



...see through the crowd

## Remote Monitoring with Intelligent Surveillance – A Case Study

i = intelligent  
Omni = all  
scient = knowing

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\*...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

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## 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

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## Summary of Intelligence in the Surveillance Industry

<b>Genius</b> IQ-180 IQ-140	<ul style="list-style-type: none"> <li>▪ Detection of objects that appear invisible to the naked eye</li> <li>▪ Object detection</li> <li>▪ Theft detection</li> <li>▪ Detection of parking violations</li> <li>▪ Detection of graffiti / vandalism</li> <li>▪ All in busy and crowded scenes despite significant obscuration and constant movement</li> </ul>	Only One Supplier... iOmniScient
<b>Smart</b> IQ-120	<ul style="list-style-type: none"> <li>▪ Behavior analysis</li> <li>[Slips and falls, loitering, running, customized behaviors...]</li> <li>▪ Crowd management with alarms for overcrowding</li> </ul>	About Half a Dozen Suppliers
<b>Average</b> IQ-110 IQ-100	<ul style="list-style-type: none"> <li>▪ Counting / directional alarms</li> <li>▪ Perimeter protection / intrusion detection</li> <li>▪ Object tracking in un-crowded scenes</li> <li>▪ Limited object detection in uncrowded scenes</li> </ul>	Dozens of Suppliers
<b>Limited</b> IQ-60	<ul style="list-style-type: none"> <li>▪ Basic Video Motion Detection</li> </ul>	Hundreds of Suppliers

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## 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



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## 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



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## Crowd Management

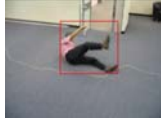
- Crowd Management
- Traffic Management
  - Ability to set a numerical threshold
  - Will alert staff if threshold is reached
  - Will detect overcrowding / congestion
  - Monitor public safety
  - Ensure regulations are adhered to



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## 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...



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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



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## 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

### Implemented Sites Include:

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

And many more...

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## The Next Generation of HW:



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## 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**

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