



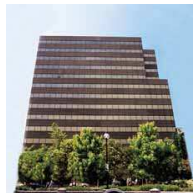
ORGANIX IT

Intelligence+Technologies

Smart Video Monitoring












Information Technologies and Security Convergence



Head Office Canada

Montréal – Toronto – Vancouver
OrganixIT
4200 boul. St-Laurent bureau 402
Montreal (Québec) Canada H2W 2R2
Tel : (514)288-0123 Fax : (514)843-7607
www.organixit.com

Index

Smart Video Monitoring.....	1
 Preface.....	3
 1. Introduction.....	4
 2. SOS Product Line.....	5
 3. References.....	7
 4. Basic Features.....	9
 5. Optional Intelligent Features for a High Security Environment.....	12
 6. Third party physical subsystems.....	16
 7. Technical Description.....	17
 7. Organix IT Services.....	21



Preface

The Security Market is in deep transformation with the Information Technologies (IT) and Security convergence. All security solutions - as video surveillance, access control, detection / intrusion, fire system - embeds more and more IT.

As Digital Media Leader and in the interest of its customers, Organix IT participates actively to this IT and security convergence in proposing IT solutions for security and monitoring.

Organix IT, has partnered with ISS Technology to propose a Smart Video Monitoring System (SVM), one of the most powerful, intelligent and integrated video surveillance and monitoring system.

With SVM, Organix IT can help strengthen physical security while protecting people and critical assets. From mobile and stationary surveillance, to information and access portals and wireless content delivery, Organix IT can help governments and organizations proactively respond to heightened security challenges.

1. Introduction

Surveillance devices are common today and are used as a proven method for protection and risk management. Traditionally, the video security and surveillance market has been dominated by analogue cameras (tape recording), technologically limited distribution means, and non-interactive display systems.

With the advent of faster, less expensive computer systems, analogue is giving way to digital surveillance, which uses streaming video technologies, multi-function open source software, and high compression capabilities to overcome traditional barriers. Digital surveillance cameras can be monitored by local and wide area networks, including the Internet, to safeguard citizens, customers, employees and assets.

SVM markets digital security and surveillance systems, which record video images digitally, permit their viewing remotely, and allow option additions like human and object tracking. All system components are programmable and are capable of being customized to satisfy special requirements, be it coverage which is continuous or when events are detected.

SVM is powered by a video software of Intelligent Security System (ISS) technology – Security Operating System (SOS). SVM digital systems also employ digital video data compression, which saves space and time for transmission and storage.

The product line of SOS is one of the most integrated digital security and comprehensive software programs for security systems in the world and had been in development since 1993 by ISS.

2. SOS Product Line

Tools for management...

Central Station: monitors data and manages the infrastructure of large-scale system in the Intelligent Video Framework

Tools for Video acquisition...

Live Video Server: an integrated video acquisition, monitoring, control, system management and data distribution in Intelligent Video Network. (for analog an IP cameras)

Intelligent features for Specific Applications...

- **Face Capturing & recognition:** integrated video and data acquisition, monitoring and data distribution system adjusted for human face detection and capturing
- **Plate Recognition:** integrated video and data acquisition, monitoring and data distribution system adjusted for car plate pattern detection, capturing and recognition. It provides data collection, live querying and analysis
- **Object/Body Tracker & Activity Analyzer:** integrated video and data acquisition, monitoring and data distribution system adjusted for human body detection and tracking
- **Traffic monitoring:** integrated into any "smart" roadway/highway to count vehicles, track speed, flow density and direction. A powerful component of the Traffic Monitoring system is its ability to integrate with legacy traffic management systems.
- **Remote Station Operator/Administrator:** remote video, audio and data monitoring within Intelligent Video Framework. Partial remote control of multiple system components. The component allows total control & monitoring of an surveillance network from a remote location via a TCP/IP connection. The Administrator is designed for secured video/audio and event data monitoring, system control and administration over the Internet or an Intelligent Video Network. The system architecture with multiple Remote Stations provides stable remote management and administration solution for enterprise applications.

Data Flow Control...

- **Access Control, Intrusion & Fire Alarm panel** : integrated digital access control system adjusted for access management, data collection, live querying and analysis
- **Archive Server:** network-based intelligent video/audio storage and archive retrieval system. Archive Server is designed projects that require long term data archiving over months and/or years. The Archive Server works in the video network and provides two options for video/audio data archiving, Tape library or Disk array. Multiple sites may have secured access to in order to store and retrieve data remotely. Data Archive Systems are designed for centralized data collection from numerous sites.

SVM can custom & tailor a digital video system to provide a solution that will more closely match the behavior of the people using the system. This is especially true for complex security system requirements in government agencies and in commercial and industrial applications for large office buildings, manufacturers, refineries, banks, chemical plants, nuclear power stations, state boarder crossings, and gas-oil pipe lines.

3. References

Key Facts

- 25,000 installations monitoring over 150,000 cameras worldwide
- ISS Systems deployed in over 50 countries
- Commitment to technology – over 60 scientists dedicated to R&D in ISS.

Some references

Transportation

- Shanxi Province Metro System, China
- Taiwan Freeway Bureau

White House and Parliament

- White House, Brazil
- Tahiti Presidency, France
- European Parliament, Belgium

Facility

- Palace Hotel – NY
- Ministry of Defense, Lithuania
- Piscataway High School, NJ, USA
- University of Jussieu – Paris, France
- Tahiti Ministry of Equipment, France

Safe Cities

- Moscow, Russia Federation
- St. Petersburg, Russia Federation
- Calahorra, Spain

Heavy Industries / Energy

- Severstal, Russia
- Qatar Liquefied Gas Company Ltd.
- Ministry of Atomic Energy, Russia
- Caspian Sea Gas Pipeline
- Rostov Nuclear Station, Russia
- Toitures Goerens, Luxembourg



Finance / Banking

- Central Bank of Russia
- Alpha Bank, Greece
- Banco de la Provincia, Argentina
- Crédit Mutuel / CIC, France

Retail

- IKEA, Moscow
- ShopRite Supermarkets, USA
- Balco Supermarkets, Russia
- Auchan, Moscow
- Couche-Tard Convenience Stores, Canada

IT Data Centre

- Ministry of Finance, France
- Catholic Hospital of Liege, Belgium
- Canvac, Montreal University, Canada.

4. Basic Features

SVM offers the power of scripting that provide ability to interact with all data derived from SVM with all associated and defined sub systems. This allows the SOS (Security Operating System) platform to utilize and manage this data (metadata) using external subsystems and scripting. The SOS platform is specifically built around the metadata derived intelligent features and can perform, monitor or react in an unlimited capacity.

The open architecture is another key component of the SOS platform. Any component or virtually any third party device or system, if it can send a digital signal, can be integrated and managed into the SVM infrastructure. How is this important to an end user? For an organization, it means one point to monitor, manage, and react to multiple subsystems within enterprise architecture, including, but not limited to, technology, building management, or security systems.

In summary, one operator, can at his fingertips, manage a multitude of local or remote sites, and anticipate, react, and respond to a multitude of threats instantly.

Core Features

The following features are included by default, in the SOS platform (Security Operating System) software:

Core Engine

- Control all subsystems
- Create a network based systems
- Manage remote based servers

Video Subsystem

- Show video on split multi-layer screen
- Show the on-line video from remote servers
- Record video
- Use video motion detector
- Compress video frames with different level of compression
- Use video image enhancement
- Use smooth digital zoom
- Print image, export it to AVI/JPEG format

Multi-Functional Capture Cards

- Analog video and conversion it to digital
- Multiplex video channels
- Multi channel audio signals
- 3-states digital inputs & outputs
- Digital IP cameras (hybrid system)

Voice Notification Engine

- Voice notification according to custom define events

System Event Viewer Engine

- Multiple screens with on-line displaying of system events
- Custom define filters for each event viewer

Macro Command Engine

- System reactions to custom selected system events

WEB-Server

- Http service to watch video using http browser (JAVA)
- User rights limit access to system
- Password based access to http service

Remote Station Operator

- On-line video (mosaic 2x2, 3x3, ...) from remote Video Server
- Video recording on remote Video Server
- Video image enhancement
- Smooth digital zoom
- Print image, export it to AVI/JPEG format

Script Language Engine

- System events management using multi-level custom scenarios

User Rights Management

- Access level for every object in the system
- Unlimited number of group with different access level to system objects

Alarm Message Window Engine

- Pop-up window with other system information



Time Schedule Engine

- Time periods (a day-time, a holidays, etc.)
- Schedule-based control of system components

AVI Export Utility

- Convert video archive to AVI file in order to watch it at any Windows computer
- Convert synchronized video/audio archive to AVI file

Alarm Message Sending

- Message by email, SMS according to custom define scenario
- Picture/video by email according to custom define scenario

Query Engine

- Custom design graphic form to request operator decision
- Custom design graphic form to control special equipment

Digital Multi-layer Map Engine

- Locations of security environment on screen in graphic form
- Security environment using simple GUI

PTZ / Dome Camera Control

- PTZ / Dome camera from different vendors on remote servers

Sequence

- Sequence of cameras over any video output

5. Optional Intelligent Features for a High Security Environment

What makes an intelligent feature intelligent?

- Intelligent Features are complex enough to apply “artificial thought processes” which alert security professionals or commence other actions based on predefined parameters of complex scenarios
- Intelligent Features can “talk” to each other, allowing for greater complexity in reaction functionalities (i.e. the face recognition system can alarm based on specific parameters and then carry out more complex activities, such as track the individual, provide access to specific areas, contact security, etc.)
- Intelligent Features can be “taught” - using advanced scripting functionalities, which empowers intelligent features with an unlimited scope of scenarios and corresponding reactions; baseline scenarios can be programmed, detection parameters may be fine tuned, event reactions can be completely customized
- Intelligent Features are scalable – new functionalities can be integrated using scripting, new systems (or third party) can be integrated, and software updates and patches can help the Intelligent Architecture grow more powerful over time.

Face Capture / Recognition

SVM via the ISS engine offers proprietary real-time algorithms for face detection and capture. It does not require special cameras or any specific environment. Multiple faces from a crowd may be detected, captured, recorded and delivered for further analysis, reporting and notification capabilities. The Face Capture software is useful for video surveillance, crowd monitoring and law enforcement.



Individual facial patterns are recorded and stored in a digital photo database, that can be retrieved for different applications locally or remotely. ISS has developed several algorithms for real time processing of video data and image localization, determination of position of head and motion tracing for subsequent recognition.

Object and Human Tracking

The Object Tracking Component utilizes and builds on ISS standard motion detection technology. The feature can track and record the movement of individuals in real time or from stored video. It can track an unlimited number of people simultaneously (based on processing power of host computer) and be programmed to alarm based on one or multiple events / actions. Human Tracking can also optionally be enhanced to detect the subject's direction to anticipate destination of target.



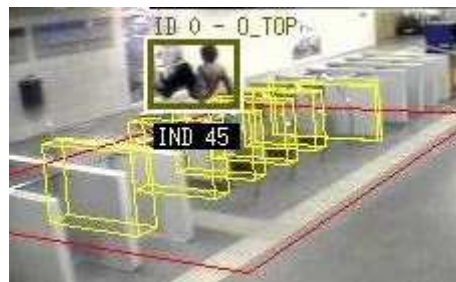
The ISS Object Tracking module can track objects and record multiple objects simultaneously. It can determine the dimensions, shape, and speed of the object to understand its characteristics for potential identification. The system is further enhanced by its "lost baggage" capability which associates object to people, and can detect and alarm for various unusual circumstances (such as leaving baggage behind).

Behavior Recognition

The ISS Behavior Recognition Enterprise Component utilizes motion detection and then passes applicable video through complex algorithms to "understand" the actions being taken.

The system can be "taught" to define complex motions such as fighting, overcrowding, barrier (or turnstile) jumping, running, graffiti painting, or the drawing of a weapon. The system can further initiate complex reactions based on its behavior recognition results, including, but not limited to:

- Control and automate complex system events based on predefined activities
- Initiate alarms, email and telephone alerts
- Increase fps performance based on predefined activities



The system utilizes scripting to detect and alarm an almost unlimited scope of behavior patterns. The module additionally can be programmed to ignore or alarm

behaviors based on a complex set of parameters and/or scenarios. Standard ISS behavior recognition detection scripts include:

- Fighting
- Turnstile / Barrier Jumping
- Panic Detection
- Running Crowds
- Aggressive Acts / Drawing of Weapons
- Overcrowding
- Graffiti

License Plate Recognition

License Plate Recognition (LPR) was developed to simultaneously detect, capture and compare multiple car license plates in real time.

LPR utilizes an algorithm to detect & capture car license plate letters & numbers. Once captured, the car license plate is compared to selected subject plate numbers for identification. Positive plate comparison results can trigger specified system processes.



The LPR database synchronizes all image, video and event data. The LPR system can query remote databases in real time to verify operational status of a captured plate.

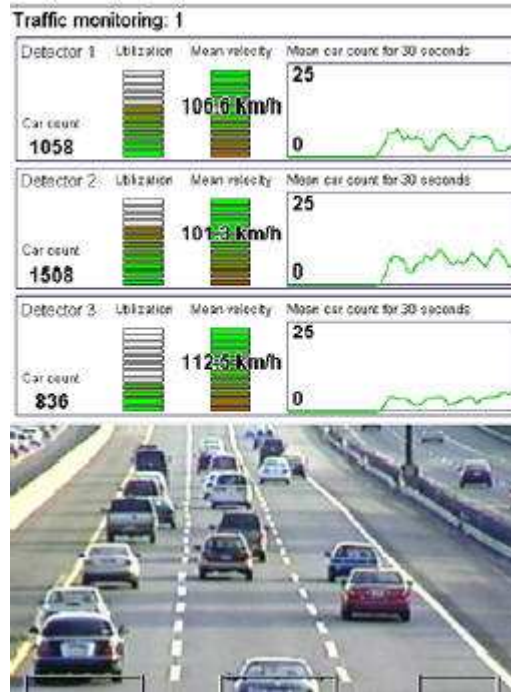
The core features of LPR are:

- Compare Captured Plates to Profiles
- Captured Plate Numbers Associated with Video.
- Capture Numbers & Letters at Speed (up to 60 km/hour)
- Query Remote Database
- Specify Alarm Event and Reactions
- Voice Alarm Notification This system can be trained to recognize characters (numbers & letters) for vehicles, containers or alternate identification applications.

Traffic Monitoring

Traffic Monitoring can be integrated into any “smart” roadway and can count vehicles, track speed and direction. The feature can use a modified version of Behavior recognition to detect and alert an unlimited number of traffic based scenarios, including, but not limited to:

- Accidents
- Objects on the roadway / Objects falling from trucks
- Pedestrians
- Vehicles traveling wrong direction
- Roadway conditions
- Occupancy / Traffic Congestion
- Parked vehicles
- Speeding / Slow Vehicles
- Travel time
- Unauthorized vehicles (based on shape or speed)
- Roadway Smoke or Fire detection



People Counting

The ISS People Counting Intelligent Feature is an ideal solution for mass transportation hubs, or any other public facility where large numbers of people congregate.

The People Counting feature can

- Counts distinct people per CCTV zone.
- Tracks and counts number of passengers over multiple cameras without duplication.
- Detailed system logs for statistical analysis.
- System determines and tracks passenger direction to anticipate destination of target.
- Alarms for overcrowding, unequal distribution of passengers over camera zones, etc.



6. Third party physical subsystems

Several physical security subsystems from third party vendors have already been implemented in Security Operating System. These subsystems are :

- Access Control
- Intrusion system
- Fire/Burglar Alarm
- Building Automation
- Mobile and In Car Video Solutions

Access Control, Building Management and Fire Systems Integration are optional tools that can unify facility management, security, life safety, and access control systems.

SVM enables interface of third party access control systems via TCPIP, RS232 or RS485 connections. Once integrated, the SVM Server can provide simultaneous monitoring & control of activities throughout a facility's physical infrastructure.

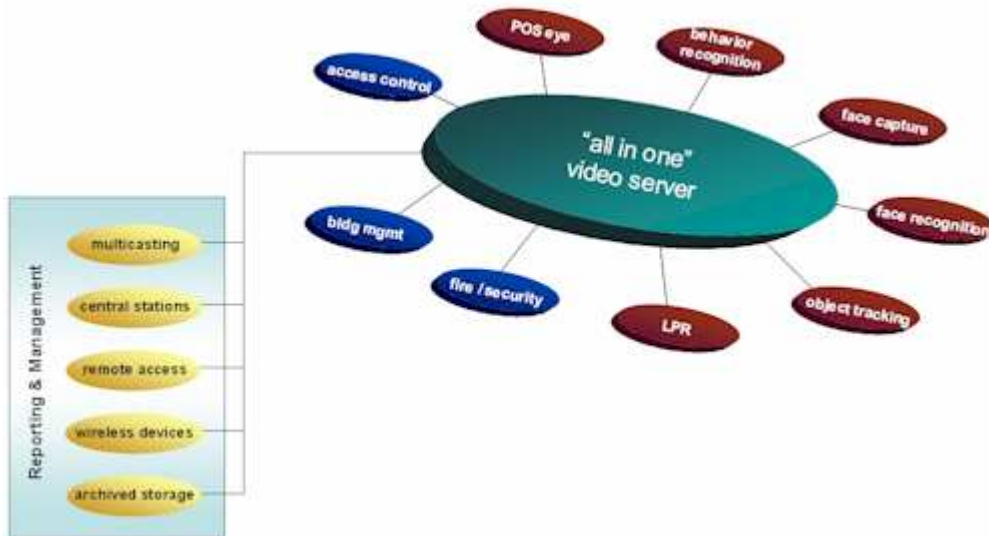
7. Technical Description

SVM Technology has the following relevant characteristics:

- Scalable & Modular “All in One Unit”
 - optional image processing & recognition features
- Fully Open Architecture - SDKs to tailor system to user needs
 - Integrates with any third party system
 - Object oriented application design
- Event Driven System Core
 - Program complex system reactions for complex system events
 - Advanced open script code (abbreviated C language)
- Networks of Unlimited Scope
 - Unlimited number of servers and workstations
 - Control unlimited # of cameras and sensors from any network point
 - Remote administration or operation

“All in One” Concept

The SOS is not only a security system based on IT, but also handles networking features, management system, third party physical sub systems, as well as intelligent features in the same solution.



Moreover any of these features can be extended by updating the software license key. This is really a scalable and modular “All In One” solution, with optional intelligent and recognition features.



Advanced Security Scripting Language

The Advanced Scripting Language is the nerve center of SVM. It is where you teach what it needs to know, the specific parameters, the actions to be taken, the sensitivity of both detection and reaction, and whether to log it to build a reactive history.

Scripting allows the knowledge worker to manage and exploit the open object architecture of the security platform, and allows every device within it to be managed and manipulated, whether it by a third party component or else.

As indicated earlier, the scripting language is an abbreviated form of the C language, and as such, it retains the power and flexibility of C. These benefits translate to ease of programming, and a rich set of commands that allow very complex event handling mechanisms, including multiple responses based on the exact scenario.

Networking

The network architecture is completely Ethernet networked based and covers almost all network topology. Local or remote connections authorized access to any system infrastructure and/or device, specially the capability to process video, for example displaying video over PDA, be notified of events, or even monitoring the system or part of the system. Administration and management of the system can be performed locally or remotely from any desktop computer (of course if user has the rights and access).

Modularity

Modularity feature gives the possibility to perform partial deployment and integration is processed as system capacity and need grows. System sizing is possible without limits, as far as there is sufficient bandwidth and networking access.

The Safe City of Moscow project is a good example for the system modularity. This project started in 2002 and must be terminated by 2009 for a total of 90,000 cameras. Deployment and extension is performed continuously from 3 system integrators.

Kernel

The kernel (core system) has been designed to manage the database (set up, device, equipment, authorized features, filters,..), to interface client station and to provide server to server connectivity via the network. Data workflow control is managed by the kernel, bridging the different local and remote system objects. This important feature thus helps a lot for design of complex solution. Any change in any part of the system is replicated on the fly to all concerned objects.

Multi Layer Architecture

This multi layer structure makes it quite simple to unplug certain software modules and plug new modules. For example, it's possible to use a new face recognition algorithm from a different vendor. Similarly this applies to hardware devices such as implementing a new PTZ camera protocol or an access controller unit, ..

Open Technical Architecture

SOS is an open architecture, hence customizable. Several objects are available for this customization, which can be performed at different levels

- Basic level (reuse of query, alarm window, dialog box, macro, ...)
- Complex level (scripting and SDK – Software Development Kit)

This gives tremendous possibilities for integrators to make the different subsystem interact to create value added functionalities for the final end user.

Moreover the complete management software pack can be replaced by the customer, in house made, GUI (Graphical User Interface) & Management Tools. This is possible by using the SDK (Software Development Kit) component. This SDK is accessible as an object, IIDK (Integration Development Kit) in the object tree, for interfacing with third party software. Basically, all objects (control, events, action, reaction ...) can be monitored via TCP/IP protocol and ActiveX component is provided to display video stream I an external software.

Event driven & Object Oriented

SOS is based on event driven and object oriented architecture to notify status changes of system objects. Each event has a unique ID, type, origin, date/time, status ... These events can be filtered and visible to which system object (for example client station No.3 object does not need to be notified about access control status and events).

These events can be combined using macros to automate actions and reactions on any other objects.

Cameras

SOS Software platform manages CCTV and IP cameras and supports several PTZ protocols from the different CCTV camera manufacturers.

Video recording

Video recording is an essential feature in the definition and design of a video surveillance & security system. Key parameters are:

- the storage architecture (centralized, distributed), including the storage support (HDD, SCSI, SATA, IDE, RAID, Tape library for mass archiving)
- the different recording mode (manual, pre/post alarm, automatic on schedule)
- friendly user functionalities related to manipulate these recorded data (from archive retrieval, to export, search engines, ...)

SOS platform covers all the above features. However the design & calculation of storage capabilities are totally dependant on the

- The number of recorded images per second (rate)
- The quality of recorded images
- The resolution of recorded images
- The duration per day and the number of archive days

Storage architecture

Storage technology is mainly focused on a distributed architecture, This means that each video server is autonomous and self sufficient for storage operation locally, thus being totally independent for transmission to central storage server. This distributed storage architecture has the following advantages:

- Distributed CPU resources over all servers, working stand alone
- Ease of deployment & Flexibility for tailored storage calculation (even for extension later on)
- Limited risk to lose recording due to network congestion
- No bandwidth occupation. For example: if 1000 cameras needs to be recorded centrally, then sizing of the network is important. Bandwidth sizing and calculation is dedicated to only live video transmission.
- Lost of limited records, in case of total crash (only those from the associated server)



7. Organix IT Services

Organix IT not only provides government and organizations with a fully automated and cost effective SVM solution, but also ensures rapid access to and retrieval of digital video content ingested by the surveillance cameras.

Our standard offering is a complete end-to-end solution for security and law enforcement personnel and can be integrated with access control and screening solutions to provide a unified "command center" view of a single location or complex facilities network.