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# AWARD WINNING SITUATIONAL AWARENESS TECHNOLOGY

DESIGN AND MANUFACTURE OF SPECIALISED ELECTRONIC COMMUNICATION EQUIPMENT AND EMERGENCY AND DISASTER MANAGEMENT SYSTEMS

DIRECT CONTACT NUMBER +27 (0) 83 561 8213 Email: COLTRON@coltron.co.za

WHEN SECONDS MAKE THE DIFFERENCE BETWEEN LIFE OR DEATH

## ABOUT

First established in South Africa in 1982 as Coltron, the company's main function is the Design and Manufacture of Specialised Electronic Communication Equipment.

We pride ourselves with expert Technical Abilities through employing highly skilled technical staff enabling us to boast our Company Strength to be the engineering of tailor made products to our clients' exact requirements.

Innovative Electronic Engineering and Design, earned the company multiple awards.

The company launched the worlds' first ever fully digital, web-based Emergency and Disaster Management Communication System in 2018, a ground breaking achievement in Situational Awareness.

INNOVATIVE ELECTRONIC ENGINEERING AND DESIGN EARNED THE COMPANY MULTIPLE AWARDS:

- TOMA Award (The Outstanding Manufacturing Awards).
- SABS Design Award (Outstanding Engineering Design – Engineering Design Excellence - for the Tornado MRCC System).
- Police Services Acknowledgement Awards.
- Chamber of Commerce and Industry Awards.
- Department of Trade and Industry Acknowledgements.
- Various Service Excellence Acknowledgements.
- Voted 'Partner of Choice' –
- in Situational Awareness Technology

## HISTORY

The company successfully established itself through producing Voice Switch products for Financial Institutions. The target market expanded to Disaster Management and Control Room environments eventually necessitating the development of a more universal platform to adequately service these diverse markets including the Electricity Supply Commission of South Africa.

The TORNADO MRCC Multi-role Communication System was developed in conjunction with; and to the specification of the Electricity Supply Commission of South Africa (ESKOM). This system provided a hardware platform to which any specialized circuit interface could be added and software, which could be uniquely programmed to suit each client's specific requirements.

The system is capable of expansion to 65 000 circuits in modular form. The diversity of the system earned this product a Design Award in the electronics field for design excellence from the South African Bureau of Standards and an Outstanding Manufacturers Award.

Additional software products were added to integrate the system with networks of PC's providing database support and control functions.

This product has been supplied to a variety of markets including ESKOM, Financial Institutions, the Defense and Police Force, Fire departments, Ambulance services and Traffic Police.

The product successfully functions in various Emergency and Disaster Management Services control Rooms around the country as well as at all of ESKOM major control centers in South Africa. Continued development has enabled ESKOM to more efficiently manage their entire communication network.

A software division was established to provide Call Centre Call taking and Dispatch Software and Specialised Database requirements.

## PRODUCT OVERVIEW

AWARD WINNING TORNADO MULTIROLE COMMUNICATION SYSTEM

TORNADO MRCC

The Tornado MRCC Digital Communication System is specifically designed to support all types of control rooms from very small to very large centers.

Development of the Tornado System began in 1991. The initial design parameters were specified by Eskom (Electricity Supply Commission) to assist the company with the efficient operation and control of large portions of its electrical reticulation network. Since the first production model, hardware and software have been augmented to suit a variety of users including police, emergency services and various financial institutions. Its ease of operation is an asset to its integration into control and emergency centers.

Each system is tailor made to meet the client's exact requirements on a simple 'plug and play' basis.

Designed from the outset to integrate **call taking and dispatch** functions into a **single** system by combining digital and analogue telephony and radio control.

The System features the ability to interface with all standard types of communication circuits and has been designed to cater for interface modules providing communication to specialised circuit types.

The Tornado employs distributed processing to provide maximum reliability and allowing new functions to be added at any time, while maintaining compatibility with the existing modules. Employs modular concepts to facilitate expansion thus ensuring maximum flexibility.

Based on a distributed architecture with built in redundancy to ensure 100% up time.
The Tornado Multirole Communication System combines all communication circuits into a single operator console.

## TORNADO MRCC FEATURES

The required circuit interfaces determine the choice of modules in the Communication Switch.

Modules available for the following:

- Analogue PSTN and PABX Lines
- GSM networks with suitable gateway
- Analogue or Virtual Private Wire (Hotline or Point to Point Circuits)
- Analog radio via 2/4-wire direct with 5/6 Tone Calling/Reception for ZVEI (ZVEI 1) / DZVEI (ZVEI 2) / DDZVEI / EEA / DTMF / CCIR
- Digital trunked Radio – TETRA voice/data
- 2 Channel TDMA – DMR
- 2 Channel FDMA – DMR
- Prepared for DMR Tier 3 implementation
- All makes of radios accommodated (Profiles for each make of radio)
- ISDN Primary rate
- E1 CAS 2 Mbit/s
- VoIP Telephone Circuits

## FEATURES CONTINUED/..

### CONFERENCING

Conferencing between telephone lines, GSM lines and full duplex radio communications

### INTERCOM

Provides intercoms between Consoles / Stations

### CALL TRANSFER

Provides call transfer between consoles / operator stations

### BROADCASTING

Allows operator programmed broadcast groups of multiple radio channels or point to point circuits

### RADIO TO RADIO CROSS-CHANNEL RE-BROADCAST

Allows mobiles on radio channels of the same or different frequencies / protocols to communicate with each other.

### RADIO TO TELEPHONE / GSM PATCHING

Operator or User controlled interconnection between - Radio channels and Telephone circuits / GSM circuits

### MONITOR AMPLIFIERS

Select and Unselect or individually programmable amplifiers are provided for monitoring radio channels

### CLI

Analog, ISDN, VoIP, DMR and Tetra caller identity is supported and displayed on the GUI in the incoming call queue.

### A.N.I. RECEPTION

Received ANI (Automatic Number Identification codes) is displayed on a list in the GUI.

### RADIO CALL TONE CODE RECEPTION

The system will receive 5/6 tone codes in multiple formats and allow these to 'Call' individual consoles or multiple consoles. (The same as a telephone call)

### RADIO CALLING

Consoles may call in 5/6 tone format to alert a field radio.

Each console is programmed with a unique 5/6 tone code to notify the field radio of the caller ID.

### MUSIC ON HOLD

- Internal music on hold/corporate information message for calls placed on hold
- Also allows external music source

### CALL PROGRESS TONES

Provides call progress tones for Point to Point Circuits, PABX Trunks and CAS Telephony

### AUTOMATIC CALL DISTRIBUTION

Up to eight independent ACD (Automatic call distribution) groups may be programmed into the system.

### AUTODIAL

System administrator defined Speed Dials, allowing enhanced call restriction

### PARKING (CREATE POINT TO POINT CIRCUITS)

Allows ordinary dial lines / GSM lines to be

## CALL RESTRICTION

Multiple layer call restriction can be imposed by the Systems Administrator.

## TIME SYNCHRONIZATION

The system time is synchronized by a GPS Time Sync Module.
Time synchronization is available for synchronizing an external voice logger and other servers/networks.

## VOICE LOGGING

Voice logger output for external Logger (per operator station)
Optional integrated Voice Logger (**embedded**) providing 1year live storage and archiving to Blu-Ray Disc.

## GIS AVL

The console GUI display GIS and AVL with the use of the appropriate server or access to positional information via Tetra/DMR and FFSK on analogue radios.

## MOBILE DATA TERMINALS

Facilities are provided on the console GUI to transmit and receive data from mobile data terminals.

## I/O CONTROL

I/O control circuits are provided for operating Door locks, Receiving External Alarms, CCTV control, Access Control etc.

## STATIC RESISTANCE

All modules / cards have been designed to be resistant to static (Highveld conditions) and require no special anti-static devices.

## LIGHTNING RESISTANCE

External input circuits are designed to be hardy. Together with external lightning protection devices a high level of lightning immunity is provided.

## MMS (Maintenance Management System)

## SELF DIAGNOSTICS

Continuous self-diagnosis with automatic alarm reporting.
This includes Server Health, Module Checking and Gateway Analysis.
If enabled, a remote email/SMS facility can report any Out of Bound Conditions to service personnel.
Priority levels may be set to indicate the importance of the condition.

## CONFIGURATION AND DIAGNOSTICS

The MMS GUI is used to configure the system, allow software updates and run Diagnostics via the built in terminal or remotely via the LAN / WAN / Internet.
(Internet access is via VPN, 3G, ADSL with the appropriate modem installed)

## MANAGEMENT INFORMATION SYSTEM

Comprehensive Web based Management Information System with support for multiple large screen format Dashboards Displays to show center performance.

Real Time Live Performance Dashboards

Historical information database providing user defined reports and Statistics.

System Administrator Dashboard.

Virtual IT Assistant.

## OPTIONAL VoIP SERVER

An optional SIP Protocol VoIP Server may be fitted to provide back office phone support.

# OPERATOR CONSOLES

The GUI's are designed to provide similar operations for all types of circuits thus making the controls for different types of circuits invisible to the user.

The system supports up to 200/1024 circuit ports (analog or digital) and further allows up to 48/200 operator positions which can be a mixture of wired, VOIP or Virtual Operator Consoles which manage telephone call taking and radio dispatch. Modularly expandable to increase capacity.

With access to an internet connection, virtual positions are operated from anywhere in the world.

Operator Consoles are available in direct wired and/or VOIP connected via the local LAN or VIRTUAL operator consoles via any point on a WAN or internet connection (web based). The Tornado system has been designed for all control room applications including, Utilities, Police/Metro, EMS, Fire, Airports, Ambulance, Disaster Management, Transportation and Private Industry applications.

## CONSOLE TYPES

### WC3000 CONSOLE

The WC 3000 Operator Console is web based, allowing operation on any PC, Cellphone, Tablet or laptop with internet capabilities. All operating systems with web browser support are compatible.

The user logs into the web server console application, giving access to all communication circuits connected to the Central Communication hub.

The console employs SIP VoIP protocols to convey voice communications over a standard network, WAN or over the internet.

The application presented is similar to the operation of the standard wired console, allowing the operators to use a familiar interface.

In basic operation mode all that is required on the user side is a headphone – either wired or blue tooth, depending on the facilities provided by the device used to access the web server.

For full featured HMI facilities, an adapter is available to promote the audio port of the laptop / PC/ tablet/ phone to support handset, headset, boom mic and foot switch ports.

Voice traffic is communicated at full voice quality on internal networks. Lower quality codecs may be employed to reduce the bandwidth required.

### HI1200

The HI1200 Operator Console is a directly wired console with no bandwidth restrictions.

Standard CAT5/6E cabling (Power, Data, Voice).

Integrated embedded PC supplied with Keyboard, Mouse and optional Touch Screen

Fully featured control unit with Boom Mic, Handset, Headset, Foot Switch and Cordless ports.

### IP2000

The IP2000 operator console connects to the central equipment via a VoIP connection situated anywhere on a LAN (Hardware network port or Wi-Fi enabled) with a Wi-Fi modem.

IP2000 and WC3000 ADVANTAGES OVER STANDARD WIRED CONSOLE

- Operation of the console can be performed from anywhere in the network.
- Operators can be moved temporarily to any location without the need to have made provision for cabling.
- In the case of evacuation of a call Centre, normal operations can be resumed by merely placing staff anywhere on the network using a PC or laptop and audio interface adaptor.
- Connect to the centre from anywhere in the world with **full radio and telephony operational functionality** as if the operator is sitting in the control centre.
- Forward command vehicles require absolutely no equipment other than internet connection and a PC or laptop or handheld device.

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## OPERATOR CONSOLE FEATURES


- Access the central database of stored contacts
- Answer next
- Call log for each shift/User
- Call Restriction
- Call Status Information
- Call Transfer between operators
- CLI (Caller Line Identity)
- Conference
- Console Status Information
- Dial pad activation
- Drop Call
- Embedded Recording
- Hold
- Incoming Call Queue
- One Touch Dialing
- Instant playback of calls
- Intercom between operators
- Line Keys
- Line Privacy activation
- Notepad facility with storage per call
- Park (Create Hotline from ordinary circuit)
- PBX Call transfer
- Programmable Function keys
- PTT (Press to talk)
- Radio to Telephone Patching
- Receive and send emails
- SMS receiving and sending
- Text messaging system for local LAN
- Text messaging for DMR/Tetra Radios
- Attach emailed images to incident
- Live streaming from incident (Forward Command)
- Microphone Mute
- Radio Channel Grouping (Cross channel re-broadcast)
- Broadcast over multiple radio channels
- ANI code queue (Microphone ANI reporting)
- Analog Radio selcall 5/6 tone
- Radio priority/busy channel marker
- Radio re-dial
- Individual/group call
- Emergency call
- Trunked mode (TMO)/Direct mode (DMO)
- Send/receive status messages
- Encryption of calls
- Scan, Stun, Revive & Kill (Digital Radios)
- Monitor digital inputs (e.g. external alarms)
- Control digital outputs (e.g. door latches)
- Dialing number Database (Address Book)
- Handset/Headset/Boom Microphone Volume
- Volume control for the monitor amplifier
- Volume control for the unselect amplifier
- Web /html browser with Whitelist / Blacklist to restrict usage

# UNITY EMERGENCY AND DISASTER MANAGEMENT CALL TAKING AND DISPATCH SYSTEM

UNITY
EDMS

## OVERVIEW

**UNITY EDMS™** is a software server suite that services the broad needs of Emergency Management and cooperation type industries by providing a solid browser based interface to manage and monitor all aspects related to the documentation and real-time interfacing of Situational or Incident Based environments.

Core Facilities include

- Call Taking/Capturing
- Resource Management and Dispatch
- Google Maps incorporated into the native **GUI** with GEOJSON support
- Easy interface for creating/changing markers and geo-fences.
- Resource and Asset management (Vehicles, Staff and Buildings)
- Real-time Interactive Dashboards
- Scalable Redundancy and backup features

- Full Cloud/Local Cross platform deployment

The software utilizes **Connection Hive™** techniques to establish and maintain free-flowing links between various hardware modules, such as Data Servers, Mobile Data Terminals and all other Software endpoints that ties into the current infrastructure.
Access to the system is not limited to internet (TCP based) connections but can interface with local hardware to employ Least Cost Routing of information by means of Digital Radios, LoRa, GSM and WiFi, connecting at the core server and at devices such as MDTs (Mobile Data Terminals) and Cellphone Apps.

An API layer is included to allow access via different connection methods, like webSockets, *REST* APIs and Network Sockets to interrogate and influence the system.
The UNITY CORE module employs HTTPS protocols to encrypt data end to end when connected over WiFi, 3G, LTE and converts to using a proprietary key encryption/decryption protocol when low level connections are active like LoRa and GSM.

**UNITY EDMS™**, developed alongside the Coltron **Tornado MRCC™** Communications Switch (Multi Role Communications Console) natively integrates the communication environment with Incident Management to ensure that capturing of 'Caller ID', 'Login-Forward', 'Call Answering' and all other basic radio functionality can be used within **UNITY EDMS™.**

Apart from the CORE that hosts and delivers the platform to the end users, **UNITY EDMS™** has the ability to seamlessly integrate additional modules in order to expand the systems capabilities and customization in accordance with end users' requirements.

## APPLICATION LAYER

The platform was developed on NodeJS and Lubuntu and leverages native modules in the browser environments to achieve fast and continuous communication.

The solution is serviced with a MySQL database to keep licensing requirements to an absolute minimum. This used as it is the basis of most internet servers and therefore suitable for the application.

## UNITY CORE

### CORE Server

The following services are included in the CORE Server Services -

- File Serving (Media and Host Files)
- Application Serving (Capture and Dispatch GUIs)

- Net/WebSocket Communication
- Serial / RS 232 Communications
- Data event based routing
- Integration REST API
- Robust module management functions and data routing
- Inter-Server communication/duplication

### CORE Browser

CORE Browser Application Facilities –

- Call Taking/Data Capturing
- Resource Management and Dispatch
- Active Incident Handling
- Integrated Google Maps/OSM overlays System
- Map and Overlay management
- Staff and Asset Management
- Manual Staff/Asset Rostering (Daily)
- Real-time Current Open Incidents Wallboard
- Real-time per incident timeline wallboard
- Detailed and Summary "One-Click" reports
- Automated Scheduled Reporting and Emailing

## MODULES

Modules included in the UNITY CORE Module

### Incidents Management Module

Responsible for collecting data from the capture and dispatch interfaces and route data to any monitoring endpoint (Like Dashboards and Wall Displays)

The main ability of the module lies in the ability to notify the CORE and all or some of its connection endpoints about data updates virtually instantly.

### Notifications Module

Enables the CORE system to send SMS and email notifications, receive messages via hardware routes. It also manages the notifications of pre-set groups of people and far end devices like remote fire bells with their required protocols being programmable via the browser interface.

### Logs Module

Built as a tool to enable diagnostics of the system and its various components. Keep real-time logs of system events and automatically identifies problems within all the code running. A preventative module to ease the mind of the end users when trusting a system to always work.

### Redundancy Module

Listens and catches all requests and responses between the current active servers and redistributes the events to pre-defined hot-clone servers that is ready to take over at a moment's notice. Service interruptions will seem invisible as the end point applications automatically switch to a redundant servers.

This module also recovers data from redundancy points and notifies the endpoints to switch back once operation on the main server can resume.

These modules and the CORE server application is all that is required to setup a functional and operating call taking and dispatch center. Additional modules exists that expands the capabilities of the system.

## ADD ON MODULES

### Mobile Data Terminal Management Module

This module handles all communication between operators and MDT units. The module is responsible for collecting all data messages that pertain to connected devices and forwarding it to the incidents module for processing and event triggers within the software. In turn it also collects all responses/messages/instructions from the operator endpoints and forward it to the correct MDT unit. This module comes bundles with **UNITY EDMS™** if our MDT units are used to interface.

### MDT Applications

The MDT itself is a dashboard mounting tablet unit that runs Android/Linux as operating system. The main interface is a browser based GUI that runs on TCP/IP GSM but can be extended via hardware within the vehicle to employ least cost routing via existing infrastructure such as DMR radio networks and RAW GSM/GPS units by means of a hardware add-on.

*Features of the MDT Application*:

- Login/Logout Automated Rostering
- Instructions Receive and Respond
- Incident information and to-center progress updates
- MDT network text communication
- LoRa Network Communication
- UNITYChat (if the coms module is installed on the server)
- GPS Tracking

### GPS Tracking Module

Couples with the MDT Management module to report the locations of all GPS pings received from endpoint devices. This module can be installed separately and hosts its own API for external developers to use with their own systems.

### ILP GRID™ (Informal Location Protocol Grid)

This module enables the administrator to generate and define a custom grid over an informal settlement on the map and give each block a short alpha-numeric address. This grid becomes available via mobile or desktop browser so that members of the public can view their own generated address based on GPS coordinates.

During emergencies, residents of an informal settlements can give this ILP address and our maps will point to the exact block under that name.
The mobile interface allows for service staff to pin point the ILP address while out in the field to for instance mark homes with their corresponding ILP marker address.

### HOIF – Hospital Interface Module

An interface module to allow existing Hospital systems to report availability of:
Number of beds
Number of ICU bays
Number of trauma bays
Number of Operating Theatres
Number of ER Doctors on duty

### JOC Management Module

The JOC Module is a set of GUI interfaces that enables a group of people spread apart geographically to collaborate on planning and deployment of resources using Map Environments, Geo-fencing Tools and Quick Resource creation to represent real world resources being moved or actioned to task.

The environments allow each user connected to use the map to send suggestions to the other JOC users about where vehicles should be moved to, what staff should be active in created fences, and then using pre-defined structures enable authorisation to members of the JOC to approve suggestions made by the various parties.

Should it be that no overriding authorisation has been selected, all suggestions go to an interactive 'Quick Vote Box' that actions the suggestions with the most votes. Giving all members of the JOC equal say via vote of majority to action events.

All actioned events and instructions automatically get routed to MDT units and call center operators as live updates to their map environments in front of them.

### JOC Module feature shortlist

A Features shortlist for the JOC module:

- Incident Tracking and Reporting
- Advanced mapping and tools environment
- Collaboration between logged in members (Same Room, Same Network or Over the internet)
- Vote and Action Management System with overriding authority ability.
- News Feeds
- Weather Feeds
- Video Streams (If Command Center Module is installed)
- Social Media Streams (If Social Media Integration Module is installed)

### Social Media Integration Module

Another set of functions that enables operators to accept SMS, WhatsApp, Facebook and Twitter messages as incoming incidents and pass it off to dispatch. The SMI module can host an unlimited amount of accounts to interact with.

### Features of the SMI module:

Social Media/WhatsApp Message/SMS to Incident
Separate Filtering GUI to enable manual filtering of incoming messages
Social Media Tag/Search Algorithm tracking and display GUI
Social Media Interaction GUI to respond broadly to multiple accounts at once
Enabled to use Natural Language Processing to extract relevant data from messages

### IOT Integration Module

The internet of things has become a part of everyday operations and gives us valuable insight into our surroundings.

This module can interface with various types of IOT networks to deliver dashboards that can monitor anything from the fuel levels at depots to the weather conditions in specific areas.

The module allows the user to drag and drop sensor monitors of sensors that has been connected to the system via some or other network connection.

'Things' like Dam water levels, Water Tank levels and other related environmental 'Things' can give vital information to the Emergency Controllers to know if certain solutions are available to them during the span of an incident.

### IT Network Monitoring Module

This module does not necessarily fall into the same category as the other modules connecting to the CORE but performs various functions to enable IT or Ground staff about Network and Device health with real-time audible alerts and notifications via SMS, Email and other methods.

It tracks and reports Server, Computer and Router outages with programmable labels to know exactly where the 'disconnect' has happened.

The module hosts its own GUI and has a special user type available to restrict IT workers from affecting or view other parts of the system.

### Work Order Management Module

- Enables long term management of low risk incidents and also enables a separate MDT user interface for service workers on the ground.
- Operators can assign for instance a clean-up task to a service crew that could take days.
- Manages and reports any changes and tasks completed.
- Integrates natively with the notification module of the core to notify all parties involved of work orders being issued and when their status changes.

### Chained Redundancy and Backup Module

This module pushes data to a chain of redundancy "Clone" Servers which ports all events and records in real-time.

In the event that that the main server lose connection for any reason, the various modules connected to the core, will automatically fall back to the next server in the chain.

Once the main server recovers connection, it will first update itself with all new data and notify the other modules that it can be used as primary server.

This differs from the normal embedded redundancy measures by enabling automatic hot-switching between machines spread apart geographically.

## RTC Coms Module

This module enables Text, Audio and Video Chat across all GUIs and MDT's.
It establishes connections either over the Internet or via a Local Intranet.
All online users are able to use the facility to co-ordinate and lay out tasks needed to manage any incident as this module employs IO Signal **IO Signal Pooling™** to establish peer-to-peer communications.

The module can be deployed on a separate server for conferencing via the COMS module.

## Block-Chain Storage Module

Block-chain methods ensure that records can be verified for years after they were created.

The module collects all records and events in real-time and adds them to a secure block-chain file that can be backed-up and verified using the module tools.

The major benefit of this module is its ability to port the block-chain and any new additions to other connected systems using decentralized connections.

With the Client App enabled, all records generated across all connected systems/sites are consolidated and spread among its peers.

## Deployment Options

The system can be deployed as a cloud or localized solution. The CORE and modules may reside on the same hardware platform or can be split up into different regions of a network/VPN to accommodate redundancy rules as defined by the end user.

The free-form installation allows the system to chain CORE servers to alternate installations in order to duplicate all events and messages sent on the main system in real time.

In the event of hardware failure, the endpoints will automatically switch to the next server in line and use that to continue operations with virtually a seamless switch over.

## Security Protocols Used

All communications between modules, endpoints and operators are encrypted by HTTPS certificates as default.

Information can be transmitted on various network topologies without concern of espionage or sabotage of information with confidence.

## POPI Compliance

The system can be programmed to adhere to the POPI laws by destroying data older than a certain time frame automatically, but can also be switched off manually for sites that require long term or indefinite record keeping.

No data captured by the system phones home and stays within the operating network. It does not get parsed or captured for speculative or marketing purposes and actively guards personal information stored on the system with watchdog scripts that detect intrusion and manipulation attempts.

Self-protecting mechanisms will report any unwarranted actions taken or introduced throughout the system and the hardware connected to it.

## CORE REST INTERFACE API

In order to service the need to accept instructions and data from any external system, a multi-tier API is exposed to enable other developers to interface with the data on the system.

The Unity system exposes a native Socket Server, a webSocket server and a HTTPS POST/GET server as methods to interface with the data. This enables most languages and script engines to access and affect data.

The API is protected by manually issued ID tokens, to ensure that validated software can interface at that level.

Encryption on native sockets is disabled at this level, due to the range of communication methods and the need to simplify integration.

Alterations to the Protocol can be effected to accommodate any vendor requiring to encrypt data between their application and the Unity servers.

# Disaster Management Module

## Overview

The main purpose of this module is to serve graphic interfaces to facilitate the data capture of risk assessed areas and visually present them to endpoints connected to the UNITY core server, using a map platform.

Added features include system wide notification blasts and automated real-time incident risk analysis to keep your people informed of the possible hazard areas field staff could face during an incident.

## Software Sections

The module comprises of the following sections:

- Risk Assessment Capture
- Automated Risk and Vulnerability Assessments
- Administration
- Data Sharing
- Database REST Interface
- User Management
- Risk Alarm Management
- Web Host

## Risk Assessment Capture

The capture screen presents a desktop or mobile version to the users and give them the following facilities:

- Select and complete customized risk assessment forms.
- Attach media to each assessment
- Draw risk area boundaries on a map
- Create GPS Markers
- Edit/Remove Assessments (created by user only)
- Search risk assessed areas within a map view.
- Map viewer with media playback

## Automated Risk and Vulnerability Assessments

The module server constantly watches the core server for the type of incidents that gets registered. Rules can be established to automatically mark an area as a hazard if more than a certain amount of incidents has occurred in the same geographic location. Furthermore, you can set Vulnerability

marker distances to indicate what geographic area outside of the risk area can also be affected by an auto-detected risk.
Example: A fire risk can be marked as a single building but the vulnerability area can be 500m in all directions around that building it. The level of vulnerability is set by checking if objects like fire hydrants exist within the vulnerability area of a risk.

Over time this module can indicate for instance an increase in crime related incidents in a particular area and help other government departments, like the police, to target these areas during protection duties. Or in the case of fires, help with preventative planning measures.

Administrators are notified each time the module has auto-identified a hazard area. These areas can be managed by admin users only.

## Administration

Gives system administrators advanced configuration tools to change how the module works and what questions need to be presented to the data capturing GUI.
Available facilities:

- Risk Assessment Approval
- Edit/Remove Risk Areas (Created by anyone)
- User access controls
- Add/Edit/Remove data sets (risk types)
- Map viewer with risk area overlays
- Issue system wide information blasts
- Set alarm triggers per risk type / sub type
- Questionnaire designer per risk sub type

## Data Sharing

This portion of the software is fully automated. It manages communication between the UNITY core server and the administration module so that information can freely flow between the database, call taking, dispatch and mobile terminals. It is also the module that enables this software to run independently or as part of the core.

### Database Interface

This is a REST API that is open to external interrogation to share risk assessed areas and associated data with third party applications. API documentation is safe guarded and only handed out at the request of our clients.

## User Management

This module uses the UNITY core to authenticate user logins. It separately gives access to users that is allowed to capture on/administrate the disaster management module. Any other module/user can only access the risk areas for viewing.

## Risk Alarm Management

This section of the module listens in on all new incidents created on the UNITY core and checks to see if there are any risk areas close to the location of the incident. If the module determines that there are risk alarms, a notification will pop up on each terminal currently working on or viewing the incident on the system.

Alarm trigger distances can be configured for each risk-incident type correlation.

### Example:

```
Trigger alarm WHEN (House Fire) IS CLOSER THAN (500m) FROM (CHEMICAL FIRE
HAZARD)

Trigger alarm WHEN (House Fire) IS CLOSER THAN (1000m) FROM (DYNAMITE FIRE
HAZARD)

Trigger alarm WHEN (MVA) IS CLOSER THAN (200m) FROM (CONGESTION TRAFFIC
HAZARD)
```

Each of these trigger rules can send a specific programmed response to the dispatcher/call taker/viewer currently working on the incident that triggered the alarm.

## Web Host

Responsible for accepting and storing file uploads and serving the GUI components to browser endpoints. This is a fully automated and invisible function that does not require any maintenance from your system administrators.

## FACTS

- Designed, Developed and Manufactured in South Africa.
- Tailor made to your specific requirement at no extra cost.

## PRODUCT LIST

- Disaster Management/Emergency Control Centre Equipment and Software
  - Tornado MRCC Multirole Communication Systems
  - Storm 16 Communication Systems (small 16 circuit application)
  - UNITY Emergency and Disaster Management Integrated software

- Repeater Management
  - Audio Conference Bridge equipment in 1U and 3U format
  - 4 Wire E&M to Standard Telephone Port Line Interface
  - PABX to 4 Wire E&M Interface
  - Repeater Alarm and Diagnostic Control Equipment with analog voltage measurement

- Channel Bank Replacement Equipment
  - The LBU700 system interfaces a 2 Mbit CAS E1 link to analogue 4 Wire E & M circuits and or serial data links.

- Specialised Line Branching Equipment
  - The OWLIII Unit is specialised for railway backbone radio communications. Each 4-port unit contains the circuitry for both audio and signaling.
  - The LBU100/200 Line Branching system is a 1U rack based system that allows 4 port 4-Wire E & M line branch cards and Ring Down cards to be installed. The rack provides power and 4 wire E & M connections to the cards plugged into the rack.
  - The LBU500 Line Branching / Conferencing system interfaces a 2 Mbit CAS E1 link to analogue 4 Wire E & M circuits with built in LBU100/200 features.
  - The LBU600 system provides a housing for a number of E1 conferencing cards with their redundant backups and an automatic changeover card to switch between the primary and backup cards

- General Communications Equipment
  - Audio Attenuators fitted on Krone Blocks
  - Interposing Relays on Krone blocks
  - Serial Port Multiplexer interface in 3U rack format.

- Software
  - Call Centre Management Dashboards/Wallboards
  - Fire and Rescue (ReSponz)
  - Client Database Management
  - Security Alarm Management
  - System Administrator Dashboards
  - VITA IT Infrastructure Monitoring and Administration

- Specialised software
  - Software developed to client specification.
  - UNITY EDMS – Situational Awareness Call taking and Dispatch Incident Management System