



Advanced Research & Technology Ltd

- Information Technology
- Software
- Systems

AR&T

Advanced Research & Technology Ltd. is an innovative company, specialising in the development of electronic technology, from concept and research phases through to commercially viable projects. The company provides a comprehensive research, design, production engineering and project management service.

Services

AR&T's services may be tailored to suit the needs of most organisations requiring technical support for the development of electronic or Information Technology based projects. Services are not limited to technology based companies, but are extended to organisations whose business activities require only occasional design or consultant services. For these organisations, where the cost of a full time IT or electronics R&D department would be uneconomic, AR&T provide an innovative solution.

AR&T's aim is to work closely with clients to acquire the detailed and project specific knowledge that will support the efficient introduction of new technology. When required, AR&T staff may be temporarily transferred to work in client's premises to expedite those parts of a project needing interactive communication with other team members.

Experience

Areas of expertise include:-

- Project Management
- Computer Science and Programming
- Video Compression and Encryption
- Information Technology and Website Design
- Graphic Design
- Analogue Circuit Design
- Digital Circuit Design
- RF Circuit Design
- Audio and Video Equipment and System Design
- Visual Display Technologies
- Transport Telematics
- Simulation and Training Systems
- Communication, Monitoring and Control Systems
- EMC

AR&T engineers and designers have many years of practical experience in their individual fields. They have accrued the 'know how' to repeatedly create successful and profitable designs and to avoid expensive pitfalls.

AR&T's involvement may encompass any one, or all, of the stages of research, design and development, including:-

- Market Analysis
- Basic Requirement Capture
- Conceptual Design
- Technological Research
- Feasibility Studies
- Quality Plans
- Project Plans and Cost Analysis
- Life Cycle Cost Analysis
- Detailed System and Sub-System Specifications
- Mechanical, Electrical and Software Module Definitions
- Mechanical Design
- Electronic Design
- Software Design
- Design Reviews
- Quality Audits
- Availability, Reliability and Maintainability Analyses
- Safety Analyses
- Technical Writing and Illustration
- Manufacturing Information
- Prototype Manufacture
- Functional Test and Acceptance Specifications
- Environmental Test Specifications
- System Integration
- Development System Testing



Video Surveillance for Ports and Harbours

The Challenges

Protecting Ports and Harbours from security threats is difficult and expensive. Traditional site surveillance depends on the challenging task of maintaining continuous, reliable vigilance by security personnel.

Effective protection from sea borne threats has the additional challenge of trying to detect small craft in relatively large areas of water.

Monitoring fences and responding to false alarms from shore-based installations is time consuming and can be labour intensive.

New Solutions

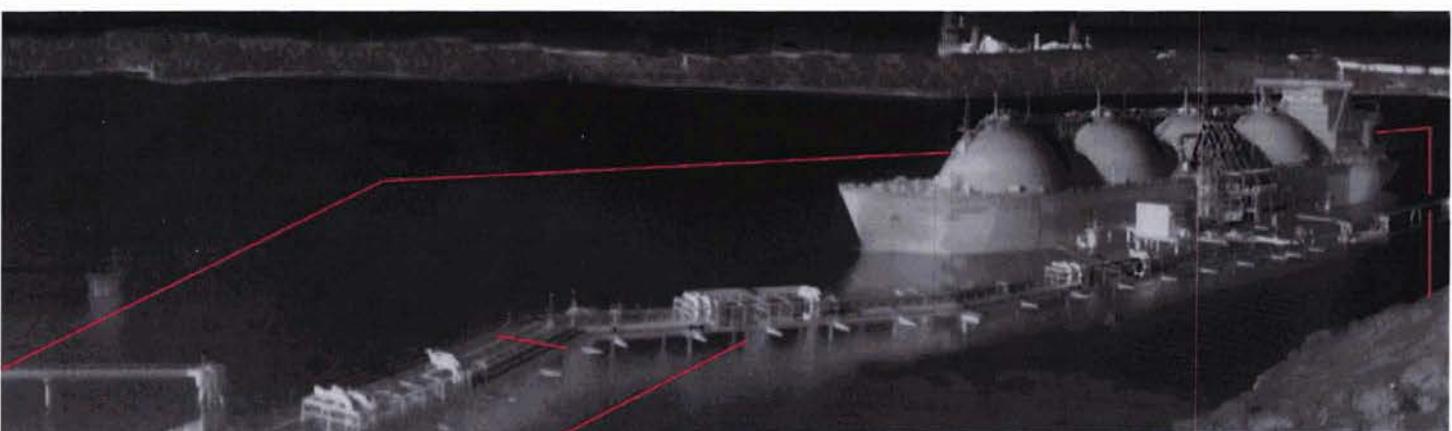
Recent advances in 'Intelligent Video' systems, combined with reductions in the cost of Thermal Imaging cameras, have enabled better ways to detect potential threats when compared to traditional surveillance techniques.

Thermal Imaging cameras have the ability to detect very small changes in the surface temperature of objects at great distance, for instance it is possible to produce a thermographic image (temperature map) of the earth from space. TI cameras have been in use for military and scientific applications for many years but the technology was expensive and needed regular maintenance. Improvements in the manufacturing process have now made TI cameras more affordable.



Relatively low cost TI cameras can easily depict the thermal image of a small vessel at several kilometres, they need no light whatsoever to function; the coldest, darkest night presents no challenge. Objects are detected by small temperature differences on their surface. However, the scene depicted by a TI camera needs careful interpretation, in most cases the human eye is an inappropriate tool to detect objects that may be classified as potential threats. This is where 'visual intelligence' plays an important role; such systems can be given a set of instructions to determine if objects in a thermal image meet pre-set warning criteria, and if they do, to raise an alarm.

The picture below is a composite view from three TI cameras showing the protection zone (in red) around a tanker off-loading Liquefied Natural Gas at a pier and terminal. Objects conforming to pre-defined criteria entering the zone alert security staff.



Benefits of Intelligent Video Systems

Unlike human surveillance operatives, Intelligent Video Systems suffer no strain or boredom from monotonous tasks, they provide a true 24/7 capability and are much easier to sustain than their human counterparts, whose optimum concentration is maintained for only a few minutes. 'Real time' analysis of complex scenes by modern machine vision techniques is more consistent and can be considerably more accurate than reliance on human eyes.

The use of Intelligent Video Systems will eventually transform the way companies and governments protect high value assets. The realization that machine 'visual intelligence' can be more reliable and cost effective than humans for routine surveillance will enable users to reduce surveillance budgets and increase the effectiveness of response teams. Budget allocations can be shifted in favour of response teams and the equipment needed to facilitate appropriate responses.

RADAR

In general, it is possible to obtain more data from a Thermal Image than from RADAR, especially where targets are not equipped with RADAR reflectors. Using TI cameras and 'visual intelligence', range and bearing can be obtained from multiple targets and displayed on a PC monitor alongside the visual image of the targets. Detection distances can range continuously from a few tens of meters out to the horizon. RADAR system can have difficulty displaying this continuous range without adjustment. Some RADAR systems, using surface wave technology, can 'see' over the horizon but, because of the relatively long wavelength, they cannot show sufficient detail to establish threat, only presence. TI cameras and Visual Intelligence systems can perform an important role, alongside RADAR, in providing short and medium range surveillance.

The Bigger Picture

Visual Intelligence Systems present many opportunities to improve surveillance and security. They range from the basic concept outlined above, to tracking objects, detecting interaction of objects with 'Virtual Sensors' placed in views of the ocean, plotting detected objects into maps, determining range, bearing, latitude and longitude of detected objects.... etc. the list is considerable. Once the geographic position of a suspect in known, powerful visual cameras or other means can be automatically directed to provide detailed visual images for threat assessment and co-ordinated response.

The system can also be used to monitor berthed vessels and vessels at anchor, thus providing protection for crew and cargo.

Furthermore, IP networks can be used to connect intelligent video systems together providing a multi-disciplinary dimension to security. Video data can be instantly available to Harbourmaster, Immigration Control, Police, Homeland Defence, Coast Guard, Military, etc.

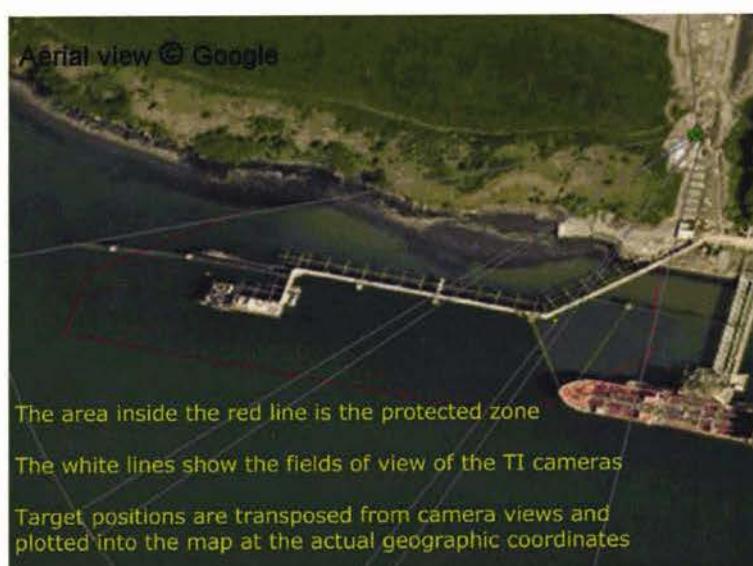
Networked Visual Intelligence Systems offer a comprehensive surveillance package for all types of vessel-berthing facilities.



Fence lines can be monitored by multiple technologies, including; motion detectors attached to fences, microphones, TI cameras and standard visual spectrum cameras. In this picture 'virtual sensors' (the red and yellow lines placed in the image) are used to locate and track people by a visual intelligence system.

All data from these multiple sources can be analysed by the system and threat levels determined accordingly. Operators can be presented with precise visual information regarding the exact location of the threat in text and map form and can, if appropriate, allow the system to initiate first line 'discouragement' in the form of illumination and verbal or acoustic warnings at the location of the alarm event.

The sea threat elements of the system are fully compatible with the land-based elements and form an easily managed composite system requiring minimum user interaction.



The picture to the left shows an alternative view of the pier and terminal, without the LNG tanker present, again with the protection zone shown in red.

The movements of all objects, including people on the pier, are plotted onto this scene and represented by coloured dots. Anything crossing the red line from the unprotected area into the protected area will raise an alarm to draw the attention of security staff.

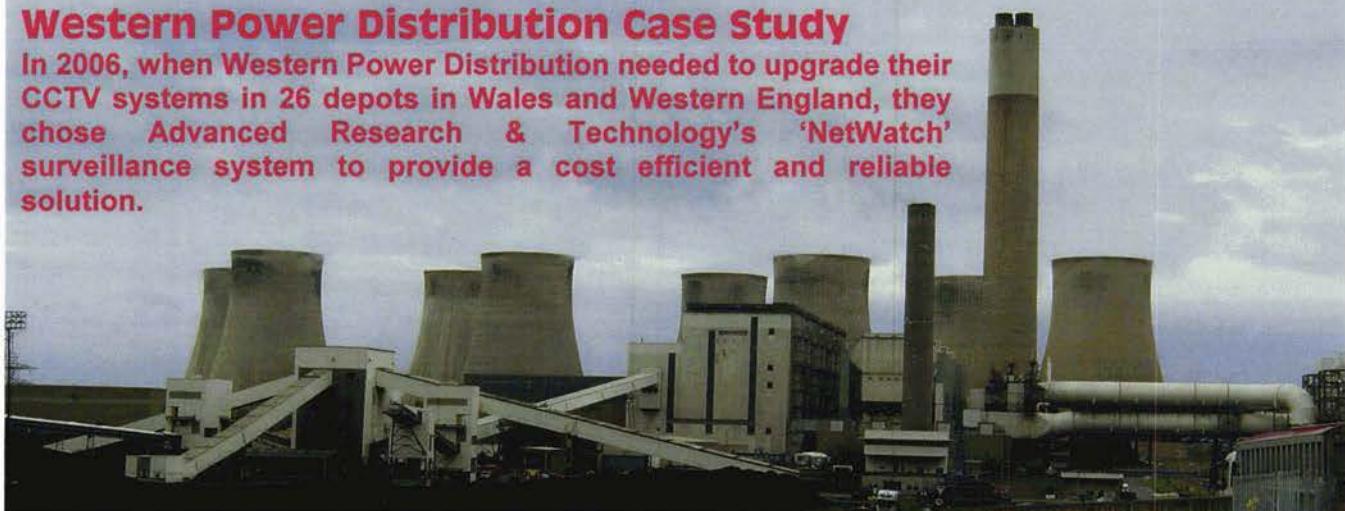
Visual Intelligence Systems are already in use at strategically important sites in the UK and are proving to be reliable and effective. AR&T believe the future will see Visual Intelligence systems introduced at virtually all sea terminals where high value assets are at risk.



Providing Security Solutions for the Power Industry

Western Power Distribution Case Study

In 2006, when Western Power Distribution needed to upgrade their CCTV systems in 26 depots in Wales and Western England, they chose Advanced Research & Technology's 'NetWatch' surveillance system to provide a cost efficient and reliable solution.



The initial challenge was to provide a system that would enable local depot staff to manage their own site security during daytime operations, and central office security staff to control and monitor the 26 depots at other times. The depots ranged from Milford Haven in West Wales, to Redruth in Cornwall. The central control is in Cardiff.

A system was required that was compatible with existing communications infrastructure, could provide the necessary video quality and would reliably alert operators when it detected intruders. **NetWatch** was the ideal choice.

NetWatch Video Data Servers, using Local Area Networks for on-site communications and low cost ADSL broadband for off-site communications, were fitted in all the depots. This allows daytime staff to manage local security from their own **NetWatch Surveillance Control Stations**.

The NetWatch Surveillance Control Stations utilise an extremely easy to operate map based user interface. Each camera is represented as an icon on the map and can be viewed by a mouse click. Camera fields of view are indicated on the map. Alarm conditions cause the icons to change colour. Intelligent motion detection is used with temporal and object size filters to reduce false alarms. An audio facility is provided, enabling operators to directly address intruders at any depots.

The first phase of the system was installed in October 2006 and is reliable and effective.

A full audit trail of all operator activity is available and the system is fault monitored with easy to understand text based logs available for maintenance purposes. Retrieval of recorded video is fast and simple and can be transferred to CD or DVD from an integrated menu system.

- Allows operators to quickly locate people infringing security
- Provides sufficient information to enable operators to direct identification / deterrence measures to the correct geographic location(s)
- Quicker response to potential threats
- Releases operators to take on wider scope of activities
- Extremely low false trigger rate
- Improved site vigilance
- Minimal operator interaction required

12 months after completion of the depot systems, Western Power placed an order for the system to be extended to 37 electricity sub stations; these are now all on line to the complete satisfaction of the client, with the Cardiff office currently having control of about 70 sites. The system is now rolled out to more major power and LNG distribution networks.

Application Areas

Embassy



Road



Border



Airport



City



Utility



Underground



Port



IP Network

Immigration Control

Highways Agency

Coast Guard

Police

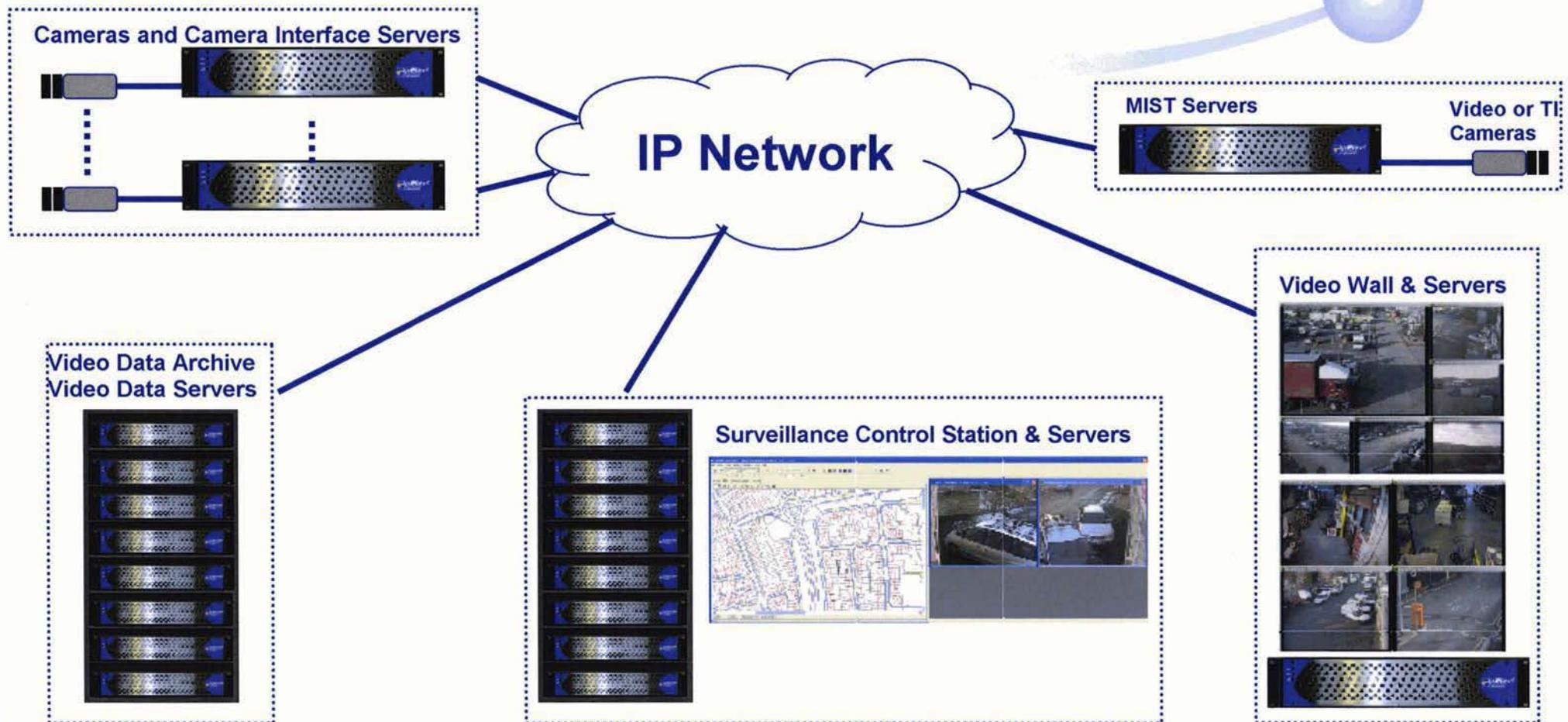
HM Customs



Surveillance and Control Areas



NetWatch is an integral component of video surveillance systems, providing network interfaces to cameras and the management, storage and display of video data throughout the system. Separate data sheets provide detail on each component; this overview shows the communication relationship between components and over page, a conceptual view of how the system may be deployed.



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Camera Interface Servers (CIS) capture video from cameras and streams video data to local storage devices and the network. Operators at Surveillance Control Stations have control over any number of CIS units and can command them to: control active cameras, download current and historic video data, control the Visual Motion Detectors, update the Alarm Status lists etc. Camera Interface Servers also provide physical interfaces for PTZ control, External Alarm Inputs, External Alarm output, Audio devices, Local Area Networks, ADSL and PSTN Networks etc.

Video Data Servers (VDS) provide a networked archive of video data allowing any Surveillance Control Station to replay or download historic data (typically: from a few seconds old, to many months). VDS's are employed to provide a data backup increasing system availability. They are used particularly where the primary CIS may be at risk from criminal damage or where radio networks may be temporarily unavailable.

Automatic Number Plate Recognition (ANPR) Developed by AR&T for site traffic management, the system is fully compatible with the NetWatch suite of products - using the NetWatch 'Surveillance Control Station' for the human interface. The system identifies and reads car number plates on vehicles in motion and provides alphanumeric output data from the source video. This data can then be compared with user data for correlation. Depending on the rules applied, vehicles may then be admitted or stopped by automatic barriers. Vehicle presence at sites can be verified as they can be automatically logged in and out.



Video Wall Servers (VWS) route selected video directly from CIS's or VDS's to selected video wall screens. Screen views are set from Surveillance Control Stations configured with the appropriate privileges. Video Walls need not be directly connected to the associated SCS, they can be located anywhere on the network, enabling remote viewers to access current and archive video under control of the associated SCS. Each screen can display multiple images of 1, 2, 6, or 9 camera views. Any number of screens can be used.

Video Editing Work Station (ViEWS) this software can reside on the SCS or on a separate workstation. It enables video to be viewed, enhanced and edited 'off line' in preparation to be used as evidence. Clips can be created and 'Personal Privacy' editing can be accomplished. In addition, a ViEWS workstation can perform video format conversions.

Video Replay Software (VRS) part of the **ViEWS** package VRS enables video captured on a NetWatch system to be viewed 'off line', mainly to facilitate replay of NetWatch video data to authorised third parties such as police and in courts of law. VRS is distributed under licence, but free of charge, in order not to inhibit the free exchange of authorised video data.



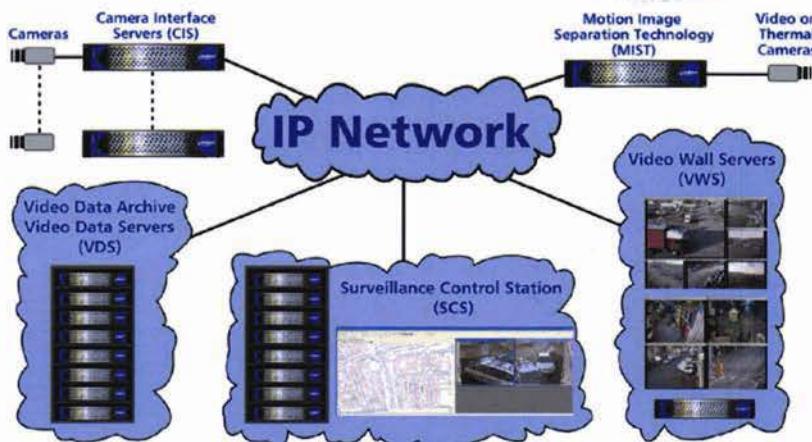
Evidence Submission Manager (ESM) an optional part of the **ViEWS** software provides the management and database tools to maintain and demonstrate compliance with the Data Protection Act in relation to surveillance systems. It contains all the features of NetWatch **ViEWS**, produces video evidence on CD or DVD media and provides a full audit trail of all actions and processes undertaken up to the point of release of the media to third parties. ESM produces all release forms, receipts, CD labels and management reports up to, and including closure of the incident where this is appropriate.

EyeLynx provides an entry-level to Networked Digital CCTV, allowing small businesses and shops to benefit from the infrastructure provided by larger Town Centre or corporate schemes. EyeLynx is fully compatible with the NetWatch Suite of products and can improve the effectiveness of surveillance at commercial sites of any type.



Developed by AR&T Ltd 'NetWatch' is a suite of networked intelligent video surveillance products providing security conscious organisations with the all tools needed to manage IT based CCTV security.

The use of Intelligent Video Systems will eventually transform the way companies and governments protect high value assets. The realisation that machine 'visual intelligence' can be more reliable and cost effective than humans for routine surveillance will enable users to reduce surveillance budgets and increase the effectiveness of response teams and prosecutions.



NetWatch is modular, scaleable, 'networkable' and enables the worldwide exchange of high quality digital surveillance video. It provides an essential surveillance system management structure to assist in combating crime and terrorism.

The NetWatch suite of products guarantees end users have a fully compatible system, able to detect incidents, to communicate with, and transfer video data to all required locations without loss of quality or data integrity.

Surveillance Control Station (SCS) provides the human interface with NetWatch servers; Surveillance Control Stations enable operators to control all system functions and to view all live and recorded video. They also provide tools for camera control, downloading video, audio communication, map functions, and server configuration and maintenance.

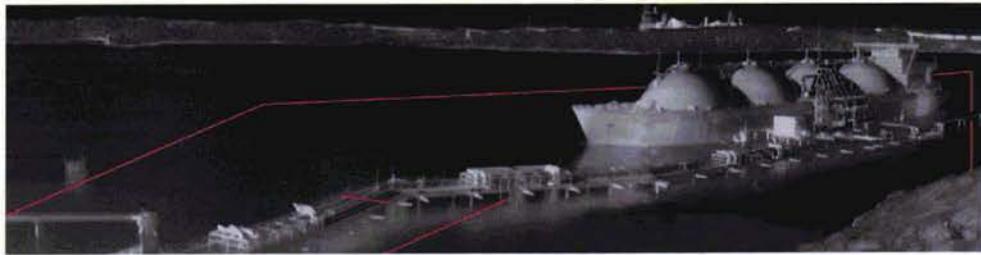
Each remote server maintains its own event logs, recording the operational status of all its cameras and hardware. The SCS provides operator access to these event logs enabling maintenance and system audit.



Motion Image Separation Technology (MIST) a reliable and sophisticated object detection and tracking system providing an early indication of intrusion from objects (including people) entering or moving through restricted areas or routes. The system detects and tracks objects that obey a set of qualifying rules. When these objects cross 'Virtual Trip Wires' placed in the video image by the system administrator, the system raises an alert for the operator and gives a clear and precise visual presentation for the cause of the alert. The picture shows the thermal image of a boundary fence protected by 'virtual trip wires' drawn into the NetWatch MIST view. Also available in a rapid deployment version – **MIST-RD**

Sea Ranger - enables new levels of intrusion detection for Coast, Ports, Docks and Harbours. Using a combination of standard vision and thermal imaging cameras, 'Sea Ranger' detects and tracks all moving objects in the cameras fields of view.

Sections of sea and dock areas can be designated 'restricted'. The area enclosed in the red lines in the picture shows the concept.



MIST® Motion Image Separation Technology



Motion Image Separation Technology (MIST) is a new and sophisticated object detection and tracking system capable of providing an early indication of intrusion from objects (including people) entering or moving through restricted areas or routes.

The system detects and tracks objects that conform to sets of rules. When these 'objects' interact with 'Virtual Sensors' placed in the video image by the system administrator, the system raises an alert for the operator and gives a clear and precise visual presentation for the cause of the alert.

'Virtual Sensors' include: Virtual Trip Wires (VTW), Virtual Cages (VTG) and Virtual Warning Zones (VWZ) all of which can be drawn into the scene using interactive tools.

Tracked objects leave paths from where they were first detected to their current position.

Used in conjunction with the NetWatch CCTV product range, MIST can activate hi-resolution normal vision PTZ cameras to home in on and record the virtual sensor activation. MIST servers record pre and post alarm video.

MIST can operate with multiple targets, showing tracks of past positions and predicted future routes based on general heading. Path prediction maintains object tracking even when an object is temporarily obscured.

MIST Features

- Fully integrated with the NetWatch product range
- Compatible with most Thermal Imaging cameras
- Operator notification when Tracked Objects interact with Virtual Sensors
- Detection rules configurable to suit application requirements

User Benefits

- Extremely low false trigger rate
- Improved site vigilance
- Minimal operator interaction required
- Quicker response to potential threats
- Reduced operating costs

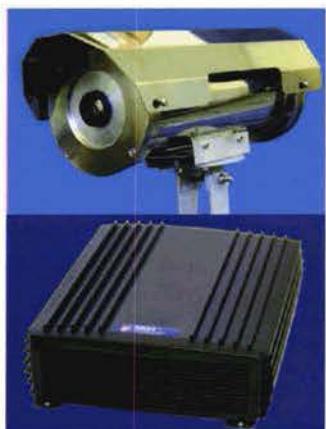
When equipped with TI cameras, MIST detectors can provide reliable 24-hour intruder detection under all weather conditions on land, sea and air at ranges of up to 30km.

Applications include: asset protection, search and rescue, process control etc.

In conjunction with NetWatch, MIST can be built into large corporate or military networks. Such systems can then detect remote events and distribute the resulting video data to all locations on the network.

All the surveillance system management tools available with other NetWatch products are equally applicable to MIST. MIST servers may be retrofitted to existing video systems to improve performance and reduce operator stress. The visual displays are easy to understand and simple to operate.

AR&T support clients through the planning stages and can configure MIST systems on client's premises if required.



MIST identifies potential threats and, using the NetWatch infrastructure, alerts users and enables informed responses.

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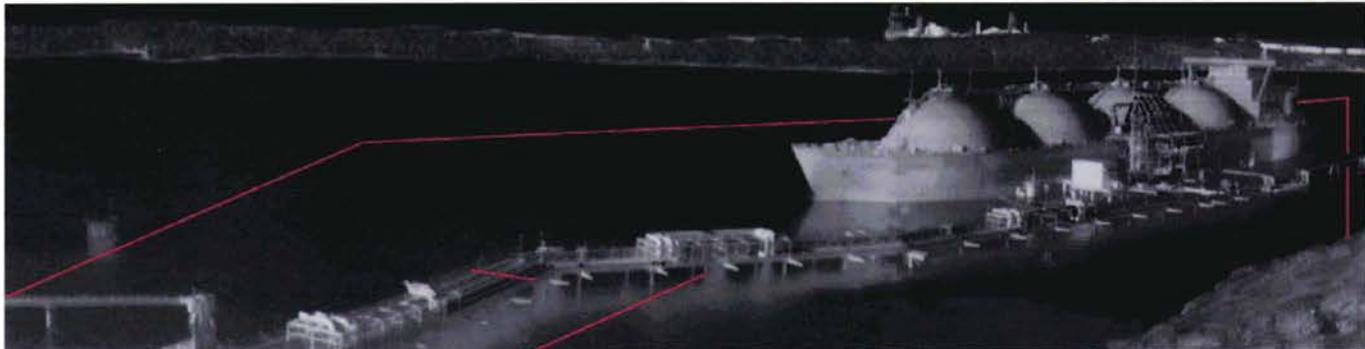
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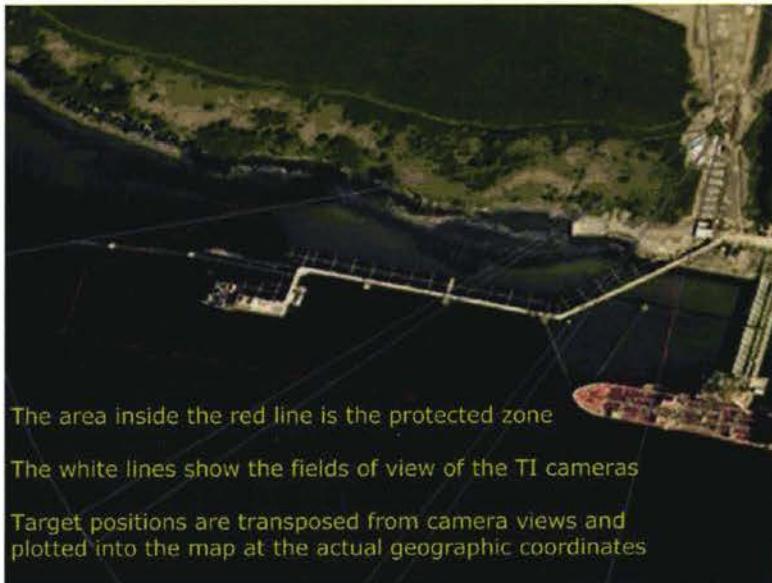


Sea Ranger

Providing unprecedented levels of intrusion detection for Coast, Ports, Docks and Harbours



Using a combination of standard vision and thermal imaging cameras, 'Sea Ranger' detects and tracks all moving objects in the cameras fields of view. Sections of sea and dock areas can be designated 'restricted'. The area enclosed in the red lines in the pictures shows the concept.



The area inside the red line is the protected zone

The white lines show the fields of view of the TI cameras

Target positions are transposed from camera views and plotted into the map at the actual geographic coordinates

Screen maps display the images of detected objects, their latitude and longitude together with bearing and distance from the detecting camera.

Tracks show the route the object has taken and the calculated position where it will cross 'Virtual Trip Wires' drawn into the scene.

PTZ cameras can be automatically directed to take close up pictures of objects entering 'restricted' areas.

There is no limit to the number of TI cameras or normal vision cameras that can be deployed on a system.

Vast areas can be covered with detection ranges up to 30 Km using TI cameras.

Sea Ranger is fully compatible with AR&T's NetWatch Intelligent Video Systems and Video data can be made available, via IP networks, to any NetWatch Surveillance Control Station located anywhere in the world.

All the surveillance system management tools available with other NetWatch products are equally applicable to Sea Ranger.

NetWatch and MIST systems monitor fence lines and open areas, bringing all the elements of CCTV surveillance into a single easy to manage system.

In use by government, military and major utility companies with over 1000 installations, NetWatch is established as a reliable and effective system contributing to the fight against terrorism and crime.

- Reliably detects vessels and people entering prohibited areas
- Better detection capabilities than human eye
- Monitors the designated areas 100% of the time
- Reduces operator fatigue and boredom that can result in security lapses
- Allows operators to quickly locate vessels and people infringing security
- Provides sufficient information to enable operators to direct identification / deterrence measures to the correct geographic location(s)
- Quicker response to potential threats
- Releases operators to take on wider scope of activities
- Extremely low false trigger rate
- Improved site vigilance
- Minimal operator interaction required

MIST®-RD Rapid Deployment Surveillance

MIST-RD assesses visual intelligence at remote locations and alerts operators when pre-defined criteria are detected in the images.

The system can be deployed covertly and with minimum effort. It provides all the functionality of Advanced Research & Technology's NetWatch and MIST servers in a small, rugged, weatherproof case. The system is battery powered, includes an optional wind up tower and a choice of cameras and PTZ units. It has optional interfaces for bi-directional audio communication, external sensor inputs, and external volt free outputs.

MIST-RD is intended for networking, either wirelessly or by direct connection. The system is fully compatible with standard AR&T NetWatch Surveillance Control Stations and any number of MIST-RD surveillance servers can be networked to provide wide area coverage.

Remote MIST-RD servers can be configured wirelessly using a fully portable and field deployable ruggedised Tablet PC. The same Tablet PC can be used for all monitoring and control functions. Options are available for 3G and satellite communication.



The system is designed specifically to address the issues surrounding long-range covert surveillance. The system is easily transported in the boot of a car; it requires no mains power or wired communications and can be deployed by a single person.

MIST-RD:

- Improves vigilance - alerts operators when detection criteria are recognised
- Records and distributes audio and video evidence
- Enables quicker identification of potential threats
- Requires minimal operator interaction
- Has networkable data backup to provide resilience against hostile action
- Provides a data management system compliant with the data protection act

Mast-mounted MIST-RD server with a portable Tablet PC resting on the base



MIST-RD Server Kit options include:

- Carry Case & Camera Cable Set
- Separate Battery and Battery Case
- Tablet PC
- Cameras; Including Thermal Imaging
- Pan, Tilt and Zoom units
- Extendable Camera Tower
- External Audio Functions
- External Sensor Functions
- 3G communications adapter
- Data link to satellite communications



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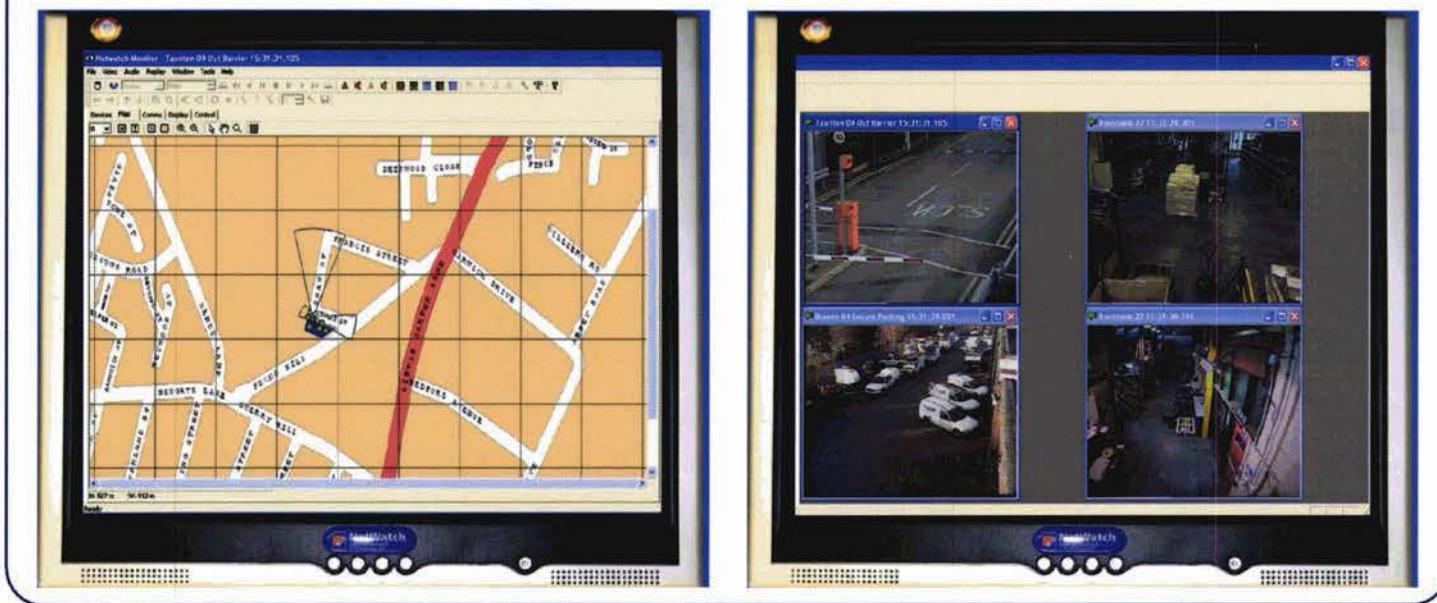


SCS Surveillance Control Station

Surveillance Control Stations provide the human interface with networked servers; these include the Camera Interface Servers, Video Data Servers and Video Wall Servers.

Surveillance Control Stations enable operators to control all system functions and to view all live and recorded video. They also provide tools for camera control, downloading video, audio communication, map functions, and server configuration and maintenance.

Each CIS maintains its own event logs, recording the operational status of all its cameras and its hardware. The SCS provides operator access to these event logs to enable maintenance and audit of the system. The SCS also provides password protected CD and DVD creation tools allowing video data to be exported securely to third parties.



Features

- Camera view selection, normal, motion, replay & edit.
- Camera auto cycle definition & replay tools.
- Play back individual cameras while viewing real-time camera set.
- Synchronized event log & video data download from servers.
- Operator activity logs maintained & available for audit/evidence.
- Event grouping to enable operators to identify exceptions.
- Remote configuration, restart & close down of recorders.
- Capture single frame to clipboard.
- Telephone directory for dial up connection sites.
- Viewing Alarm log entries for cameras, individually or as a combination list.
- Download recorder event log file.
- Auto / manual time synchronisation for all connected recorders.

- Monitor activity log. Contains date and time, user logged on / off, cameras viewed / replayed and downloads made.
- Full duplex point to audio combination with selected recorder / camera.
- Supports function authorisation levels of use implemented through windows user groups.
- Motion detection Alarms - audio + visual prompts

Benefits

- Easy access to data from local and distributed sites.
- Reduced management costs.
- Easy distribution of data.
- Easy management of data protection legislation.
- Online review of recorded video data without interrupting the recording process.
- Improved security through smart alarm monitoring.
- Improved vigilance.

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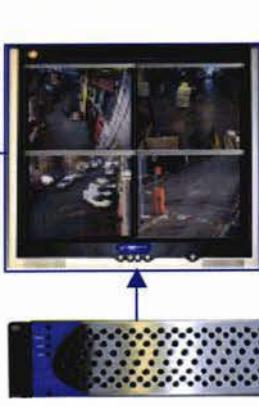
Video Wall Server

Used in conjunction with Surveillance Control Stations, Video Wall Servers route selected video directly from Camera Interface Servers or Video Data Servers to selected video wall screens. Each VWS sits between the LAN and two screens of any physical size. Each screen can display multiple images of 1, 2, 6, or 9 camera views. Any number of screens can be used.

Screen views are set from a Surveillance Control Station configured with the appropriate privileges.

Video Walls need not be directly connected to the associated SCS, they can be located anywhere on the network, providing remote viewers with access to both current and archive video under control of the associated SCS.

This screen dump shows a 6-view screen on a single monitor, each view is labelled with camera location, time of view and an icon showing alarm status



IP Network

ViEWS® Video Editing Workstation

The ViEWS package provides a powerful video analysis, editing and enhancement capability to the NetWatch Suite. Video can be reviewed, analysed to find specific events, broken into sample clips or built up into multi-camera large clips. Video clips can be enhanced and edited to include personal privacy (selective blurring). Video can be reproduced in native format (sub master) or in any standard Windows video formats (copy).

Video is usually downloaded from the NetWatch system, but ViEWS provides a PAL input allowing legacy VCR tapes to be processed. Video evidence can be exported to CD or DVD media, or to a PAL output, in order that SVHS tapes can be generated on legacy equipment.

Analysis and Search Tools

Video analytics enable ViEWS to automatically search for objects that move into or out of selected areas. Set the search running and the system will notify you audibly when it has detected an object, it then stops the play sequence for operator review. Notice the rectangle used to localise the search area in the second picture.

This picture shows a service road running alongside a depot.



This picture shows the first instance of a vehicle using the service road



Enhancement Tools

Video enhancement uses integration and re-sampling techniques along with brightness and contrast adjustments, turning the original and cropped image into a more detailed image. Note that these processes are applied real time to the video as it is reviewed.

Original



Cropped & Enlarged Original



Enhanced Enlarged Version



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NetWatch® Intelligent Video Systems

ViEWS® Video Editing Workstation

The ViEWS software suite also includes a powerful digital video playback and analysis package. The one off ViEWS licence permits the user to copy this playback software onto all CDs produced by ViEWS containing digital video .nvs files. In addition to providing a general purpose video replay function, the Video Player package enables users to view time synchronised multiple images in separate 'windows' on PC monitors.

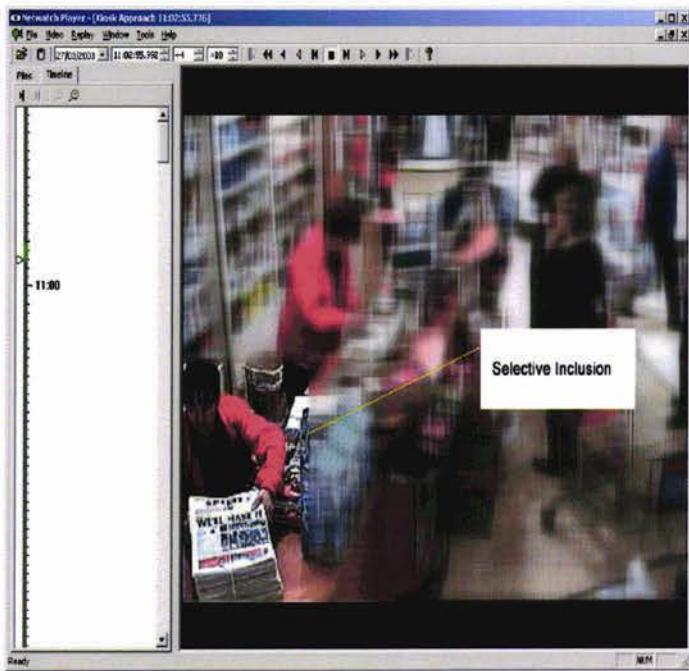
User Benefits

- Easy to use
- Easy to distribute video data
- Reduced costs of managing video data
- Provides a single station comprehensive video editing and enhancement tool.
- Seamless integration into NetWatch Suite allows a fast and easy way to prepare evidence.
- Provides a platform to process recorded video and redistribute the processed video on a standard media.

This screen shot shows the selective blurring function where individual faces can be obscured to preserve privacy.



This screen shot shows the selective inclusion function where the entire shot is blurred except for selected individuals.



ViEWS Functions and Tools

- Seamless integration with NetWatch Evidence Submission Manager and Surveillance Control Station Software
- Networked connectivity to NetWatch surveillance suite
- CD and DVD Exportable Media
- Video Brightness and Contrast enhancement transform
- Video inter picture integration transform
- Video picture resolution re-sampling transform
- Video picture rotation transform
- Video picture clipping transform
- Picture object search transform
- In picture annotation tools
- Personal privacy blurring tools
- Video import / export including - AVI, NVS, NVSA, VMW
- Multiple windows video CODEC support
- Powerful video time line navigation tools, including variable rate forwards and backwards replay.
- Clipboard support for image capture
- Support for dual timeline video editing (compensating for unsynchronised video sequences)
- Composite PAL video input and output

ESM Evidence Submission Manager

ESM Functions

- Incident request logging - form completion of: who made a request for video data, when the request was made and the reason it was requested
- Video segment & still image capture review and download from real-time CIS & VDS servers to the ESM server
- Control of the Surveillance Control Station and Replay Software time synchronised to database record
- All review activity is recorded time / date along with operator and any third party reviewer present.
- Expiry warning for video evidence that has not been downloaded from the real-time system
- Management reports include:
 - Incident involvement time by operator, total time expended by all by operators on an incident
 - Total time involved on incident servicing by department
 - Total number of media produced per incident in period
 - Total number produced by the department

- Incident evidence management:
 - Booking in returned evidence and the location of the evidence
 - A log of when the evidence is destroyed, and / or when system evidence and incidents are closed.
- Generation of media for incident evidence:
 - Comprehensive report detailing a complete audit trail of all activity involved including any still images extracted from the system
 - Exported video segments retained in original codec and format as sub-master material
 - The media contains an installable report viewer
 - Pass-word protected MS Word format reports
 - Pass-word protected NetWatch Video Replay Software for video segment replay
- Media label and receipt is generated automatically when media is produced by the system each with unique serial number
- Corporate logo's and definable report styles supported
- Provision for handheld bar code scanner increasing the speed of incident data retrieval

ESM Benefits

- Structured procedure for compliance with the Data Protection Act
- Structured and documented process for exporting video evidence
- Speeds the evidence review process
- Simplifies video data collection and re-distribution
- Text logs and video data are time synchronised improving the audit process
- Single point data management reduces risk of errors
- Multiple camera and simultaneous multi-stream video enable time synchronized evidence review
- Printable media writer included in the package - guarantees compatibility and minimum processing time

Views

ESM is an enhanced version of NetWatch ViEWS and incorporates all the ViEWS basic and optional functions. Please refer to the separate ViEWS data sheet for more details.

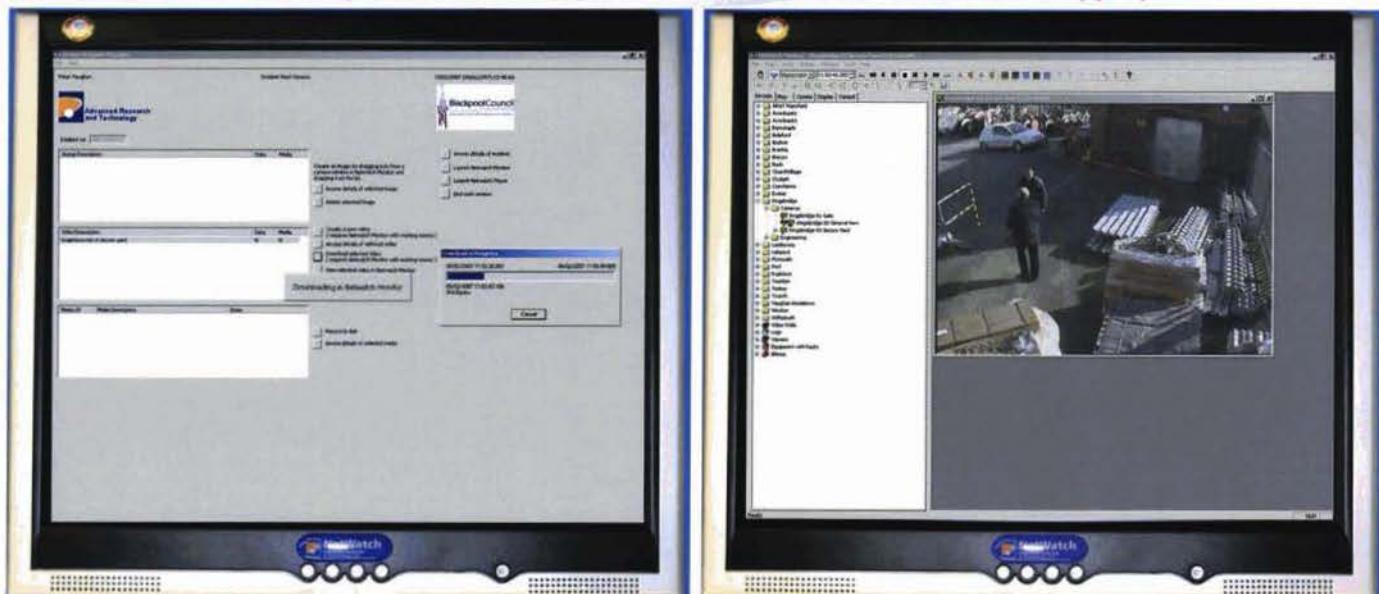
Media

- DVD or CD media can be used.
- The date and unique serial number are printed in numeric and barcode formats
- Corporate logo etc. can be printed on disk



ESM Evidence Submission Manager

ESM provides the management and database tools to maintain and demonstrate compliance with the Data Protection Act in relation to surveillance systems. It contains all the features of NetWatch ViEWS, produces video evidence on CD or DVD media and provides a full audit trail of all actions and processes undertaken up to the point of release of the media to third parties. ESM produces all release forms, receipts, CD labels and management reports up to, and including closure of the incident where this is appropriate.



The above shows a video segment being downloaded from an online CIS to the Evidence Submission Manager server.

Screen review of an Evidence Report that will contain a full audit trail of every action during the extraction of evidence from the NetWatch system. This report is written to the media disk along with the video sequences.

Details from the Evidence Report showing the integrity of the process for possible scrutiny in court:

Category:	Robbery
Requested by:	Warner, David, PC4324
Organisation:	Blackpool Council
Address:	
Telephone:	
Mobile:	
Incident Description:	Copper Cable theft from secure area Kings Depot
Subject	
Description:	
Notes:	
Timeline:	Incident record created by operator Peter Vaughan
05/02/2007	
12:29:43	
12:40:02	Session started by operator Peter Vaughan Accompanied by Smith, John, Mr, 12458
12:47:35	Created video Suspicious men in secure yard
12:50:52	Created and downloaded still image
12:52:40	Suspect 1 and 2
	Session ended

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& Technology Ltd



Camera Interface Servers (CIS) Video Data Servers (VDS)

CIS

The CIS performs the digital equivalent of the analogue 'recording' function; it captures video from cameras and streams video data to local storage devices and the network.

Operators at Surveillance Control Stations have control over any number of CIS units and can command them to: control active cameras, download current and historic video data, control the Visual Motion Detectors, update the Alarm Status lists etc.

Camera Interface Servers also provide physical interfaces for PTZ control, External Alarm Inputs, External Alarm output, Audio devices, Local Area Networks, ADSL and PSTN Networks etc.

The CIS provides the video intelligence for the system and is able to analyse and process video data through mathematical 'Transforms' to obtain accurate motion detection and to perform its functions in accordance with user specific requirements.



VDS

Video Data Servers provide a networked archive of video data allowing authorised Surveillance Control Stations to replay or download historic data (typically: from a few seconds, to many months old). VDS's can be employed to provide a data backup to increase system availability. They are used particularly where the primary CIS may be at risk from criminal damage or where radio networks may be temporarily unavailable. On larger systems they provide extended data storage for archive material and video data distribution that otherwise may be overwritten at a CIS.

User Benefits

- Proven technology - in use for over 6 years by major Government, Commercial and Industrial users
- Proven compatibility with major network hardware suppliers - no compatibility risks when AR&T plan system
- Integrated features guaranteed to meet all common security applications - lowest risk solution possible
- Highly cost effective solution for larger surveillance systems
- Surveillance system reach is only limited by the network
- Can be used over the Internet allowing long distance surveillance
- Visual Intelligence reduces fatigue and loss of attention by operators
- Mapping function allows operators to have better visualisation of events
- Can be implemented to provide high availability of data for high value assets
- Digital networked video can provide better quality and easier access than analogue
- Wireless communication options provide cost effective data distribution
- Integrated diagnostics help rapid fault location and reduce down time
- UK design and manufacture - support available when required
- Bespoke hardware and software solutions available for non-standard applications

Mounting Styles

NetWatch servers are supplied in 1U, 2U and 4U rack mountable case styles.

All styles are constructed with steel bodies and stainless steel front panels providing attractive, industrial quality, equipment and control room fixtures.

LED indicators show operational status and there are no user controls available on the front panels. Front panels are held in place with security screws to inhibit tampering.

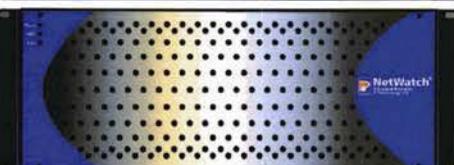
1U



2U



4U



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Camera Interface Servers (CIS) Video Data Servers (VDS)

CIS and VDS common features

- Resolutions supported 190 x 160 to 768 x 576 pixels
- Local recording storage capacity 250GB to 5.1TB per unit
- Local RAID 1 supported
- Recording - continuous, scheduled or on motion
- Recording scheduled low / high frame rates
- Recording high frame rates on picture motion
- Recording and Alarm on picture motion
- Recording to user defined time period 1 - 99 days
- LAN, WAN and WI FI connectivity supported
- Dial (PSTN / DSTN) out on alarm, voice and data
- Dial in (PSTN / DSTN) remote viewing
- Event logging
- Alarm logging by camera data Stream
- Alarm generation by MVD (Motion Video Detection)
- Advanced Motion detection and tracking system available; see MIST data sheet
- Full duplex audio communication with SCS
- SNMP Support - Device Fault, Device Alarm, Trap Alarm active, Trap Alarm inactive
- HTTP Server support for internet browsers
- Communications Bandwidth Management tools, High / Low / Auto quality settings
- Low to high speed IP connection protocols
- Communication performance and monitoring tools
- Remote recording protocol
- Internet connectivity, private and shared port structure
- Full support for network multicasting
- Supports remote configuration, restarts, close down, set-up and software revision information for servicing and commissioning functions
- Password protected configuration utilities and sensitive camera views

CIS Only Features

- Multiple camera input capability 1 to 16
- Multiple resolutions supported QCIF to 2CIF
- PAL and NTSC camera supported
- Frame rates from 1 to 25 f/S/C
- Visual and thermal spectrum camera support
- Camera and external equipment event association
- Camera real world co-ordinate position, FOV range and bearing options
- Functional camera protocols supported
- Functional camera auto home and multiple presets included
- Remote recording protocol included

VDS Only Features

- Multiple LAN video data streams, input capability 1 to 10
- Frame rates from 1 to 10 f/S/Stream
- Camera data stream and external equipment event association

Compact High Capacity Data Storage



Camera Interface Servers (CIS) Video Data Servers (VDS)

CIS and VDS common features

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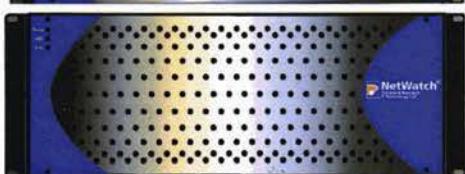
1U



2U



4U



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