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.
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 ¼”
- 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 7th 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
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
1280×1024

0.5 SVGA
800×600

320×240

Megapixel Technology Delivers SD and HD Resolution Choices
Why Megapixel Video?
CIF
4 CIF
1.3 Megapixel
2 Megapixel
<table>
<thead>
<tr>
<th>Imaging Science</th>
<th>Industrial Design</th>
<th>Processing Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Back Focus (ABF)</td>
<td><strong>Saves Installation Time</strong></td>
<td><strong>PoE or 24Vac</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Precise Image Focus</strong></td>
<td><strong>Advanced Web Browser</strong></td>
</tr>
<tr>
<td>Service Jack</td>
<td><strong>Easy Camera Positioning Without Laptop on a Ladder</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Local Storage</strong></td>
<td><strong>Local Storage</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Built In Mini SD Slot</strong></td>
<td><strong>Built In Mini SD Slot</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Removable Backup for Images</strong></td>
<td><strong>Removable Backup for Images</strong></td>
</tr>
</tbody>
</table>

**Mini SD Slot**

**Auto Back Focus**

**Service Jack**

**Power**

**Sarix™ Technology**
Why Auto Back Focus is Important

- 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.

Imaging Science  Industrial Design  Processing Power
Focus Shift with Temperature for Megapixel Cameras

Competitor Camera – at 23C Environment

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 50°C Environment

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

**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
Sarix™ Technology

Imaging Science

Industrial Design

Processing Power

Pelco Analytics for Sarix based cameras

Camera Sabotage

Adaptive Motion

Directional Motion

Abandoned Object

Object Removal

Object Counting
Sarix™ Technology

OV Security suite for Sarix

Directional Tripwire Detection

Inside Area Detection
Sarix™ Technology

OV Event Counting Plus

Dwell Time Monitoring

Occupancy Sensing

Directional Tripwire People Flow Counting
Spectra Positioning Systems
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
Upgrading Spectra III & IV to Spectra 5 HD  
*It’s as easy as 1  2  3!*

<table>
<thead>
<tr>
<th><strong>Step 1</strong></th>
<th><strong>Step 2</strong></th>
<th><strong>Step 3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove these 3 small nuts and remove the old Dome Drive Receiver</td>
<td>Install the new Dome Drive Receiver with same 3 small nuts</td>
<td>Slide in the new Dome Drive and put the new bubble on</td>
</tr>
</tbody>
</table>
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