Arecont Vision Update

August Customer Update

Arecont Vision

Leading the Way in Megapixel Video™

- Good finish to July 2017!

- New products delivered July!

- Continued Progress with VMS/NVR Partner sales opportunities.

- Project Registrations ranging 35-40% in additional discount! Best in Industry!

- Quality and Service continue strong improvement in RMA reductions and solid call rates. Averaging less than 2 voice messages per day!

- Customer Satisfaction continues to improve and highly rated! Exceptional results in 2Q17!

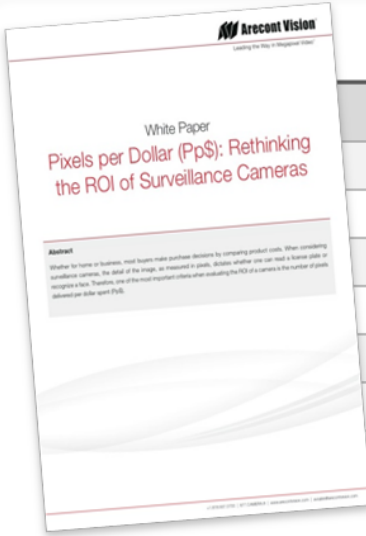- Buy American Executive Order Program is in process!

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MegaVertical Presentation: Large Enterprise
(Additional focus on Architecture and Cybersecurity)

Arecont Vision®

Leading the Way in Megapixel Video™

Solutions for Corporate and Large Enterprise

- Arecont Vision increases your ROI
  - Multi-sensor cameras can reduce infrastructure costs
    - One camera can provide up to (4) unique Field-of-Views
    - One POE connection
    - One camera license for most VMS platforms
  - Single-sensor cameras provide greater coverage over analog
  - Full product line to meet multiple applications
    - Perimeter and parking lot security
    - License plate capture
    - Discreet facial capture
    - General surveillance

More Pixels per Dollar (Pp$)

Arecont Vision
Leading the Way in Megapixel Video™

- Arecont Vision multi-megapixel cameras provide better image quality and superior return on investment (ROI)

  - 10MP cameras provide more than 18,000 Pp$ while VGA-resolution cameras only about 1,500 Pp$ (see chart at right)

- A single megapixel panoramic camera may also be able to cover the same field-of-view as several standard resolution cameras

- Using fewer cameras also translates into infrastructure cost savings (less labor, cables, mounts, housings, VMS/NVR license fees, maintenance, etc.) for further increased ROI

Cost Effectiveness Among Various Camera Resolutions

White Paper
Pixels per Dollar (Pp$): Rethinking the ROI of Surveillance Cameras

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.

- At the core of every Arecont Vision camera is a **Field Programmable Gate Array (FPGA)** integrated circuit mounted on a custom-designed Printed Circuit Board (PCB)
 - The circuit boards vary based upon camera series
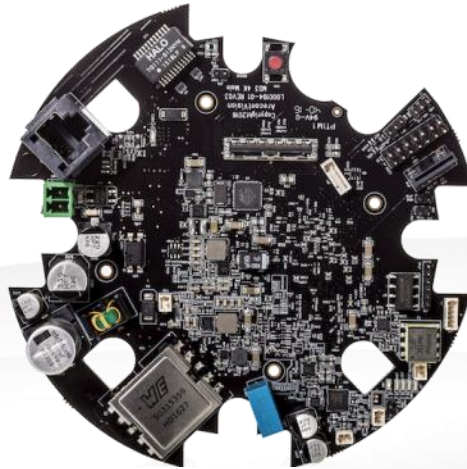
Arecont Vision Circuit board, top surface
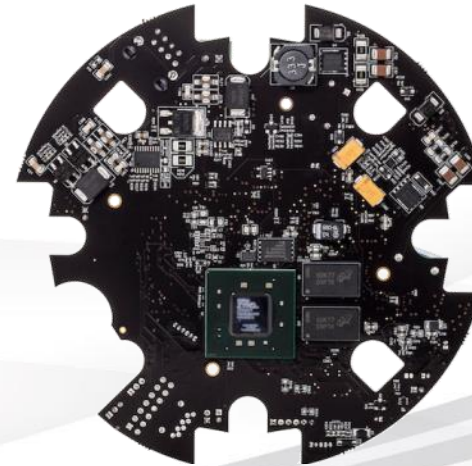
Arecont Vision Circuit board, flip side

- The Arecont Vision FPGA is programmed with our in-house designed Massively Parallel Image Processing (MPIP) architecture, now in it's 5th generation
  - We are the only major network camera manufacturer to use FPGA technology and to have invested in the development of our own operating architecture for video image processing
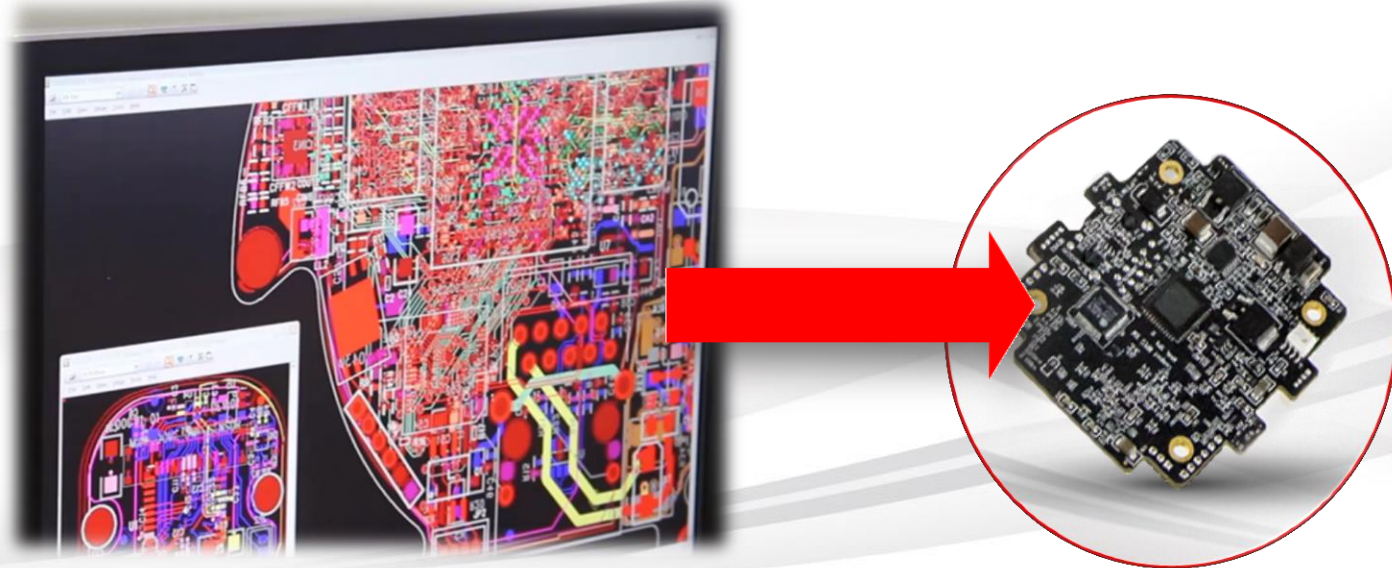
- Competitor cameras are typically based on Application Specific Integrated Circuit (ASIC) technology

  - Entire cameras or multiple firmware features may be supplied not by branded camera vendor but instead by 3rd parties, then loaded on the ASIC or supporting circuit boards

  - This is for time-to-market and manufacturing cost reasons, and are typically produced in large lots for multiple camera models, sometimes OEM'd by multiple camera vendors with identical features

- ASIC technology limits updates to core firmware

  - Minor field security updates and bug fixes are often all that can be applied to existing cameras

  - New features, major security updates, and enhanced capabilities are more complex

    - *Usually require a new camera to be purchased*
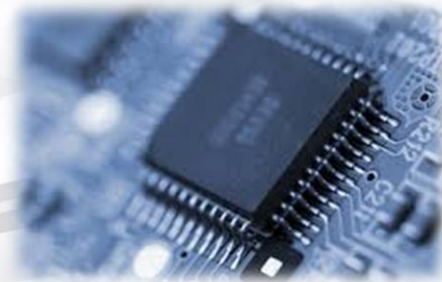
- Common operating systems such as Linux can pose a cybersecurity risk to network enabled devices running the OS

  - Most competitor cameras run Linux or other common OS systems on which they load any of their own code plus the 3rd party code that they have purchased or licensed for core features in their cameras

- In comparison, to safeguard against cybersecurity risks, Arecont Vision cameras do not run common operating systems (OS)

  - Arecont Vision runs our own machine code as part of our in-house developed MPIP architecture on the FPGA IC chip installed in every one of our cameras

- Competitor cameras are increasingly used in cybersecurity attacks

  - Cyberattacks are no longer limited to IT devices

  - Many network cameras, computers, appliances, and IoT-enabled (Internet of Things-enabled) devices that use Linux have been documented to have been compromised

  - They can and have been repurposed to be used in Distributed Denial of Service (DDoS), ransomware, network penetration, and other cyberattacks

Arecont Vision Cybersecurity Protection

Arecont Vision Cybersecurity Positioning

Leading the Way in Megapixel Video™
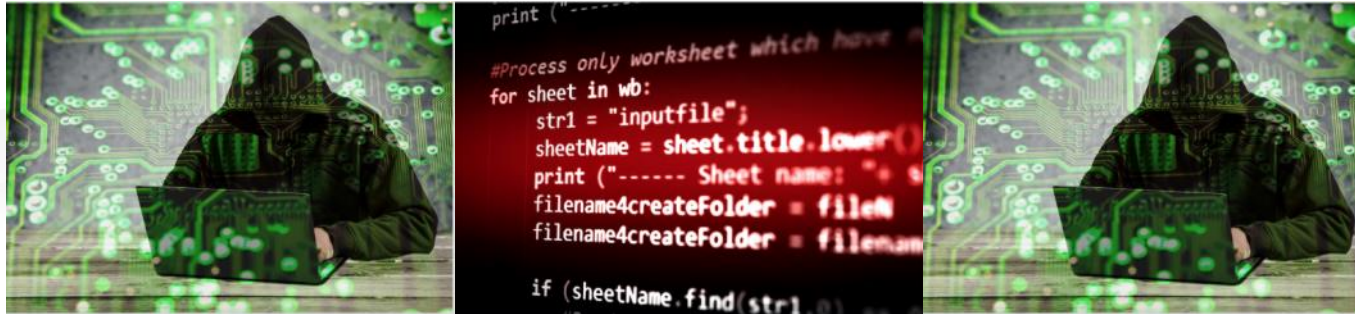
- Arecont Vision cameras have never been reported as being used in any cybersecurity attacks

- Should a hacker gain access to an Arecont Vision camera, or obtain the user ID and 16-digit ASCII password to log into the camera, the attack would <u>only</u> impact that device

  - *A successful hacker or virus attack could access the camera webpage and change individual camera settings or take if off line*

  - *The camera could not be taken over for any function other than for which it is designed*

  - *A bot or virus could not take control and use the camera to launch cyberattacks on other network enabled devices or infect other devices across either the the local network or the Internet*

View all Technical Updates: https://www.arecontvision.com/bulletins/Technical

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Arecont Vision Cybersecurity Protection

- An Arecont Vision camera cannot be repurposed to be used in DDoS, ransomware, or network penetration attacks on other network devices
  - This is due to our Massively Parallel Image Processing architecture that takes the place of common operating systems found in competitor devices

- This enables Arecont Vision to balance the user experience along with advanced cybersecurity protection in all of our megapixel cameras
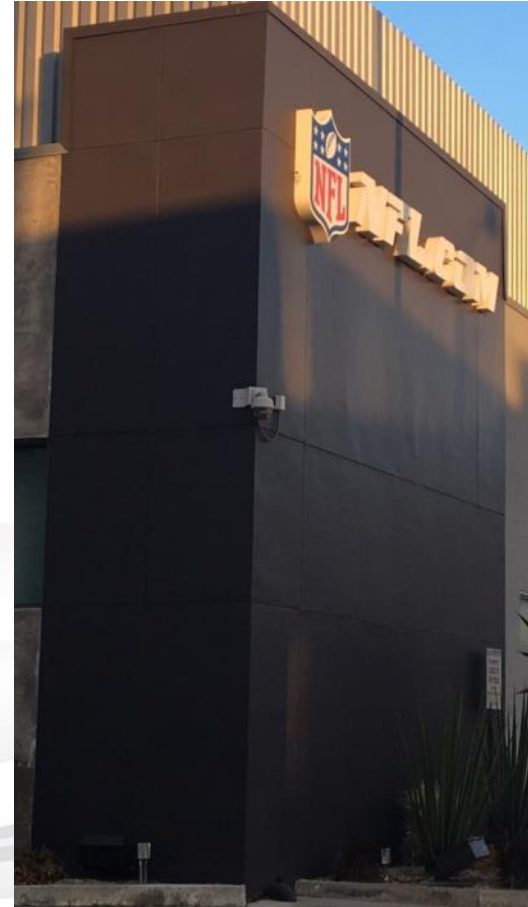
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Stage 1: *Prospecting*

Stage 2: *Needs Identification*

Stage 3: *Proposal Generation & Delivery*

Stage 4: *Negotiation*

Stage 5: *Closing*

Traditional Sales Funnel

Sales Qualified Lead

Requirements Definition

Value Demonstration

Proposal

Negotiate

Close

Awareness

Evaluation
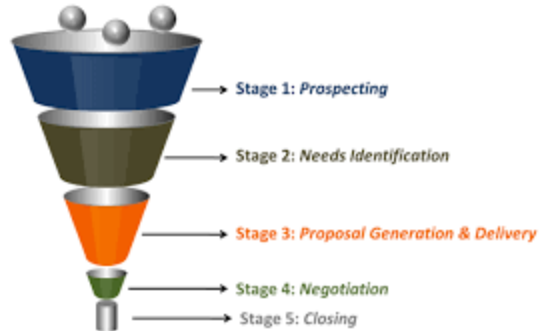
Purchase

Good, Better, Best: Arecont Vision

CAMERA TYPE	Good* Arecont Vision	Better** Arecont Vision	Best*** Arecont Vision
BOX	AVx115DN (1-10MP)	AVx215PM (1-10MP) AV 4K Box Camera	
MICRODOME	MicroDome 1 (1-5MP)	MicroDome 2 (1-5MP) MicroDome 2 IR (1-5MP)	
MEGADOME	MegaDome 1 MegaBall 1	MegaDome 2 (1-10MP) MegaDome 4K MegaBall 2	MegaDome 3 (2-5MP)
BULLET	MegaView1	MegaView 2 (1-10MP) MicroBullet (2-3MP)	
TETHERED CAMERA		MegaVideo Flex(1-5MP)	
MULTISENSOR (180°/360°)	SV Panoramic (8-40MP)	SV G5 Panoramic (5-20MP) MicroDome Duo (4-10MP)	
MULTISENSOR (OMNI)	SV Omni G1 (12, 20MP)	SV Omni G2 (12, 20 MP)	SV Omni G3 (12, 20MP)

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When a Project Registration hits, immediately please work with your local Arecont Vision person to discuss key information so you can improve your chance to win.

1. Background on the opportunity: size/scale, % chance to win, order date, product mix, VMS/NVR, etc.

2. Is the project funded?

3. Has a demonstration of the product been completed for the customer? Can you offer a demonstration unit? Is the customer interested in a Try&Buy? Will they be doing a shootout, proof-of-concept, or pilot?

4. Who is the competitor: SI and competitive products

5. What products should we really propose: Good, Better, Best? Option 1-Option2?

6. What is needed to get the order?

7. What other projects can we work on together?

Once the project is registered and in CRM, that is when the real work starts (or continues). We need to do a much better job in follow through once the opportunity is visible to us. Otherwise we open the door to competitors who will deliver a sub-standard solution and lesser support and service than you.

1. Is the project still funded?

2. Can Arecont Vision people help you with the demonstration, Try&Buy, proof-of-concept, or pilot? Is it successfully completed?

3. Has the proposal been delivered to the SI and then to the end user?

4. Are you aligned with your VMS/NVR technology partner? Are they helping you win?

5. Are there any more open action items?

6. Ask for the order 4-5 times.

7. What else can we do together to get the order?

Arecont Vision®

Leading the Way in Megapixel Video™

- Programs released:
  - Summer 2017 Promotion!
  - Trade UP Program
  - Try&Buy Program
    - Extended for Multi-Sensor Products, MicroDome Duo, 4K and Flex
    - Expanded for OMNI3, MegaDome3, 4K Box camera
- SI/dealers should sign up for service parts/demo agreements.
  - Immediate shipment without a credit card.
  - It is fast and simple to do.
- Our new products are shipping now? We don't have product holds!

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Product Development Update

Innovation: Most Complete Product Line

Omni

Omni G2

Omni G3

SurroundVideo® Omni
Series

180º
Mini

180º
w/RF

360º
Mini

SurroundVideo® G5
Series

MicroDome® Duo

Surface
IR

Surface

Flush

MicroDome® G2

MicroBullet®

MegaVideo® Flex

Bell Mount

Bell
Mount
IR

Wall/Surface
Mount

MegaBall® G2

MegaDome® 4K

G3 RS

G3

G3 with IR

MegaDome® G3
Series

Telephoto

Wide Angle

MegaView® 2

MegaVideo® 4K

Dual
Sensor

Single Sensor
w/RFRZ

MegaVideo® G5
Series

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MegaVideo® 4K

*4K (8.3 Megapixel @ 30 Frames Per Second) **Box Camera H.264 Remote Focus/Zoom, P-Iris Lens, True Day/Night, IP Camera***

Highlighted Features Include:

- 4K Ultra High Resolution Image Quality
- 8.3MP/30FPS H.264 True Day/Night Indoor Box IP Cameras
- NightView™ Technology for Enhanced Low Light Performance
- 4K/1080p Dual Mode
- Wide Dynamic Range
- SNAPstream™ (Smart Noise Adaption and Processing) for reduced bandwidth without impacting image quality
- Multiple Lens Option with Remote Zoom/Focus and P-iris
- Outdoor Housing Options

SNAPstream™

NightView™

4K Resolution

Customizable Motorized and Manual Lens Options and Housing Options

P-Iris Control for Best Depth of Field and Image Clarity (PM Models)

SDHC Card Slot (-S Models)

True Day/Night with IR Cut Filter

CorridorView™ with 90° Image Flip

GEN5 Megapixel IP Cameras

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MegaVideo® 4K

Leading the Way in Megapixel Video™

Outdoor Ready HSG3 Housing

Powerful Lens Options

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MegaVideo® 4K Sales & Technical Materials

- **On the Arecont Vision Website** (www.arecontvision.com)

  - In the PRODUCTS section @ http://tinyurl.com/y93wa76c

  - In the PROJECT REGISTRATION system via the AV Sales Partner Program Web Portal @ https://www.arecontvision.com/signin.php

  - New interactive web page will go live shortly

- **Available Sales Materials**

  - The **Data sheet** can be downloaded from the PRODUCTS page or directly @ http://tinyurl.com/yc7kdcd2

  - **A&E Specifications** can be downloaded from the PRODUCTS page or directly @ http://tinyurl.com/yc8eyc4s

  - Your Arecont Vision sales team representative can provide you with MegaVideo 4K **Product Presentation** materials from the AV GOLD STANDARD deck

  - **MegaVideo 4K Pricing** is available to AV Sales Partner Program Members (effective 19 May 17)

  - The unique **Cybersecurity Protection** of MegaVideo 4K and all other Arecont Vision cameras is explained in the cybersecurity whitepaper @ http://tinyurl.com/ybdnc4ez and a cybersecurity presentation is available from your Arecont Vision sales team

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Arecont Vision®

Leading the Way in Megapixel Video™

SurroundVideo® Omni G3

4 Remote Configurable Motorized Sensor Gimbals
in an Omni-Directional All-in-One Solution

Highlighted Features Include:

- 12 or 20 Megapixel (MP) H.264 All-in-One Remote Setup Omni-Directional Camera

- No Touch Setup: 4 Individual Camera Gimbals Each with a 2.8–6mm Motorized Lens That Can be Remotely Setup in Any Position Around a 360° Track

- Preset Positions to Create a 360°, 270°, or 180° Field of View and Two Custom Configurations

- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)

- SNAPstream™ Advanced Compression Algorithm Reduces Bandwidth without Impacting Image Quality

Easy Plate with Hinge Installation

| Remote Setup | SNAPstream™ Technology | Omni-Directional Track with 4 Customizable Sensors | Presets 180°/270°/360° | Custom Presets | Motorized Pan & Tilt Capable | Wide Dynamic Range on Select 12MP Models | True Day/Night with IR Cut Filter | Pixel Binning Mode | Impact / Weather Resistant IK-10 and IP66 Rated | Installer Friendly |

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Possible Scenarios

Indoor Hallway Intersection Layout

270° Outdoor Layout

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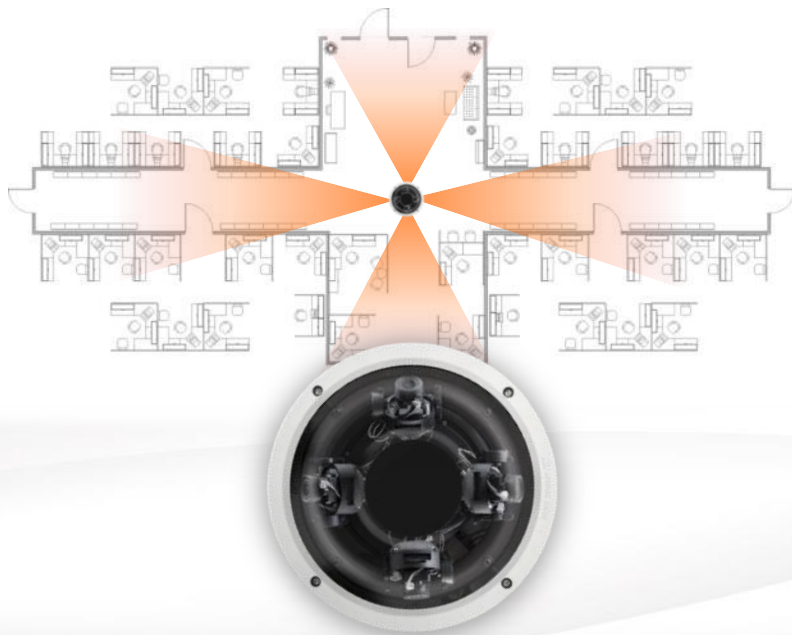
MegaDome® G3 RS

With Remote Setup, SNAPstream™, and an Installer-Friendly Design

Highlighted Features Include:

- 3 or 5 Megapixel (MP) H.264 All-in-One PoE Dome IP Camera Solution

- Remote Setup – No Touch Setup with a Varifocal Motorized Lens that can be Remotely Setup in Any Position

- Motorized Pan and Tilt Capable – Pan 359°, Tilt 90°

- True Wide Dynamic Range up to 100dB at Full Resolution (Select Models)

- SNAPstream™ Advanced Compression Algorithm Reduces Bandwidth without Impacting Image Quality

| Remote Setup | Motorized Focus and Zoom Capable | Motorized Pan & Tilt Capable | SNAPstream™ Technology | Wide Dynamic Range Available on Select 3MP Models | True Day/Night with IR Cut Filter | Pixel Binning Mode | Non-Integer Scaling | CorridorView™ with 90° Image Flip | SDHC Card Slot | Installer Friendly | Impact / Weather Resistant IK-10 and IP66 Rated |

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MegaView® 2

Production Line Inspection Updates – New Test Fixtures
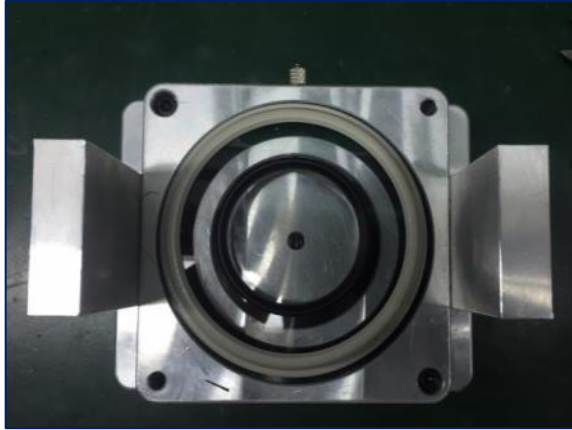
Front Cover
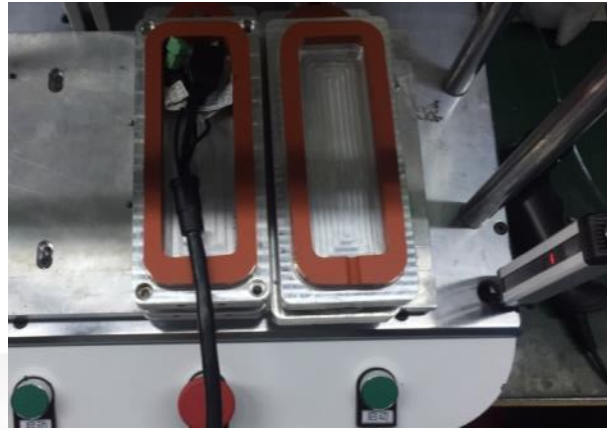
Pigtail Cable

Body

Air at 20KPa is injected to test the integrity of the seals and gaskets

HOW I SHOT THE BEAR:
CELL C BTS TOWER PROJECT

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- Cell C is the Third Largest Cellular provider in South Africa, competing for the lucrative mobile and data network market in South Africa. Population Est. 62 million people

- South African infrastructure heavily reliant on road transport – particularly important for cellular providers to provide continuous connectivity on it densely populated road infrastructure.

- Major City's include Johannesburg, Cape Town, Pretoria, Durban, Port Elizabeth and Bloemfontein,

- Distance from Johannesburg to Cape Town 1400km (600miles)

- Routing of calls in most densely populated area of Johannesburg approximately 2 million calls per minute.

- Competitors include Vodafone (Largest) and MTN South Africa (2nd Largest)

- Average 24 month contract per household in Southern Africa approximately 10 contracts per household

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How I Shot the Bear : Cell C

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- Cell C emphasis on security especially with its cellular network
- Approximately 4500 BTS Towers around South Africa
- Towers include battery's that keep power live if any brown out's or black out's occur.
- Towers have infrastructure with air conditioners to keep electronic goods operational 24/7
- Valuable assets that require up-time continuously

The Challenges experienced by the client:

1. Vandalism

2. Theft

3. Remote locations

4. Flexibility to view all angles of the BTS site

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Omni Camera – the flexible solution
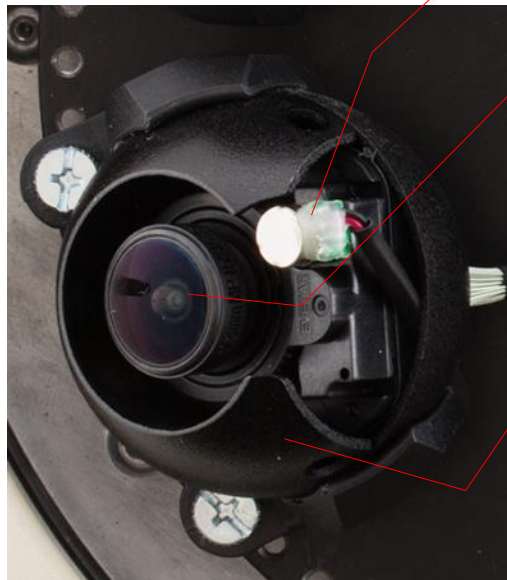
Motorized Focus Module

Changeable Lens 2.1mm to 16mm

3 Axis Gimbal

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Installing the Omni Cameras we reduced the camera footprint from 4 individual cameras to 1 camera

Close working relationship with ExacqVision gave us the ability to provide an NVR that is cost effective and integrates effortlessly into our Omni Directional Camera

The fact that the camera is installed below the "Crow's nest" gives the appearance of a light fixture with the pendant mount, this reduces the possibility of vandalism of the product

With our SNAPstream technology we are able to stream the multi-sensor camera and reduce the recording significantly with very little impact on the existing mobile infrastructure

AV 1080p @ Default Settings
30 FPS 2.2 Mb/s

AV 1080p @ Default Settings
with **SNAP**stream ® 30 FPS 0.5 Mb/s

The Solution

- Interchangeable Lenses giving client flexibility to view wider angles or more pertinent points
- Pendant mount has the appearance of a light, giving the camera more anonymity

- The flexibility of Generations has given the client more options and price points on the Omni Gen 1, Gen 2 and Gen 3 with the same technology and quality that the product promises

- The Cut Filter for low light conditions Black and White has performed exceptionally well and has provided good low light scenes

- The build quality and design has past with flying colors in stress tests done by the Networking Department of Cell C

- Client feedback has been extremely positive – 'unique and ahead of its time'

Leveraging Megapixel for Better Design Coverage

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- Camera Reduction

  - The most cost beneficial way to implement Megapixel reducing total cameras needed covering wider FOV at higher resolution

  - Reducing number of cameras placed, also reduces, VMS license, wire cost, labor time, and points of issue potential, etc

  - Typically less expensive than lower resolution IP installations

- Anywhere you have a very large space to cover with minimum mounting points.
- Common applications include:
  - Parking Lots
  - Campus Quads and Business parks
  - Cafeterias and Building Lobbies
  - Large Industrial Spaces
  - Large Retail Space and Storage Yards
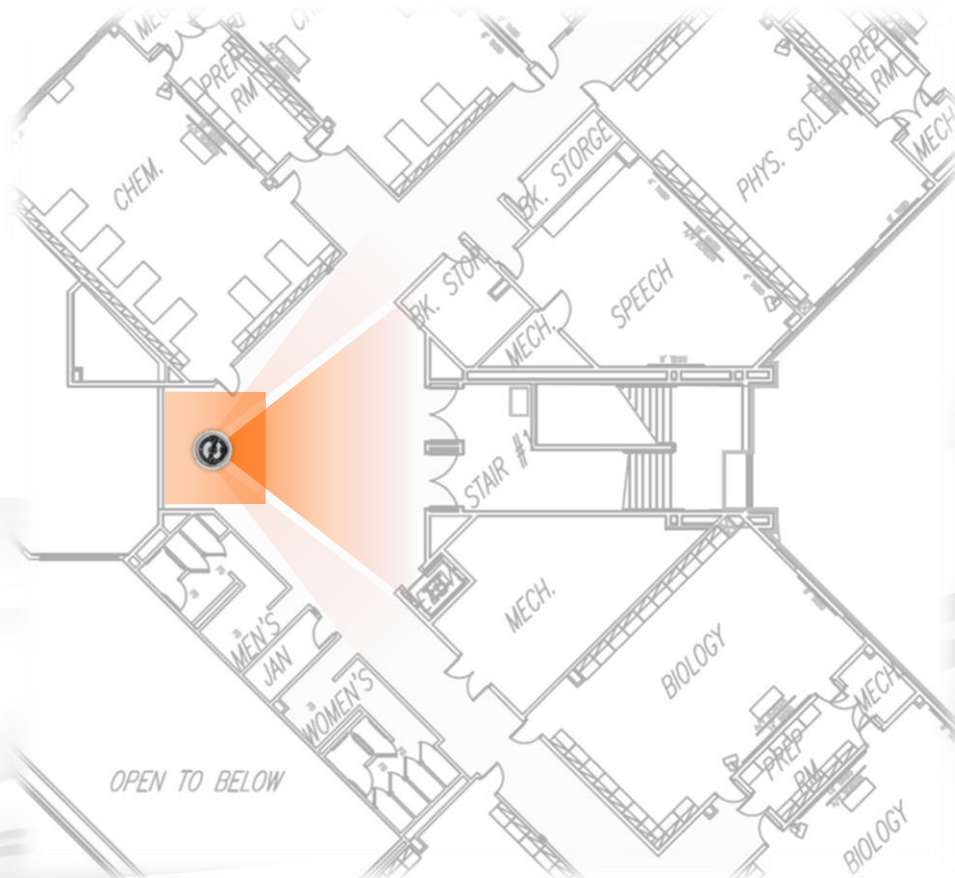
SurroundVideo®

Omni family

270^0 rooftop corner application

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Arecont Vision®
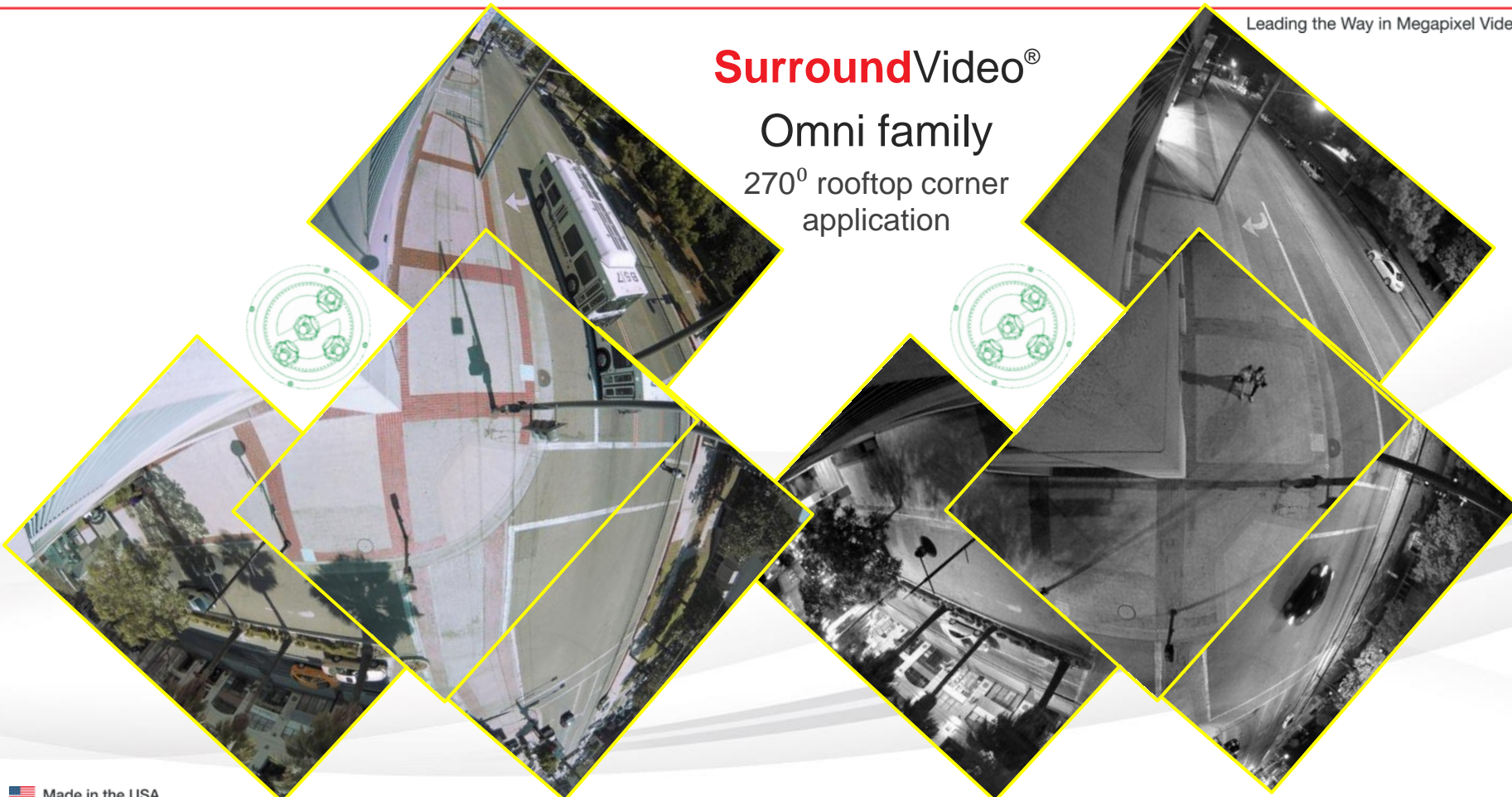
SurroundVideo® Omni or
## **Micro**Dome Duo

Odd hallways and concourses

Benefits:

- Situational Awareness

- Liability reduction

- Monitor use and access of company parking and campus perimeter

- Identify accident details or illegally parked vehicles

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- A single camera can cover a very wide field of view – (camera reduction)

- All the action is captured all the time vs. PTZ type solution

- Combined with single sensor cameras at entrances this of solution does not necessarily need high resolution coverage throughout the field of view

- Sufficient detail exists to monitor general activity throughout the covered space

- If more detail at distance is desired higher resolution 180°cameras can be used
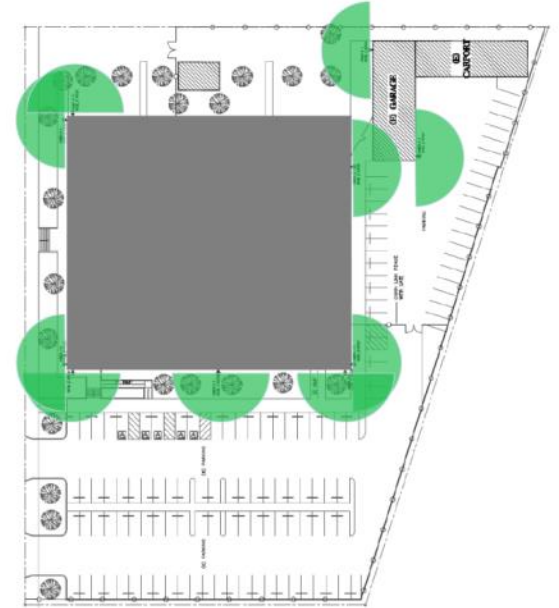
Typical Parking Application

- Approximate size: 300' wide x 200' deep

- 20MP Panoramic camera: AV20585PM

- Closer Objects have more Pixels on Target

Parking Lot 2 camera solution

- Camera 1: 20mp AV20585PM
- Camera 2: 5mp AV5225PMTIR
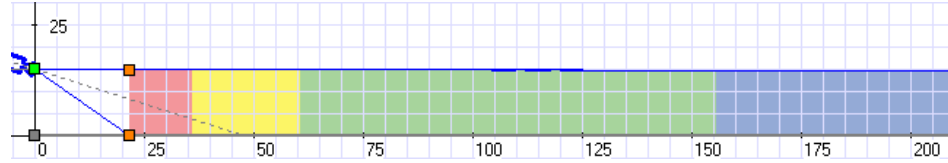
Camera 1
Image quality
at edge of lot
12ppf/ 39ppm

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- Camera 2: 5mp AV5225PMTIR @ 22mm

Camera 2
Image quality at
the red car
60ppf/ 196ppm

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Example outside – parking, perimeter, and loading bays covered using 180° cameras with addition of LPR cameras at entrance points.
Every point in the lot is covered for situational awareness

- Anywhere you have a very large space to cover with minimum mounting points.

- Common applications include:

    - Parking Lots

    - Campus Quads and Lecture Halls

    - Cafeterias and Building Lobbies

    - Large Industrial Spaces

    - Large Retail Space and Storage Yards