

CLARITY
VISUAL INTELLIGENCE

SENSNET

Visually enabling networks for intelligent video surveillance
and video event response management.



A common infrastructure for developing intelligent, highly customised, networked video products and solutions.

SENSNET

Clarity Visual Intelligence's SENSNET technology enables the acquisition, serving, analysis, storage and viewing of video information in real-time over a network.

SENSNET provides a common infrastructure for developing intelligent, highly customised, networked video products and solutions that enable an organisation to more efficiently manage a facility and significantly enhance security by automating common surveillance tasks.

- Visually enables corporate IT and ERP systems.
- Re-engineers conventional processes.
- Computer vision based image processing.
- Automates surveillance functions in CCTV systems for security & facility management.
- Enables information systems to manage themselves with minimum human intervention.
- Derives meaning from within images and supplies searchable 'meta-data' from usually impenetrable image based data.

Robust

- Built on the robust and secure Linux Operating System.
- Designed for mission critical environments.

Flexible

- Can run on standard IT hardware and integrate with other systems.
- Uses analogue and digital cameras.
- Flexible licensing model to meet a wide range of needs.

Intelligent

Visual Intelligence Engines are used to create high-level information about video.

- Adaptive scene modeling.
- Image segmentation.
- Robust multidimensional motion detection.
- Object tracking and counting.
- Object detection and recognition.
- Event detection and tagging.
- Behaviour classification - stationary, fast, abnormal.

Efficient

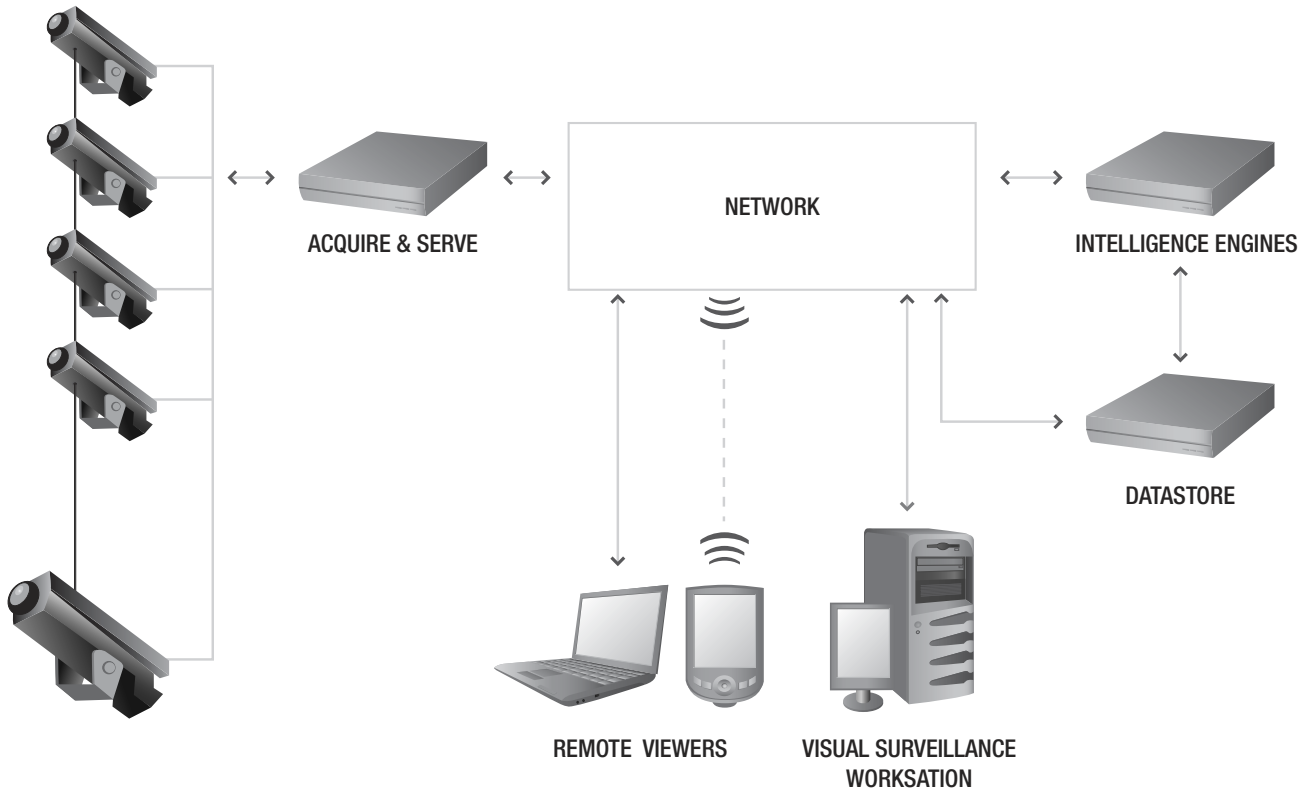
Object detection and segmentation enables the acquisition and storage of important sections of video (such as faces) at the highest resolution possible, while storing everything else at low resolution.



Detection of faces and viewing and storage at higher resolution than background.

Minimal Configuration

- Automatic discovery of network services such as live video or datastore.
- Self healing connections when services are moved/change locations.
- Minimises the amount of configuration required when changes are made to the infrastructure.



The SENSNET Infrastructure

The SENSNET infrastructure performs the following functions:

1. Video Acquisition and Distribution - SENSNET Video Server.

Captures video from analogue or digital cameras and makes it available to the network, the SENSNET applications and the Visual Surveillance Workstation (an advanced surveillance operations tool).

2. Image Analysis - Intelligence Engines.

Uses state-of-the-art computer vision algorithms developed by Clarity Visual Intelligence to analyse video footage in real-time to find 'interesting' objects, events, or 'abnormal' behaviour in the video.

3. Data Storage - SENSNET Datastore.

Stores and serves data created by the Intelligence Engines to other systems and the Visual Surveillance Workstation.

4. Remote Viewing - SENSNET Remote Viewer.

Provides remote access to real-time and recorded images and intelligence from handheld computers and from other computers which have not been designated as dedicated Visual Surveillance Workstations.

Video Acquisition and Distribution - SENSNET Video Server

The SENSNET Video Server is a video acquisition and serving tool that forms a fundamental component of SENSNET infrastructure. It provides seamless acquisition of video from any analogue or digital camera or other video source and makes this video available on a network. The Video Server can notify clients of the arrival of new video and serve images to any number of clients. Each client can have different requirements in terms of image dimensions, resolution, compression type, compression quality and frame-rate.

- Video can be acquired from diverse sources: IP camera, composite video, VCR/DVR, network video, file system real-time play back.

- Can accept both digital & analogue data – transforms analogue data to digital (requires card).
- Can be queried for performance statistics remotely.
- Clients of the Video Server can negotiate key connection parameters, including encoding, frame-rate and resolution, at any time.
- Multiple Video Servers can run on a single machine.
- Is able to auto discover all video sources and communicate this to the network providing clients with a list to choose from.
- Uses a published communication protocol that can be utilised by third parties to access video.

Network Bandwidth Reduction / Network Efficiency

- Cropping and scaling occurs at the video server to reduce data sent over the network.
- Image compression (JPEG, JPEG2000, RLE) occurs at the video server to reduce data sent over the network.
- Video server can control the frame-rate and image dimensions dynamically.

Video Analysis - Intelligence Engines

The Intelligence Engines produce an automatic, accurate and dynamic analysis of object and people activity in an area. When integrated within a visually enabled IT solution they can help an organisation to more efficiently manage a facility and significantly enhance security by automating common surveillance tasks.

Using background/foreground image separation capabilities, the Intelligence Engines detect 'interesting' events utilising a variety of functional modes such as activity detection, object tracking, abnormal behaviour detection and face detection. The system then uses pre-configured settings to choose how and where to deliver the information, including the SENSNET Datastore. This enables both real-time and recorded video to be analysed, stored, viewed and acted upon with a high level of context.

- Automatic, accurate and dynamic analysis of object and people activity.
- Real-time video processing.
- Ability to learn and cope with changes reducing false alarms in varying light and background conditions.
- Robust – once configured, will work continuously with no changes required.
- Runs on standard PC hardware and integrates easily with existing IT infrastructures.
- Personnel or other systems can be notified of detected events when they happen.
- Enables efficient image storage and transmission.

Data Storage – SENSNET Datastore

The SENSNET Datastore stores video and high-level semantic information generated by the Intelligence Engines for later retrieval by clients such as report generators or the Visual Surveillance Workstation.

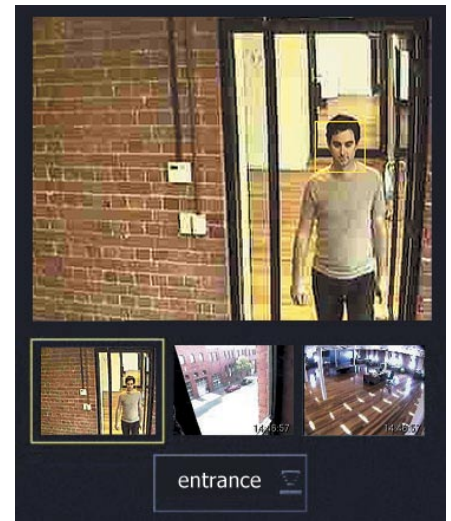
The Datastore:

- Uses an industry standard database that has been selected to cope with the demands of high volume video storage and retrieval.
- Can handle multiple requests simultaneously.
- Is highly scalable and provides fast retrieval of data over large periods of time.
- Is robust making it suitable for mission critical environments.

SENSNET Remote Viewer

The Remote Viewer is a Java application which provides a medium for viewing network served video. The Remote Viewer can run on any machine with a Java ME Virtual Machine or better. The user interface is designed to run optimally on a PDA.

- View video remotely including over wireless networks.
- Easy-to-use interface allowing viewing of multiple video streams simultaneously.
- Provides security staff with mobility while retaining a visual observation of an event.
- Enables viewing of video from any SENSNET Server on the network.



The SENSNET Remote Viewer Interface.

Further information

For further information about SENSNET or other Clarity Visual Intelligence products and solutions please visit www.clarityvi.com
Clarity Visual Intelligence is a technology of the Safehouse Group - www.safehousegroup.com