Arecont Vision Update

July 2016

Arecont Vision

Leading the Way in Megapixel Video

Company Update – July 2016

Arecont Vision®

Leading the Way in Megapixel Video™

- 2Q16 Record Results!
- New people on-board in sales, engineering and services
- New products are shipping!
- Excellent Progress with VMS/NVR Partner integration, events, customer project training and execution
- Project Registration is providing substantial separation between standard and registered pricing.
- Quality and Service continue strong improvement and the results show it.
- Operations, Assembly, Distribution new layout in our building.

Field Activity

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- CSO Scorecard is a hit!
- Field Reviews and Strategy meetings were successful
- Customer Meetings always yield great ideas!

ARECONT VISION MEGAVERTICAL PRESENTATIONS

(Check *arecontvision.com* for other MegaVertical Presentations)

Hospitality

Hotels, Hospitality, and Gaming

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- Hotels, casinos, and the hospitality industry face balancing the needs of security in a changing world while maintaining an appropriate and welcoming environment for their guests
- Video surveillance is growing in use not only for traditional protection of guests, facilities, staff, and visitors, but also for people counting, access control, video analytics, traffic and parking management, and a host of other needs
- Arecont Vision megapixel technology is proven around the world to be able to reduce the number of cameras required while increasing video quality, coverage, and forensic recording

  - Criminal behavior and vandalism deterrence
  - Facial recognition and identification
  - Traffic monitoring and vehicle identification
  - Parking monitoring and license plate recognition
  - Crowd and traffic flow monitoring
  - Monitoring of restaurants, bars, retail areas, lobbies, reception areas, lounges, gaming areas, event spaces, parking lots, corridors, elevator lobbies, gyms/health clubs, pools, offices, stock rooms, and storage areas
  - Litigation protection
  - Vehicle monitoring for pre-existing damage
  - Overall situational awareness

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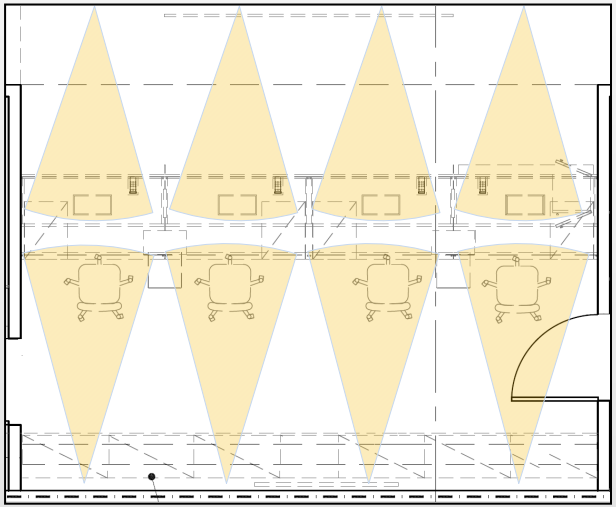
Camera Reduction / Increased Resolution: Counter

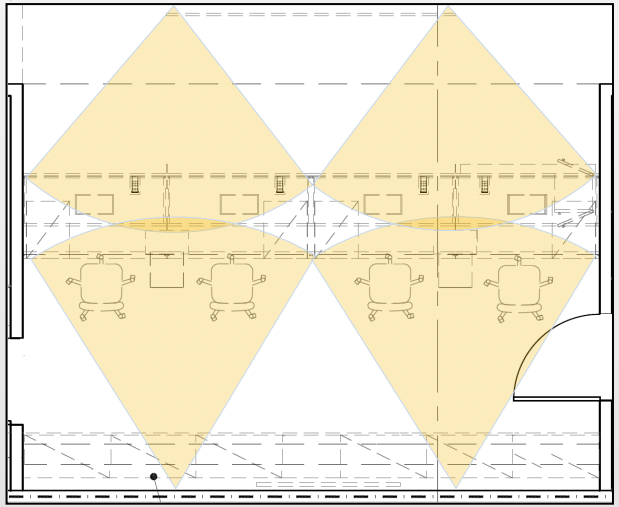
Analog

8 Cameras to Cover a Customer Service Counter.



Megapixel

4 Arecont Vision Megapixel Cameras Yield Better Clarity and More than Double the Resolution.



Note: Areas covered are the same, but PTZ only sees the region it's current position is looking at.

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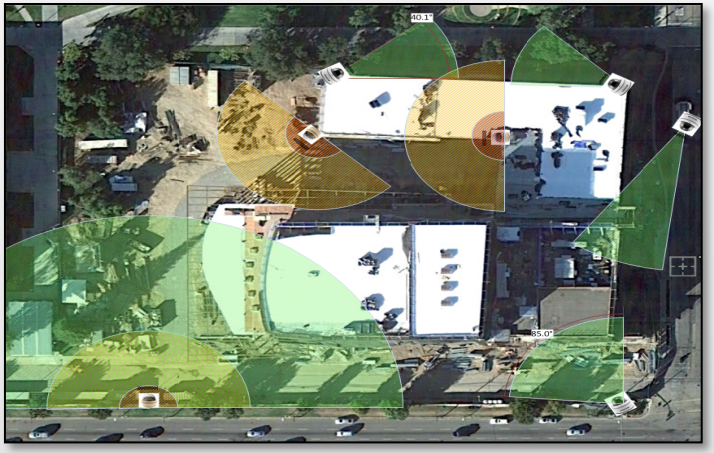
Camera Reduction / Increased Resolution: Perimeter

Analog

48 Standard Resolutions Cameras Provide Marginal Detail

Megapixel

7 Megapixel Cameras Secure the Perimeter with Better Clarity for a Fraction of the Cost



Note: Areas covered are the same, but PTZ only sees the region it's current position is looking at.

Case Studies

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- Sheraton Saigon Hotel & Towers, Ho Chi Minh City, Vietnam
  - http://goo.gl/yAlgie

"These cameras help reduce our on-floor manpower and increase our effectiveness because there can be one person on the floor and another person who is watching the camera, who can cover 10 times more area than one person can on foot.

We certainly didn't want to give people the feeling that they are being watches throughout the hotel. We really like how the low profile of the cameras and the multi-sensor capabilities enabled us to use just one camera opposed to four separate ones."

- Kevin Miller, Corporate Director of Security for the Davenport Collection of Properties

"We demonstrated the superior performance of Arecont Vision's megapixel cameras to provide wide area coverage in almost any lighting.

Mr. Linh's staff at the Sheraton Saigon Hotel & Towers were so impressed that we designed and built a new video surveillance solution around Arecont Vision's imaging technology."

- Thomas Tran, Citek Corporation

3Q16 Action

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- Programs released.
  - Try&Buy Program
  - Special Pricing Program on GEN1 via Project Registrations
- New support programs in place to drive better service for our customers.
- SI/dealers should sign up for service parts/demo agreements. That way we can ship immediately and we will not require a credit card. It is fast and simple to do.
- Our new products are shipping now!

Latest Arecont Vision Products

Arecont Vision®

SurroundVideo® Omni G2

4 Motorized User-Configurable Sensors in an Omni-Directional All-in-One Solution

- 12 or 20 Megapixel (MP) H.264 All-in-One Remote Focus Omni-Directional User-Configurable Multi-Sensor True Day/Night Indoor/Outdoor Dome IP Cameras
- Multiple Lens Options in a Single Camera Housing from 2.1mm to 16mm
- 4 Individual Camera Gimbals can be Independently Placed in Any Orientation Around a 360° Track with Extra Positions for Looking Straight Down
- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)
- Faster Frame Rates versus Previous Generation

Available Now

SurroundVideo® Omni Mini

2 Motorized User-Configurable Sensors in an All-in-One Solution

- 4, 6, and 10MP H.264 All-in-One True Day/Night Indoor/Outdoor Dome IP Cameras
- Motorized Lenses with Remote Focus
- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)
- 3-Axis Gimbal on Each Sensor

Coming Soon

MegaVideo® Flex

Ultra Low Profile Design Solution

- 1.2, 1080p, 3, and 5MP H.264 Remote Focus True Day/Night Indoor/Outdoor Tethered IP Cameras
- Camera Sensor and Main Unit can be Connected via a USB Cable up to 40ft in Length
- Optional IR LEDs

Coming Soon

* Sold Separately

MegaDome® 4K

8.3 Megapixels at 30fps!

- 4K Ultra High Resolution Image Quality
- 8.3MP H.264 True Day/Night Indoor/Outdoor Dome IP Cameras
- 30 Frames per Second
- New Easy-to-Install Housing Design

Coming Soon

SurroundVideo® G5 Mini

Smaller Housing Models Now Up to 20 Megapixels

- 12 and 20MP H.264 All-in-One 180° or 360° Panoramic True Day/Night Indoor/Outdoor Dome IP Cameras
- True Wide Dynamic Range up to 100dB at Full Resolution
- Faster Frame Rates versus Previous Generation

Coming Soon

SurroundVideo® G5

Now with Remote Focus and STELLAR™

- 5, 12, and 20 Megapixel (MP) H.264 All-in-One 180° Panoramic True Day/Night Indoor/Outdoor Dome IP Camera
- Motorized P-Iris Lenses with Remote Focus
- STELLAR™ (Spatio Temporal Low Light Architecture) Technology on 5MP Model
- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)
- Faster Frame Rates versus Previous Generation

Available Now

MicroDome® G2

Now with Remote Focus and 3-Axis Gimbal

- 1.2, 1080p, 3, and 5MP H.264 All-in-One True Day/Night Indoor/Outdoor Dome IP Cameras
- Motorized Lens with Remote Focus
- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)
- 3-Axis Gimbal

Available Now

MegaBall® G2

Now with STELLAR™, Adjustable IR, and More!

- 1.2, 1080p, 3, and 5MP H.264 All-in-One Motorized P-Iris or Manual Panomorph Lens True Day/Night Indoor IP Cameras
- STELLAR™ (Spatio Temporal Low Light Architecture) Technology (Select Models)
- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)
- New Adjustable IR LEDs
- Flush or Surface Mount Domes and New Bell Mount Housing Options

Available Now

* Junction Box Sold Separately

AV IP Utility v2.0.2

Powerful Free Software for Camera Discovery, Configuration, and Updates

- Easy to use interface
- Multiple discovery options including broadcast and multicast
- Update firmware and/or hardware for one or multiple cameras from virtually anywhere
- Import and export camera settings via .csv files
- Compatible with all Arecont Vision® cameras

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The Davenport Grand Hotel

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The Customer

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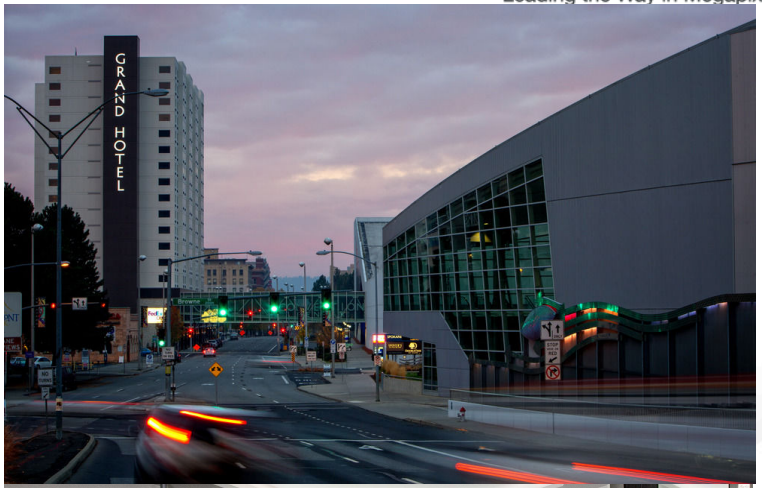
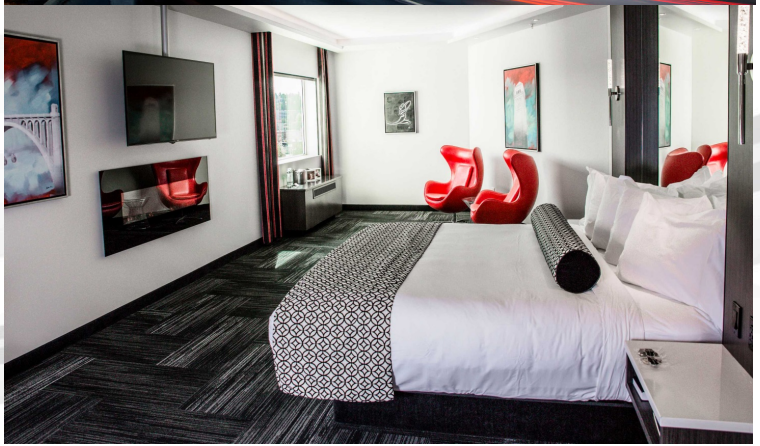
DAVENPORT HOTELS

AUTOGRAPH COLLECTION® HOTELS





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The Customer

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- In 2015 this new hotel would soon provide world-class service, sublime surroundings, and luxury within reach are all things you'll find at Davenport Hotels in downtown Spokane, Washington.
- They required a surveillance solution that would provide quality video to ensure the safety and security of it's guest, employees, and visitors, while helping to prevent theft and other loss.
- Existing hotels in their collection had a mix of analog and low resolution IP cameras, and did not provide the level of quality needed.
- One of the biggest challenges facing the integrator, A-tec, and Arecont Vision, was providing the amount of coverage needed to give them a complete solution, while maintaining a high pixel density for recognition and evidence.
- Another challenge, providing the right solution without polluting the walls and ceilings with cameras.
- Additional challenges included lighting conditions, both WDR and lower light areas, capturing license plate details, and capturing POS areas with high detail.

DAVENPORT HOTELS

AUTOGRAPH COLLECTION® HOTELS

A-tec

The Solution

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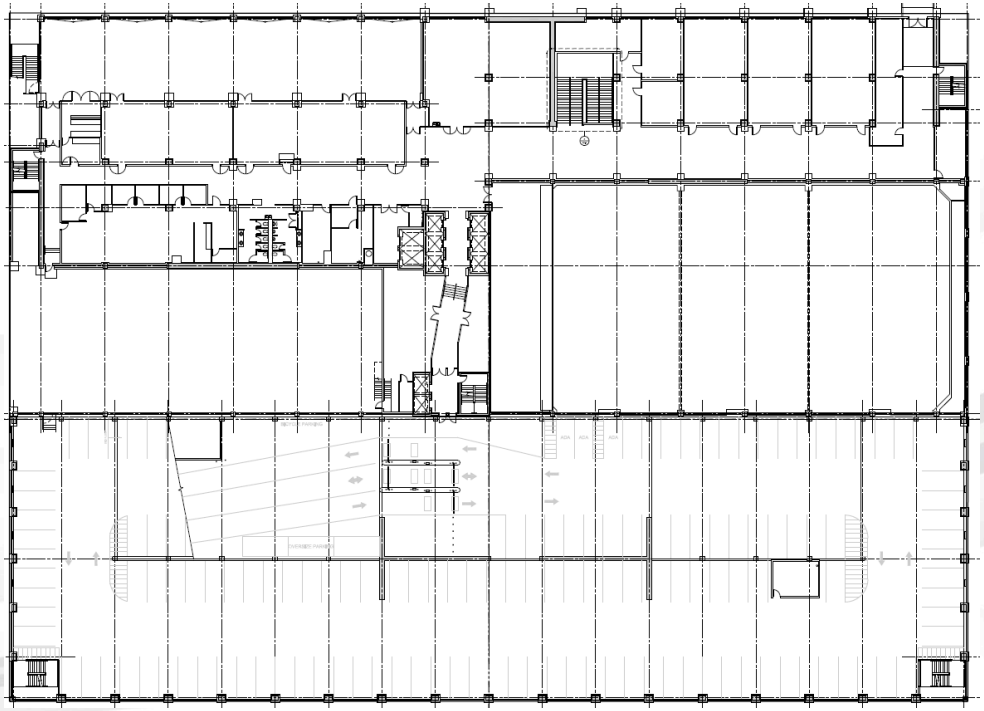
- The first step was to evaluate the existing surveillance design provided by others, as well as visit the construction site. Almost all cameras they proposed were 2MP domes. (Sony)
- The next step, listen….
- Without any preconceived ideas of what the security team needed, we listened to their concerns about their existing system, and how they wanted the new system to be a much more useful tool. We talked about specific areas of concern and past problems with their existing system.
- From what we learned, we knew the current design would not provide the solution desired.



The Solution

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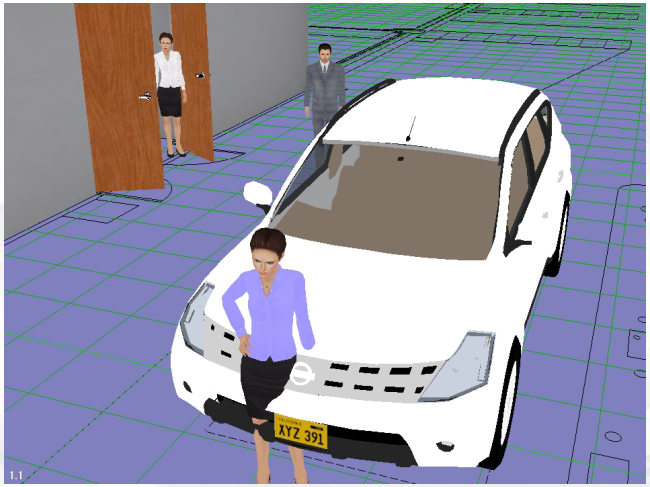
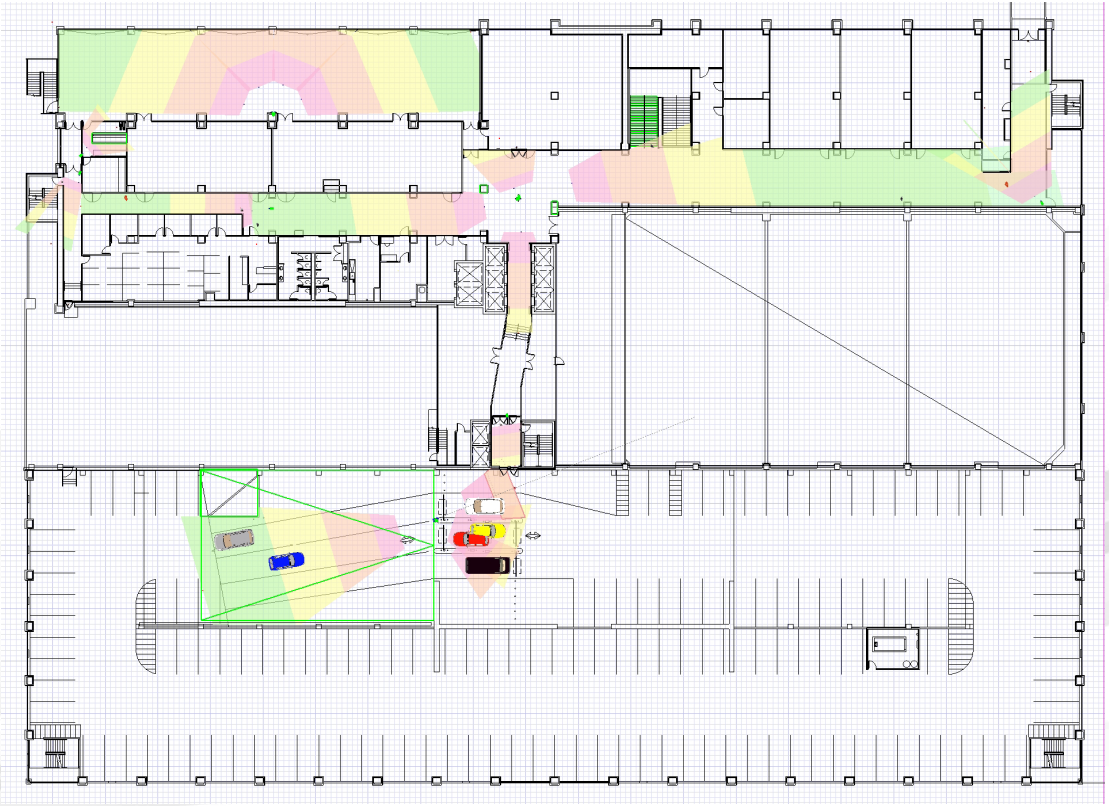
- A conceptual design was started.
- Progress was shared via cloud.
- Discussions took place often to discuss concerns, adds, or changes.





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Setting the bar high

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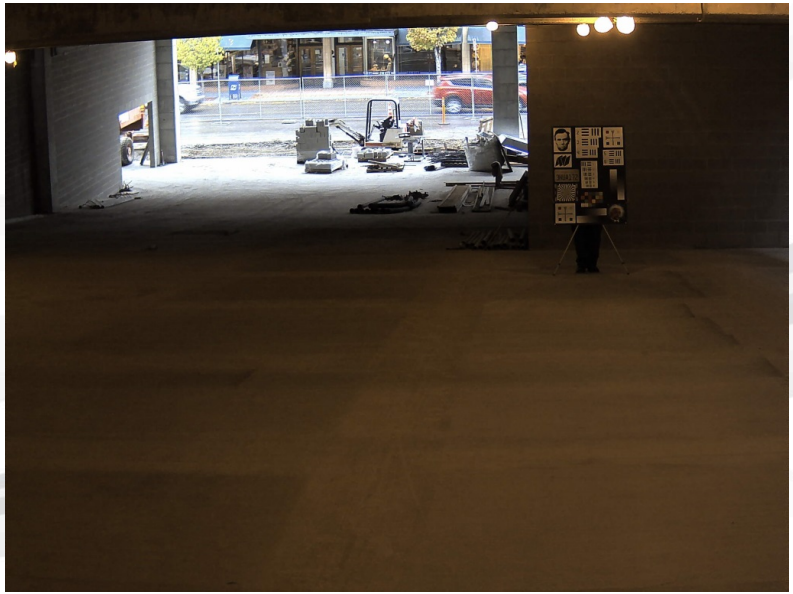
- Once enough progress was made on the conceptual design, onsite evaluations were made again, and video was captured using the cameras and lenses from the new design.
- Although it was a dark, shell of a building, this process helped tremendously as we continued through the design with the customer.

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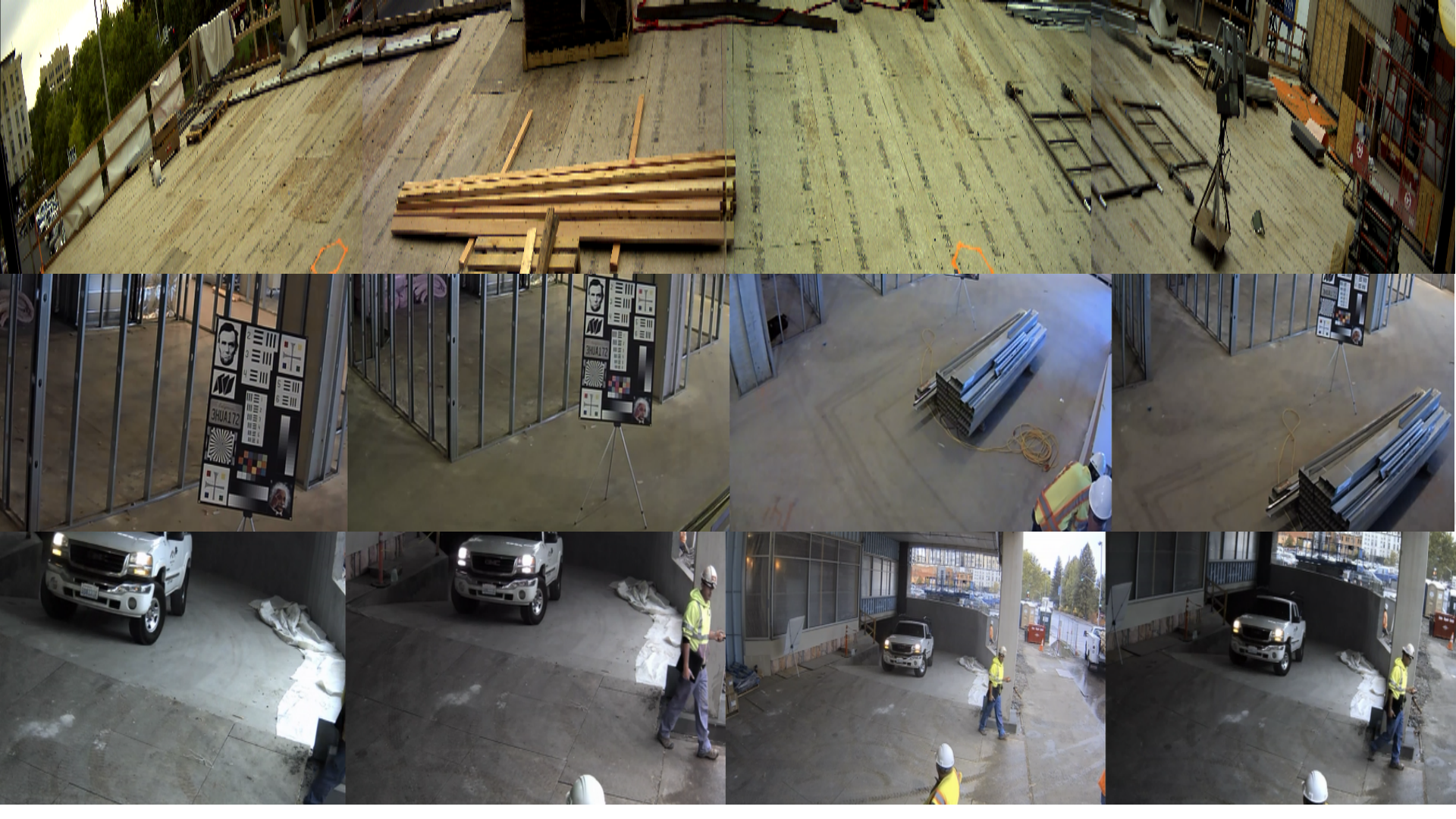

Technology Partnership

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- The next step was introducing our VMS partner. This presented another challenge as the IT Director did not see a need to change the VMS platform from their existing one.
- The VMS platform chosen by the integrator was Exacq Vision, and because Arecont Vision has such great partner relationships we truly came across to the Davenport security and IT staff as a team.
- The obstacles presented by IT were quickly overcome and we were now on our way to presenting a final solution and proposal.

Project Registration

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- Once the final design was complete the customer was anxious to move forward with a proposal.
- Using Arecont Visions project registration as well as the integrator working directly with the distributor to ensure best pricing against our competitor, Sony, we knew we were positioned well.

Project Awarded

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- When the two solutions were evaluated we knew we had provided the best solution, the director of security wanted the solution, and we had the support of the IT director.
- They stood their ground to get our solution awarded the project.
- Although our solution came in with a higher price tag, we were selected because we listened to the customer, worked with them to develop a concept around their needs, then before they had spent a dime, we showed them the proof that we had the best solution.

The Cameras

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The overall installation included nearly 70 Arecont Vision cameras, all of which were deployed to suit the individual areas in which they were to be used. The installed cameras are from several Arecont Vision families. (The original proposal would have added 20 camera locations but only provide 200MP, compared to our 70 cameras, 372MP's with 119 views)

SurroundVideo® Omni User-Configurable Omni-Directional Multi-Sensor Megapixel Cameras

(11) AV12176DN SurroundVideo Omni Series 12.0 Megapixel Omni-Directional User-Configurable Indoor/Outdoor Multi-Sensor Camera

(3) AV20175DN-NL SurroundVideo Omni Series 20 Megapixel Omni-Directional User-Configurable Multi-Sensor Day/Night Indoor/Outdoor User-Configurable Camera

SurroundVideo® 180° Panoramic Multi-Sensor Megapixel Cameras

(3) AV12186DN SurroundVideo Series 12.0 Megapixel 180 Panoramic Day/Night Dome

MicroDome® Ultra-Low Profile Megapixel Dome Cameras

(6) AV1455DN-S MicroDome Series Surface Mount Ultra Low Profile Day/Night Camera with IR Corrected Lens

(2) AV2455DN-F MicroDome Series In-Ceiling Mount Indoor Vandal Resistant Dome with IR Corrected Lens and Microphone

(4) AV2455DN-S MicroDome Series Wall Mount Indoor Vandal Resistant Dome with IR Corrected Lens and Microphone

(15) AV3456DN-F MicroDome Series Ultra Low Profile In-Ceiling Mount Indoor Vandal Resistant Day/Night Camera with IR-Corrected Lens

(1) AV5455DN-S MicroDome Series Ultra Low Profile Surface Mount Vandal Resistant Dome Camera with IR Corrected Lens

MegaBall® Megapixel Dome Cameras

(4) AV2245PM-D-LG MegaBall 2 Series Camera with Remote Focus and Zoom

(1) AV3245PM-D-LG MegaBall 2 Series Camera with P-Iris Lens with Remote Focus and Zoom and Day/Night Functionality

(4) AV3246PM-D-LG MegaBall 2 Series Indoor Camera with P-Iris Lens with Remote Focus and Zoom, Day/Night Functionality and WDR

(4) AV5245PM-D-LG MegaBall 2 Series Indoor Camera with P-Iris Lens, Remote Focus and Zoom, and Day/Night Functionality

(1) AV5245DN-01-D-LG MegaBall 2 Series Indoor Day/Night In-Ceiling Mount Camera with Panomorph Lens

MegaDome® Megapixel Dome Cameras with Remote Focus/Zoom

(4) AV2256PM MegaDome 2 Series All-in-One Indoor/Outdoor Dome Solution with Remote Focus and Zoom and STELLAR Low-Light Technology

(2) AV3256PM MegaDome 2 Series Indoor/Outdoor WDR Dome Camera with Motorized Lens and Remote Focus and Zoom

(3) AV5255PMIR-SH MegaDome 2 Series Indoor/Outdoor Dome Camera with Motorized P-Iris Lens, Day/Night Functionality and Remote focus and Zoom

Proof of Concept

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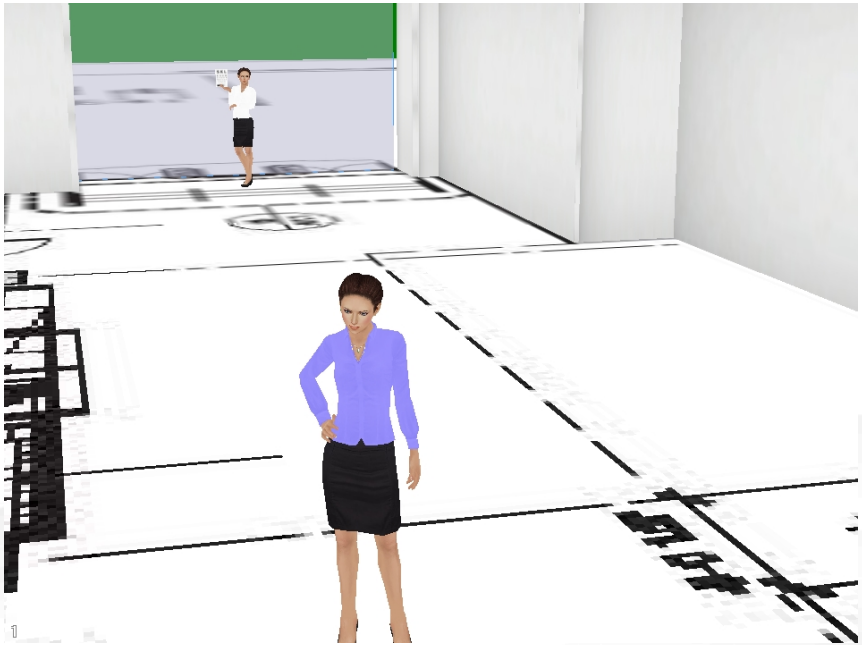

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Sample Images/Videos

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Sample Images/Videos

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Police Seek Help Identifying Davenport Grand Hotel Burglary Suspect

Contact: Ofc. Teresa Fuller, 509.835.4568, tfuller@spokanepolice.org

Monday, June 22, 2015 at 9:12 p.m.

UPDATE: Spokane Police Arrest Davenport Grand Hotel Burglary Suspect

6/23/2015 7:31 a.m.

Spokane Police Downtown Neighborhood Conditions Officers took Ryan S. Robinson (31) into custody just before 9:30pm last night. The officers saw Robinson in the Peaceful Valley area and recognized him from the surveillance footage of the burglary. He was booked into Spokane County Jail for 2nd Degree Burglary and 2nd Degree Theft.

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Sample Images/Videos

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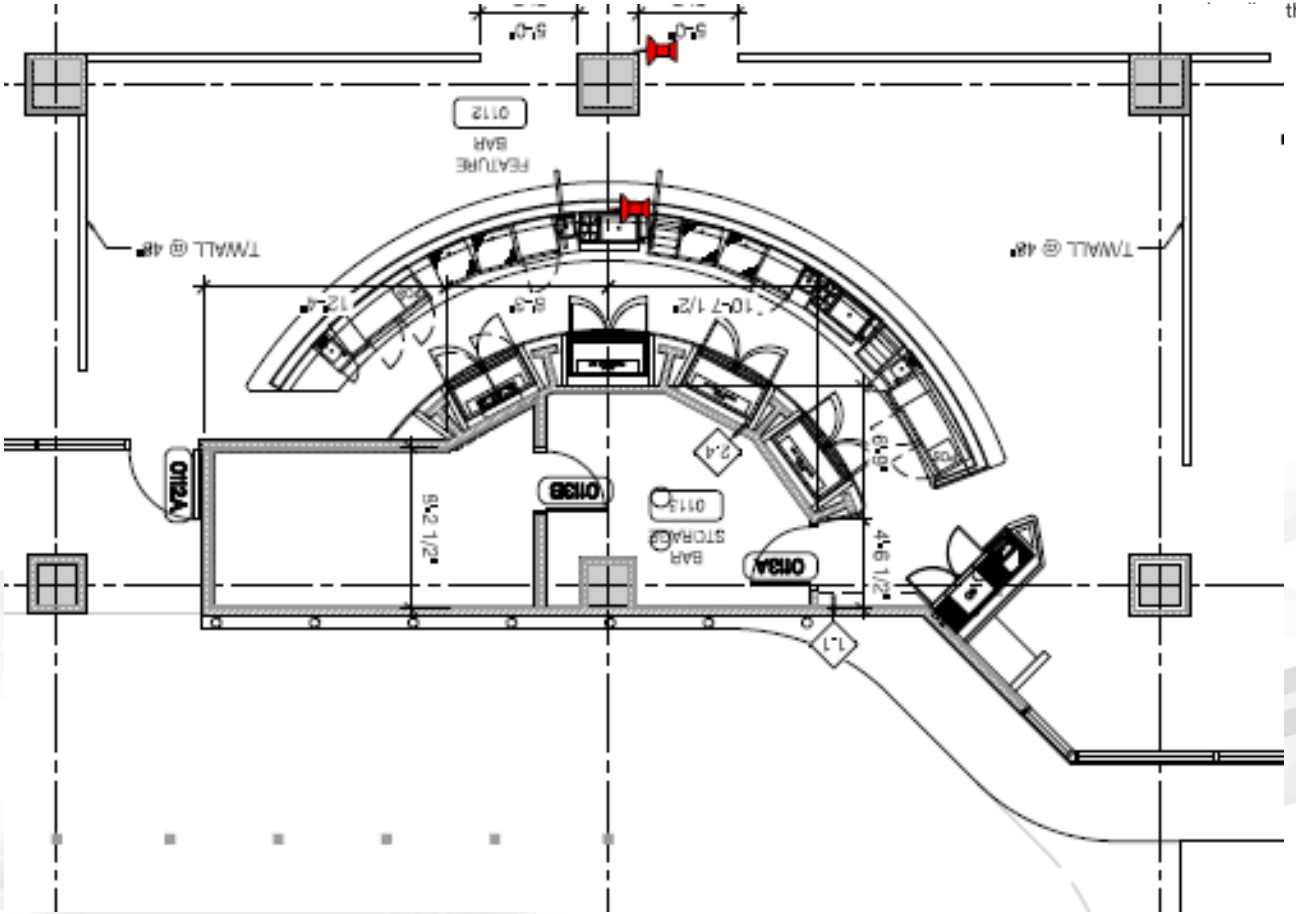
the Way in Megapixel Video™



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Sample Images/Videos

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Tips and Tricks – Getting the Best Image

Getting the best shot

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- Whether setting up a demonstration or “fine tuning” a live installation the goal is the same
- You want the camera setup to provide the best picture possible
- Most of the time the cameras default settings will provide a great picture
- However there will be situations additional adjustment of camera settings is necessary
- Intent of this segment to teach settings to focus on that will help you get the best picture

Tips before you start

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- Know what the camera should be looking at
- Check the camera firmware – confirm version with your VMS
  - *Upgrade Firmware to add new features*
  - *Upgrade Firmware to implement the latest improvements*
  - *Upgrade/ or Downgrade Firmware for compatibility (Some VMS only support specific firmware versions)*
  - *Don't upgrade firmware just because it is the latest (if it ain't broke don't fix it)*
- Know your VMS and what settings on the camera it can control
- Consider night time site lighting conditions (will supplemental lighting be needed?)

Basic tuning tips

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- Focus, is first and most important step before adjusting any settings on the camera
- Use the “Brightness” level (#1 setting in image menu) to adjust overall image brightness
- Try to lower the “Brightness” level as much as possible with acceptable image
- Exposure mode - the key to understanding how Arecont Vision cameras work
- This setting is for the camera response to changing illumination levels
  - Allows radio selection for one of 5 low light modes
  - Automatically by exposure mode are also gain(AGC), backlight compensation, and noise reduction
  - Functions are grouped into preset modes that automatically adjust determined by the “Exposure mode” selected

Auto Exposure Control

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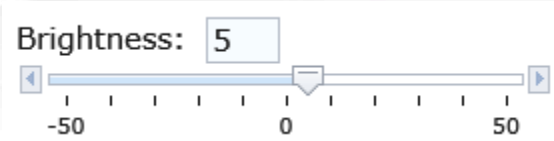
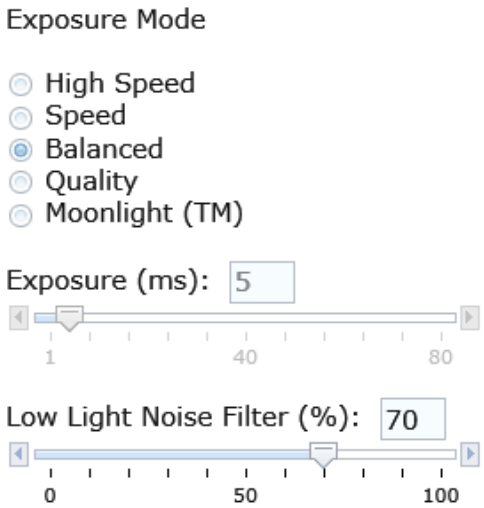
- How does Auto Exposure work?
  - User sets desired brightness of the image (target brightness)
  - Auto Exposure measures brightness of the image, and adjusts exposure time (shutter speed) and gain to maintain target brightness level
  - Depending on selected exposure mode Auto Exposure adjust with different trade-offs





Auto Exposure Control

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- Five modes available to select from
  - MoonLight™
  - Quality
  - Balanced
  - Speed
  - High Speed

- There are different trade-offs for each mode, between higher image noise and bit rates with shorter exposures, reduced FPS and motion blur with longer exposure times

Auto Exposure Control Best Practices

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- To maintain the same brightness, the gain must be increased which will be done by the camera automatically
- As gain increases, image noise increases, for that reason short exposure images look grainy
- Increased exposure time reduces the amount of noise but will increase motion blur of moving objects
- FPS shown in AV camera specifications are max possible, actual frame rate will be affected by exposure mode selected, and local illumination

Examining effects of Illumination

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- Best picture from megapixel in low light requires considering site illumination
- Need more illumination than lower resolution because of smaller pixel sizes in high megapixel
- Site illumination has a big effect improving image quality, frame rate, and bit rate

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Option – Binning

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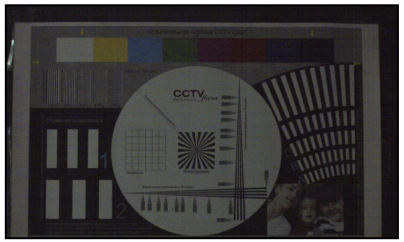
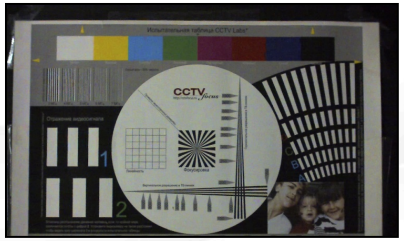
- Binning combines and averages pixels to:
  - Improve low light performance
  - Increase sensitivity
  - Produce better SNR



Non Binned



Binned

Not binned

Pixel 1	Pixel 2
Pixel 3	Pixel 4

Binned = ¼ resolution

One combined pixel
4 times the light
gathering ability

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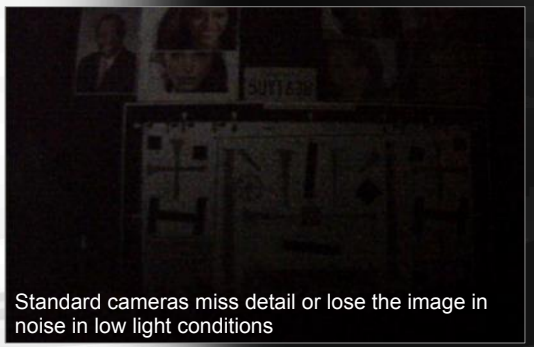
STELLAR™ Technology

(Spatio TEmporal Low Light ARchitecture)

Highlights:

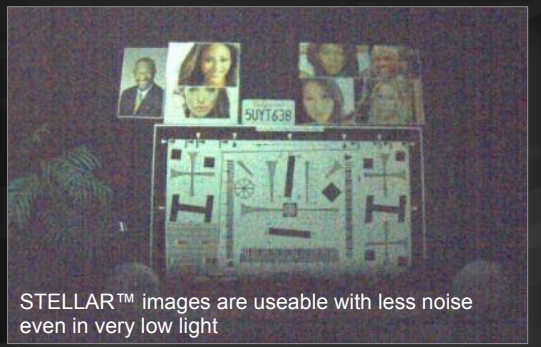
- Color Images in Near-Complete Darkness at 12 FPS
- Superior Low Light Sensitivity
- Adaptive Contrast Enhancement
- Motion Blur Reduction
- Patented Noise Reduction Algorithm
- Low Bit Rate and Storage Requirements

Color Mode Comparison
at 0.01 Lux



Standard cameras miss detail or lose the image in noise in low light conditions

Standard



STELLAR™ images are useable with less noise even in very low light

STELLAR™

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Option – Exposure, ROI Reference

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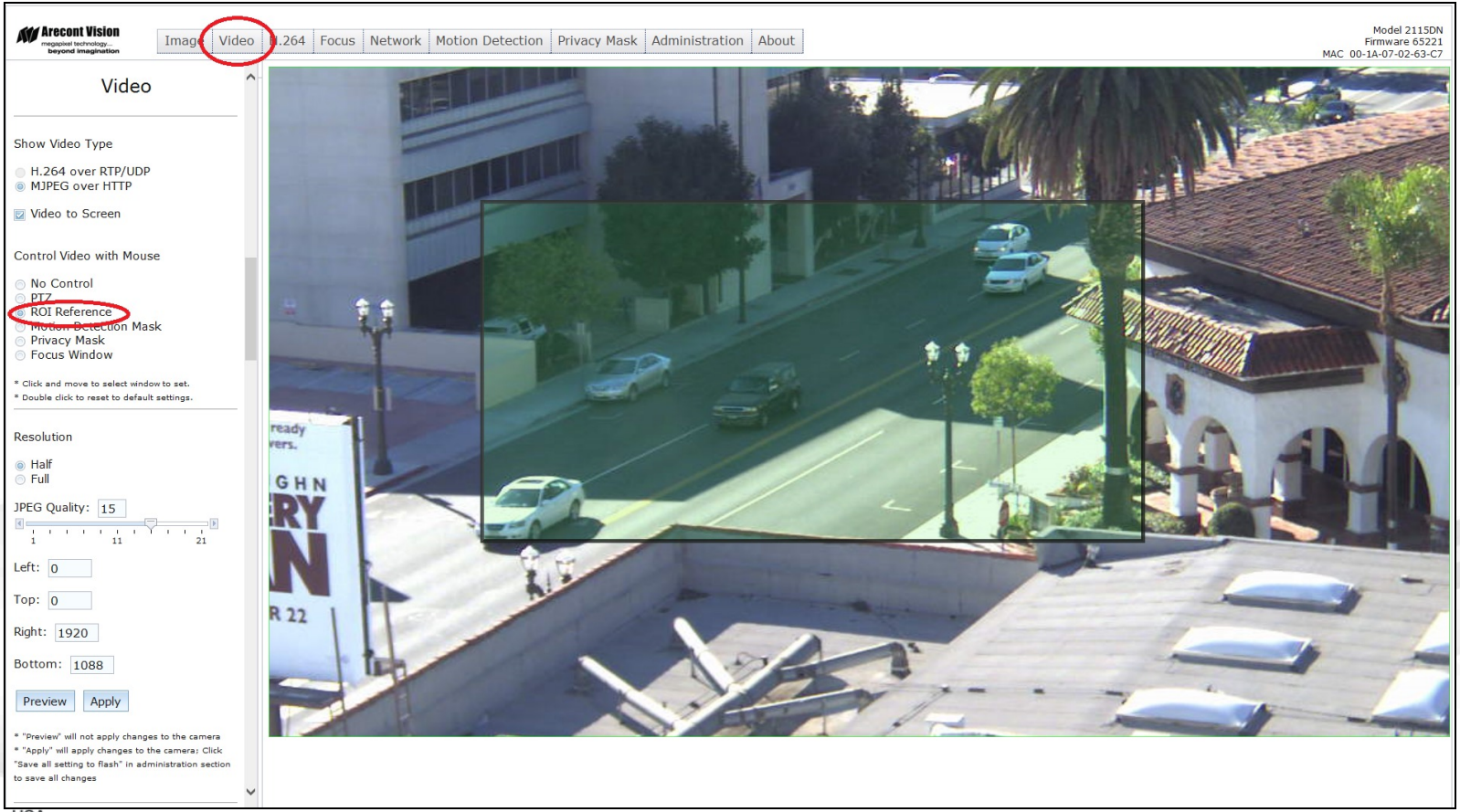

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Better Exposure / BLC control

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Note how dark the top half of the picture is

Exposure reference can be customized using our ROI feature

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Option – Equalize settings

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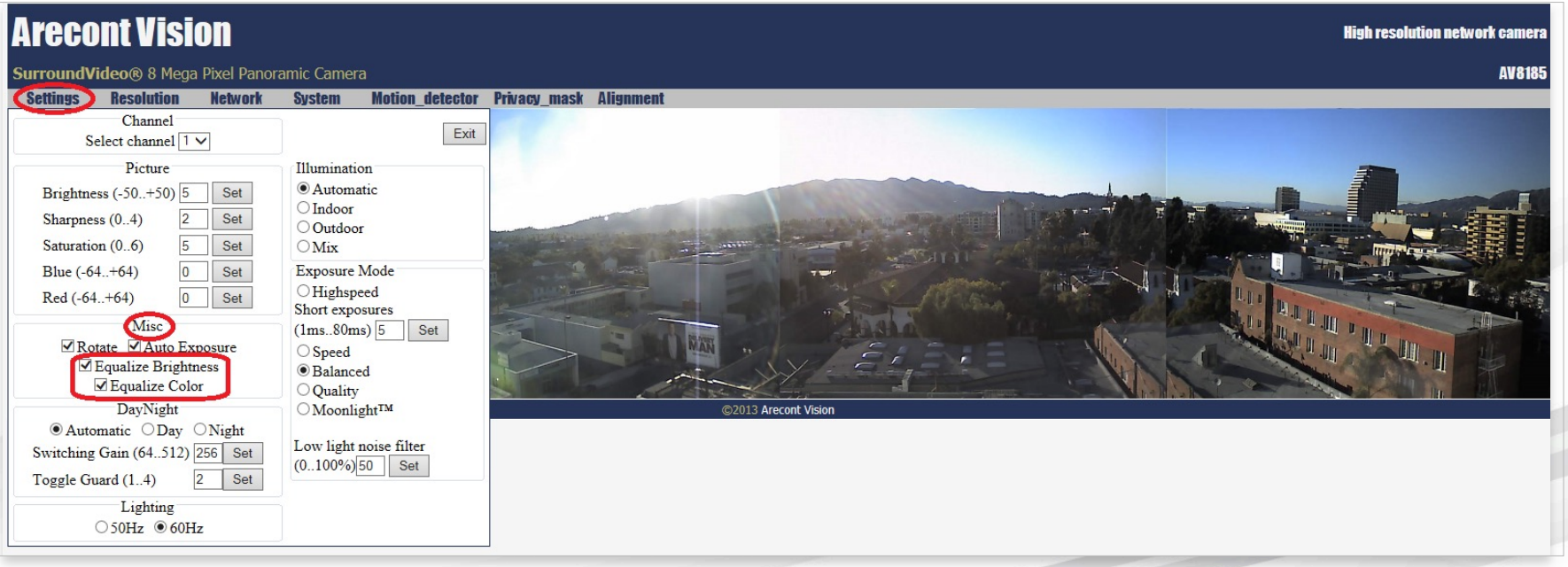

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Option – Exposure Ref Channel

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Exclusive to the 12MP WDR Surround Video cameras
Takes place of the equalize brightness and color settings
Allows manual setting of one channel to use as exposure and color reference

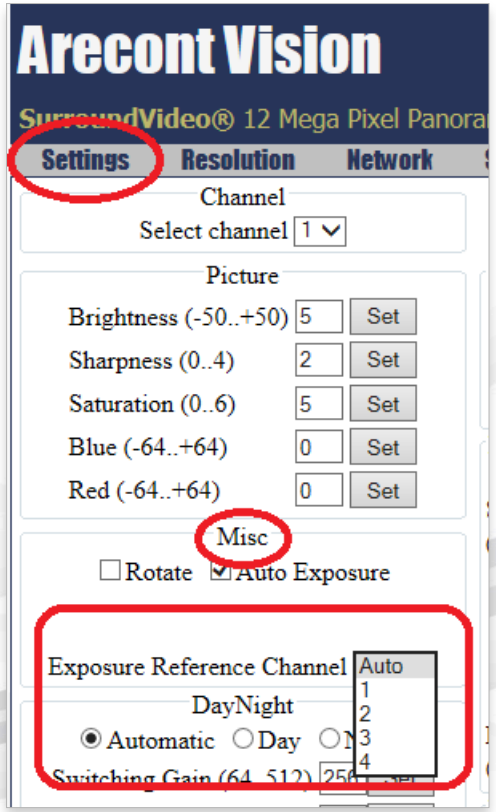

Image Equalization

Arecont Vision®

Leading the Way in Megapixel Video™

Auto

Exposure Reference Channel

Learn More:

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