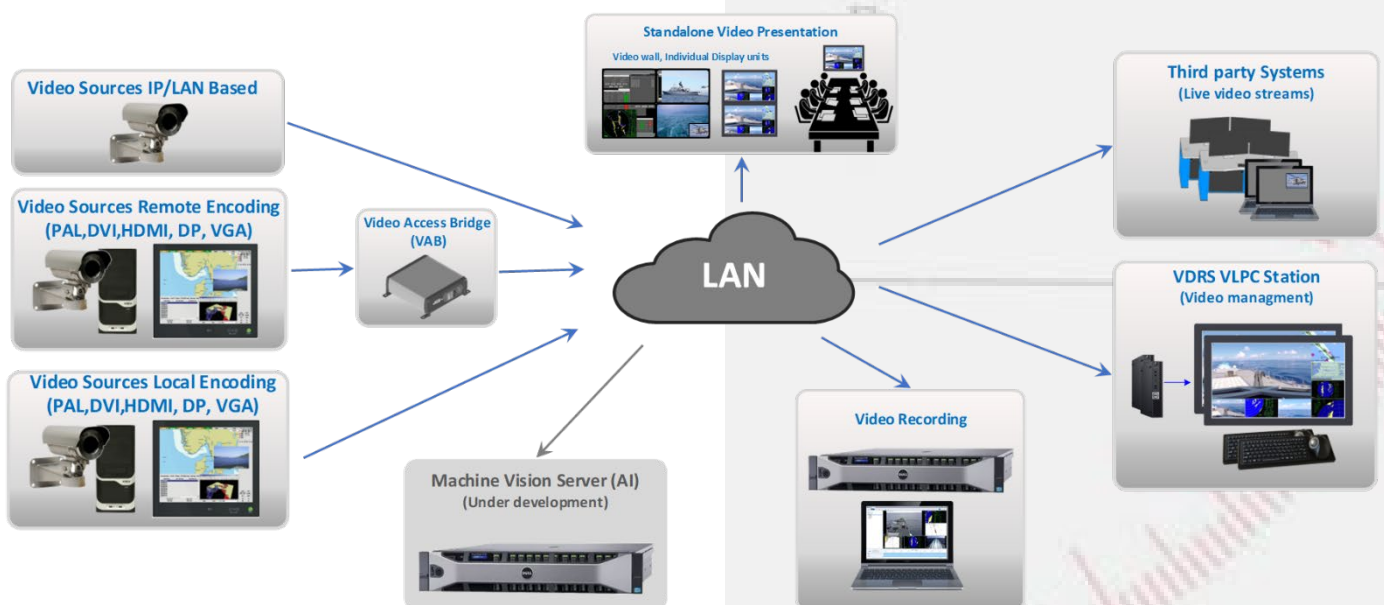


VDRS

Video Distribution & Recording System



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VDRS Overview

The VDRS system is developed to handle all video sources in a multi system environment into one coherent system.

Traditional video distribution systems are based on video matrix systems which fast grow into costly, complex architectures which provide little flexibility regarding video storage, distribution and reviewing of the video content.

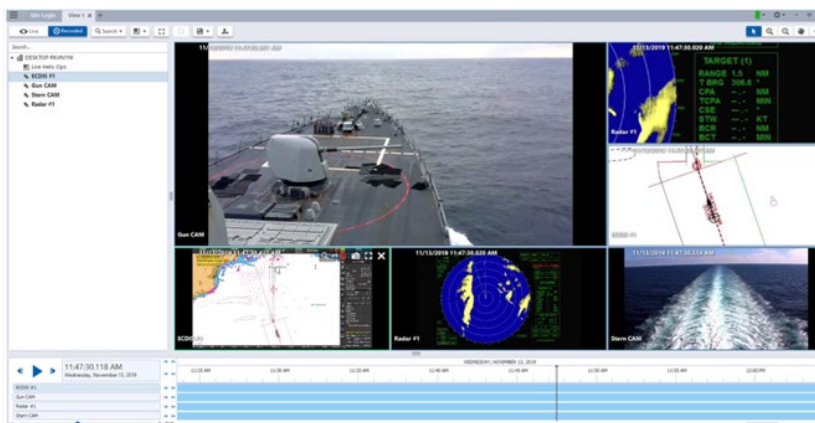
VDRS is integration of commercial subsystems with adaptation of specially developed hardware and software to be able to collect video data from multiple sources from different systems with different video formats.

VDRS utilize video as network video streams, enabling multi video handling capability into one coherent system:

- Video Capture
- Video Distribution
- Video Recording
- Video Live/Playback Presentation

This enables a common pool of all video sources and allows multiple usage of the video pool content:

- Management support
- Operation support
- Training
- Debrief and post analysis
- Situation evidence
- Surveillance



VDRS flexibility

The VDRS system is a highly flexible system.

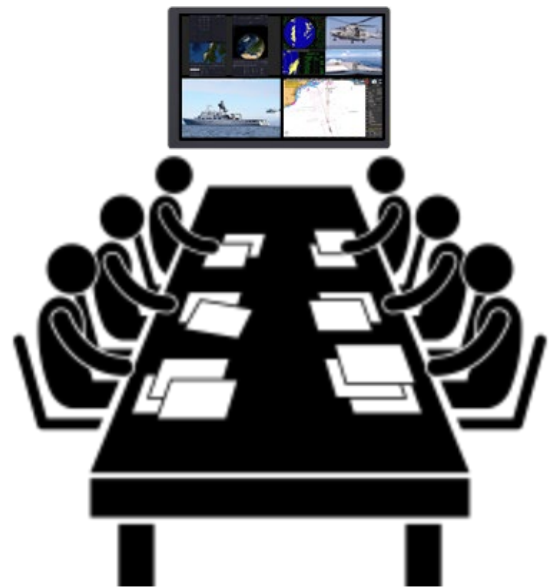
The VDRS design is scalable:

- Number of video sources: One to unlimited, simultaneously
- Number of operator/users: One to unlimited, simultaneously
- Video recording limited by storage size

The VDRS flexibility is built into the design criteria to ensure that VDRS system easily can be integrated in new as well as existing system.

Some design criteria include:

- New solutions as well as integration into existing environments
- No interference/impact on systems providing video to VDRS
- Failsafe video capture of computer video
- Integration into existing or dedicated LAN structure
- Usage of COTS components to allow flexible customer-based solutions
- Enable video transfer between security domains



Video Capture

The VDRS can handle most video formats and sources. The principle of the VDRS system is to capture video sources and format them as video streams.

Video source examples are:

- Camera Video (Examples)
 - IP Cameras
 - PAL/NTSC Cameras
- Computer Video (Examples)
 - Operator-/Workstations
 - Embedded systems
 - Standard computers
- Multiple Computer Sources (Examples)
 - Commanding Control systems
 - Integrated Bridge systems
 - Video/KVM matrix systems
- Sensors (Examples)
 - Electro-optical sensors
 - Drone video feeds

Video Sources IP/LAN Based



Video Sources Remote Encoding (PAL,DVI,HDMI, DP, VGA)



Video Sources Local Encoding (PAL,DVI,HDMI, DP, VGA)



Solution for video capture

To be able to overcome the following challenges:

- Multiple video source types and formats
- Long distance transmission of computer video
- No spare Video ports at desired video sources
- Minimum/no impact on video sources



The following solutions has been developed (VDRS Video Access Bridge units (VAB))

- Standard series of compact units for capturing and transmitting most types of video from computer source to VDRS via fiber optic wires
- Optional Integrated “Failsafe” video signal splitting
 - In use by video recording system for air traffic control centers
 - Non-disruptive video capture from host system (in case of VAB failure)

Video Sources

Multiple types of users can be connected to the VDRS system to allow operation specific usage of the videos.

Such usage can be:

- Multiple video source types and formats
- Third party user systems (multiple simultaneous):
 - Computers using generic video stream player software
- Integration into third party systems:
 - Command control systems
 - Systems with video stream play capability
- VDRS VLPC client (multiple simultaneous)
 - View recordings and live video
 - Customizable video overview build-ups
 - Switch between Multiple simultaneous video views
 - User collaboration regarding video views
 - Instant playback of resent event
 - Quick time selection and playback back of recordings
 - Customizable Video source status overview
 - Customizable floorplan/map-based Video source selection
 - Control video content of remote displays/video-walls
- Video Walls or Individual Displays
 - Flexible configurations of VDRS display devices:
 - Almost any size and display configuration of Video walls
 - Multiple individual displays units at remote locations
 - Video from VDRS via LAN or fiber optic video signal extender
 - Video Content Control:
 - Content on Video wall/Display controlled by VLPC operators
 - Cooperation between multiple operators regarding display content.



Video Recording

Selected or all video streams can be recorded. Duration and number of videos are based upon Hard disk Drives in the system.

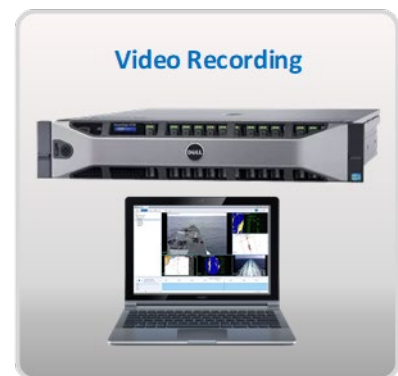
Some recording features include:

- Time stamping
- Encryption
- Authentication of authenticity
- Continuous or scheduled Recording of any available video sources
- Video Recording without any user interaction
- Auto-delete oldest video data when storage capacity limit is reached (FIFO)
- Video is stored in an embedded video database, not as computer video files.

Videos can be exported in several formats depending on usage.

Some examples video export features are:

- Single Video
 - For playback on generic video player
 - Standard video format
- Multiple Synchronize Videos
 - Proprietary format
 - Configurable parameters:
 - Video Sources to Include in export
 - Time range to export
 - Video Player Included (no license)
 - Enable playback in VDRS user environment or external computer
 - Custom layout of videos during playback
 - Video Zoom-in during playback
 - Encrypted Video
 - Authentication of authenticity



Machine Vision

As all video is available in one system the potential for extracting data by using Machine Vision provided many potential usages.

A plug-in unit enabling up to 50 video channels to be simultaneously analyzed. The unit contains built-in libraries for object detection and appearance searches.

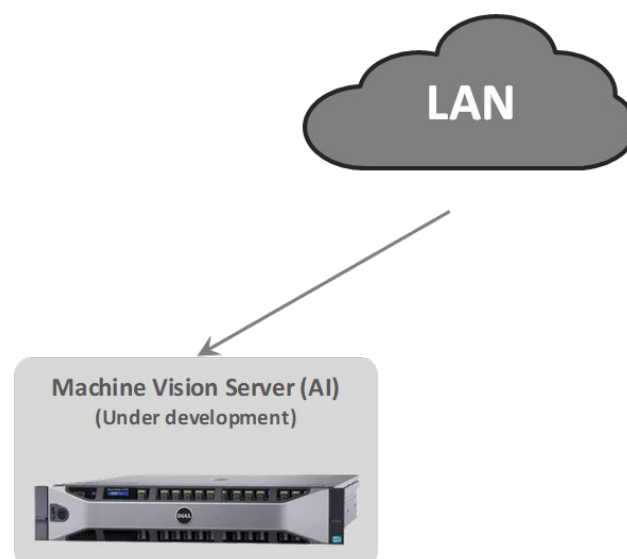
Electronicon AS ambition is to develop the VDRS machine vision implementation together with customer to determine the video sources to analyze and the specific methods for various analyzes.

Electronicon AS is currently exploring how to integrate Machine Vision (MV)

- Developing own skills to establish baseline MV features
- Customer requirements
- Third party integration

Potential usage of MV can be:

- Flagg incidents
- Object detection
- Workstation Operator monitoring
- Object Search



Security Cross Domain solution

VDRS system can provide the following two types of security cross domain solution:

- One way fiber optic transfer
 - Low cost
 - Multiple cables in large systems
 - Low flexibility
- Data-Diode solution
 - High/medium cost
 - Single cable transfer
 - High flexibility
 - High capacity
 - EAL7+ approved

