

## Site Survey



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# 1 Introduction

This document details the procedure of surveying a particular site on which a deployment of Agent Vi video analytics is planned, with the objective of identifying site parameters that may affect the ability to satisfy project requirements or video analytics performance requirements. Project requirements, equipment (existing or planned), and assumptions are collated and documented in this (provided) template, to be used to:

- [Existing cameras] Evaluate camera layout design by inspecting camera views
- [Planned cameras] Evaluate the layout design of cameras yet to be deployed, followed by correct camera selection
- Design and formulate the required hardware and software specifications (that apply to video analytics), including servers and workstations
- Identify risks and potential issues prior to deploying video analytics

Each section below covers an aspect of the survey. Each is accompanied by a dedicated table (with examples) that the integrator must complete and use as a basis for a deployment design recommendation.

# 2 Site Overview

Define the type of site, i.e., a large shopping mall, indoor railway station, gas facility surrounded by fences. Then define the high-level requirement for video analytics, i.e., to protect a gas facility by securing its perimeter and by monitoring high threat areas inside.

Site Overview	
Site Type	
Video Analytics Requirement	

# 3 Requirements

Accurately document the video analytics requirements in as much detail as possible for them to be used as acceptance criteria for the deployed solution.

**Examples:**

**Protecting a perimeter fence**

- The video analytics will be able to detect a person approaching the fence line.
- The video analytics will detect a person moving at various speeds, from a very slow crawl to a very fast sprint
- The video analytics will detect a person walking, crawling, or moving in any position in between
- The video analytics will perform 24/7 without incurring degradation in the probability of detection (POD) due to lighting conditions

### Detecting vehicles illegally parked in front of a building

The video analytics will detect any vehicle parked for more than 60 seconds within a distance of 50 meters from the building entrance

The video analytics will detect a vehicle of any size, from a motorcycle up to a bus

The video analytics will perform 24/7 without degradation in POD due to lighting conditions

List all requirements relating to video analytics, referring to these categories:

- Real-time video analysis and alerts (hereinafter 'RT')
  - Defining events and scenarios and receiving real-time alerts when such events are detected. List required detection distance if applicable
- Forensic search and post-event analysis (hereinafter 'FS')
  - Searching through recorded video after an incident to locate specific video footage
- Business Intelligence (hereinafter 'BI')
  - Analyzing video footage, collecting metadata, and generating statistical reports

It is recommended to avoid quoting specific items from Agent Vi's offering but rather to use your own words or to copy-paste the requirements as they appear in the original SOW / tender / specifications sheet.

For each requirement: provide a Requirement ID, specify the category, provide a requirement description, and indicate its priority. It is recommended to prioritize requirements since it may be challenging to achieve optimal performance levels across each and every function due to environmental constraints, camera mounting, lighting issues, etc. Use three categories: (1) mandatory (2) highly recommended and (3) nice to have. Use this table (some examples are shown):

Requirements			
Requirement ID	Category	Description	Priority
R1	RT	Detect persons approaching the fence line, 24/7, at a distance of X meters from the fence	Mandatory
R2	RT	Detect persons loitering around the building between 8a.m.and 5p.m., Monday-Friday	Highly recommended
R3	FS	Enable forensic investigation (at all times) on the indoor cameras covering the public spaces	Mandatory
R4	BI	Analyze the flow of people across the indoor dining area and provide a meaningful representation showing popular areas ('hot zones') on an hourly basis, including daily comparison charts	Hourly-based 'Hot-Zones' – Mandatory Daily comparison - Nice to have

## 4 Cameras

List cameras used or planned to be used with video analytics.  
For each camera specify:

- Identifier
- Make and model
- Form factor (box / dome / PTZ / thermal)
- Resolution (specify separately for viewing and recording)
- Frame rate (specify separately for viewing and recording)
- Bandwidth (specify separately for viewing and recording)

Use this table (some examples are shown):

Cameras								
Camera ID	Make and Model	Form Factor	Resolution		Frame Rate		Bandwidth	
			Viewing	Recording	Viewing	Recording	Viewing	Recording
C1	Axis P3363	Fixed dome	800x600		25 fps	10 fps	1.5 Mbps	
C2	Axis Q1604	Fixed box	1280x960		25 fps	10 fps	2.5 Mbps	
C3	Verint S5120FD-DN	Fixed box	720x576		25 fps	10 fps	1.3 Mbps	

## 5 Video Management System (VMS)

Indicate in the table below which 3<sup>rd</sup> party VMS / PSIM / alarm monitoring applications will be used.

3 <sup>rd</sup> Party VMS / PSIM / Alarm Monitoring Application	How it is expected to Operate / Integrate with Video Analytics <sup>1</sup>	Vendor <sup>2</sup>	Version <sup>2</sup>

<sup>1</sup> Indicate how the 3<sup>rd</sup> party VMS / PSIM / alarm monitoring application is expected to operate / integrate with video analytics

<sup>2</sup> For each application, specify the vendor and the exact versions being used. Make sure that you indicate the precise version numbers of each of the relevant components, for instance, if the VMS utilizes separate versions for the management and recording servers and for its client, specify the version of each

## 6 Recording, Viewing and Monitoring

Specify the physical location of the recording, viewing and monitoring clients and servers. Indicate if you will be utilizing one or more centralized monitoring location and/or distributed monitoring site.

Recording, Viewing and Monitoring						
	Recording		Viewing		Monitoring	
	Client	Server	Client	Server	Client	Server
Central						
Location a						
Location b						
Location c						

## 7 Forensics / Statistics

If you are utilizing forensics and/or statistics, indicate:

- Locations of operators and how the relevant forensics and/or statistics interfaces will be used, for example, if you're planning to utilize standalone workstations for video forensics and how the statistical data will be processed and retrieved (manually / automatically, etc.).
- Data retention time required for each application
- Data export format required for each application

Forensics / Statistics	
Operator locations	
Interfaces	
Data retrieval mechanism	
Data retention time	
Data export format	

## 8 Network Infrastructure

Describe the network infrastructure. Use a dataflow diagram (recommended). Include the following:

- Location of servers
- Topology and policies
- Available bandwidth between each two nodes
- Bandwidth explicitly dedicated to video analytics

Note that a stable and continuous network connection is required at all times. Indicate if there is any deviation.

Network	
Diagram	

## 9 Failover

Indicate if you require any form of failover utilization and describe it in detail. Illustrate the required failover method on top of the network dataflow diagram (recommended).

Failover	
Description	

## 10 Map Cameras, Requirements and Locations

Map the cameras and requirements. Indicate the camera counts for each camera ID, the associated requirements, and the location IDs (range). Use the example below as reference:

Cameras, Requirements and Locations			
Camera ID	Requirement ID	Count	Location ID
C1	R2	4	L1-L4
C1	R1 + R3	10	L5-L14
C1	R3	5	L15-L19
C2	R1	20	L20-L39
C3	R4	10	L40-L49

In the above example:

- There are 49 cameras in total (19 x C1, 20 x C2 and 10 x C3)
- Four C1 cameras are used for requirement R2, ten C1 cameras are used for requirements R1 and R3 simultaneously, and the remaining five C1 cameras are used for requirement R3 only
- C1 cameras are located in location IDs 1-19

Map locations in the following table:

Locations		
Location ID	Location Name	Description
L1		
L2		
L3		
L4		

## 11 Cameras Layout on Site

If cameras are already deployed onsite or if camera layout design is already implemented, use an illustration to display the camera design across the site. For outdoor scenarios, it is recommended to utilize a clear map image (i.e., using Google Maps), while indoor scenes should utilize a precise diagram / drawing. It is recommended to use a scaled illustration which will allow performing various measurements referring to the camera’s field of view (FOV).

Provide a camera mapping illustration indicating the following for each camera:

- Location ID
- Triangular representation of the camera’s FOV on top of the illustration, emphasizing the detection range (use scale) and direction.

Cameras Layout on Site	
Illustration	

If the cameras are yet to be mounted and/or the camera layout design is incomplete, mark the required FOV across the illustration using scale to indicate the dimensions of the FOV (distance and width). Indicate the possible camera mounting locations on top of the illustration described in the previous section, and indicate the possible mounting heights and expected / required detection ranges.

If the camera design is complete but the cameras are yet to be placed, enhance the definition of each camera ID with the following parameters:

Camera Parameters					
Camera ID	Sensor Size	Resolution	Focal Length	Mounting Height	Tilt Angle
C1	1/3"	HD 720p	2.5-6 mm	5m	35°
C2	1/3"	3MP	2.8-8mm	4.5m	30°






## 12 Camera Screenshots

If the cameras are already mounted, provide a screenshot for each camera view next to its location ID. For outdoor scenes operating day and night, provide a representative screenshot for each. Provide two more screenshots taken at sunset and sunrise.

Camera Screenshots		
Location ID	Time	Screenshot

**Example:**

Location ID	Time	Screenshot
5	Day	
5	Night	

Location ID	Time	Screenshot
6	Day	 A daytime photograph showing a field with sparse, dry vegetation. A chain-link fence runs along the left side, and a set of metal tracks or rails is visible on the right. The ground is a mix of dirt and low-lying plants.
6	Night	 A nighttime photograph of the same field, appearing very dark and blurry. The ground and vegetation are barely visible, and the overall scene is dimly lit.

## 13 Lighting Survey

Perform a lighting survey across all areas of interest. Note the most distant points viewed by each camera.

Note also:

- Use of surrounding lighting – describe the existing illumination (street lights, road lights, etc.).
- List use of IR or White light illuminators next to each camera. Specify the illuminator's model and make and the achievable distance based on the vendor's indication.

Lighting			
Location ID	Available Illumination (IR, White light)	LUX Level at Maximum Detection Distance	Comments
	Free text		

## 14 Determine Environmental Factors that may Adversely Impact Analytics

Environmental factors may adversely impact video analytics performance. Factors include lighting issues (low light, glare, shadow, etc.), weather (fog, snow, wind, etc.), and other generators of nuisance alarms triggered by environmental factors. It is important that you identify these factors in advance in order to make correct recommendations and reduce delays during deployment.

The list below shows factors that may adversely impact a video analytics deployment. Indicate what factors are relevant (if any). Add to the list any additional factors (which are unlisted) which you suspect may constrain your video analytics deployment.

Environmental Factors Adversely Impacting Video Analytics	
Environmental Factor	Comments
Extreme weather conditions can be expected during certain periods (specify if rain, snow, fog, wind)	
Dark shadows	
Non-uniformly lit areas, i.e., Wide Dynamic Range (WDR) scenes	
Direct sunlight	
Strong glare and/or reflections on the floor	
Very pale or very dark ground	
Glare generated by ambient lights and/or vehicle headlights	
Light causing dazzle (light reflected from puddles or other factors)	
Low ceilings / camera mounting points	
Presence of constantly or occasionally moving items in the FOV, such as opening doors, barriers, large carts, etc.	
Concealments	
Crowds	
Trees, bushes, and any other item which may result in periodic movements	
Other	

## 15 Identify 3<sup>rd</sup> Party Implications

3rd party components may affect the overall performance of the analytics system.

It is important to identify and document any unlisted 3rd party functionality and any advanced / uncommon camera feature that may constrain video analytics performance. It is advisable to consult with Agent Vi regarding their potential implications.

List in the following table all 3<sup>rd</sup> party components which may have implications on the planned implementation. Some examples are shown in the table.

3 <sup>rd</sup> Party Implications	
Function	Implications
Motion-based recording	
Interactions and triggers utilizing relay connections	
Utilization of embedded camera applications (regardless of Agent Vi)	
Utilization of advanced camera imaging features such as extreme low light capabilities, AGC, long exposure times, privacy masks, etc.	
Any PTZ functionality	
Non-standard resolutions which do not apply to 4:3 or 16:9 aspect ratios	
Extremely low/high bandwidths	