...see through the crowd

Remote Monitoring with Intelligent Surveillance – A Case Study

i = intelligent
Omni = all
scient = knowing

iOmniScient Intelligent Surveillance

"...the World's most Intelligent Surveillance Software"

The Client

- One of the largest Remote Monitoring Companies in the USA
- Based in LA - monitoring client sites across the USA
- Traditional model was to have Motion Detection systems with break-ins reported to a Central Monitoring station
- The Break-in is reported to the client and to a local response company

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What they wanted

- A totally distributed system
- Events can happen at any site
- The Monitoring Center can see any camera at its discretion
- All events get reported to the monitoring center.
- Need to talk back through the camera

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What they got initially

- A DVR at the customer site
- Remote Client capability
- Video Motion Detection (VMD)

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Challenges with their Initial System

- VMD only useful for empty scenes for intruder detection
- VMD generated massive number of false alarms
- Heavy Communications load
- Operator Overload

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Why Does a Surveillance System Need Intelligence?

Studies show that CCTV systems are limited without added Intelligence

Watching only 2 Monitors:

After 10 minutes an operator misses 45% of action
After 22 minutes an operator misses 95% of action

This data is for a relatively empty scene. In a busy scene an operator could not possibly be expected to keep track of all the action

Hence the need for INTELLIGENCE to detect effectively, especially in a crowded scene

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Phase II

- NAMS to minimize False Alarms (one person /shift with 1000+ cameras)
- Event based monitoring
- Ability to Jump Back to any event
- Infinitely scalability
- Many different events to be monitored on each camera

How do you Measure Intelligence?

- **Everyone claims "intelligence"**
- **We have rated intelligence in the surveillance industry using the human IQ rating**
- **Average of the population is IQ-100**

Summary of Intelligence in the Surveillance Industry

Genius IQ-180 IQ-140	▪ Detection of objects that appear invisible to the naked eye ▪ Object detection ▪ Theft detection ▪ Detection of parking violations ▪ Detection of graffiti / vandalism ▪ All in busy and crowded scenes despite significant obscuration and constant movement	Only One Supplier… iOmniscient
Smart IQ-120	▪ Behavior analysis [Slips and falls, loitering, running, customized behaviors…] ▪ Crowd management with alarms for overcrowding	About Half a Dozen Suppliers
Average IQ-110 IQ-100	▪ Counting / directional alarms ▪Perimeter protection / intrusion detection ▪ Object tracking in un-crowded scenes ▪ Limited object detection in uncrowded scenes	Dozens of Suppliers
Limited IQ-60	▪ Basic Video Motion Detection	Hundreds of Suppliers

Intrusion Detection

- **Perimeter Protection**
- **Intrusion Detection**
- **Object Tracking**
- **Detection of Objects in Un-crowded Scenes**
  - Understands perspective
  - Use direction as alarm criteria
  - Multiple regions of interest within the scene
  - Multiple filters for size and shape
  - Ignore small animals, rubbish, etc
  - Ignore complex light changes
    eg shadows, reflections, etc



Counting

- **Counting**
  - Statistical analysis
  - Marketing
  - Ability to Count Multiple Directions
  - Traffic-flow Analysis and Reporting
  - Export to spreadsheet, management system, or database
  - For Security e.g. 40 in 39 out
  - High Accuracy


Crowd Management

- **Crowd Management**
- **Traffic Management**
  - Ability to set a numerical threshold
  - Will alert staff if threshold is reached
  - Will detect overcrowding / congestion
  - Monitor public safety
  - Ensure regulations are adhered to




Behaviour Analysis

- **Slip & Fall / "Man-Down" Detection**
  - Public liability minimization
  - Care in aged homes
  - Allows immediate assistance
  - Allows immediate preventative action
- **Detection of Suspicious Behaviour**
  - Loitering, Running
  - Customisable detection pattern



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Non-Motion Detection

- **Detects static changes to a scene**
- **Ignores motion**
- **Handles crowded and busy environments**
- **Completely unique (internationally patented)**
- **Can detect tiny objects**
- **Can detect almost invisible objects in very low contrast**




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Non-Motion Detection

- **Left Object Detection**
- **Theft Detection**
- **Graffiti and Vandalism detection**
- **Parking Violation Detection**

Others use a form of Video Motion Detection to detect stationary changes to an environment
– this doesn't make sense!



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And now…

iQ Infinity

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Detection versus Identification

Identification involves close up views:

- License Plate Recognition
- Facial Recognition

Individual applications available separately

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License Plate Recognition

- **License Plate Recognition**
  - Fully Integrated with Detection Engine
  - Simultaneous Detection and Identification on a single camera without loss of field of view

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IQ Hawk

Is the technology robust in diverse environments?

Customers:

- Art Gallery of Ontario
- Disney
- Telefonica
- Sydney Harbour Bridge
- South Australian Police
- Adelaide Airport
- Prague Airport
- Johannesburg & Cape Town Airport
- Spanish Railways
- Incheon Airport
- Bangkok Airport
- Office of the Malaysian PM
- ANSTO
- Chicago Transit

And many more…

Implemented Sites Include:

- Hotels
- Airports
- Embassies
- Railways
- Military sites
- Government Organisations
- Traffic Authorities
- Museums
- Warehouses
- Offices
- Art Galleries

The Next Generation of HW:

Important Points to Consider

- Without Intelligence you will have spent a lot on cameras with little preventive impact – **humans cannot do the job alone**
- Cost of Intelligence is small compared to the cost of the infrastructure

Consider cost of NOT having intelligence