SPATIAL VIDEO

Video Security technology takes many forms today, but essentially it is the integration of:

- Video cameras
- Video recorders
- Software that allows the user to review in real time and historically what the cameras have "seen"
- Possibly the incorporation of software that will analyze the video stream either in real time or offline to identify events that the video cameras have recorded

Spatial Systems Associates, Inc. (SSA) has developed a product that integrates video security technology with Geographic Information System (GIS) technology to bring a locational or spatial awareness to a standard security video system. We call this product **Spatial Video**.

GIS technology is rapidly becoming accepted by government and private organizations alike as a tool that allows the user to capture, store, and analyze information from a locational or spatial perspective. GIS has been available for about 50 years, but as a technology, its use has become common only since about the mid 1990's. Most federal government agencies, states, counties, municipalities, utilities, and many private companies now take advantage of GIS technology for such applications as:

- Location of infrastructure—water, sewer, gas, electric, cable, etc.
- Property boundaries, or cadastral data tied to ownership, tax, and other characteristics
- Routing—with a network of addressed street centerlines, a GIS system can determine the best route for deliveries or emergency response
- Natural resource inventory, monitoring, and protection
- Emergency management
- Facility management—mapping of the interior spaces of buildings and integration with work order management systems, energy monitoring, and indoor environment tracking

SPATIALSECURITY All facilities, from highway networks managed by state or local governments, to campus environments, to individual buildings, have a security need that often incorporates a combination of site monitoring, perimeter access control, interior suite or room access control, fire protection monitoring, and video cameras. SSA has built a GIS-based product to spatially-enable all of these security components in a single system. We call this product **Spatial Security**.

Video technology though, is a unique component of security technology due to its prevalence across multiple uses, including:

- Traffic monitoring
- Campus site security
- Building perimeter security
- Building interior security
- Other security monitoring applications

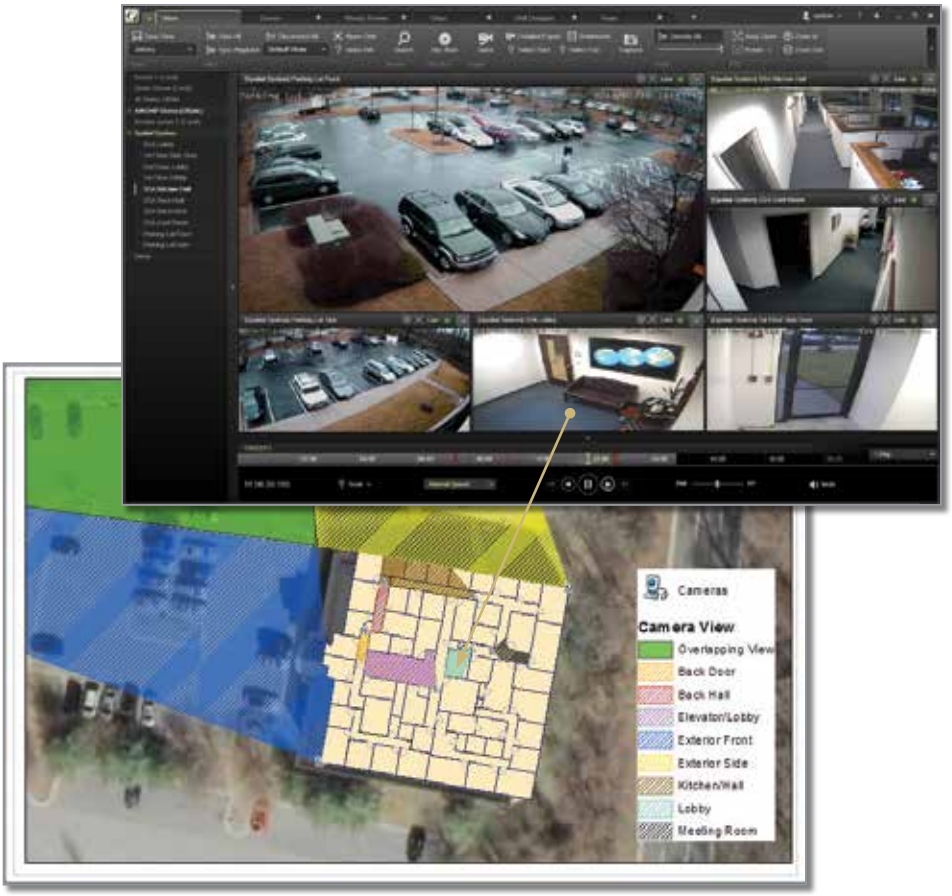
With the variety of video system components mentioned above, a video system can include literally thousands of cameras, recorders, display monitors, and analytics that most often do not have a convenient locational or spatial visualization context.

Our Spatial Video product is built on standard commercial GIS technology from Esri, the clear leader in GIS and the product that is most often used by the government and private clients mentioned above. Spatial Video brings locational awareness to the video system and provides the ability to answer such questions as:

- Where are the cameras deployed on my video system?
- What is the areal extent of what each of the cameras can see?

- What is the areal extent of what is not covered by my present video system?
- When an event is reported, by whatever means, what camera in my system is most likely to be able to see what is going on?
- As an event unfolds, what additional cameras should I be looking at to track the event?

Spatial Video allows an operator not only to know what cameras are available, but provides the ability to send commands to the video system to display one or more cameras on specific screens in an emergency command center. Further, properly configured, Spatial Video can provide alerts to security personnel that an event has occurred (based for example on video analytics), and identify the most appropriate camera to view to follow up on the event.



This graphic depicts the location of video cameras on the outside and inside second floor of the subject building. The spatial extent of what is visible to each camera is shown in plan view, and the identity of each camera is defined in the accompanying legend. For the exterior cameras, areas that are visible to multiple cameras are shown as "overlapping view." The image then shows the layout of the video camera display from the video system, highlighting in particular one camera image and the space within the building that the subject camera is recording.

Video analytics increases the value of standard video camera and recording technology by the addition of continuous automated monitoring. Whether the intent is to:

- Detect movement and draw attention of monitoring staff to an event that may be occurring
- Count the number of people or vehicles traversing within the range of a camera
- Attempt to identify individuals through face recognition video analysis and compare the identity against a known list of individuals
- Analyze video of an area to determine when an object is left behind
- Analyze video of an area to determine when an object becomes missing

or any similar analysis, video analytics, combined with a spatially-aware security system provides the best possible active/passive approach to securing a campus, building, or suite. If you are interested in seeing how the integration of video technology and GIS can be of benefit to your installation, please contact Spatial Systems Associates, or email **Security@spatialsys.com**.

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