

# **Advanced CCTV and what it means to your operation**

**EFC Conference May 11, 2011 – Leavenworth, WA**

---

**Kevin Loresch / DOC-Monroe**

**Eric Paffenroth / Pelco**

**Mark Twietmeyer / URS Electronics**

---

# Advanced CCTV – What it means to your operations

---

## ✧ Components of a typical CCTV systems

- ✧ Camera / Lens / Transmission / Monitors / Recording / Control
- ✧ Terminology / Buzzwords

## ✧ I/P Digital Camera Systems

- ✧ Features and Benefits of IP/Digital systems
- ✧ Design concerns of IP/Digital systems

## ✧ Case Study – State of WA/Dept of Corrections

- ✧ Integrating Pre-Y2K & Post-Y2K equipment with today's technology while still providing for future-proofing.

## ✧ Q&A – Hot Shop / Pelco Mobile Product Showcase



# Advanced CCTV – What it means to your operations

---

## ✦ Components of a typical CCTV systems

- ♦ Camera / Lens / Transmission / Monitors / Recording / Control
- ♦ Terminology / Buzzwords

## ✦ Mark Twietmeyer – URS Electronics

- President / Second Generation Small business Owner
- Wholesale Electronic Distributor since 1935
- State of Washington Contract #03709 Vendor  
(DOT/ITS – Intelligent Transportation Systems)
- Supplier of CCTV Equipment for over 30 years

# Advanced CCTV – What it means to your operations

---

## ✧ I/P Digital Camera Systems

- ◆ Features and Benefits of IP/Digital systems
- ◆ Design concerns of IP/Digital systems

## ✧ Eric Paffenroth / Pelco by Schneider Electric

- ◆ Pacific Northwest Sales Engineer
- ◆ Over 20 years of experience with CCTV equipment



# Advanced CCTV – What it means to your operations

---

## ✦ Case Study – St of WA/Dept of Corrections

- ♦ Integrating Pre-Y2K & Post-Y2K equipment with today's technology while still providing for future-proofing.

## ✦ Kevin Loresch / State of WA-DOC Monroe


- ♦ Facilities Superintendent
- ♦ ~1000 cameras spread over (5) separate facilities
- ♦ Goal: Bring all camera images to a single location for recording, transmission and review.

# Advanced CCTV – What it means to your operations

## ✦ Agenda

### Q&A – Hot Shop

The Pelco Mobile Product Showcase (MPS) van will be parked in the parking lot during the morning session.



The image is a promotional graphic for the Pelco Mobile Product Showcase (MPS). It features a large blue and green Pelco truck with the company logo and website (www.pelco.com) on its side. Below the truck, there are three smaller images: a rack of electronic equipment, a close-up of security cameras, and a computer monitor displaying a website. To the right of these images, there is text describing the MPS and its capabilities. At the bottom right, there are two empty boxes labeled 'WHEN:' and 'WHERE:' for scheduling and location information.

www.pelco.com

**PELCO**  
by Schneider Electric

**Bringing OUR Solutions to YOU!**

Pelco's Mobile Product Showcase (MPS) delivers total systems solutions to you! The MPS offers an array of our industry leading video security products in one convenient location. Come experience our newly revamped displays including Endura Express, Camclosure 2, Spectra HD, and Sarix IP cameras.

Step on board and experience what thousands of others across the country have seen!

The Pelco Mobile Product Showcase: Bringing OUR Solutions to YOU!

WHEN:

WHERE:



# Components – CCTV Systems

---

✦ Cameras

✦ Lenses

✦ Transmission of video signal

✦ Monitors

✦ Recording of images

✦ Control of camera & images

# Components – Cameras

---

## ✧ Pre-Y2K

- ◆ 1970's technology were tube based (Vidicon)
- ◆ 1980's IC Technology brings 1" Charge Coupling Device (CCD)
- ◆ Large and generally 120vAC only
- ◆ Generally Black and White. Color was very expensive
- ◆ Low levels of resolution.

## ✧ Post-Y2K

- ◆ Current CCD technology is 1/4"
- ◆ Higher level of resolution.
- ◆ Day/Night Cameras that switch between color and black/white.
- ◆ More analytical features at the camera level.
- ◆ Wide range of sizes/feature/benefits. (small pinhole to dome/PTZ)



# Components – Cameras

## ✦ Today's Cameras

### ✦ High Definition (HD) – Digital/IP Camera

- 720 or 1080 rows of Pixels
- Format: 16:9
- Works best with wide screens

### ✦ Mega-Pixel – Digital/IP Camera

- 720 or 1080 rows of Pixels
- Format: 4:3
- Allow to zoom in to small details while maintaining image integrity.

### ✦ Standard Definition (SD) – Analog camera

- 704 x 576 (PAL)
- 704 x 408 (NTSC)
- 4CIF – sufficient to meet many surveillance applications

# Components - Lenses

---

Sizing the lens for an application:

- ◆ **Manual Iris** – fixed setting for constant light levels.
- ◆ **Auto-Iris** – the aperture automatically adjusts as light levels change.
- ◆ **Focal Length** – the size of the lens (2.8 – 60mm)
- ◆ Today's camera's have better ability to make adjustments to various light levels without the need of auto-iris lens than Pre-Y2K cameras.



# Components – Lens / Field of View

---



8mm



50mm

# Components - Transmission

---

## ✧ **RG-59/U Coax cable – traditional method**

- Baluns can be used to convert video signal to TCP/IP, so that older existing cable plants (RG6/RG59) can be used in today Ethernet environment.

## ✧ **Large Multi-Conductor Phone cable (with Baluns)**

## ✧ **Category 5/5E/6 Unshielded Twisted Pair (UTP)**

- Utilize Existing Cable Network – LAN
- Less space in conduit trays.

## ✧ **Fiber Optic Cable:**

- Longer runs - over 500 ft
- Immune to strong EMI/RFI signals
- Large amount of bandwidth

## ✧ **RF Wireless Systems:**

- Cable installation is too difficult
- Clear line of sight is needed – for transmitter and receivers
- FCC license may be required (Factors- distance, frequency and population)



# Components - Monitors

---

## ✧ Pre-Y2K

- ✧ 9" and 12" Black and White Tube Monitors
- ✧ Burn-in images were a concern
- ✧ High maintenance cost (replacing tube)

## ✧ Post-Y2k

- ✧ LCD with newer technology of LED & Plasma
- ✧ Wide range of sizes (4" to 52")
- ✧ Longer product lifespan
- ✧ Video Wall technology is becoming affordable

# Components - Recording

---

## ✧ Pre-Y2K

- ◆ Time Lapse Video Recorders (Tapes)
- ◆ Very limited recording capacity
- ◆ Difficult to find specific time/date images

## ✧ Post-Y2k

- ◆ Images being stored electronically on Hard Drives.
- ◆ DVR-Digital Video Recorders – Stand alone
- ◆ NVR – Network Video Recorders
- ◆ Higher Level of Search & analytics capabilities
- ◆ Easier to transfer images via web/CD



# Components - Control

---

- ✦ **Baluns:** Converts signal to run over Unshielded Twisted Pair (UTP)
- ✦ **Encoder:** Converts the video signal from analog to IP/Digital
- ✦ **Enclosures:** Basic Outdoor to Bullet/Explosion Proof.
- ✦ **Pan/Tilt/Zoom (PTZ)** User controls camera image.
- ✦ **Transmitter/Receiver:** Fiber Optic applications converting the electrical signal to light and then back to electrical.
- ✦ **Video Switchers:** Route either Analog or IP video signal to various monitors

# Components - Control continued

---

✦ **Cooling:** Ideal ambient temperature is 85deg

✦ **Mounts:** Wall, ceiling, parapet, pole

✦ **Power Supplies:** 24Vac, POE, Integrated UTP

✦ **Racks:** Enclosures ranging from wall mount to uprights.

✦ **Uninterruptable Power Supplies (UPS)**  
♦ Protection against power sags/surges/blackouts.



# Thank you for attending

---

## **URS Electronics, Portland Oregon**

Website: [www.ursele.com](http://www.ursele.com)

Toll Free 800.955.4877

123 NE 7<sup>th</sup> Ave, Portland Oregon 97232





## **State of Washington Contract# 03709**

- Intelligent Transportation Systems Equipment
- Category 3 – Close Circuit TV (CCTV)
- Eligible users: State and public agencies for OR/WA
- Contract expires: Dec 2015

# Hot Shop – Morning Session

www.pelco.com

**PELCO**  
by Schneider Electric



## Bringing OUR Solutions to YOU!

Pelco's Mobile Product Showcase (MPS) delivers total systems solutions to you! The MPS offers an array of our industry leading video security products in one convenient location. Come experience our newly revamped displays including Endura Express, Camclosure 2, Spectra HD, and Sarix IP cameras.

Step on board and experience what thousands of others across the country have seen!

The Pelco Mobile Product Showcase: Bringing OUR Solutions to YOU!

WHEN:

WHERE:



# Pelco Products

- ■ Industry-defining systems and solutions
- ✧ Over 5,000 video security products
- ✧ Cameras, mounts, enclosures, and positioning systems
- ✧ Monitors, displays, and viewing systems
- ✧ Video recording and management
- ✧ IP, fiber optic, and UTP video transmission
- ✧ Enterprise and DVR Systems



# Sarix™ Technology

Imaging Science

Industrial Design

Processing Power

✦ Breakthrough Low-Light Technology



with Sarix™



without Sarix™



# Leading competitor - Night



# Sarix Camera - Night





# Why Megapixel Video?

1.3 MP  
1280x1024

0.5 SVGA  
800x600

320 x 240

Megapixel Technology Delivers SD and HD Resolution Choices



# Why Megapixel Video?





CIF



# 4 CIF





# 1.3 Megapixel





## 2 Megapixel





# Sarix™ Technology

Imaging Science

Industrial Design

Processing Power

## Auto Back Focus (ABF)

- ◆ Saves Installation Time
- ◆ Precise Image Focus
- ✱ Service Jack
  - ◆ Easy Camera Positioning Without Laptop on a Ladder
- ✱ Local Storage
  - ◆ Built In Mini SD Slot
  - ◆ Removable Backup for Images
- ✱ Power
  - ◆ PoE or 24Vac
- ✱ Advanced Web Browser



Auto Back Focus



Service Jack



Mini SD Slot

# Why Auto Back Focus is Important

Imaging Science

Industrial Design

Processing Power

- ✦ Save time and money on installation.
- ✦ Ensure a crisp focus to achieve a perfect image during installation.
- ✦ Ensure a crisp focus 24/7 in all environments.



Sarix™. Always in Focus.



# Focus Shift with Temperature for Megapixel Cameras

Competitor Camera— at 23C Environment

Jun/01/2009 08:26:23

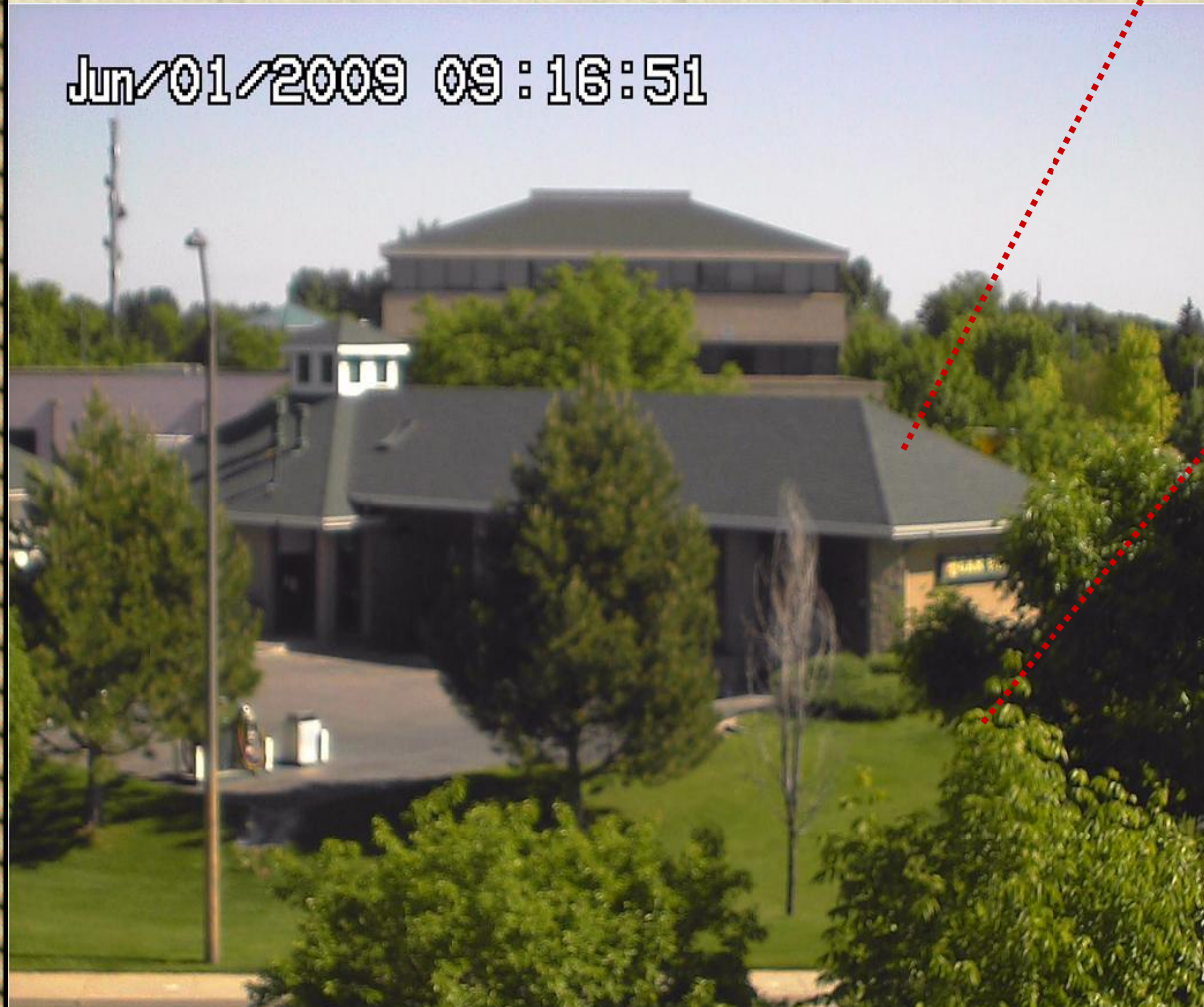


*Lens was carefully focused at 23C environment, then locked in place. This shows a 1280 x 960 image captured from the camera showing sharp focus. Lens is Pelco 2.8-12mm Mpixel Lens, set to 12mm focal length.*



# Focus Shift with Temperature for Megapixel Cameras

— ■ Competitor Camera at 50C Environment — ■ — ■ —



*1280 x 960 Image Capture from competitor camera when camera was at ~50C operating temperature. Video is out of focus, due to temperature shift in focus.*

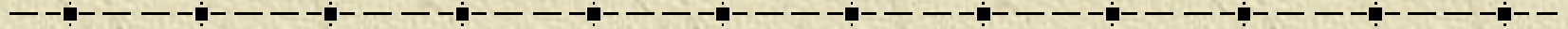


# Sarix™ Technology

Imaging Science

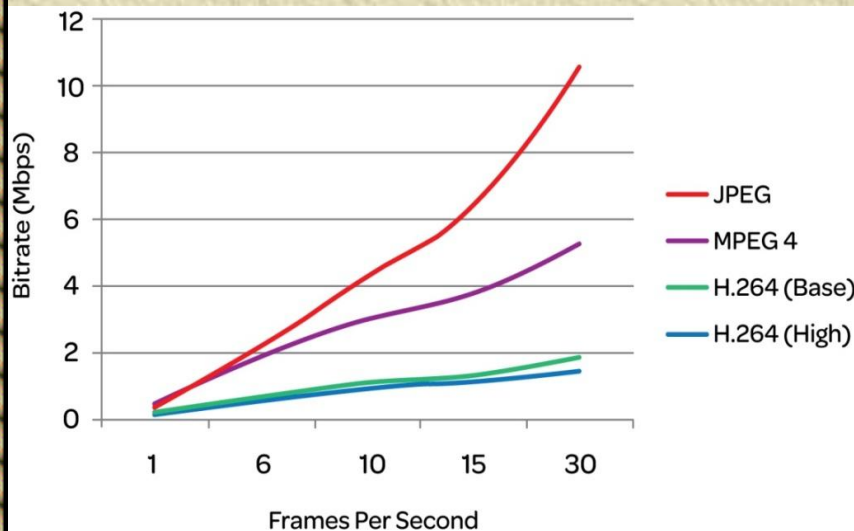
Industrial Design

Processing Power



## ✧ Sarix Compression Choices

- ✧ MJPEG; still images
- ✧ MPEG4; designed for video
- ✧ H.264 (aka MPEG4 part 10); Used for Blu-Ray



## ✧ H.264 Main Benefits:

- ✧ Higher video quality at a given bit rate
- ✧ High resolution at a given bit rate
- ✧ Higher frame rate at a given bit rate
- ✧ H.264 Results in:
  - ✧ Lower storage requirements
  - ✧ Lower bandwidth requirement

Imaging Science      Industrial Design      Processing Power

Imaging Science      Industrial Design      Processing Power

Imaging Science      Industrial Design      Processing Power

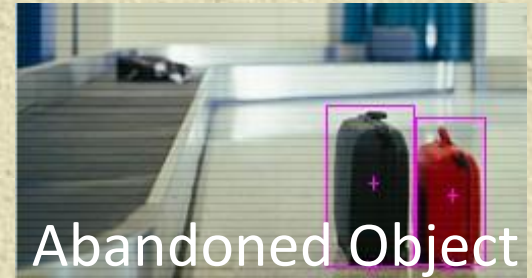
Pelco Analytics for Sarix based cameras



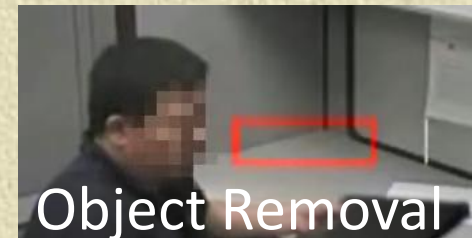
# Camera Sabotage



# Adaptive Motion



## Abandoned Object



# Object Removal



# Directional Motion



# Object Counting



# Sarix™ Technology

**OV Security suite for Sarix**

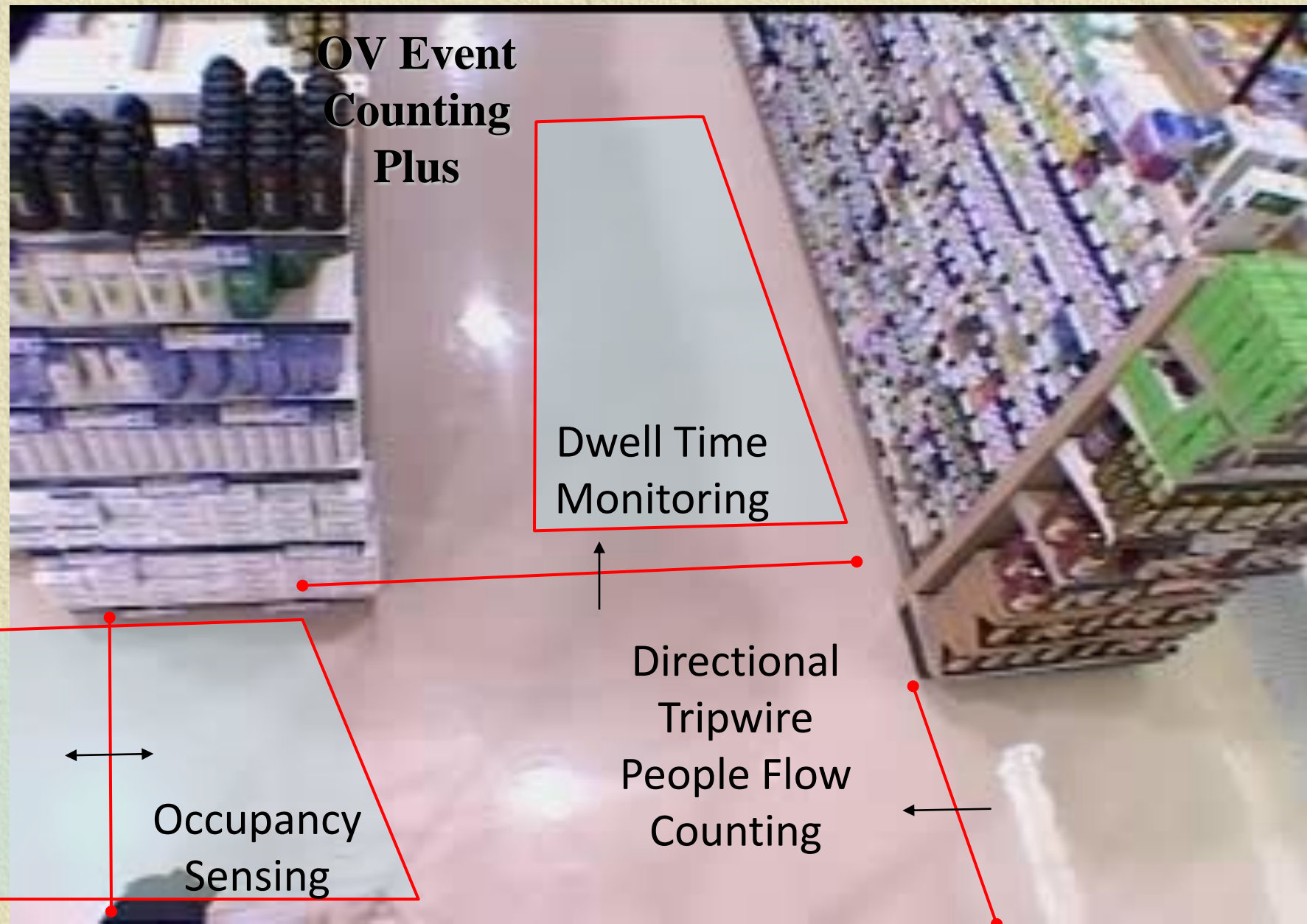
Directional  
Tripwire  
Detection

A photograph of a parking lot with several cars parked. In the background, there are trees and a large building. A red line with two dots is drawn across the parking lot, indicating a directional tripwire. The text 'Directional Tripwire Detection' is placed near this line. A red line is also drawn along the bottom edge of the image, indicating an inside area detection zone. The text 'Inside Area Detection' is placed near this line.

Inside Area  
Detection



# Sarix™ Technology





# Spectra Positioning Systems

---

 **SPECTRA** **IV™** IP  
Featuring H.264

 **SPECTRA** **5™** HD  
Powered By SARIX™



# SPECTRA 5™ HD

Powered By SARIX™

18X optical / 10X digital  
zoom,  
WDR day/night camera

1.3MP (1280 x 960)  
Resolution

- 960p @ 20ips
- 720p @ 30ips

3 Simultaneous Progressive  
Video Streams

Dual Scalable MJPEG &  
H.264

Continuous Rotation

Video Analytics

Pelco  
OV

Advanced Auto Tracking

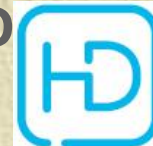
PoE + HPoE



Forensic Zoom



Increased  
Definition



Digital  
Zoom



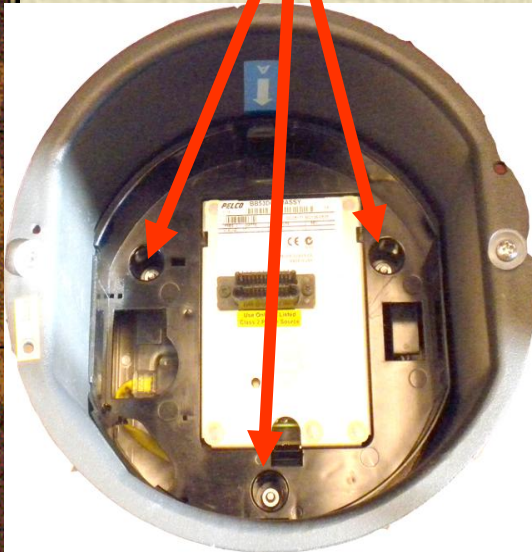


# Upgrading Spectra III & IV to Spectra 5 HD

*It's as easy as 1 2 3!*

## Step 1

Remove these 3 small nuts and remove the old Dome Drive Receiver



## Step 2

Install the new Dome Drive Receiver with same 3 small nuts



## Step 3

Slide in the new Dome Drive and put the new bubble on



# Sarix Cameras and Domes with SureVision

Building upon the Sarix IX and IM platforms

---

## IMAGE QUALITY

- Wide dynamic range
- 5X better low light performance
- Best in class anti-bloom
- Improved sharpness
- SEAMLESSLY TOGETHER –

## INTELLIGENT PERFORMANCE

- Megapixel and standard definition
- Efficient H.264 compression
- Sabotage analytic
- Free Pelco analytics on IXE10-LW

## INDUSTRIAL DESIGN

- Indoor, outdoor, and vandal resistant models
- ABF or AF for rapid installation and tuning.



Available - August, 2011