Selling Design and Application

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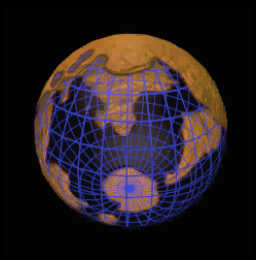
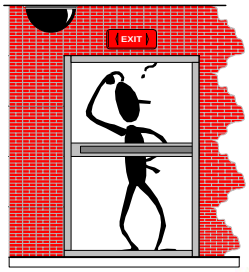
World Wide Application Principles of CCTV

- Interface the four principals of Security equal to the application
  - Electronic Security
    - Burglar / Fire
  - Access Control
    - All forms of locks and barriers
  - CCTV
  - Professional Response



Five Duties of Security

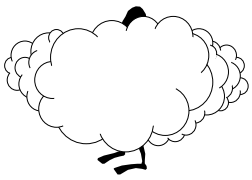
1. Prevention
2. Deterrence
3. Detect / Annunciate
4. Response
5. Evidence



Reason 1 for CCTV in Security

"To obtain Visual information about something that is happening!"

Reason 2 for CCTV in Security



"To obtain Visual information about something that has happened!"

Reason 3 for CCTV in Security

Deterrence

Can only be used under specific Circumstances!

Deterrent - Requirement #1:

Severity in sentencing

The punishment must fit the crime and must be large enough to be a negative consequence in the offender's eyes

Deterrent - Requirement #2:

Certainty of sentencing

The offender must believe that there is a high probability of apprehension and a high probability that the negative consequence will be imposed to it's full extent

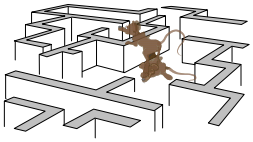
Deterrent - Requirement #3:

Celerity

The sentencing must be imposed within a reasonable time from the point of apprehension in order to be a deterrent

Deterrent - Requirement #4:

Closed Population



A population that is restricted to living, working, or communing within the same general area

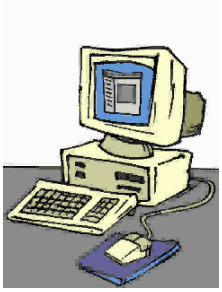
Three Precepts of CCTV

1. Response
2. Reaction
3. Evidence

Response!

A Pre-planned reaction to a practiced and expected scenario

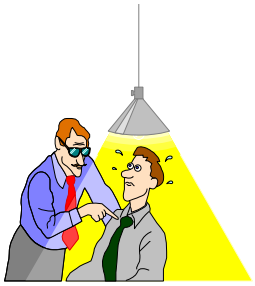
Reaction



Unplanned reaction to a sometimes startling scenario

Evidence

Information deemed necessary to insure prosecution of an accusation!



Three Forms of Visual ID

1st = Personal

– Relates to the visual information pertaining to the personal identification of the main criteria of the scene

- May be a person
- May be a very small object
- May be a fixed object

Personal ID

Based upon the International Association of Chiefs of Police (IACP), the object of *Personal Identification* should take up at least 1/10 of the overall scene!

Three Forms of Visual ID

2nd = Action

– Relates to the visual information pertaining to the action of a crime or incident.

- It is important to have the complete action of an incident.
- Without the action, the personal Identification may leave you with circumstantial evidence

Action ID

Based upon the international Association of Chiefs of Police (IACP), the object of *Action Identification* should take up at least 1/20 of the overall scene!

Three Forms of Visual ID

3rd = Scene

– Relates to the visual information pertaining to the overall individuality of the scene.

- Providing proof of a crime or incident may prove to be inadequate if you cannot properly document the location of the incident.
- All visual scenes within the confines of a single camera system must be able to stand out on their own from an area identification perspective

Summary

Regardless of how the equipment of the industry advances, changes, and/or expands, the theories and purposes of CCTV in Security remain consistent!

From The Beginning

With the modern age of CCTV,
we must …
absolutely, positively must:

1. Integrate
2. Automate
3. Compile
4. File

Through The Middle

Which means that we must …
absolutely, positively must:

1. Plan ahead
2. Think out-loud
3. Dream a little bit
4. End up with useful information

To The End

Which means that we must …
absolutely, positively must:

1. Investigate
2. Educate
3. Test
4. Prove

Understanding

- Video Systems are replacing old standards of thinking with advanced technology and communications … We are advancing into the next generation

Understanding

- We are communicating between multiple types and styles of systems all reaching to the same, ultimate goal ...
  - Security
  - Safety
  - Increased Production

Understanding:

- Whenever you look around, there will be a single person screaming to the wind and anyone else that will listen … that they have the best solution to all the problems … that they have the solution to all of your problems … that they have the best and there is no better.

Comprehension

In the end … it will be discovered that each problem requires a unique and thought out solution.

In the end, it is the simple things that will prove best

Sometimes you just need to close the door!

A Story …
Based upon true events

To Learn from our mistakes is the voice of reason and profit

The Process:

- Client applies for Government grant to assist in costs to bring 13 sites in four states up to new security levels designed by the Coast Guard … Marine Security Guidelines (Mar-Sec I, II, & III)

They get the money!

Case at Hand!

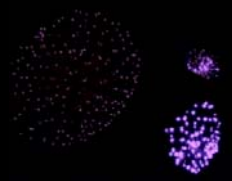
- The purpose of the system was defined in the grant request:
  - Visually monitor the perimeter with;
    - Guard Patrols each 4 hours;
    - Support the in-between time with CCTV

The Main Site!

- 1 ½ miles of perimeter fence
- Two truck gates with Access Control
- One truck gate with guard supervision
- Three man gates with Access Control
- Four Maintenance gates across the back and side portions of the perimeter – Chain locks

The Process:

- The client looks in various magazines, phone books, and asks around a bit trying to find a good, professional, well known, national, Security Company!
- **They Found Three!**
- They then requested that each come to the sight to gather data for the purpose of creating a design and bid for competitive comparisons.



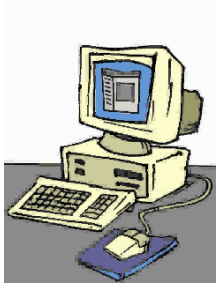
The Hope!

- The Professional, national security companies arrive … one at a time.
- They are greeted … introduced and the overall project is explained to them by the Security/safety Manager.
  - The first question asked by all three?
    - What do you want?
  - The second question asked by all three?
    - Where do you want your cameras?

The 1st Design / Bid Arrives!

- 45 Cameras
  - 10 PTZ
  - 35 Fixed
- Outside Microwave to detect motion and trigger various reactions!
  - Mounted outside the perimeter fence!
- Why Outside?
  - Too much activity inside!

The 2nd Design / Bid Arrives!

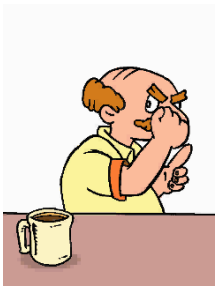


- 56 Cameras
  - 23 PTZ
  - 33 Fixed
- Digital Video Motion Detection on all the PTZ and most fixed to trigger a response!
  - The Best DVM available!
  - 8K average cost per camera (for DVMD only)

The 3rd Design / Bid Arrives!

- 100 Plus Cameras
  - 15 PTZ
  - Everything else fixed
- No Triggers!
- Points out that the guards would have two screens able to display 24 images at a time!

The Client is Lost!



- The number of cameras is way to far apart to make sense!
- The costs are all across the board!
- The client fears that he will add heavily to the existing guard staff!
- The client spends money to hire a consultant to decide which is best!
  - The client is tired, confused, and basically not happy with the professionals!

The Consultant Decides! System 1:

- Outside Microwave Systems are designed for a controlled zone to prevent false alarms!
- The entire batch of cameras is fixed on the perimeter … no bang for buck!
- Starts on creative and aims toward a fashion of automation, but fails to achieve the goal due to excessive equipment and heavy false alarm potential!

System 1 is out!

The Consultant Decides! System 2:

- DVMD is a good wide area approach, but it has potential downfalls in this type of system
  1. The cameras remain dedicated to the perimeter
  2. The cameras will be moved by the guards so giving the potential to be out of position
  3. There is good DVMD available for semi controlled areas without costing nearly as much
  4. The DVMD approach requires too many cameras in this application to be efficient
- The system is not interfaced with any other functions other than perimeter
- The gates are not triggered

System 2 is Dropped!

The Consultant Decides! System 3:

What the Consultant Did:

- Reviewed the wants of the client.
- The client wanted to meet with Mar-Sec Code at their sites.
  - The client wanted to keep man power at the same level or lower to help with long term costs.
  - The client wanted to maintain easy access to their sights as much as possible.

What the Consultant Did:

- Reviewed the Mar-Sec code as it applied to the client's site::
  1. There is no call for constant visual vigilance on the perimeter
  2. There is a need to identify all individuals and vehicles entering the property

What the Consultant Did:

- Asked the Client Questions … Good Questions:
  - The client has a fully automated access control system at all sites … it is inter-site compatible.
  - The client is not anxious to add personnel to the security staff
  - The perimeter is completely enclosed by a chain link fence with three strand barbwire across the top
  - The client had a major fire at the main site five years earlier. During the fire, there was no communication between the site and the corporate office for five hours because:
    - Too much noise
    - No communication direct line

What the Consultant Did: KISS Approach: Automate!

- Utilize a fence alarm for the perimeter with 75 foot zones
- Utilize low level Day/Night cameras (.00005 lx) fitted with 30:1 zoom lenses
  - Even with 3 f-stops of lens light loss in full zoom, the sensitivity is great enough to avoid lighting issues in almost all cases
  - The lens gives an identifying image (15 foot wide) at 800 feet

KISS Approach: Automate!

- Use PTZ with tour and Pre-positioning to cross respond to all fence / gate alarms
- Use PTZ to monitor activity within the plant when not in alarm
- USE PTZ to run intermittent tours of various hot spots in between active guard tours

KISS Approach: Automate!

- Use fixed cameras interfaced to the access control system via POS and triggers at all access points
  - With today's digital technology there is no reason to isolate any one system to it's own devices
  - Access control is far more effective when it is supported with visual images
  - Visual images are even better when they contain the data from the Access systems

KISS Approach: Automate!

- Use fixed cameras interfaced to gate contacts at all non monitored openings
  - This will contain license plate information which will support the contractors sign in efforts
  - This will support the perimeter by maintaining a quiet vigilance on all gates. If one is opened without prior authority … or it is left open for too long, you have immediate visual verification … no more waiting for the guard rounds to reach it.

Net Result:

- 30 total cameras:
  - 15 PTZ
  - 15 Fixed
- Fully automated system with interior monitoring as Primary objective with the perimeter fence and gates as the primary response
- Fully interactive with Access Control for complete records of all access to the plant
- Fully integrated with the fence alarm to be able to have two cameras from opposing angles respond to any/all alarms … one tight and one wide area

Net Result:

- No additional personnel required to man system
- 125K less expensive than the best bid received
- The Client can operate the system fully from any PC in the world if need be
- The cameras primary objective is the interior of the site
- All proven technology with a minimal false alarm potential

Happier Client!

The issues

- Insuring that views will interact without obstructions
- Understanding the new digital format cabling requirements
- Insuring compatibility between systems
  - Designing a proper head-end that will not promote avoidance by the guards due to complicated instructions or slow responses
- Getting straight answers from manufacturers
  - Convincing the manufacturers that you are not an idiot that needs to be spoken down to.

Investigate Cabling Requirements

- With all the changes in the field today, it is very important to investigate and learn the different standards and how it will affect your cabling plans
  - RS485
  - RS422
  - RS432

Cabling Issues:

- Cabling really is easy … even the new stuff that looks rough.
- Cabling may be fiber optic or wireless
- You need to verify the process so that you design and bid the system properly from the beginning

In the End:

Call if you need help and keep the ship afloat

- Do your homework
- Pay attention
- Upgrade your education
- Ask questions
- Relax and learn more
- Learn to apply all formats of security to get the desired affects

Modern CCTV Systems

- Are for more than creating video images and moving records of everything in an area
- Are used to create intelligent files of visual evidence and activities
- Are automated as much as possible to avoid time and fatigue factors
- Are designed to be manageable according to the needs of the system, it's operators and owners

The Steps in the Process of Design:

- Take the time to learn the clients business.
  1. What is the business?
     - Production?
     - Manufacturing?
     - Service?
  2. What is the process of the business?
     - What is the general traffic of the business?
       - Parking / employee – Interior and Exterior
       - Hot Spots – Who, What, Where, When & Why

The Steps in the Process of Design:

3. What are the different departments within the company?
   - Product or quality control
   - Safety
   - Maintenance
4. What are the functions of the different departments in the company?
   - Do they interact?
   - Do they have their own budgets?
   - Will your security design overlap into their areas?

After the questions:

1. Layout the security system:
   - Starting with the CCTV System:
     - If existing, review the entire system.
       - Position of cameras
       - Purpose of the cameras position
     - If new, develop your positions as based upon:
       - Purpose
         - Live security – Monitored or triggered
         - Review / after the fact security – visual data records
- Base everything on a point of automation

After the questions:

- Don't be afraid to over design
  - Don't get carried away
  - Leave options open
- Lay the entire system out on paper including:
  - Locations
  - Views
  - objectives

After the questions:

- Review the initial placement design:
  - Look for potential triggers
    - Doors opening
    - Motion detection opportunities
    - Specific visual data requirements
  - Design with three factors in mind:
    - Live, immediate response – physical or otherwise – requirements for continuous monitoring.
    - Triggered response – what needs to happen
    - After the fact review – what information will be needed to meet the application

After the initial CCTV Design:

- Review the general layout and responses for Access Overlap:
  - Are there doors, gates or other openings that can be controlled electronically?
    - Will there be a benefit to such coverage?
    - What do you want the response of the CCTV system to be at these points?
      - Record single image or action?
      - Record data information from card or reader?
      - Project image on a screen for additional scrutiny?
      - Trigger a higher resolution record feature?
      - Transmit an image or message via email?

After the initial CCTV Design:

- Can the CCTV system be used to control the access point?
  - Video motion detection to trigger a gate?
  - Facial recognition to trigger a door?
  - License plate recognition to coincide with Access control card data?
  - Retina Scan?
- Review the Access Control System:
  - What, if any data or language does the existing or proposed system export?
  - Will it be compatible to the proposed CCTV system data input / interface?

After the CCTV / Access is Done:

- Review the general layout of the system a second time.
  - Look for hot spots that would benefit from electronic monitoring.
    - Door contacts / photo beams
  - Review the locations as compared to the general and specific camera views.
    - Is there an overlap?
    - Does the location dictate that the camera have an alarm input capability to save cabling back to a central point?

After the CCTV / Access / Electronic Alarm interface is done:

- Review the general layout of the system a third time:
  - Look for the points of manual interface.
    - Wherever you have designed a point of physical intervention, review it for the ability to be automated.
      - Does this scene require constant monitoring or recorded visual confirmation?
      - Does this scene require physical intervention and are your triggers sufficient to support the response?
  - Add automation points wherever necessary to increase the efficiency of the system.

THE SYSTEM IS LAID OUT AND MORE OR LESS READY

NOW BECOME CREATIVE!

Once fully automated system is completed:

- Review the general layout and notes of response / view / access control a fourth time:
  - Look for other, non Security application overlaps.
    - In production areas, are there any images that may be beneficial to Quality Control or production monitoring?
    - In general areas, are there any points that outside triggers may be used to assist in emergency or maintenance response?

Once fully automated system is completed:

- This is the point where creative thinking can spread the cost of the security system into adjacent budgets.
  - If you have areas where some of the security cameras can be used to monitor interior traffic, quality control, production, safety or maintenance concerns, these cameras can be co-assigned and the cost of these cross budgeted to secondary departments.

The process of co-assignment

- Generally fixed cameras are best
  - Do not assign visually sensitive cameras to outside sources on a continuously monitored bases.
  - Use digital zooming / positioning to splice partial images of an area into a full scene for a secondary department.
  - Add cameras to areas as determined useful.

The process of co-assignment

- Determine a “Per Unit” cost factor to determine the budget spread.
  - Take the cost of the CCTV system (all parts inclusive) and divide by the number of cameras.
  - Take the number of cameras that can be co-assigned to other departments times the unit cost to divide the cost between departments.
  - Subtract the co-assigned costs from the overall security costs.

Summary

- Creative system design is a “Step by Step” process that involves breaking the entire system into small, manageable, prioritized parts and then pulling the entire system into a whole
- It involves imagination and the ability to solve problems on a one to one basis