

# Networked Local Situational Awareness

## Local Situational Awareness

Inside armored vehicles, correct information interpretation and evaluation is crucial. With an advanced Local Situational Awareness (LSA) solution, allowing meticulous, all-round perception of the local environment in mission-critical situations, decision-makers will be provided with the information they need to anticipate risks and to act accordingly.

## From analog to digital

For many years, LSA solutions used images from analog video cameras, displaying them in a mosaic layout or showing alternating camera views. Today, fully networked solutions, using digital camera sources from around the military vehicle, have proven to be much more efficient in a life-critical environment.

Providing solutions for both rearview and panoramic (all-round) surveillance, Barco offers a complete gamut of networked LSA applications and capabilities for armored vehicles, based on real-time visibility of video over IP. Barco's LSA solution brings operators the clearest and most accurate image currently achievable, irrespective of environmental conditions, helping operators and drivers to deal efficiently with information in order to take decisive action.

## 360° coverage

Starting from a number of digital cameras distributed over the vehicle, all video signals are captured and routed over a secure network. These signals will then be displayed on a display monitor, ensuring 360° coverage of the local environment. Additionally, the networked system can automatically generate image stitching or overlay windows, providing a smoothly blended view of the environmental situation to enhance accurate decision-making.

## 24/7 operation

To guarantee 24/7 continuity, a networked LSA solution requires a stable, reliable and fully redundant network environment. Barco's network-based LSA solution deploys standard protocols and algorithms to guarantee the reliability of the video flow. It also allows rerouting of streaming data in case of failure, and provides collision avoidance and error correction to keep the network consistent and error-free.

## Image processing

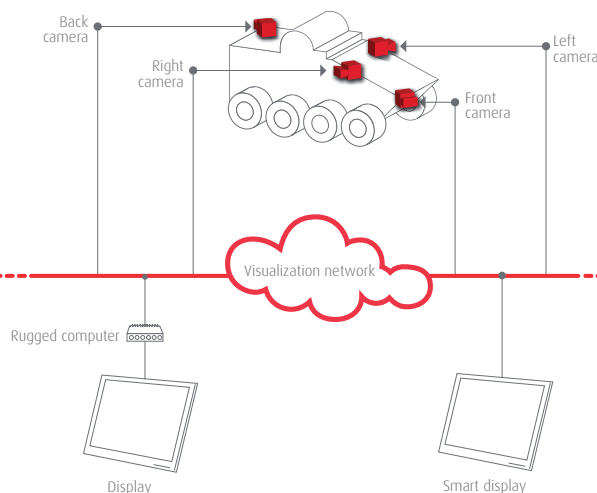
As cameras tend to vibrate when the vehicle is moving, images can become unstable and blurred. Moreover, the use of multiple cameras, displaying multiple views, can further complicate information interpretation and evaluation. Barco's video over IP offering provides high-tech image processing capabilities, minimizing the possibility of misinterpreting data and putting an end to problematic event or motion detection.

## Image stabilization

Barco's image stabilization functionality counteracts image blurring in a moving vehicle, allowing better assessment in non-stationary conditions.

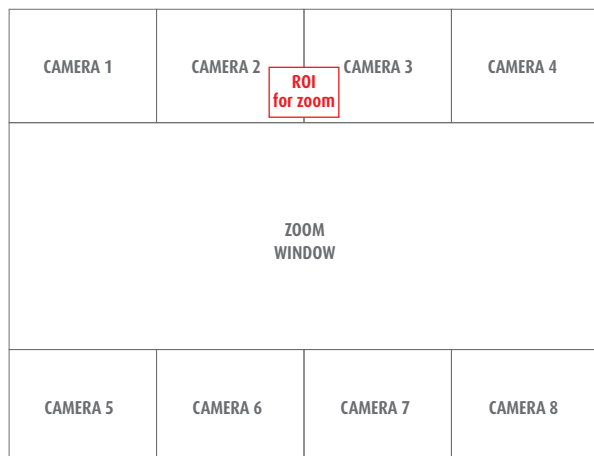
## Motion and threat detection

To assess the overall situation when the vehicle is standing still, motion detection helps to detect threats and prevent hazardous situations. When movements or objects are perceived, an alert can be sent to the operator, allowing him to take proper action. If necessary, operators can tweak the system's sensitivity to avoid false alerts related to noise and small local motions.

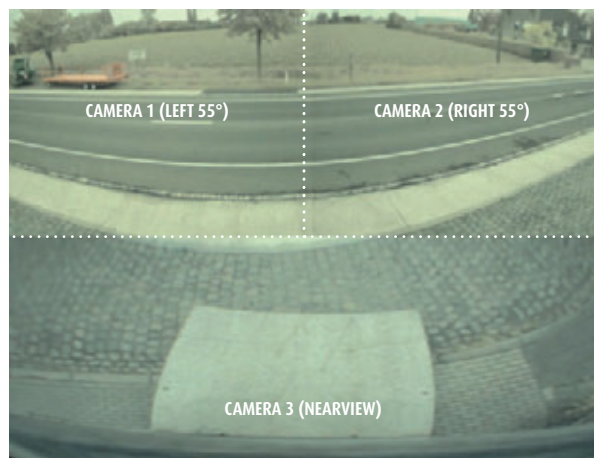


## Image stitching and blending

Images coming from different cameras can be stitched seamlessly to each other, while image blending allows smooth transients between the different camera images. These technologies help operators focus on the bigger picture and enable them to visualize video imagery in a full panoramic view, while at the same time allowing them to zoom in to a specific area of interest.



360 degrees example with 2 tiles of 180° and digital zoom



A typical rearview perspective example with 3 cameras

## Image fusion

With advanced fusion functionality, users can combine images coming from infrared and daylight cameras, to create one image with outstanding image quality and reliability, especially at dusk, dawn or in smoking conditions. Image sizes can be matched and positioned to improve the fused image quality.



Not visible person in the woods



Not visible plastic object



Example of a fusion of a day camera + IR camera

## High expandability

Furthermore, as a networked system is not limited to a number of dedicated components, it is possible to interconnect an endless range of IP-based devices – from CPUs and cameras to smart displays – to expand the system's functionality. This allows customers to seamlessly build and grow a solution that perfectly fits their needs. To ensure the expandability and flexibility of the system, Barco adheres to open standards, which are now included in the upcoming Video Over Ethernet standard.

## Simple configuration

As each situation requires a different approach, a simple user interface and configuration tool help users customize perspective layouts in order to make the best decisions and deliver successful operations. Using dedicated display buttons, a touch screen or Barco's CommonSENSE software, the LSA solution can be configured according to the user's needs and requirements in a given situation. User-friendly screen layouts, combined with Barco's advanced image processing technologies like stabilization and sensor fusion, allow recognition of information in the blink of an eye.

## Conclusion

There's a growing awareness that video over IP enhances the quality of information and thus the success of mission operations. Today, digitized systems offer the most up to date information and unrivalled real-time intelligence in the field. Because of these and other benefits, such as enhanced agility and scalability, authorities are investing strongly in the expansion of their digital capacities. Video over IP will evolve rapidly within the coming years and the scope of its usage will be broadened to a wide variety of markets, giving rise to more powerful and intelligent applications based on networked devices.

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