

Smart Vision Suite

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The history of the video surveillance

Third Generation

Video Analytics

Creates meta data based on video object characteristics and time stamp.

Smart Vision Suite

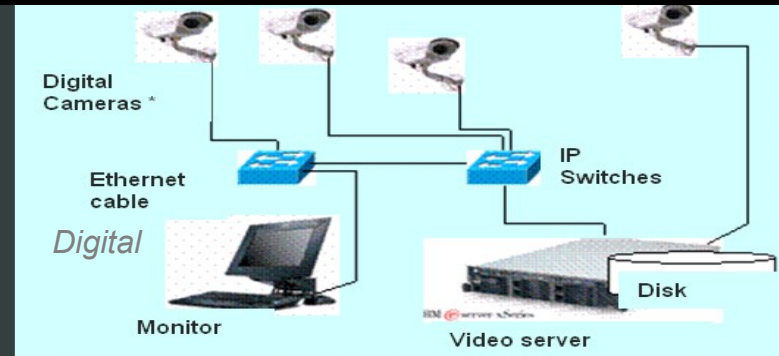
Second Generation

Video monitoring in the IT infrastructure

- Face Capture
- License Plate Capture
- Object Recognition
- Traffic Monitoring
- Object Tracking



First Generation

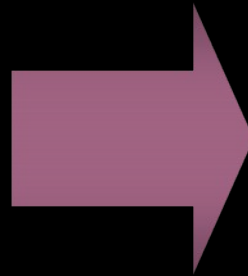


(*) Analog Camera can be used through an analog/digital converter on the video server

Key Aspects in the current transition to Digital Video Surveillance solutions that drive Business Value

Reactive

- Respond to individual Risk or Threat
- Search for “Needle in haystack”
- Separate silo’ed security systems
- Security as a required cost factor



Proactive

- True integrated Solution Architectures
- Smart Analytics for Decision Support
- Convergence of Physical Security leveraging IT
- Security as a driver of Corporate Value

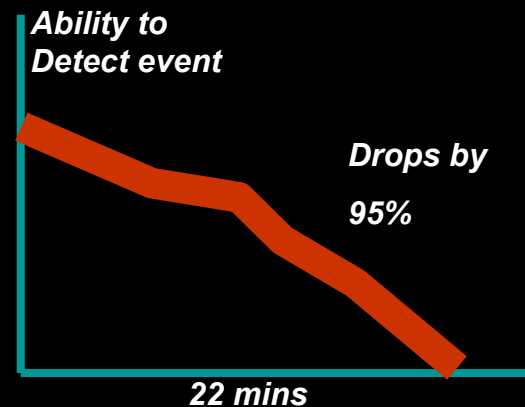
Limitations of Human Monitoring

A Harvard Experiment showed that:

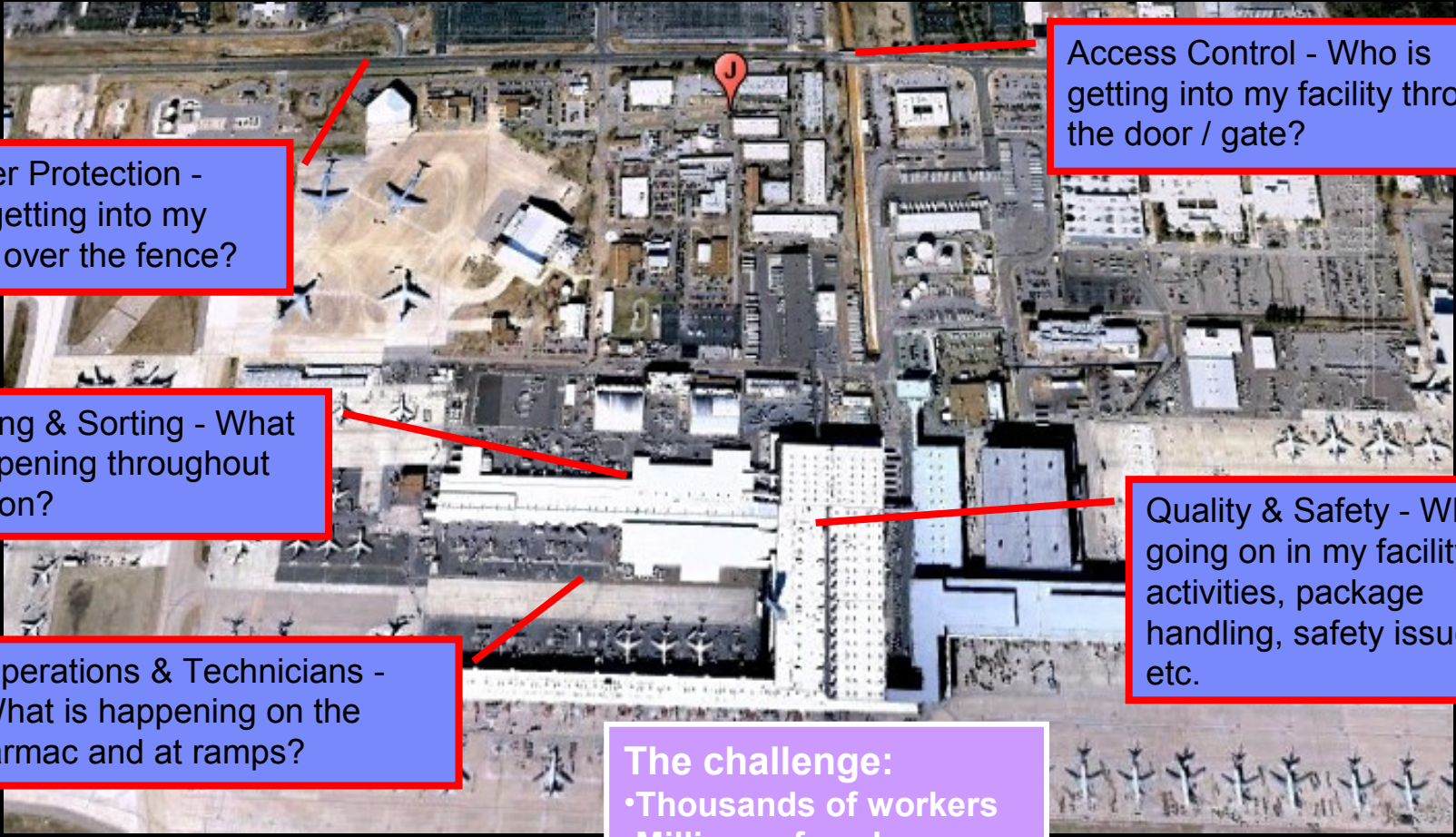
- **50%** of people counting passes made between two basketball teams **will not notice a gorilla walk into the middle of the viewing area, beat its chest and walk out.**
 - Harvard Human Attentiveness Study



Inefficiency in 'Human eye' surveillance
(2 cams, 22+ min, 95%)



We suspect there are numerous challenges that exist at hub locations



Perimeter Protection - Who is getting into my facility – over the fence?

Access Control - Who is getting into my facility through the door / gate?

Tracking & Sorting - What is happening throughout sortation?

Quality & Safety - What is going on in my facility; activities, package handling, safety issues, etc.

Operations & Technicians - What is happening on the tarmac and at ramps?

The challenge:

- Thousands of workers
- Millions of packages
- Miles of conveyors
- Acres of property
- Miles of perimeter
- Hundreds of vehicles

We have solutions to address these challenges that exist outside of the facility...

▪Perimeter & Runway intrusion detection

Real time alerts from virtual trip wires sent to

Command Center



Runway intrusion at.....

▪Suspicious behavior pattern recognition

Analytics over indexed video content alert to loitering people, vehicles



A blue van has been.....

▪Gate/Door access control

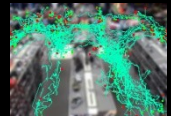


License plate recognition, tailgating Car on list.....



▪Business Analytics from surveillance data

Analytics over indexed video content produce operational information....traffic flow maps, heat maps



As well as those that exist inside the facility



Conveyor Belts

- Virtual trip wire – alert for package coming off belt
- Area of Interest – alert for person in area

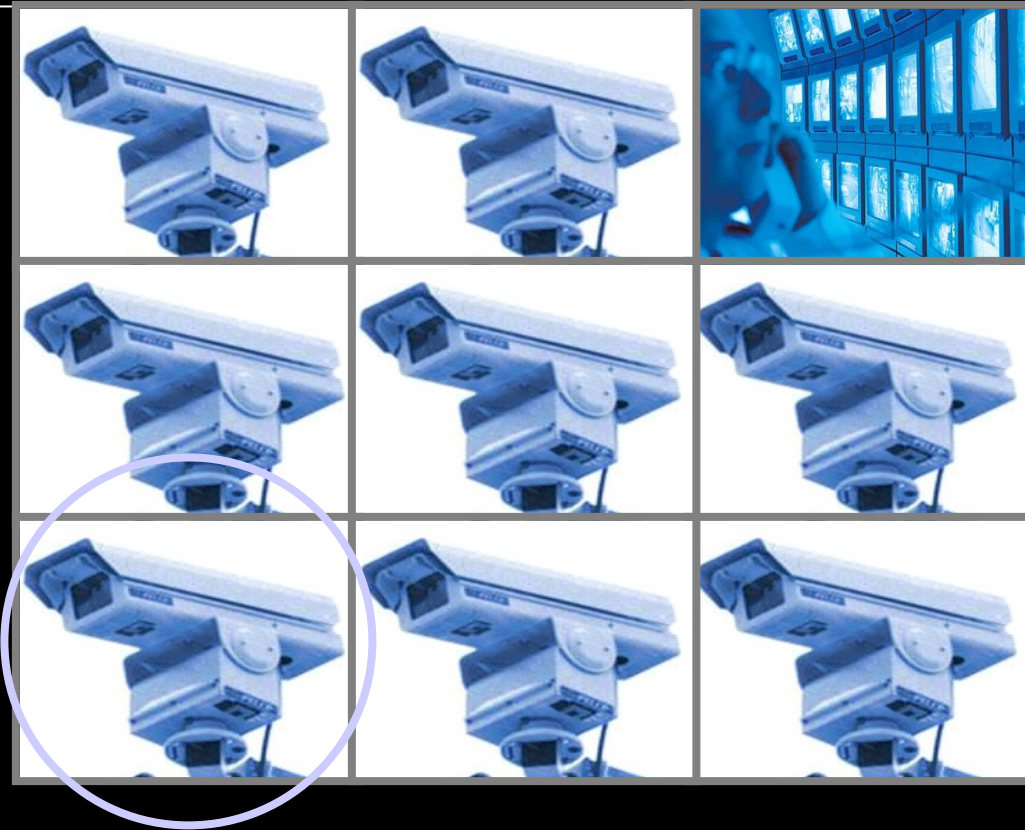
Secure areas / Doors

- Intrusion alerts
 - Opening sensor or video trip wire*
 - Face capture and recognition*
 - Tailgating*

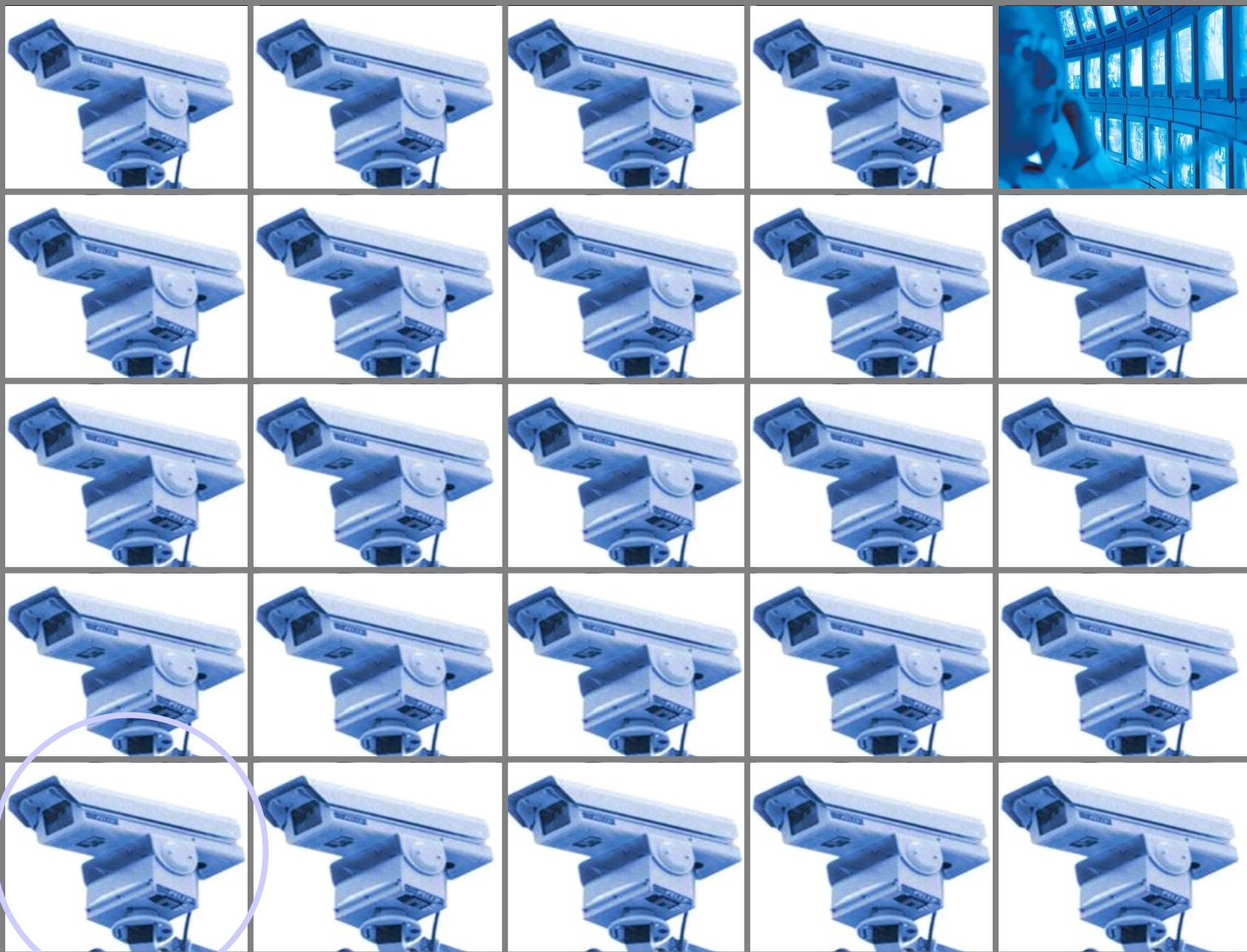




More Cameras mean More Video



**More Cameras mean
More Video**



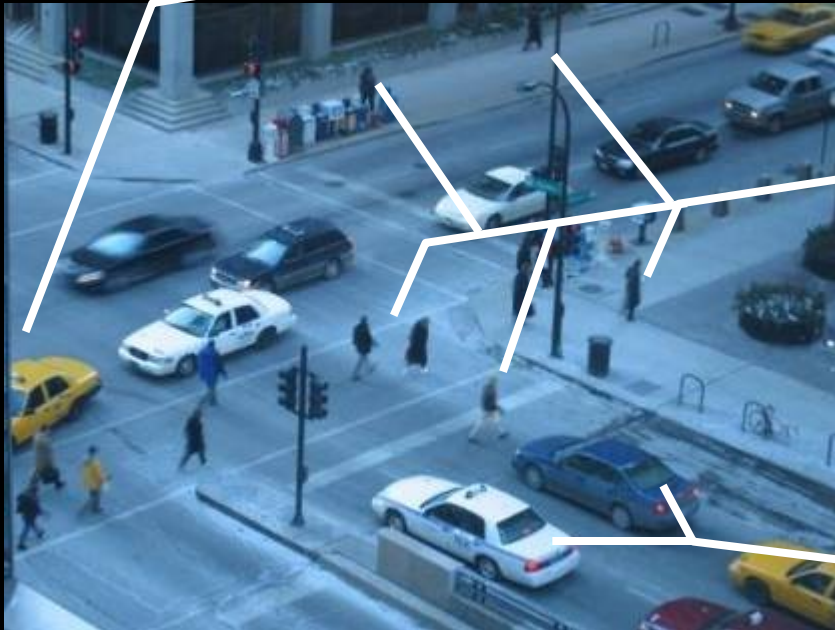


**Benefits of Greater Video Coverage:
Greater Awareness, More Coordinated and Proportional
Response, More Effective Investigation and Evidence**

**The Challenge:
Many Cameras, Much Content,
Strain on Human Vigilance to Use Visual Information
Unassisted at Massive Scale**

**The Solution:
Assisted Vigilance powered by
Smart Vision Suite**

“A picture is often worth a thousand words”
Video can tell an investigator quite a bit at every moment
Challenge: Predict in advance what will need to search



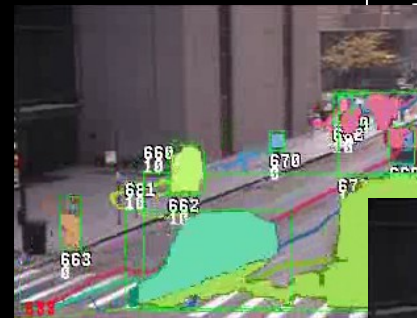
Yellow car eastbound turn L
White car eastbound turn L
Black car eastbound straight
Black car eastbound straight

Person north on sidewalk
Person west on crosswalk
Person west on crosswalk
Person north off crosswalk
Person south on sidewalk
Person south on sidewalk

Blue car southbound stop
White car southbound stop
Yellow car southbound stop
Red car southbound stop

What kind of metadata does SVS extract and Index?

- Information about each moving object (events)
- *not just pre-defined events!!*
 - Source
 - Camera ID, date, time
 - Appearance and Classification
 - Color, size
 - Person, vehicle, other
 - Motion
 - Track Summary- speed, distance, duration
 - Full Track (optional)-Exact location at each frame, trajectory, tracks
 - Thumbnail showing the object and track
 - Pointer to actual video



Alarms are configured and triggered over occurring **events**:
e.g., Abandoned objects, virtual trip wires, behavior patterns

Enables **compound, complex queries** over events:
e.g., Blue van loitering at access gates since March 1

SVS proactively alerts security

- Access gates
- Secure areas
- Cargo transfer areas
- Property perimeters
- Truck, rail yards
- Container storage



- Abandoned Object (package)
- Person or vehicle detected crossing perimeter (virtual trip wire)
- Person or vehicle detected in unauthorized area
- Person or vehicle detected in area when area is closed
- People loitering in area for extended time
- Crowd of people running in same direction
- Suspicious behavior detection across multiple cameras

SVS analytics also generate business value

- Full indexing of event metadata
- Compound/complex queries
- Consolidated sensory data

- Pattern discovery
- Trends and Exceptions
- Forensic Investigation queries
- Data Mining
- Searchable video index

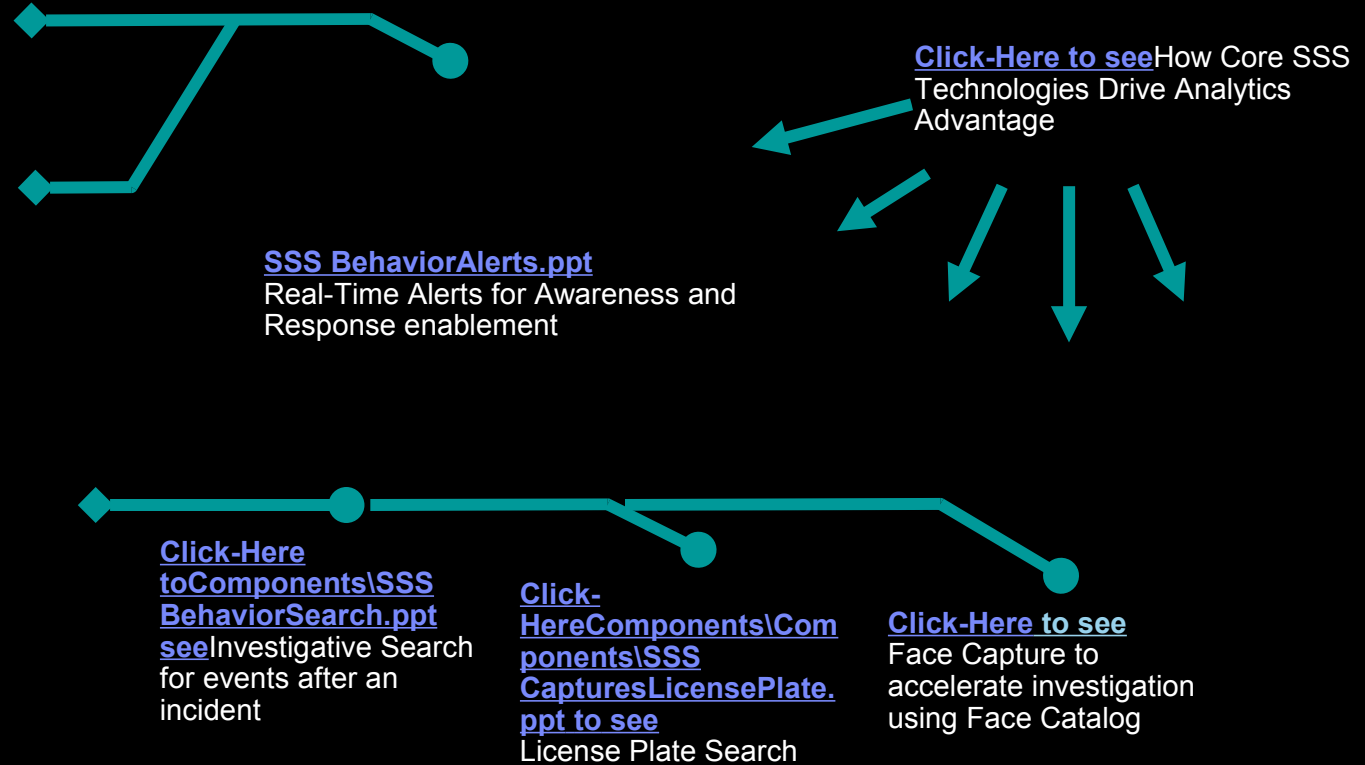
Video Analytics in Action Before, During, and After an Incident

Awareness

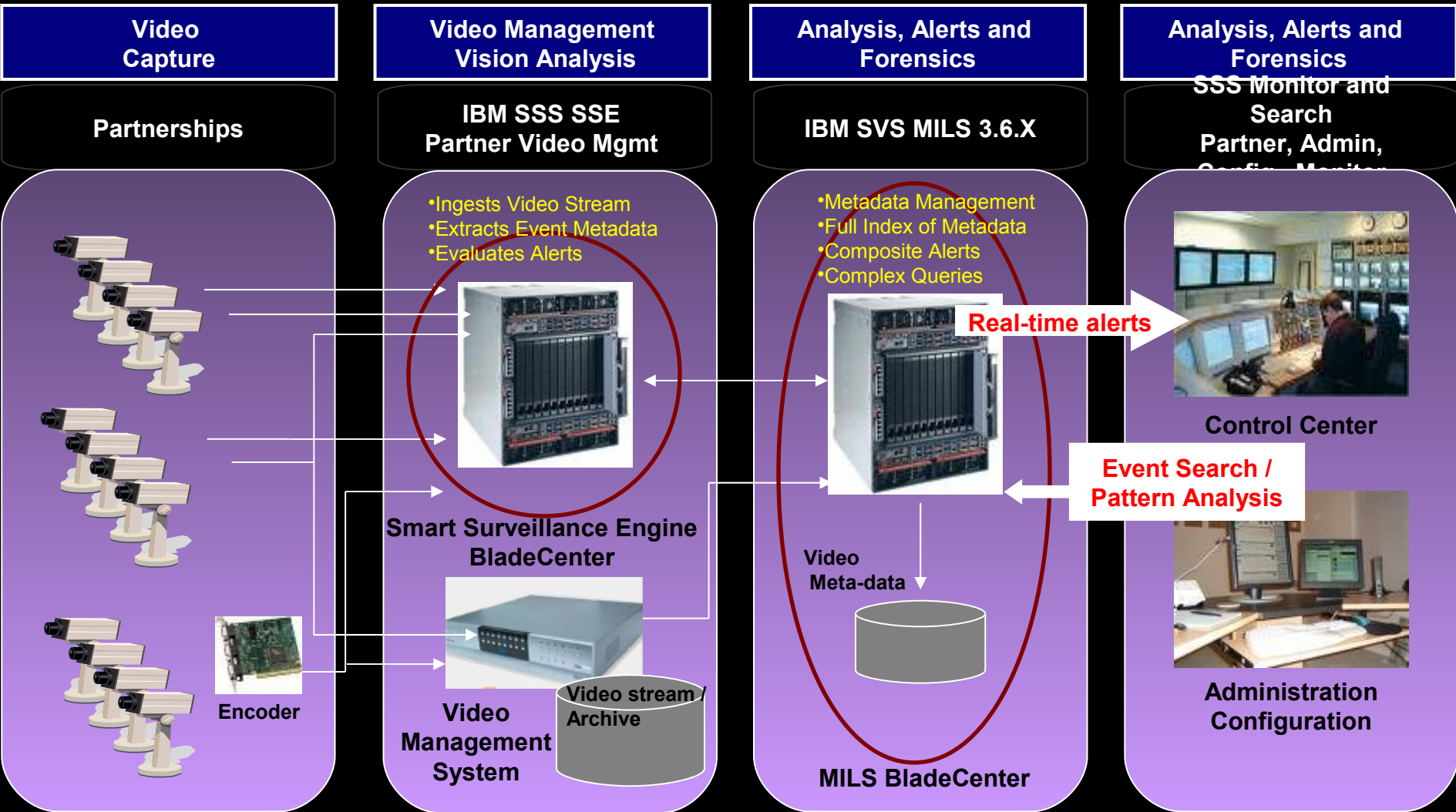
Response

Investigation

Evidence



Smart Vision Suite - IBM's Unique Solution Offering



KEY Components of full solution from IBM

Instrument the entire infrastructure on Smart Security

Geo spatial apps



- Provides Contextual information
- information

Motion Detector



- Detects motion and generates voice alarms

Command and Control



- Centralized monitoring application aggregating alarms from NVR/Video analytics.
- Optionally have security process and/or situation management process capabilities

Video Analytics



- Generate Instant alerts based on camera analytic configurations
- Creates meta data based on Object characteristics and time stamp.

Cameras and DVR/NVR/IP Surveillance

- Digital/Network Video Recorder
- Provides live and archived camera feeds for operators

Biometric Authentication Devices/Apps



- Finger prints/Finger vein
- Face recognition



Fire/Smoke Detectors



Business Applications like Ticketing Kiosks/ATMS

- ATM applications
- Airline Kiosks
- Parking Meter applications



Smart Vision Suite in action at San Pietro station Rome

IBM SMART SURVEILLANCE SOLUTION Welcome rfuser

HOME ALERTS EVENTS LOGOUT

MAPS

No Map(s) available for user

INSTANT ALERTS

San Piet... Railroad... 2009-06-03 17:44:53

San Piet... 2009-06-03 17:44:50

San Piet... 2009-06-03 17:44:49

San Piet... 2009-06-03 17:44:45

VIEWS MAPS

Camera Group: All

San Pietro 11 2009-06-03 17:41:24

San Pietro 12 2009-06-03 17:41:20

San Pietro 34 2009-06-03 17:41:28

LIVE San Pietro 6

2009-06-03 17:41:16

2009-06-03 17:41:28

2009-06-03 17:41:31

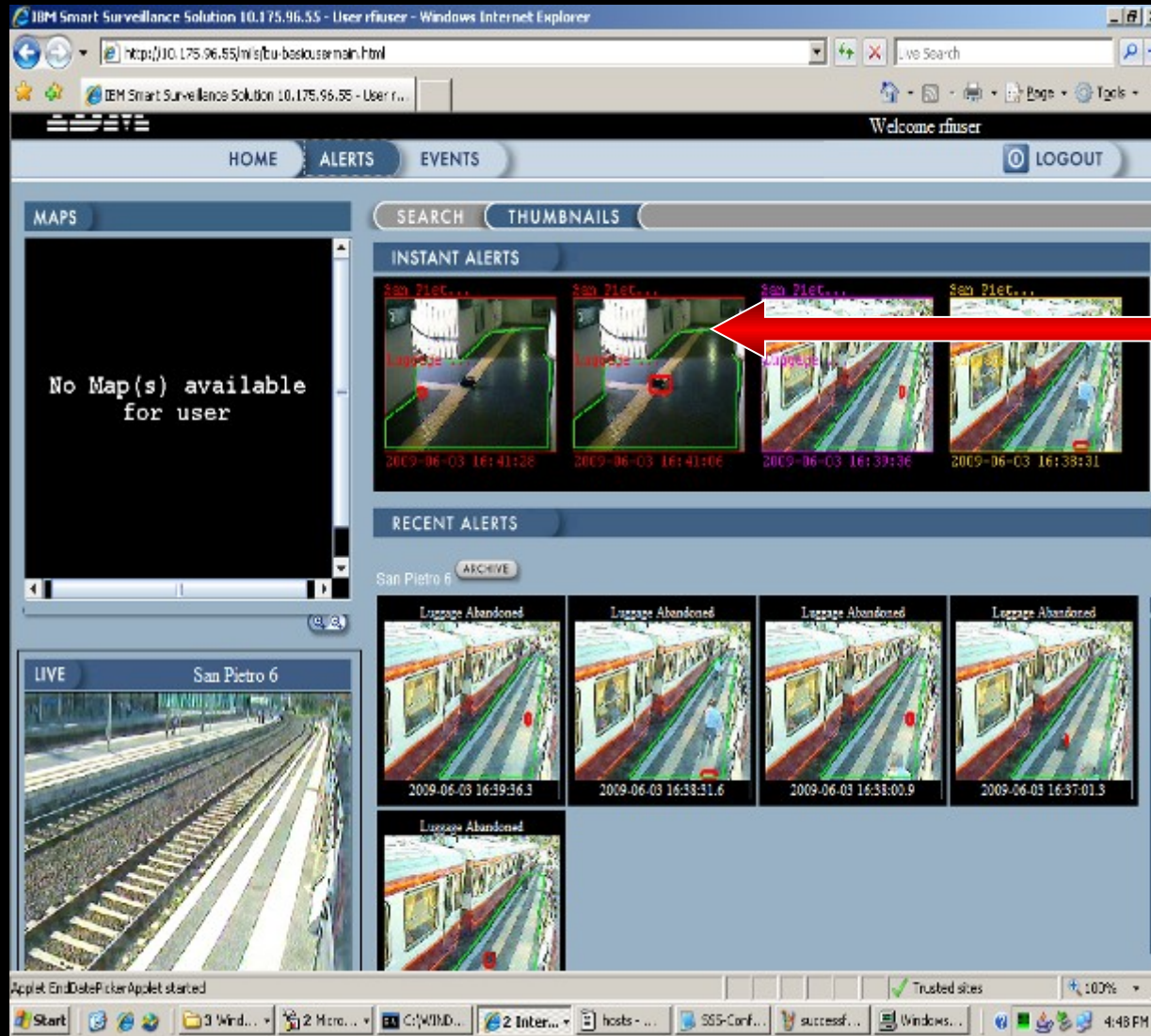
Applet Map/View: Applet started

Trusted sites 100%

Instant alert for the person crossing the rail road

Live view showing a person crossing the rail road

Smart Vision Suite in action at San Pietro station Rome



Instant alert captured for objects left on the platform and station entrance



Urban Surveillance in Chicago



Chicago Office of Emergency Management and Communication (OEMC)

- IBM contracted to create an integrated video surveillance system in the City of Chicago
- OEMC Integrates communications for:
 - Chicago Police Department
 - Chicago Fire Department
 - Homeland Security
 - 911 Call center
 - Federal Bureau of Investigation
- The OEMC, needed both infrastructure to create a video ready network as well as capabilities to feed video, voice into a centralized control center.
- As well is react to emergency management for critical events

Note: Details on number of cameras location of cameras and expenditures is strictly confidential in the contract and can not even be released internal to IBM without express written permission from the client.

New York City Department of Education – NY DOE

DOE created a “safe” environment across the New York school system in order to protect students and staff and deter malicious behavior as well as expedite investigations.

- Over 9500 cameras deployed
- Distributed server and storage model
- Analog and IP cameras in an IP network
- Interconnected through a federated design
- Central control center for monitoring and investigation



Italian Railway Infrastructure – RFI

Description

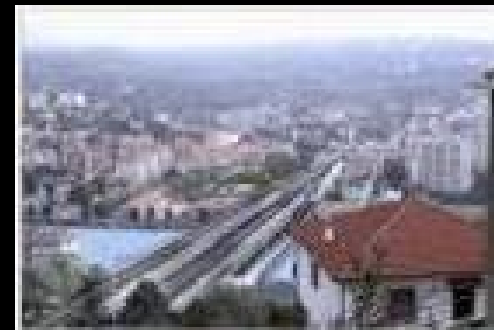
- The subsidiary of Ferrovie Dello Stato which owns the majority of the rail infrastructure in Italy
- Providing protection and intelligence to better manage railway stations, tunnels, bridges power stations and maintenance stations
- Analytics are being used to manage the security and operation of stations from regional control centers
- Contract was awarded to consortium, led by Thales

Technologies Used

- IBM 3650 Server platform
- Network design and implementation within the stations
- Smart Vision Suite
- IBM middleware: WebSphere, MQSeries, DB2
- ACTi Video Management and cameras
- Interconnectivity to regional control centers

Types of Service Provided

- Project management
- Network system architecture and design
- Security system architecture
- Delivery services, Installation & configuration
- Customization services
- Analytics configuration and tuning
- Technology recommendation



Thank You

Incheon Free Economic Zone-Korea

- IFEZ, located in Incheon, South Korea, area of 51,739 acres (209.38 km²).
- The goal of IFEZ: transform area into hubs for logistics, international business, leisure, and tourism for the Northeast Asian region.
- Incheon's FEZ, the first in Korea, was officially designated by the Korean government in August of 2003. IFEZ is planned to be a self-contained living and business district featuring air and sea transportation, a logistics complex, an international business center, financial services, residences, schools and hospitals, and shopping and entertainment centers.
- Physical Security project for these areas based on Smart Vision Suite Solution



Italy, Automotive industry - Centralized Security System

Client requirements

- Client has been looking to a solution to increase the security level within the plant areas and a centralized system in Turin monitoring all plants.

Solution

- Centralized video surveillance and access control system for 3 plants in France
- Video Surveillance for 8 plants in Italy
- Maintenance and support of this security solution for 3 years

Benefits

- Improves the security of the site and customers' people access with expertly designed, proactive facility access controls
- Single point of control
- Standardization of system management procedure across the plants network



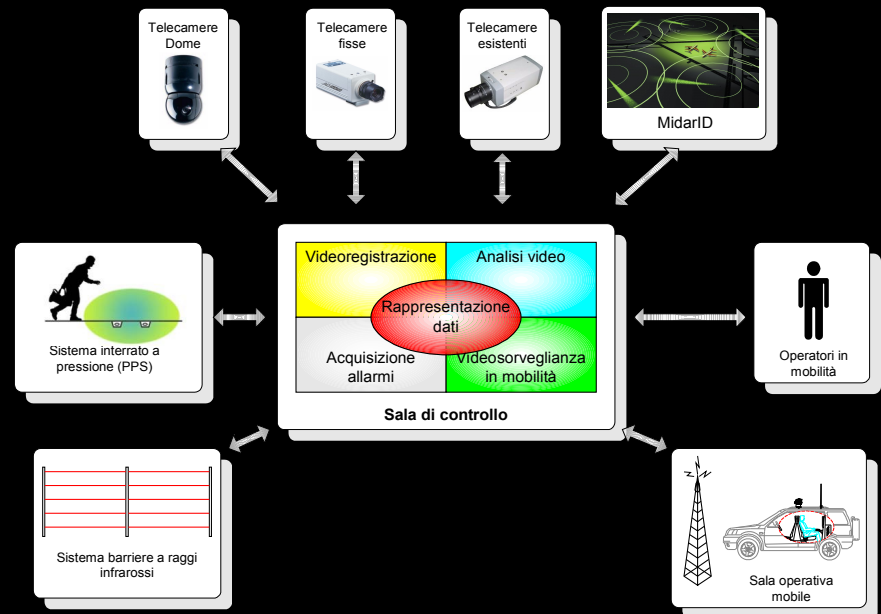
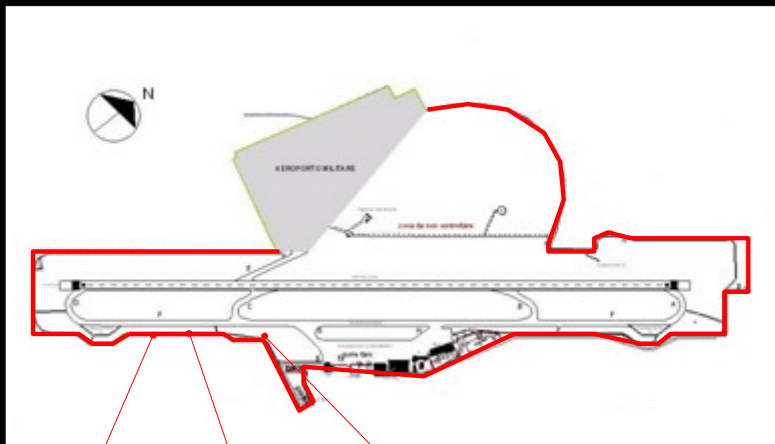
Industry: Industrial

Profile: Client is a European truck, bus, and diesel engine manufacturer, based in Turin, Italy. Produces around 200,000 commercial vehicles and 460,000 diesel engines annually. It employs 32,000 people and runs 49 production units in 19 Countries in the world. Besides Europe, the company operates in China, Russia,

Italy, International Airport - Integrated Physical Security System



- ✓ Security control room – integration and GUI
- ✓ Mobile security control room – local GUI
- ✓ Surveillance and video analysis
- ✓ Underground intrusion detection
- ✓ Infrared intrusion detection
- ✓ Field radar & thermal intrusion detection
- ✓ Face recognition access control
- ✓ Rfid access control





Gioia Tauro Port - Integrated Security System

Client requirements

- Ensure the security of the company's gates access control, integrated with the digital video surveillance:
 - Tender I – Perimeter Security
 - Tender II – Control Room

Solution

- Enhance/complement pedestrian and truck access, facility access control and intrusion detection system
- Integrate Digital Video Surveillance
- Maintenance and support of this security solution
- Security and Privacy Services, Site and Facility Services, Maintenance and Technical Support Services

Benefits

- Improves the security of the site and customers' people access with expertly designed, proactive facility access controls
- Facilitates this integration of new security technologies
- Capitalizes on Services support and maintenance



Industry: Travel & Transportation

Profile: A container-handling company that manages container transfer between ships and the railway network