

**COM
SUR**™

the missing piece of CCTV

THE FOOTAGE WHISPERER

"SEE WHAT THE CAMERA SAW"

VIDEO MANAGEMENT SYSTEMS (VMS)	COM-SUR
OBJECTIVES	
<p>A VMS enables users to:</p> <ul style="list-style-type: none"> • Add and manage cameras to view live/recorded video only from CCTV cameras. • Record/store the video in a storage device. • Search/Access/Extract recorded video as and when required. <p>However, the following items remain outside the scope of a VMS:</p> <ul style="list-style-type: none"> • Data size reduction and creation of a cost-effective disaster recovery mechanism. • The angle of auditing the footage as an SOP/continuous investigation and offering various forensics tools to do so. • The creation of well-categorized institutional libraries of important footage along with other information that can be used to train AI/ML models. • The creation of various standardized intelligent incident reports that deliver data analytics/B.I. 	<p>COM-SUR is a comprehensive software tool that empowers users of all types of surveillance cameras, including CCTV, drones, UAVs, body-worn cameras, dashcams, etc. COM-SUR is a necessary tool that caters to a broader audience in terms of the type of video source and user, ranging from a home user with a single camera to commercial users with hundreds or thousands of cameras.</p> <p>COM-SUR sits as a layer over live/recorded video feed from any source and enables users to:</p> <ul style="list-style-type: none"> • Automatically convert video feed into images at every one 'second' (the 'moment' when multiple frames come together in one second), reducing the data size dramatically (TB to GB) without missing any noticeably important information. • Convert images created by COM-SUR into data sets to train AI and ML models with site-specific images, delivering better results and reducing bias. • 'Audit' hours of video footage displaying multiple cameras in minutes without missing a single 'frame'. This allows users to grasp the entire perspective and identify critical clues and other important information. • Backup video data in the form of images at multiple remote locations for disaster recovery purposes. These images can be reconverted into video automatically or on demand.

	<ul style="list-style-type: none"> • Create standardized intelligent reports in PowerPoint, Word, Excel, and PDF, and gain data analytics/business intelligence.
<p>FEATURES</p>	
<p>A VMS generally offers features to:</p> <ul style="list-style-type: none"> • View live/recorded video feeds from multiple CCTV cameras from a single/several locations. • Playback recorded video from single/multiple cameras at various pre-set speeds (2X, 4X, 8X, etc.). • Record video with multiple options like, continuously, scheduled, or trigger based (motion, alarms, etc.). • Determine the quality of recording by selecting the video format (e.g., H.264, H.265, etc.), resolution, frame rate, bit rate, keyframe interval etc. • Search by specifying the desired date, time, camera, etc. Some VMS also offer forensic search. • Zoom into a video. However, zooming generally happens ONLY over a SINGLE camera at a time. 	<p>COM-SUR offers features to:</p> <ul style="list-style-type: none"> • View live/recorded video feeds from multiple cameras from a single/several locations. At the same time, COM-SUR automatically converts the feeds into images. • Playback the images using six exceptional playback mechanisms. COM-SUR's playback mechanisms are very efficient and come with multiple features that make minute investigations more timesaving and proficient. COM-SUR makes it very easy to playback thousands of images depicting multiple cameras over the internet, which is a great benefit, since the playback of multiple video feeds over the internet is very cumbersome due to the sheer size of video. • Playback multiple pre-recorded videos next to each other in a dashboard view, and also time/frame syncing them. This is a huge burden solved during any investigation when videos are collected from multiple sources, for example, from a scene of crime.

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| <ul style="list-style-type: none">• Export video, generally of a single camera at a time.• Monitor the health and up-time of the cameras and the feeds against intentional/accidental covering, camera offline, camera out of focus, camera moved, etc. | <ul style="list-style-type: none">• Record an entire day's video from multiple cameras as opposed to only rule-based recording, thereby eliminating the risk of missing out on important moments. The 'way' COM-SUR records video feeds from multiple cameras reduces the data size dramatically and creates a cost-effective disaster recovery backup at multiple locations (including the user's own cloud), without consuming any additional bandwidth.• Search for images depicting multiple cameras over a date and time range as well as for a particular time slot over a desired date range.• Zoom into any area of MULTIPLE cameras at the same time. This makes it easier to join the dots, i.e., the user can compare scenes between different cameras.• Flag exceptions and items of interest.• Tag relevant images to create an institutional library of important findings.• Annotate items for the purpose of machine learning.• Enhance the quality of the images in terms of the brightness and contrast, along with the ability to add various forensics filters (false colors) to the images for better discovery and isolation.• Create standardized audit finding /incident/other reports in PowerPoint, Word, Excel, and PDF. |
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- Create a single video file displaying multiple cameras. This is a huge benefit when multiple videos have to be shared that depict a single incident/story.
- Gain business intelligence/data analytics (patterns and trends) based on the historical data from the audit findings /incident reports.

VIDEO ANALYTICS, ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TECHNOLOGIES	COM-SUR
<p>Video Analytics</p> <p>Video analytics is a technology that processes the video feed from a camera using a specialised algorithm in order to perform a specific security related function such as motion detection, face recognition, license plate detection/recognition, object detection, object removal, boundary loitering detection, zone/perimeter intrusion, people counting, etc.</p> <p>Artificial Intelligence</p> <p>Artificial intelligence (AI) refers to technologies that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information collected. Artificial Intelligence (AI) technologies ‘learn’ normal/accepted behaviour and raise exceptions when deviations from the normal/accepted behaviour are observed in the video.</p> <p>Machine Learning</p> <p>Machine Learning (ML) is a subset of Artificial Intelligence (AI) which enables a computer system to make predictions or take some decisions using historical data without the need for explicit programming. Machine learning uses a humungous amount of structured and semi-structured data in order to generate accurate results or make predictions based on that data. Machine Learning algorithms are deployed for specific domains. A machine learning model devised to detect images of cars will only give results for car images. In case the model is provided with images of bicycles, it may become unresponsive.</p>	<p>As is evident, Video Analytics, Artificial Intelligence, and Machine Learning technologies can deliver only those results, or detect only those exceptions for which they have been programmed for.</p> <p>What about the rest?</p> <p>Here are a few points as to why COM-SUR is still needed as a supportive and complementary tool to these technologies:</p> <ol style="list-style-type: none"> 1. When results/alerts are received, besides false positives, a human operator is always needed to verify them and to take next steps like reporting, cataloguing etc. COM-SUR will help the operator to perform these tasks very efficiently. 2. As explained above, none of these technologies will absolutely be able to detect strange/suspicious behaviour, recesses before committing a serious crime, a child being taken to some corner at school where he/she is not supposed to be, violation of processes, health and safety issues, someone smoking in a no-smoking area, filthy kitchens, spitting, and so on. The list of such exceptions can be endless. COM-SUR will help the operator/user to discover the unknown and the unexpected. 3. As explained above, COM-SUR is an affordable tool for every user. Automated technologies can only be deployed where budgets are not a constraint. <p>In conclusion: COM-SUR is like a kernel occupying the center-stage to ensure that every user is able to convert surveillance video into actionable insights, in short, helping users to convert garbage into gold!</p>

Conclusion:

As seen in the above comparisons, COM-SUR offers unique advantages that are not available with VMS, Video Analytics, AI, and ML. For example, while a VMS can manage and store large volumes of video footage, it only works with CCTV cameras (a VMS is not generally designed to work with video from sources like drones, UAVs, body-worn, dashcam, etc.) and lacks the smart backup and intelligent incident reporting features offered by COM-SUR. Similarly, while AI and ML can analyze video data and detect anomalies, they cannot offer the same level of oversight and auditing capabilities as COM-SUR.

In conclusion, COM-SUR is a powerful supportive and productivity tool (like MS Office) that complements a range of surveillance technologies and provides unique benefits that are not available with them.