



Veracity Systems

Viewscape case study Royal Borough of Greenwich CCTV upgrade

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1. Royal Borough of Greenwich case study

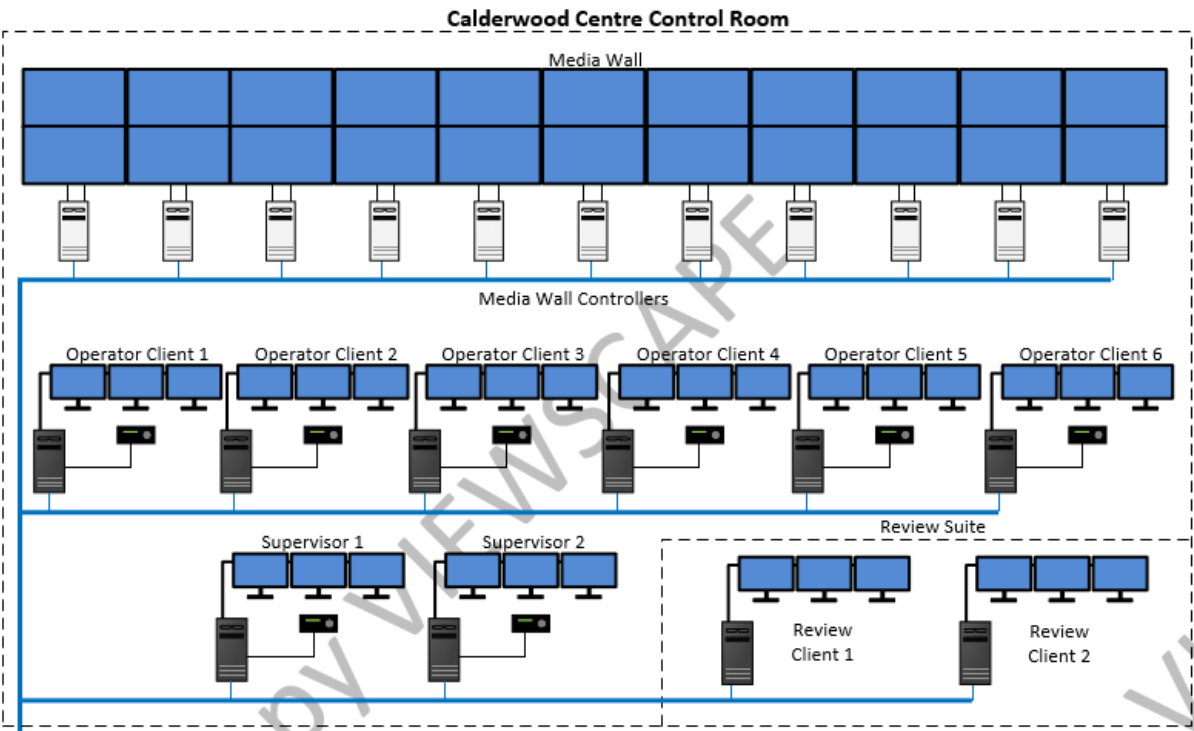
Royal Borough of Greenwich (RBG) CCTV video management system was declared end of life and no longer supported by the manufacturer and the CCTV management system needed to be upgraded or replaced. The Royal Borough of Greenwich took time to consider the development of the system as a whole and to take advantage of new technology and the development of supporting services and applications that could enhance the operation of the CCTV service as a whole as well as providing incident and operational data to support council and emergency services.

The RBG employed an independent consultant to prepare a specification that addressed the upgrade and development options that should be considered as part of the bidders' proposals. The operational requirements had been developed through considerable consultation with RBG and stakeholder engagement. Bidders therefore needed to consider compliance to the operational requirements as fundamental to the compliance of their bid.

1. The specification addresses the main aspects of the upgrade requirement, these being:
2. The control room environment
3. Transmission Infrastructure
4. System management platform
5. Recording platform
6. Dedicated disaster room
7. Replacement CCTV camera types and upgrade options
8. Replacement intercom system
9. Transmission to and Integration of additional sites

The successful bidder Eurovia won the bid by demonstrating technical capability best value and a technical ability to deliver the project. Initial deployment phase was over a 12 month period with a support and maintenance covering a further 9 years for a contract value of £2.7 million.

1.1 The control room environment



1.2 Transmission Infrastructure

To be completed by others

1.3 System Management Platform

Eurovia recognised through the compliance element of the tender technical specification and RBG operational requirements that the Security Management Platform (SMP) was key in providing RBG with an open commercial-off-the-shelf (COTS) software solution, which is non-proprietary utilising standard IT hardware and the latest Microsoft operating systems, able to scale, capable of monitoring thousands of sites and systems.

Eurovia selected Veracity Systems, Viewscape SMP because it is a trusted solution with a pedigree for large public space, high security and transport CCTV control rooms SMP deployment for over 20 years. Viewscape provides a simplified licencing model, offering whole of life with no re occurring licencing costs, making the Viewscape SMP solution both technical capable and competitive over the life cycle of the project.

Veracity Systems Viewscape™ SMP, offers an open modular software solutions that integrates disparate security and safety systems across multiple locations, transport hubs and building infrastructure into a single graphical user interface, for 360° situational awareness, incorporating command and control, incident management, mapping, standard operating procedures, reports, KPI's & analytics, alarm receiving and associated cause and effect.

To ensure system resilience the Viewscape SMP was provided with an automated failover solution to ensure high availability, which is comprised of two servers, each running a locally stored virtual machine. The servers are then clustered together using Microsoft Failover cluster and a third virtual machine for the database and pro server is stored on the storage server as shared storage. As storage is shared between both servers, the virtual machine can be moved between physical nodes via planned and unplanned failover. This method incorporates high availability and offers automated failover within several minutes.

Additionally Veracity offer a loss less enterprise failover solution offers high availability, greater redundancy, and faster convergence. Instead of using shared storage between the servers to migrate the virtual machine, each server has a locally stored virtual machine, which the database and server application are migrated between. To achieve this, the virtual machines are clustered together running a Pro Server service role, as well as always on availability groups for the SQL databases. This solution offers zero downtime.

RBG needed to retain current analogue camera and telemetry control whilst the chosen new technologies were deployed. Viewscape was able to offer a virtual CCTV matrix with the integration into the existing Synectics EX250 matrix controllers with direct switching of analogue video channels for encoded video distributed to any display monitor connected to the SMP, including camera telemetry control through the Viewscape Graphical User Interface (GUI).

RBG has Avigilon IP cameras with on board analytics and VMS storage across the public space elements of the system, Hikvision IP cameras and Video storage NVRs across the estate covering remote buildings and car parks.

Avigilon the chosen new IP video camera and video storage solution was integrated directly to Viewscape for the phased upgrade of the existing CCTV cameras allowing RBG operators to have undisturbed operation access supporting both new and existing within the Viewscape GUI. Other than the picture quality on the existing cameras was much lower resolution the operational control was the same.

Viewscape was able to seamlessly integrate the Avigilon and Hikvision sub systems into the main Viewscape SMP, RBG also had a number of Vemotion redeployable cameras which Viewscape offered direct integration offering the operators with a view and control of the system estate CCTV system within a single GUI.

Supported functions with the Viewscape GUI:

- o Live View
- o PTZ Control
- o Replay
- o Fast Forward/Reverse
- o Frame Forward/Reverse
- o Snap shot
- o Export Video
- o Camera channel video loss
- o NVR Fault
- o Video analytic events
- o I/O triggers

To ensure speedy distribution and access to the recorded footage the Viewscape SMP evidence management system enables integration on to cloud based evidence management system, this allows recorded footage / evidence to be distributed to relevant personnel in a cyber secure and password protected process.

The RBG system will continue to expand with the next phase requiring Viewscape integration and tracking including DVNP, Motorola radios and TBC body worn video cameras

1.3.1 Viewscape Architecture

Viewscape centralised server software provides the system core that enables functionality and security between all the connected system devices and workstations. Viewscape scales out to meet the project requirements with standard non-proprietary architecture.

Viewscape Primary Server,

Hosts Viewscape, developed to be both scalable and resilient, installed on non-proprietary standard rack mount PC server hardware with dual redundant power supplies and network cards including Microsoft® server OS and Microsoft® SQL server. Viewscape supports virtualised environments

Viewscape failover Server,

Optional manual, automatic or enterprise failover and replication servers are available decided by the level of resilience required for the project

Operator client workstations, Graphical User Interface (GUI) for Viewscape providing operators with greater situation awareness, command and control functions Incident Management tools, mapping & Alarm Management. installed on non-proprietary standard small form factor PC hardware with Microsoft® Windows 10 professional

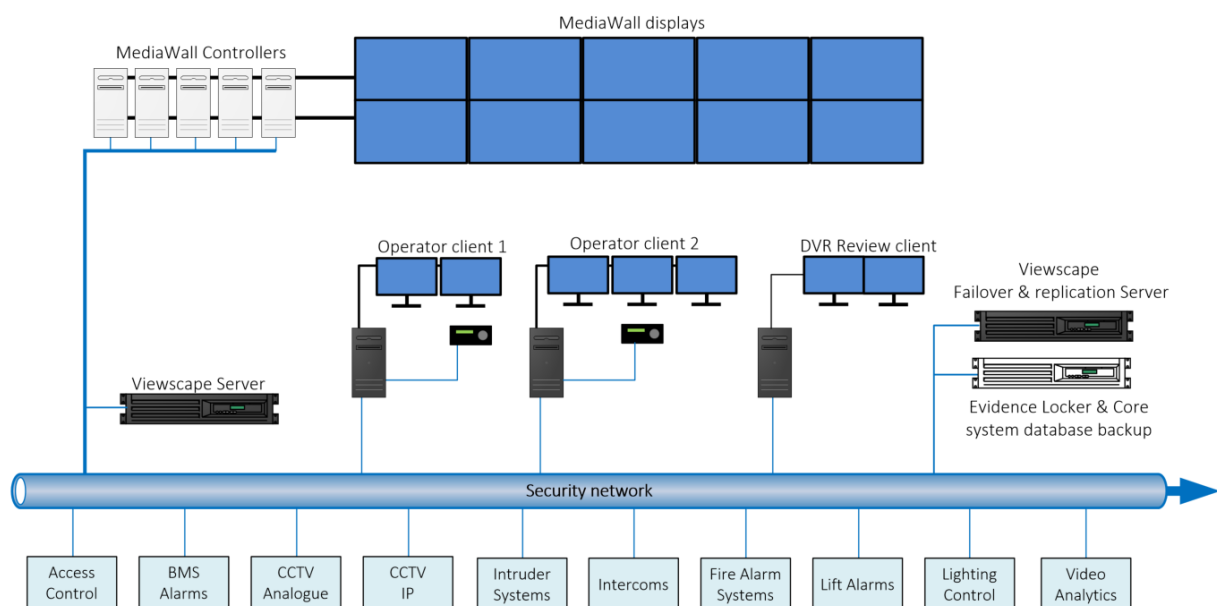
Joystick Controller

The Veracity joystick controller is ergonomically designed for comfort and ease of operation; ruggedised and supports variable speed pan and tilt control.

Review client workstations, Graphical User Interface for reviewing and reporting on incidents and associated video, full audit within the evidence management system of user actions assisting in compliance with GDPR and data protection. installed on non-proprietary standard PC hardware with Microsoft® Windows 10 professional

Media Wall, Live and playback images from video sources on multiple monitors each media wall controller can drive 2 monitors, operators have full control of the media wall with each screen able to display 1, 4, 9 & 16 cameras for any connected video stream. Additionally, web pages from 3rd party application and or web sites can be displayed as a camera input.

Evidence Locker, Viewscape workstations secures video evidence including associated documents to the evidence locker. Which is automatically referenced to the associated incident log where full audit trail of this information is available



1.3.2 Viewscape client functions overview

Configuration and system settings data and user parameters are accessed and set within the system administrator section. Areas include, password setup, user profile, system lookups, camera patrol configuration and hardware configuration.

Access rights for each operator or group of users are configured with a hierarchical structure to allow full, limited or site customised access to the operator workstation function described

Mapping area panel supports multiple sources such as GIS, CAD, jpeg or bitmap images and web-based maps such as Open Street Map, including building plans which are presented in a tree structure. The maps support multi-layer drill down functionality with hyperlinks for intuitive navigation across the maps. The mapping function include zoom functions either by clicking a selected area or via arrows

Functional icons will jump to the associated map/building plan at the pre-configure zoom level. Icons are highlighted by both colour change and icon transition clearly identifying the location of the device when in alarm. Hovering over the icon will confirm device identification and location, selecting the device offers an additional menu configured with available functions from the device and user authority, such as isolating, arming, opening, setting, un-setting, switching on an output- to open a door, turn on a light, displaying status etc

Camera Selection Panel, camera selection can be presented in numerous formats from Zone/Scheme to Area/Street, via camera number, camera name or by selection on the map. Camera selection can be limited in the User Profile list

Spot Monitor manual camera video source selection is controlled via the intuitive graphic mimic panel, offering pre-programmed display layouts. Video source is presented automatically upon activation of an alarm or by selecting the alarm event

Pre and post video footage presented on the spot monitor together with video streams from grouped cameras to other monitor displays associated with the alarm. Additionally, the operator has video play back/forward, speed controls including saving snap shots and clips from the spot monitor

Macros, Tours & Pre-sets patrols of cameras, media wall layouts and other macro defined operations offer the selection for automated camera routing to provide desired camera images, mapping, and data display scenarios

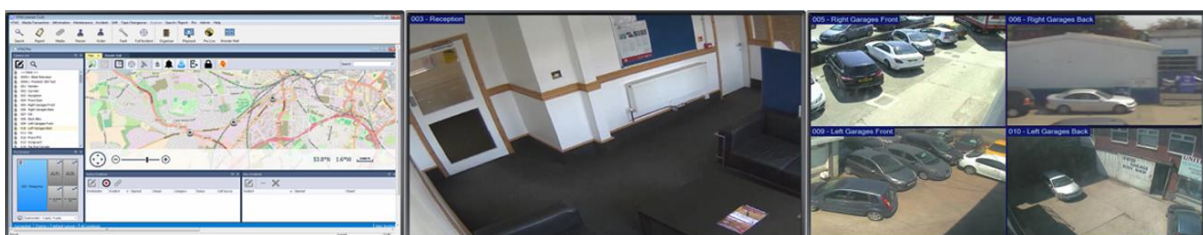
Monitor Layout Panel, user configurable operator screen layouts and media wall which can be changed and saved to suit each operator job function and linked to their profile. Multiple layouts can be saved per operator

Video retrieval and replay regardless of the manufacturer, replay will be carried out in the same format. Replay controls are available on the spot monitor for the live camera, additionally a playback window enables the replay of up to 4 video sources simultaneously. The video sources can be synchronised to the same date time and playback, with a master control for play/rewind/forward speed control, if preferred video replay can be controlled individually, even from the same video sources. Additionally, the retrieved video footage can be displayed on the optional large screen video monitors through the Veracity Systems MediaWall interface

Evidence Management the burning of disks and replication of media is tracked and noted within the system to provide a full audit trail

Alarm Handling pre-prioritise alarms, according to different criteria. The alarm list is presented to the operator in an easy-to-understand format, clearly and efficiently

Priority Levels are configured to equipment notifications, alarm inputs and user levels. Levels are set to: Alarm (BMS critical plant, fire, intruder



Workflow forms present Standard Operating Procedure (SOP) for the operators to follow with detailed workflows and procedures, these are fully configurable by the administrator of the system. An operator can escalate an alarm to a manager supervisor and or to raise a full incident management form

Maintenance/Fault Logging the ability to log a fault or maintenance visit, with warnings presented to the operators via an organiser screen. Reports are created to show faulty items of equipment, time taken to fix etc.

Visitor Log logging of visitors within the control room supports the capture of digital signatures.

Contact Directory phone book including contact to companies, people, and key holders.

Repeat Offender a full repeat offender database is included in the client application to provide easy access and identifying of known offenders. Data including description, pictures, incident details, vehicles, and associates.

Incident Panel list of live and recently recorded incidents is available for instant selection by operators to view, add, edit and deletion of Incident. Logging of information on incident category, call source, activity type, description, actions taken, people involved, responses (such as Police, Fire or Ambulance), tasks, daily log Entry, result and media/cameras used.

Join Incident offers the ability to join a live incident that another operator has created and may still be involved in. By joining the incident all footage and actions are tagged onto the same incident with the user details.

Manual Incident button an on-screen icon and or defined user buttons on the PTZ keyboard to trigger a live incident. Upon operation of the incident button. Viewscope logs and time stamps all user actions including, cameras selected, camera locations, time of incident etc. ensuring a full audit log with KPI's for analysis.

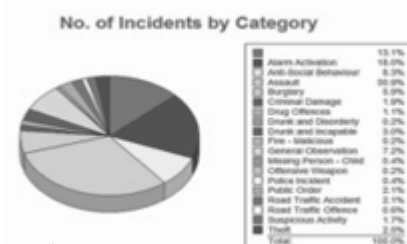
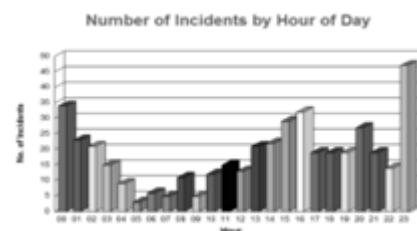
Full equipment audit details camera configuration allowing the selection via the client control screen, denote make, manufacturer, fault history and connection. Recording devices including common fields such as make, connectivity, frame rate recording and location.

Lookup tables fully configurable where naming conventions, categories and drop-down filters empowering the operators to utilise the prescribed data applied

Audit/Database Searching full auditing provided to assist with compliance with the Data Protection and GDPR regulation, along with performance indicators and in-house check reporting.

Assisting with GDPR requirements including:

- Observation requests
- Internal and external viewing records
- Daily Log
- Destruction records
- Visitor log
- Electronic signature capture
- Electronic non-disclosure agreement capture
- Camera & equipment records
- Fault & maintenance history
- Re-deployable camera use audit trail
- Secure evidential audit trail
- Extensive analysis, by camera, operator, location
- Map based analysis showing hotspots
- Colour graphs
- Extensive pre-configured reports
- Fault & maintenance management
- Maintenance visit scheduling
- Supplier performance management
- Critical fault tracking
- Control room activity diary/organiser
- Subject Access Request (SAR) management with critical date reminders



1.3.3 Viewscape Integrations overview

Veracity Systems: vast experience, not only in the production of high-performance applications and systems, but in the support, design and future proofing of solutions, combine multiple applications into one integrated, unified front end. This allows customers to maximise return on investment; allowing legacy equipment to work alongside new IP based technology.

Hardware agnostic: not tied to any one manufacturer allows Veracity Systems to offer users the best and most practical solutions, working with all manufacturers, to embed the agreed functionality from their solutions into the Viewscape open integrated security platform.

IP CCTV Systems: IP Cameras, Analytics, NVR's, VMS, multiple CCTV vendors unified into a common user interface, support for manufacturers SDK/API and standard ONVIF – RTSP protocols.

Analogue CCTV System: support legacy analogue systems direct connection of DVR's, encoders, matrix's supported PTZ functions, live and playback using a common user interface.

Intruder Detection Systems; remote control; setting-un-setting, zone isolate-activate. Faster reaction time to an IDS event with detailed cause and effect and operator guidance to grade and categories the alarm

Perimeter Intrusion Detection; remote control; opening closing, setting-un-setting, zone isolate-activate Faster reaction time to an PID event with detailed cause and effect and operator control.

Access Control; remote control; opening doors/barriers, monitoring; door forced, left open, open, invalid card are presented to the operator with detailed instructions of how to respond

Voice over IP Intercoms; calls received from an intercom can be associated with connected sub systems to display local live video and provide the operator with control over access to doors and barriers

Fire Alarm Systems: prioritised alarms, empowering the operators with emergency response plans to effectively handle the alarm ensuring the safety of the occupants, automatically displaying live video etc

Smart City-Buildings; status readings and alerts from sensors, providing actionable intelligence for reducing carbon footprint and saving money through more efficient use of utilities

Building Management Systems; remote control over lighting, HVAC, Power, monitoring of sensors and meters all leading protocol supported, Modbus, BACnet, Dali, KNX, JSON, M-Bus, SNMP etc

Internet of Things; low-cost devices and sensors can be securely connected over the internet offering remote control and monitoring, many sectors are embracing IoT such as smart cities, healthcare, security etc

Viewscape; enables integration to multiple facets of the security alarm and safety systems to provide operator and management



1.3.4 Viewscape standard applications overview

Command and Control; Simplified evidence gathering where detailed step-by-step information is crucial and ensuring no detail is overlooked. Viewscape displays all surveillance and alarm technologies in one place for seamless command and control. Empower operators with a single unified GUI.

Incident Management: Compiling datasets is an essential part of commerce, security and management, once collected, a full picture of the data reveals patterns that cannot be unearthed if single snapshots are individually analysed. Viewscape Incident Management automatically collates associated alarm and video evidence, providing the responsible parties and law enforcement agencies with detailed incriminating evidence.

Mapping: Empowers operators to view geographical location of the alarm on street maps or building plans with pinpoint location, operators can view the status of nearby objects and manually take control of technologies such as cameras, doors etc. increasing situation awareness. Viewscape mapping system offers multi layered vector graphics enabling operators the zoom in and out of the scene seamlessly linking maps and building plans. Device's icons are automatically grouped to the selected zoom level ensuring unnecessary map clutter is avoided. Additionally, devices can be grouped by location and or device type allowing multiple devices to display status as a single group icon, individual devices can be selected within the group for control and status.

Stand Operating Procedures; following standard operating procedures during an incident can be complex and time consuming, increasing the risk of a mistake or oversight. Viewscape command and control and incident management functions guide the operator through a prescribed process dramatically increasing the effectiveness of the response.

Reports & KPI's; Viewscape records in a SQL database all relevant operators' actions together with accessed video & audio. A user with the authorisation can then access this archive to supervise and audit all the actions. Reports can be configured for automatic or manual compiling. All events received by the system and all actions taken can be searched and added to a report, exported to pdf, excel, or sent out by email

Alarm Receiving; Viewscape software platform is deployed in control rooms/ARC's (both commercial and public sector) that have achieved BS5979/BSEN 50518. Alarm Receiving provides the capacity to prioritise with colour-coded alarms, so that the most urgent alarms take precedent over those deemed to be less of a priority, grouped by location and or technologies providing the operators with greater 360° Situational awareness.

Social Media and Web Pages; Viewscape supports URL links to web pages from social media, news feeds or 3rd party systems. These feeds can be placed into any operator display pane, remote media wall, interactive mouse clicks within the pane are supported for a fully interactive experience



1.3.5 Viewscape optional applications overview

Advance Reporting Dashboards; Viewscape advance reporting module offers an information management tool able to analyse data from Viewscape database including data mining from 3rd party systems, displaying key performance indicators (KPI), metrics and key data points which are fully customisable to meet the specific need of a department and or Company.

Custom Reports; Viewscape standard reporting contains over 200 predefined reports, with filtering and export facilities for each report dataset. Custom reports allows users the ability to build their own graphically rich report templates and formats based on specific requirements utilising the Viewscape database tool.

Cloud based application interface: As more operational processes and application are hosted from the cloud. Viewscape supports URL-TABS these form part of the Viewscape GUI offering operators an efficient secure method to view and interact with another hosted 3rd party applications that offer MS edge supported browser access such as cloud hosted, email, digital evidence management systems, workforce management, Company intranet, Lone worker, Guard tour systems etc.

Quick Response Teams; Viewscape QRT module provides first responders and emergency response teams the ability to collect live data at the scene of the incident for direct input and interaction with the security control room. The location of a QRT mobile device is geopositioned on the mapping system along with identification of the user logged in to the QRT app. QRT includes the ability to upload of video footage and photographs direct from the mobile device. **what3words///;** Viewscape GIS mapping system supports what3words /// where every 3 metres sq. of the world has been given a unique combination of three words. Viewscape operators are able click on an exact location on the mapping system and be presented with the three words for that location, operator are also able to search for a location by entering what3words /// address.

WebStream; offers a vendor agnostic appliance solution for deployments that require operational awareness outside of the core control room, such as counter-terror operations, disaster recovery solutions and site or city-wide distributed facilities management. The WebStream appliance module can stream live and recorded video including PTZ commands in a variety of user selectable quality levels to desktop and smartphone browsers. The WebStream user login is authenticated within the Viewscape core server which grants permission for the available user cameras video sources and PTZ commands.

VIEWCAST® is a professional RTSP video streaming utility for windows desktop displays. Viewscape captures workstation displays to generate RTSP video streams for NVR recording, video wall display or remote viewing of client PCs.

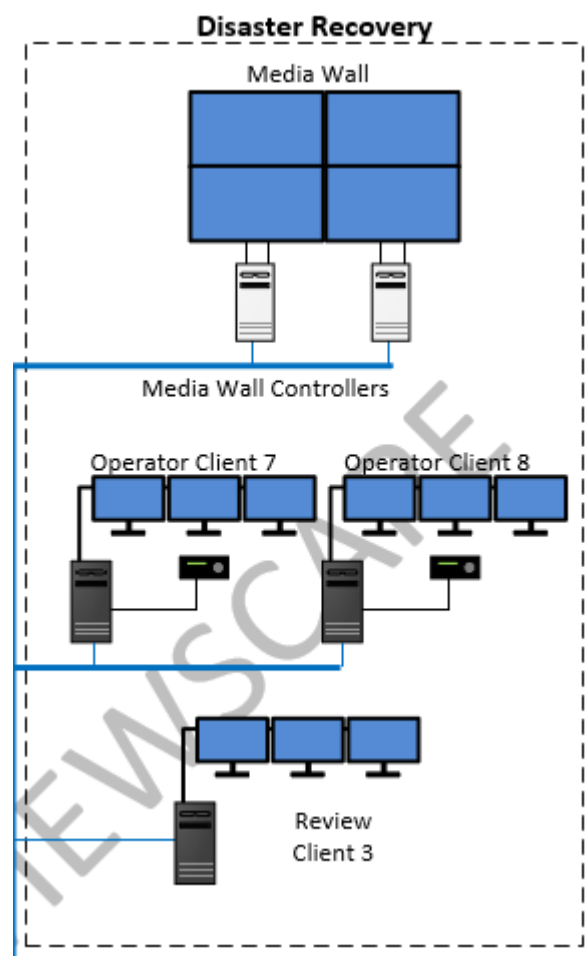
VIEWSPAN® range of video wall controllers are designed especially for video surveillance applications. They are built on dedicated hardware platforms which meet the performance and reliability requirements of high security control rooms. Viewspan® allows users to populate the display surface with an unlimited mix of video and other content. See it all, in any combination, stretch a single channel across the whole wall or a multiple monitors. Simple user control with maximum scalability



1.4 Recording Platform

To be completed by others

1.5 Dedicated disaster room



1.6 Replacement CCTV Camera types and upgrade options

To be completed by others

1.7 Replacement Intercom Systems

To be completed by others

1.8 Transmission to and Integration of additional sites

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