easy to install due to its small size. It also features a housing with a magnetic strip around the base to make mounting fast and easy. All four sensors can be manually focused during installation.

SurroundVideo G5 - The SurroundVideo G5 180º features P-iris motorized lenses to easily focus each of the camera's sensors.

Remote Focus

The SurroundVideo G5 180º series features four P-iris motorized lenses to easily focus each of the camera's sensors.

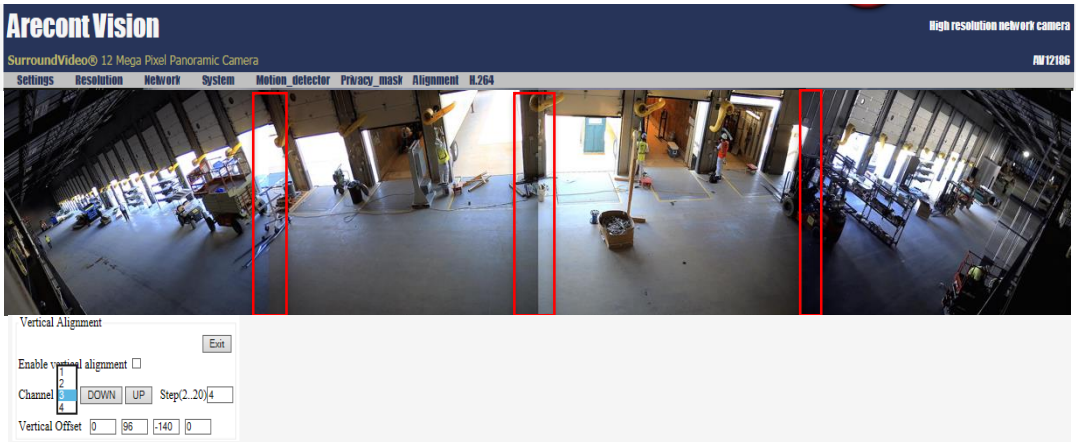
Once mounted, the operator can quickly focus the sensors remotely. This eliminates the need to adjust the camera while on a ladder or lift. The simplicity of clicking “short range focus” or “full range focus” saves both time for installers and money for end users.



Sensor Pre-Alignment

SurroundVideo panoramic cameras are designed with a 5° sensor overlap to ensure that nothing is ever missed in a 180° or 360° view. If an event happens on the camera's seam, the overlap ensures all details are captured.

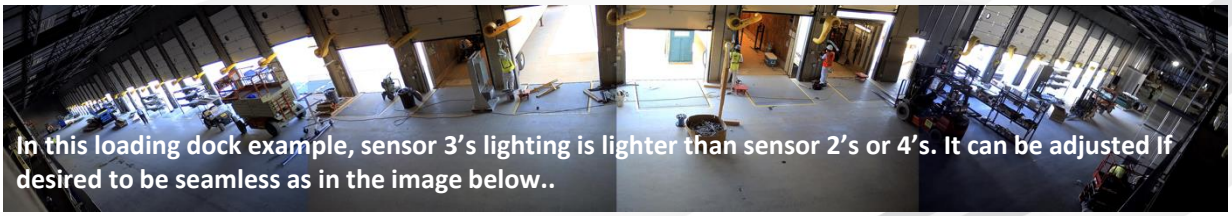
SurroundVideo camera sensors are pre-aligned during production and tested prior to leaving the Glendale, California factory. They can also be realigned using the camera's internal webpage, and image continuity can continue to be maintained with minimal adjustment.



Exposure Ratio Per Sensor

For an optimized individual image, the SurroundVideo default algorithm provides the best exposure ratio per sensor. Under certain conditions, the panoramic image may appear as though the lighting is not contiguous even though it is the most optimized image for the scene.

To ensure a constant, seamless situational image, the installer can also choose one of the four reference channels (one for each sensor) to equalize the lighting conditions across the entire image. Also included is the ability to customize white balance for any region of interest.



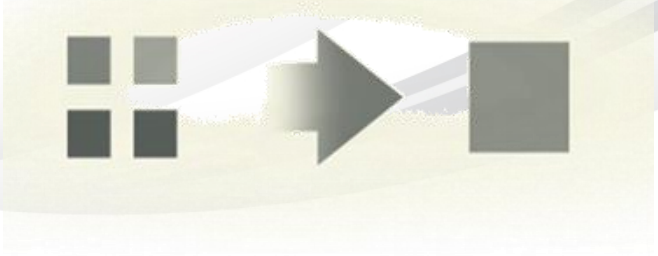
True Day/Night

SurroundVideo series models incorporate a mechanical IR (infrared) cut filter in front of each CMOS (Complementary Metal-Oxide-Semiconductor) sensor for the highest image quality at any time of day. Arecont Vision True Day/Night technology ensures vivid images during the day and optimum monochrome performance at night. The camera instantly switches between modes based on the scene's illumination.

Pixel Binning

Arecont Vision binning technology is used in parallel with True Day/Night functionality in SurroundVideo Omni series cameras.

Binning sums the light value of four individual pixels into one larger pixel yielding much better image quality in low light with reduced bandwidth.



STELLAR Advanced Low Light Technology

STELLAR (Spatio Temporal Low Light Architecture) is Arecont Vision's most advanced low-light technology for noise reduction and enhanced color imaging in near complete darkness.

STELLAR utilizes a patented algorithm that reduces noise, motion blur, bit rate, and storage requirements for scenes where very little light is present. STELLAR incorporates the algorithm with quality optics and the power of the Field Programmable Gate Array (FPGA) integrated circuit at the heart of every Arecont Vision camera.

STELLAR is available on select SurroundVideo G5 180° panoramic camera models.

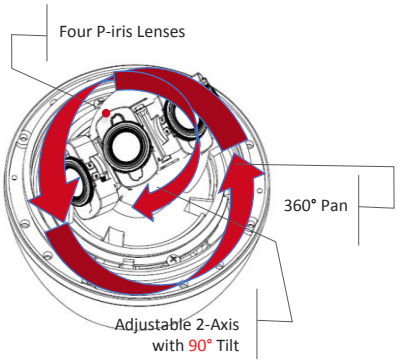
Non-STELLAR equipped camera image at night (single sensor shown).

STELLAR equipped camera image at night (single sensor shown).

See interactive STELLAR information online at:
https://www.arecontvision.com/landing-pages/stellar/overview.php#top.

P-Iris Control for Image Clarity

SurroundVideo G5 multi-sensor megapixel cameras feature a precision iris or “P-Iris” lens for each sensor. This ensures the best possible depth of field and image clarity for precise performance. The p-iris lens provides an automatic, precise iris control for applications with varying lighting conditions.



True Wide Dynamic Range

In extreme lighting conditions, it can be challenging for cameras to capture the best of both the brightest and darkest parts of a scene. SurroundVideo 12MP camera series features models with True Wide Dynamic Range (WDR) technology. WDR produces clear images in harsh lighting conditions.

Arecont Vision-developed WDR technology generates two images. One is a long exposure for the darkest areas of the scene while the other a short exposure for the brightest areas. The camera then combines the images to produce a perfect exposure, revealing details previously unseen.

IP66 Environmental Rating

Arecont Vision SurroundVideo cameras have been designed for use in demanding outdoor harsh-weather environments, and are rated to the IP66 environmental standard. They are certified with rigorous dust, water, and low operating temperature testing.

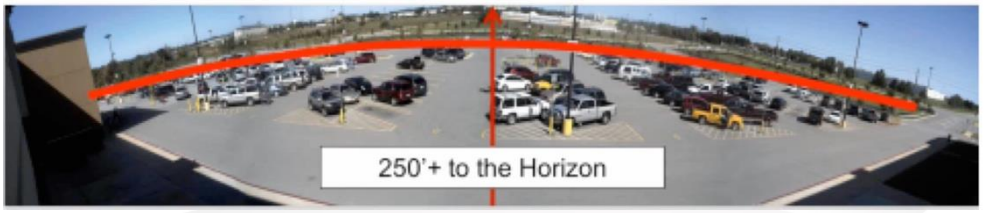
IK-10 Impact Resistance

The IK-10 rated, rugged cast-aluminum housings and bubbles of Arecont Vision SurroundVideo cameras are well suited for deterring vandals. This rating verifies that the camera can withstand the equivalent of 55 kg (120 lbs.) of force.

The normal recommended SurroundVideo panoramic camera mounting height is 15-20 feet (4.5 – 6.1 meters) for optimal viewing and resolution. This recommendation will vary when the camera is used primarily for situational awareness, such as high overhead roadways, open spaces, cityscapes, or infrastructure.

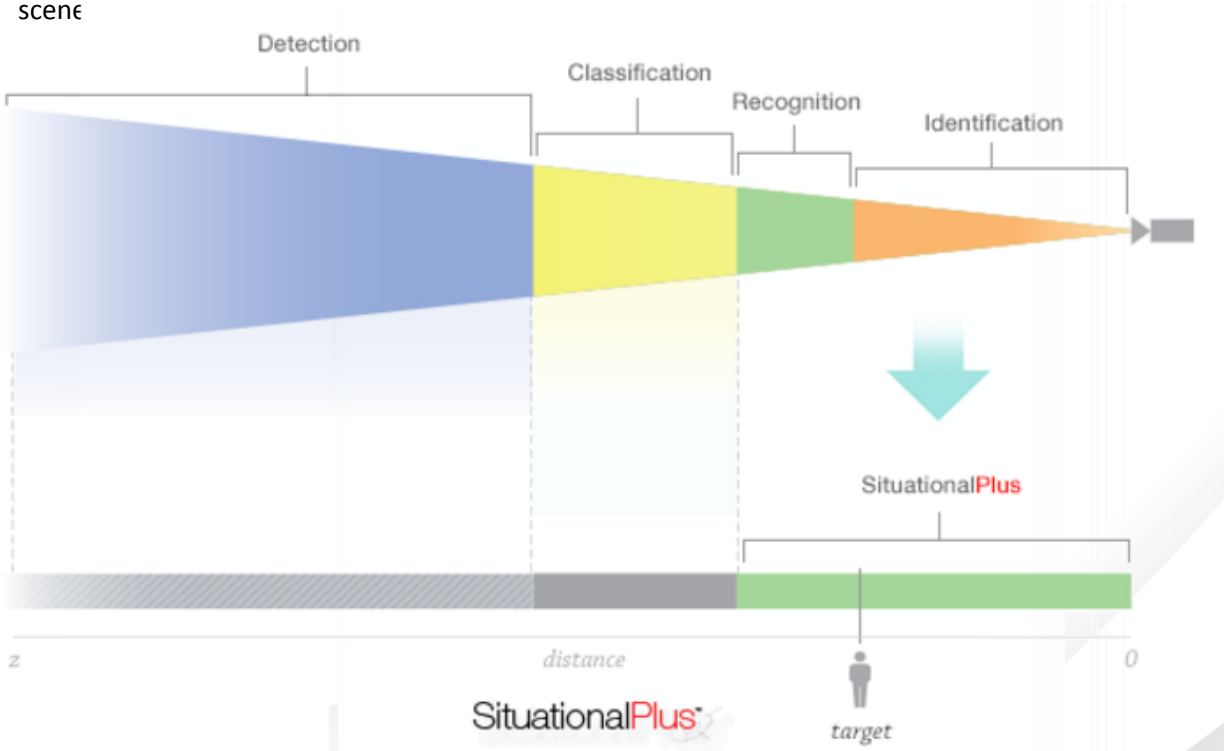
If recommended mounting height is unachievable, for every 10 feet (3 meters) the camera is mounted from the ground, expect a 10 foot/3 meter blind spot below, and the camera should be aimed ~100 feet / 30 meters (for every 10 feet/3 meters mounted) toward the horizon.

Example: A SurroundVideo camera mounted at 30 feet/9.1 meters will have a 30 foot/9.1 meter blind spot below it, and should be aimed 300 feet/91.4 meters toward the horizon.



Arecont Vision provides the most optimal camera solution possible to meet the surveillance requirements of every project. Every scene, situation, challenge, and environment is unique, however. The SituationalPlus approach makes it easy to pinpoint the right Arecont Vision camera to fit specific project needs.

SituationalPlus is the sweet spot of 60PPF (60 pixels per foot) / 196PPM (196 pixels per meter) where the camera resolution and chosen optics provide sufficient resolution for identifying important details such as faces or license plates. Calculating SituationalPlus ensures the camera features the *Right Resolution*, with the *Right Optic*s, and the *Right Illumination* for the specific scene



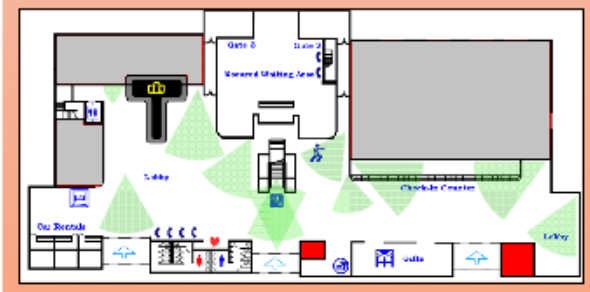
SituationalPlus is represented in green in the charts above and below, while “Classification” and “Detection” are represented in shades of gray. The gray areas do not indicate a lack of coverage, but rather a drop in forensic detail from what is expected with SituationalPlus. The example below demonstrates this fall-off of SituationalPlus from the viewpoint of the camera.

To learn more about SituationalPlus, visit:
https://www.arecontvision.com/landing-pages/stellar/overview.php#top

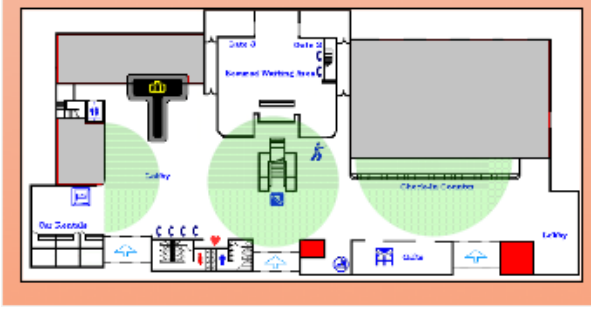
Use Case Examples
Airline Counter and Parking Lot

Airline Ticket Counter

Single Sensor
(11) Analog Cameras to Cover Ticketing Public Area



Panoramic Solution
(3) Arecont Vision Megapixel Cameras Yield Better Clarity and More Than Double the Resolution



Arecont Vision SurroundVideo cameras covering a ticket counter in this customer example required two 180º and one 360º models to cover equivalent to 11 fixed view analog or standard IP cameras to provide continuous, uninterrupted viewing and with improved image clarity and resolution.

Parking Lot

Single Sensor
(17) Analog Cameras to Cover Parking Lot and Entrances and Exits

Panoramic Solution
(1) SurroundVideo 180, (2) Optional Single Sensor Cameras for Potential License Plates at Entrances and Exits

One high resolution Arecont Vision SurroundVideo multi-sensor 180º camera would cover a car parking lot equivalent to up to 17 fixed view analog or standard IP cameras for full situational awareness. Two additional Arecont Vision single sensor cameras would be added, one for each entrance/exit at the far right of the lot, if capturing license plates upon entry was a customer requirement of the project.

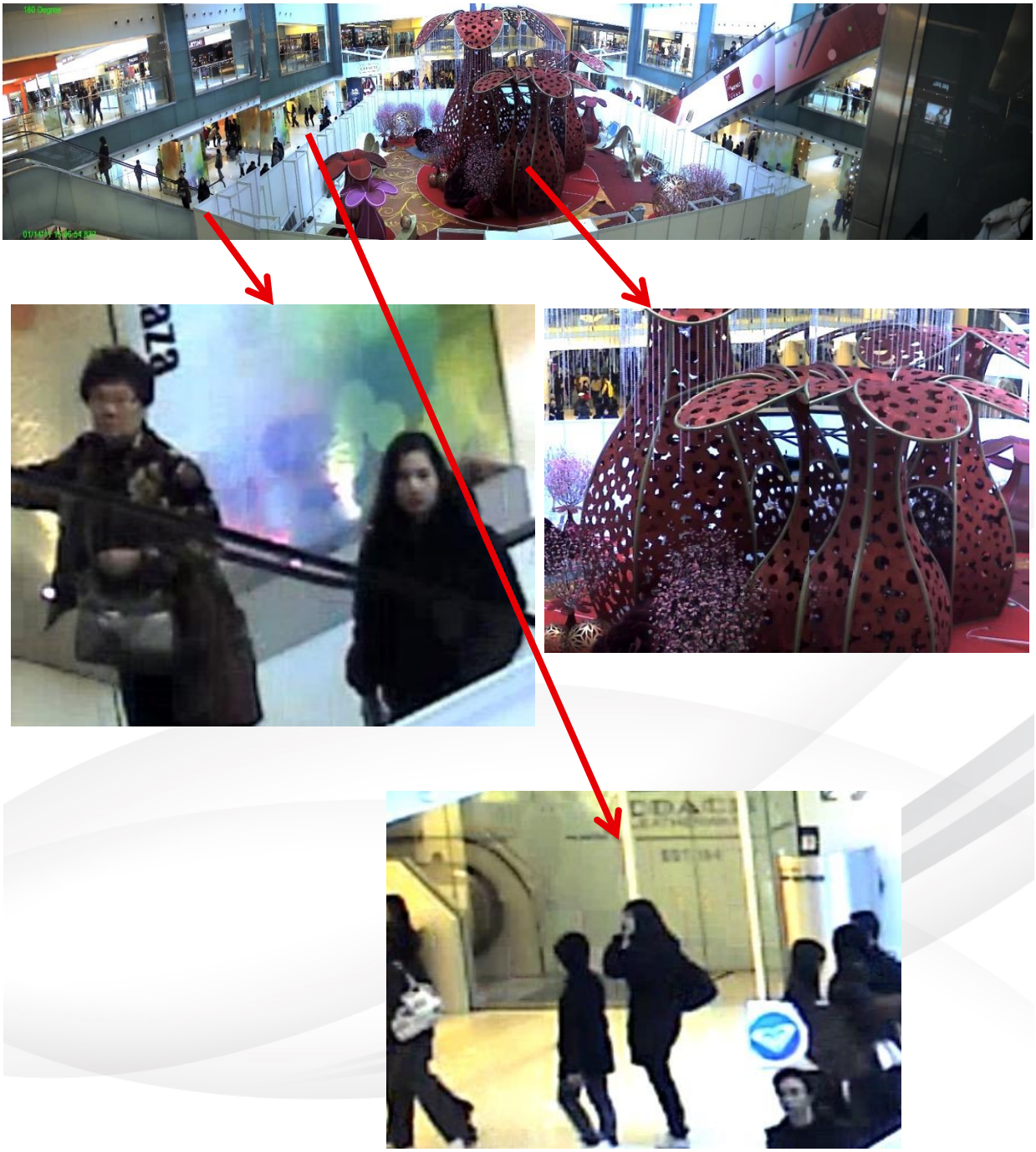
This example is coverage of grocery store POS checkouts from a single SurroundVideo 180° camera.

Car Park/Garage

Deploying a SurroundVideo 180° panoramic multi-sensor camera provides overall situational awareness. Due to the HD resolution and image clarity provided by the camera, any part of the image can be digitally zoomed in without interrupting viewing and recording of the entire scene.

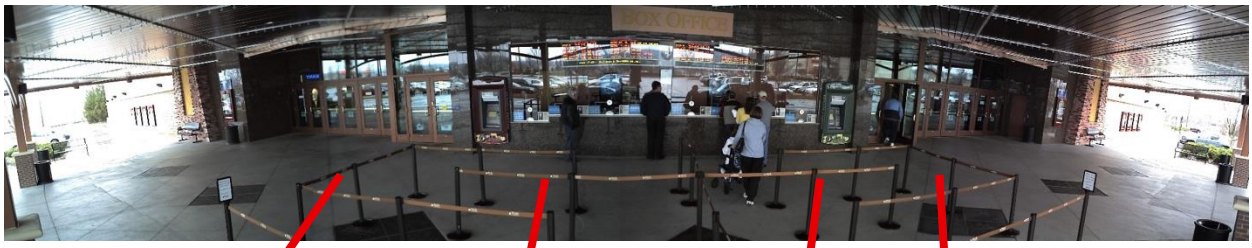
The example below is from a car park/garage, and demonstrates the image quality possible from a single SurroundVideo camera.

The example below is from a large shopping center, and demonstrates the image quality possible from a single SurroundVideo 180° camera.



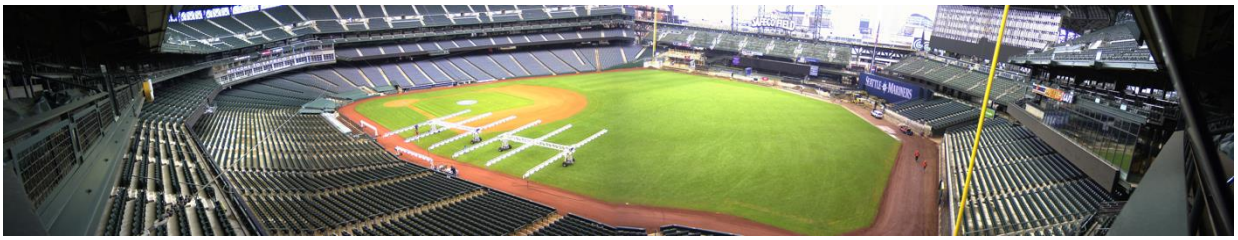
Theatre Box Office

This example is coverage of an outdoor theatre box office from a single SurroundVideo 180° camera.



SurroundVideo 180° Panoramic Use Cases

A SurroundVideo 180° panoramic multi-sensor camera providing overall situational awareness of a sport stadium from a single location.

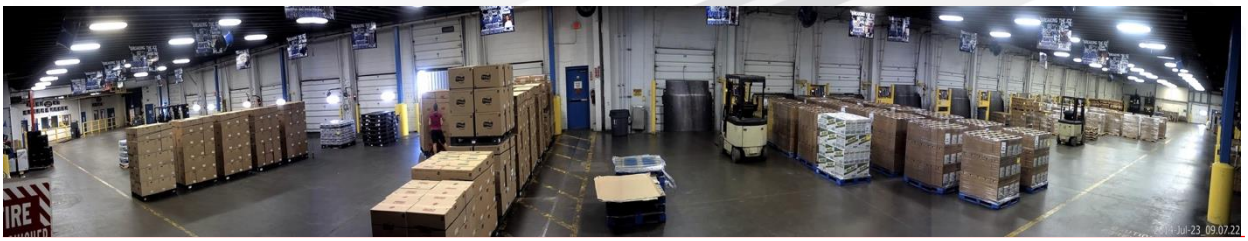


A SurroundVideo 180° providing coverage of a busy front entrance to a hotel or housing subdivision.

A SurroundVideo 180° providing coverage of a large office environment.

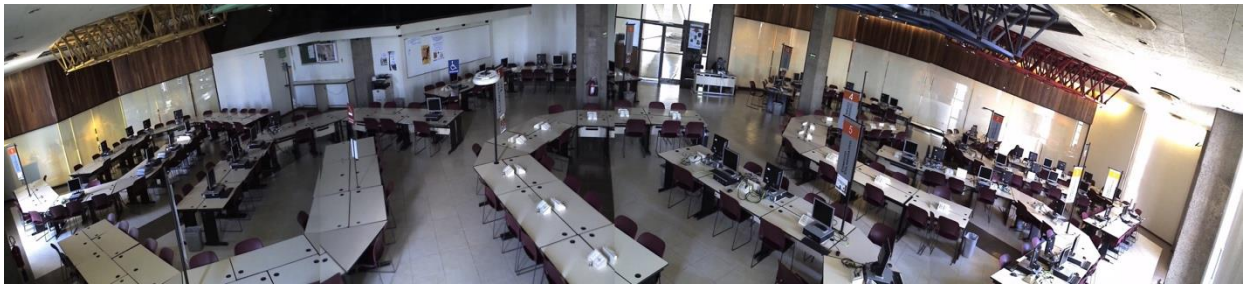
A SurroundVideo 180° providing coverage of an urban street scene.

A SurroundVideo 180° providing coverage of a loading dock.



A SurroundVideo 180º panoramic multi-sensor camera providing overall situational awareness of an outdoor sports facility.

A SurroundVideo 180º providing coverage of a classroom.



A SurroundVideo 180º providing situational awareness of a large outdoor parking lot.

A SurroundVideo 180º providing coverage of Tiananmen Square, Beijing, China.

A SurroundVideo 180º providing coverage of an airport tarmac.

A SurroundVideo 180º panoramic multi-sensor camera providing overall situational awareness of a large retail store.

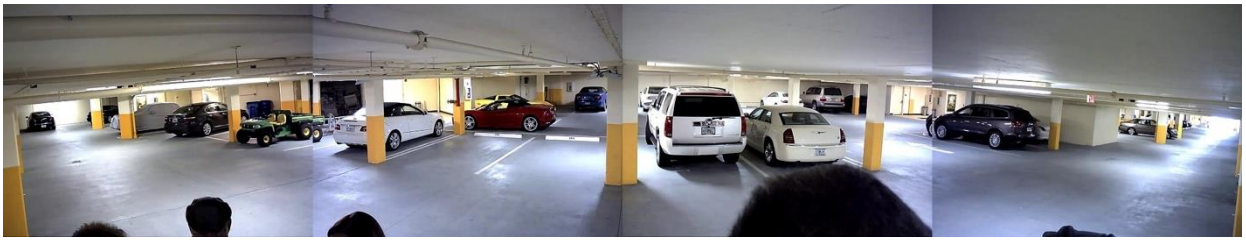
A SurroundVideo 180º providing coverage of a prison common area.

A SurroundVideo 180º providing situational awareness of a medical center lobby.

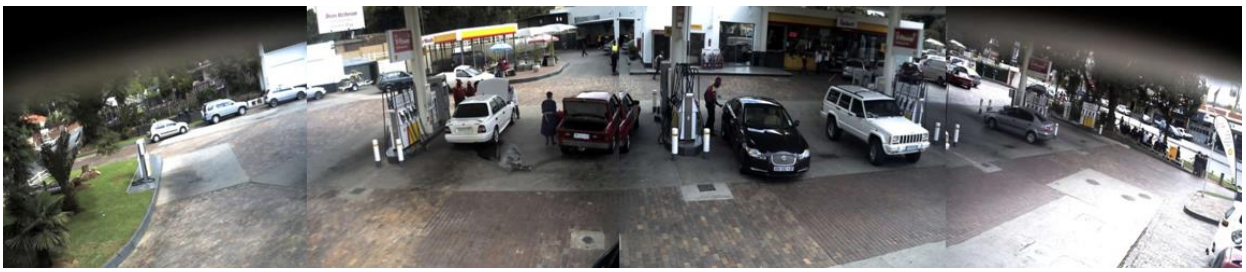
A SurroundVideo 180º providing coverage of a car dealership.

A SurroundVideo 180º providing coverage of a large outdoor crowd.

A SurroundVideo 180º panoramic multi-sensor camera providing overall situational awareness of a parking garage.



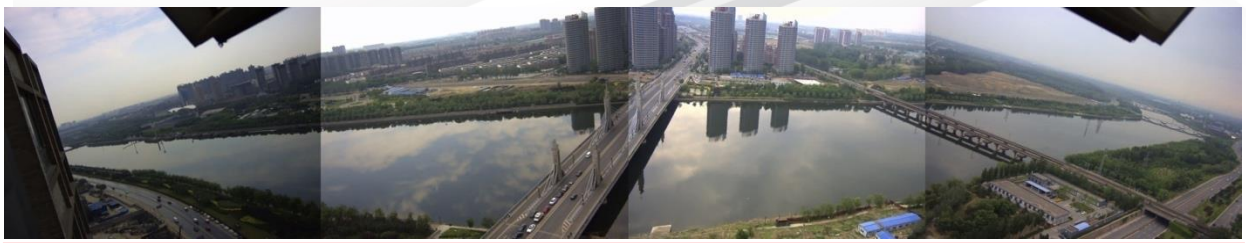
A SurroundVideo 180º providing coverage of a gasoline station.



A SurroundVideo 180º providing situational awareness of a large railway yard.

A SurroundVideo 180º providing situational awareness of a shopping center.

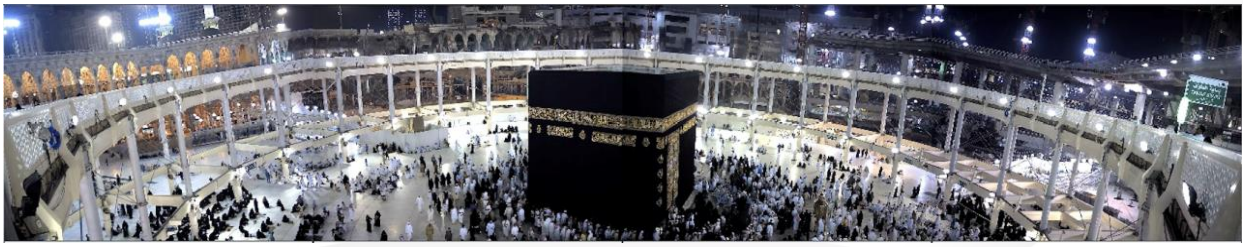
A SurroundVideo 180º providing situational awareness of an urban waterway and twin bridges.



A SurroundVideo 180º panoramic multi-sensor camera providing overall situational awareness of a large distribution center and loading docks.

A SurroundVideo 180º providing coverage of a hotel lobby.

A SurroundVideo 180º providing situational awareness of Masjid al-Haram, Mecca, Kingdom of Saudi Arabia

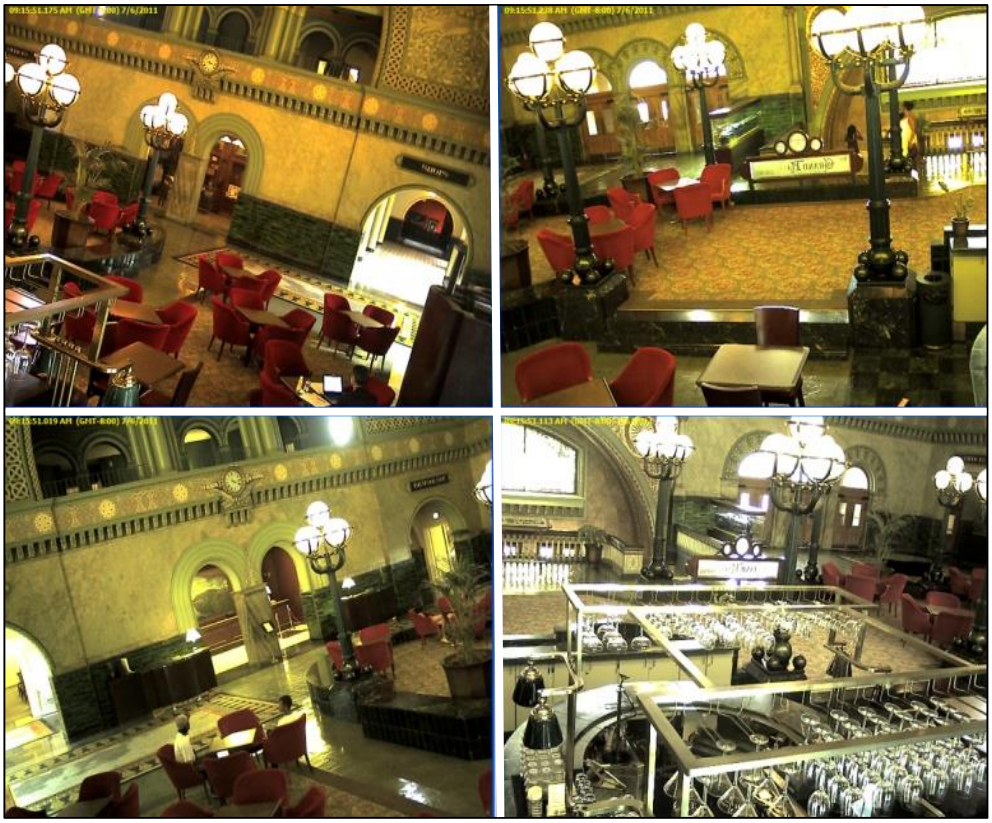


A SurroundVideo 180º providing situational awareness of an urban intersection.

A SurroundVideo 180º providing situational awareness of urban parkland.

A SurroundVideo 360º panoramic multi-sensor cameras covering an entire convenience store.

A SurroundVideo 360º panoramic multi-sensor camera in indoor restaurant space.



A SurroundVideo 360º panoramic covering a loading dock.

A SurroundVideo 360º panoramic multi-sensor cameras covering outside of large commercial spa.

A SurroundVideo 360º non-WDR panoramic model covering a lobby area.

SurroundVideo Customer Installations


amazon
fulfillment


Emergency


BỆNH VIỆN QUỐC TẾ CITY
THỰC HIỆN TỐT LUẬT PHÒNG CHÁY VÀ CHỮA CHÁY LÀ TRÁCH NHIỆM VÀ NGHĨA VỤ


st Room


CrimeEye


NorthShore


JCPenney


Slips 1 & 2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REI

SurroundVideo Integration with Leading VMS/NVR Systems

Arecont Vision SurroundVideo cameras are integrated with the industry's leading VMS/NVR systems. Multi-sensor cameras from other vendors may not offer as many choices or as extensive integration.

Integration of SurroundVideo and other Arecont Vision cameras is accomplished through the Arecont Vision Technology Partner Program and its MegaLab™ Test and Certification facility. VMS/NVR manufacturer members and other program members use the facility jointly with Arecont Vision to validate integration.

Learn more about the Arecont Vision MegaLab online at: https://www.arecontvision.com/supports/megalab.

Pretesting and integration goes beyond the ONVIF and PSIA standards, to ensure that all features and capabilities of Arecont Vision cameras are available and integrated with the VMS/NVR selected.

The graphic at right shows some of the VMS/NVR vendors certified via the MegaLab for use with Arecont Vision cameras. For a more current and detailed list, visit the Arecont Vision Technology Partner Program pages at: https://www.arecontvision.com/nvrmatrix.php.

Onsite integration of Arecont Vision cameras is easy. For several brief video demonstrations of how easily and quickly setup of SurroundVideo multi-sensor cameras is accomplished using popular VMS or NVR products, visit: http://www.arecontvision.com/vms-videos.php.

Conclusions

Multi-sensor panoramic cameras offer many advantages over PTZ and fixed-view camera technology. Arecont Vision remains the multi-sensor camera leader. The current SurroundVideo series has benefited from continued feature development, quality improvements, and design enhancements through five generations since introduction in 2006.

SurroundVideo 180°/360°	PTZ	Fixed View
- Non-stop coverage (180°/360°)	- Cone of coverage	- Limited coverage
- No constantly moving parts	- Gears, motors, and belts	- No moving parts
- Full situational awareness	- Limited situational awareness	- Limited awareness
- Zoom without impacting recording	- Record focused area	- Fixed view
- Zoom without impacting viewing	- View focused area	- Fixed view
- Many VMS/NVR integrations	- Many VMS/NVR integrations*	- Many VMS/NVR integrations*
- Proven technology	- Proven technology	- Proven technology
- Common fixed views (180/360)	- Adjustable views	- Fixed view
- Operator independent	- Operator dependent	- Fixed view

* May vary by manufacturer

A single Arecont Vision SurroundVideo multi-sensor camera can replace multiple fixed-view or pan-tilt-zoom (PTZ) cameras while providing improved coverage and enhanced situational awareness.

Without the constantly moving mechanical components that can wear out or need adjustment in a PTZ, SurroundVideo multi-sensor cameras require lower ongoing maintenance and reduced operational cost.

Arecont Vision SurroundVideo multi-sensor cameras are customer-proven and are integrated with full feature support with most leading VMS/NVR systems. They require a single PoE (Power over Ethernet) network cable, a single IP address, and a single VMS/NVR license (most vendors) to further reduce cost and complexity.

Arecont Vision cameras are based on Field Programmable Gate Array (FPGA) ICs and the in-house developed Massively Parallel Image Processing architecture. All core software features are developed by Arecont Vision and not obtained from 3rd parties. This ensures both maximum performance using the camera hardware and offers additional protection against malicious code in advertently being inserted into the device. Common operating systems such as Linux and Windows that are embedded in other cameras, devices, and platforms are not used in Arecont Vision cameras, eliminating a potential gateway to cyber risks.

Arecont Vision camera architecture can be updated for major and minor security updates, and with new product feature enhancements and additions. This continuously increases cybersecurity capabilities while extending the useful life and return on investment of Arecont Vision cameras. The architecture further protects Arecont Vision cameras, making them unusable by malicious code to launch Distributed Denial of Service, ransomware, network intrusion or other cyberattacks on other devices, even if the camera's user ID and 16-digit ASCII passwords are ever compromised.

Arecont Vision panoramic multi-sensor cameras are superior to PTZ and fixed-view cameras for a wide range of application needs and project demands. Generations of refinement ensure that SurroundVideo remains superior to copies and clones from other vendors.

Recommendations

1. SurroundVideo multi-sensor multi-megapixel cameras should be considered for any surveillance project where one or more PTZs or fixed-view had been planned or are already installed. SurroundVideo cameras deliver non-stop high definition video coverage for enhanced situational awareness.

2. SurroundVideo panoramic multi-sensor cameras are easy to set up and install, and should be considered for typical 180° and 360° degree surveillance needs. Learn more about SurroundVideo panoramic cameras from the interactive page at: https://www.arecontvision.com/landing-pages/surround-video/overview.php.

3. SurroundVideo omnidirectional multi-sensor cameras offer flexible coverage of any scene, and deliver enhanced coverage with user-settable views. Learn more about SurroundVideo Omni cameras from the interactive page at: https://www.arecontvision.com/landing-pages/omni/overview.php.

4. Do not believe a data sheet without seeing the camera in action. Not all multi-sensor cameras are created equal. Other manufacturers have attempted to copy and duplicate Arecont Vision's continued leadership and multi-sensor designs in the market that we created and pioneered without matching the capabilities of SurroundVideo.

5. Compare multi-sensor cameras in real-world environments. SurroundVideo multi-sensor multi-megapixel camera technology is now in its 5th generation and the difference in clear when in use.

6. Be aware that copies or clones of our multi-sensor cameras lack the refinements and advanced features of SurroundVideo (such as not offering WDR or advanced low light capability), cut corners to compete (such as offering low resolution, reducing the number of sensors, or offering huge cameras that are hard to install), and are integrated with few of the leading VMS and NVR systems.

7. Buy only megapixel cameras that can be updated with new features, capabilities, and security enhancements. Competitor clone cameras do not offer our 5th generation Massively Parallel Image Processing architecture or the flexibility and performance of our FPGA integrated circuits that enable new features to extend the useful life of the camera, or full security updates for unmatched cybersecurity protection.

8. Use the Arecont Vision Try-and-Buy program to obtain and install an Arecont Vision camera risk free for a trial at the customer site. SurroundVideo and other Arecont Vision cameras can be purchased at a special price through the program to demonstrate its real-life advantages [see current promotions at https://www.arecontvision.com/landing-pages/promos/overview.php#tryandbuy].

9. Learn more about other industry-leading technologies that have been developed in house by Arecont Vision that benefit our customers every day at: https://www.arecontvision.com/landing-pages/industry-leading-technology/overview.php.

10. Contact Arecont Vision to arrange a demonstration of our multi-sensor cameras.

- Look up the Arecont Vision contact for your region around the world online here: https://www.arecontvision.com/where-to-buy.php
- Request information at: https://www.arecontvision.com/contactform.php
- Email us at: sales@arecontvision.com
- Call our corporate headquarters at: +1.818.937.0700
- Visit us online at www.arecontvision.com

Learn More

Arecont Vision
Leading the Way in Megapixel Video™

www.arecontvision.com

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+1.818.938.0700

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