Crisis Management & Situational Awareness System

An integrated approach

Prepared by:

Mike Morrow
President
mmorrow@emergeo.com

Mark Bachoura
MEA Regional Manager
mbachoura@emergeo.com

UAE Office:+971 2 6580642
Website:
http://www.emergeo.com
Crisis Management & Situational Awareness System

Background

A quick and efficient response to an emergency—whether a natural disaster, a man made event, or an act of terrorism—is only possible when professional safety managers and first responders have immediate access to the essential information and tools they need. Ready access to that information comes only through adequate planning. The proper tools and systems to provide this information must be in place before the crisis strikes.

With corporate assets including facilities, personnel, infrastructure and equipment typically being scattered over large geographic areas, and the hazards that some petro-chemical and natural gas assets may pose to local populations, it becomes difficult to monitor, manage and protect those assets and vulnerabilities. This problem is further compounded by the fact that organizations are currently running disparate emergency, security and monitoring systems with no easy way to tie this data and information together.

This calls for implementing a “common operating platform” that fuses critical data from disparate systems that may already be in place or may be implemented in the future. This new common operating platform must also be designed to be used for day to day operations as well as during an emergencies to ensure the systems are continually ready for use, are up to date and familiar to operators.

EmerGeo will provide this “common operating platform” and technology integration services to protect employees, assets, infrastructure and the public from any type of emergency.

Executive Summary

As a leader in crisis management and situational awareness since 2003, SIS EmerGeo Solutions proposes to implement a proven solution to reduce the probability and adverse consequences of an incident or crisis. Fusionpoint is an easy to use, web-based software application that supports communication, collaboration and coordination within and between emergency operation centres (EOCs) and the field.
Project Rationale and Objectives

The goal of this crisis management system is to:

- Prevent a crisis through an integrated detection and early warning capability;
- Reduce the impact on operations and human resources by speeding response and improve coordination and communications among decision makers;
- Enhance preparedness with exercise simulation features and quick access to plans (SOPs);
- Ensure interoperability amongst multiple locations using a centralized or distributed system architecture;
- Reduce financial losses and liabilities through pro-active and rapid response capabilities; and
- Integrate into daily operations and systems.

Introduction

SIS EmerGeo Solutions, Inc. is a private company based in Vancouver that has been developing emergency management software solutions used for disaster and major event preparedness, response and recovery operations since 2003. The permanently staffed office in Abu Dhabi, UAE, provides both Arabic and English support and services complimented by both Business and Technology Partners around the world.

The proposed Fusionpoint™ web portal technology and integrated emergency mapping applications are used by emergency and security personnel to facilitate emergency communications, alert on actual or potential emergencies, maintain a real-time common operating picture, log and manage response activities and resources, support emergency planning processes and provide an integration platform to fuse critical data from customer’s existing systems into a customizable simple web dashboard.

EmerGeo’s software is commercial off the shelf (COTS), ensuring it is maintained and enhanced in a cost effective manner, and can be used ‘as is’ or integrated with customers’ existing systems. By leveraging the latest open web standards, the software brings together critical data from dispatch, crisis management, GIS mapping, vehicle tracking, camera and other third-party systems, providing...
a real-time common operating picture, an intelligent alerting capability and an integrated set of
decision support tools (e.g. hazard models).

Solution Overview

EmerGeo has designed its Fusionpoint solution to support all phases of emergency management. Our Framework for Resilience is based on the Six Objectives of Emergency Management and results in a comprehensive emergency management program. Fusionpoint provides tools to support each Objective described below and supports a continual improvement program.

Regardless of which Emergency Management framework or standards an organization chooses to follow, there are a common set of requirements that need to complete during the Emergency Management lifecycle. Within each of these requirements are a set of key processes that need to be defined, captured/documentcd, trained to and utilized during various stages of the lifecycle.

The Fusionpoint software supports this process in the following ways:

- **Assess Risks**
  - **Hazard Models** – with both integrated chemical plume and earthquake models as well as interfaces to third party flood and bomb blast models, Fusionpoint will support Hazard Risk Vulnerability and Capability Assessments.
- **Plume Model** – two plume model plug-ins are available:
  - **ALOHA® Interface** - ALOHA (Areal Locations of Hazardous Atmospheres) is a computer program that predicts how a hazardous gas cloud (footprint”) might disperse in the atmosphere after an accidental chemical release. The ALOHA program is used to create a footprint file, which represents the area within which the ground-level concentration of a pollutant gas is predicted to exceed your Level of Concern (LOC) at some time after a release begins. You may specify up to three LOCs in ALOHA, which will allow you to overlay up to three footprints on EmerGeo maps. ALOHA can predict rates of chemical release from broken gas pipes, leaking tanks, and evaporating puddles, and can model the dispersion of both neutrally-buoyant and heavier-than-air gases. ALOHA is designed to run on standalone PC’s and, optionally, can accepts weather data transmitted from portable monitoring stations connected to a local PC.
Emergency Response Guidebook (ERG) - The North American Emergency Response Guidebook 2010 (ERG2010) is a widely used hazardous material reference guide that provides an index of hazardous materials and a Table of Initial Isolation and Protective Action Distances. It is primarily a guide to aid first responders in (1) quickly identifying the specific or generic classification of the material(s) involved in the incident, and (2) protecting themselves and the general public during this initial response phase of the incident. EmerGeo uses the chemical data and recommended distance measures from the Guidebook to generate an overlay (layer) that can be displayed and queried on maps to quickly identify potential vulnerabilities and impacts to people, property, and the environment.
Mitigate Risks
  - An Early Warning System – The primary purpose of Fusionpoint’s alerting system is to issue relevant and timely alerts to the right emergency personnel when pre-determined incident types occur and/or when physical areas or assets are threatened.

Immediate Protective Actions

Fusionpoint Alerting engine sends description and location of event to a pre-designated crisis management team. They login to Fusionpoint for details and initiate public (mass) notification instructing people in the area to shelter in place.

- Alert Email Sent to Crisis Management Team & Local Authority
- Immediate Actions Taken to mitigate risk to people, property, environment

Incidents → Alerts → Email/SMS (alert subscribers)
• Plan for Response
  
  ○ Access online Standard Operating Procedures (SOPs), Checklists and Emergency Response Plans (ERPs)
  
  ○ Access online Forms (e.g. ICS Forms)
Configure Fusionpoint’s Forms

> Configure Fusionpoint’s Forms

- **Real-time Situational Awareness** – a web dashboard with real-time event feeds and logged data, situation maps based on ESRI, Google, Bing or Open Street Maps, Live CCTV camera(s) in windows can be dragged-dropped into position on a users’ dashboard or viewed real-time in pop-ups on maps.
Resource Status Displays – a Resource Manager module displays the status, current quantities, locations, owners, and other details of any type of resource: personnel, equipment, supplies, etc. Deploy resources and plot locations on maps for others to see – while Fusionpoint maintains a historical log record of these deployments.

A multi-window display can be configured to monitor multiple stakeholder resources, requests and issues.
- **Simple and preset log entry** – Predefined Log entry tailored to customers’ needs. This speeds up adding and sharing any logs. The log tab has geospatial mapping capabilities, complete control on visibility and tasking and supports real live updates that are time and source stamped.

![Log Entry Example](image)

- **Plot/Draw to Create Situation Maps** – plot incidents or resources by address, geocode or even landmark. Use simple drawing tools to sketch out what is happening on the ground, such as establishing a hot zone or critical areas of interest, then save and select who sees this drawing (controlled publishing of map layers).
Area secured due to chemical release at plant A.
- **Resource Management**—Fusionpoint Resource Manager displays the status, location, remaining quantity, specifications, etc. for any type of resource: personnel, equipment, or supplies. A deployment tool can be used to assign/deploy resources and plot current location on the Fusionpoint map.
AVLS Integration – configurable interfaces to 3rd party AVLS systems to fuse vehicle and incident data into a common operating picture. Alerts can be issued if vehicles enter restricted areas or 'hot zones' around incident areas that are drawn using Fusionpoint mapping.
Fusionpoint can be configured to send messages to vehicles in proximity of the incident (via AVLS system) and clearly displaying access and egress routes, staging areas, safety areas, etc.

- **Call Centre Integration** – Fusionpoint Logs can be used to enter, track and communicate call information. Optionally, a third-party Call Centre application can be interfaced and data displayed in Fusionpoint Logs in real-time.
Workflow Communications – communicating the right information to the right people at the right time in a controlled and secure manner.

More efficient data sharing is achieved by sharing data once with all... rather than once with each.

- Simple Configuration Tools – to ensure the software can be adapted to your concept of operations and integrate with your data and systems, simple software configuration tools are available to customers' Administrators.

- Fusionpoint Administration Toolbar

- Adding Map Layers
- **Adding Map Sources** - dynamically change base map – Google, Bing, Open Street Map or customer’s own GIS maps from ESRI ArcGIS

![Select Map Type](image)

- **Adding Realtime Data Feeds**

![Add Feed](image)
Building and Configuring Dashboards for Roles/Agencies

- **Plan for Recovery** – capture and visualize damage assessment reports and track progress of restoration activities and tasks through Fusionpoint’s mapping application. As work is completed and information is updated, Fusionpoint maintains a permanent historical record of events for audit and legal record.

- **Ensure Preparedness** – train and exercise personnel and equipment using Fusionpoint’s simulation and virtual operation centre features. Provide a single point of access to Standard Operating Procedures and site plans.

- **Evaluate and Renew** – Fusionpoint automatically maintains a log record of all entries and edits in the system. Such audit logs can be reviewed and analyzed post event or exercise to identify areas for improvement and, if applicable, new hazards requiring adjustments to plans.

- **Daily Use Applications** - the application can be tailored by customers to create many solutions for daily operations, including:
  - Identifying potential disruption of supplies;
  - Receiving alerts to potential or actual incidents;
  - Communication logs;
Assigning and monitoring various tasks from operational, support, resource allocation, logistics amongst many others;
- Modeling of toxic chemical (aerial) plumes;
- Maintaining standard guidelines for physical security;
- Integration with surveillance and monitoring equipment and processes;
- Vulnerability planning and risk reduction;
- Locating and distributing resources for any task thus optimizing logistics operations and reducing time for action completion; and,
- Plotting and logging regular safety maintenance of pipelines and facilities.

An Integration Platform - use of an integrated monitoring and response system can reduce the overall impact of an event by shortening the response and recovery cycle, supporting more effective communication between cooperating first responders, and by tracking the cost of managing the incident to enable quicker reporting and shorter cost recovery cycles.

Solution Simplicity & Support
EmerGeo understands the importance of ensuring the application is simple to use and intuitive. The guiding design guideline for Fusionpoint is an average non-technical operator can use Fusionpoint with only 10 minute orientation and technical staff using it with little or no training at all. The web portal is easily tailored to each emergency role to ensure the right level of detail and tools are delivered to each group. Dashboard layouts and displays can be adjusted ‘on the fly’ without programming and disruption.

Importantly, the software is backed by onsite local (Arabic and English) support as well as 24x7 online technical support.
Advanced Technology
- Microsoft-based and SOA architecture
- Leverages customers’ investment in existing technologies
- Adaptable to existing and future emergency management system (Concept of Operations) and technologies
- Supports English and Arabic with bilingual implementations already in place
- Highly configurable by customers according to any workflow
- Easy and fast deployment

Multi-Operation Rooms Interoperability
Fusionpoint allows for the multiple operation centers to operate independently and at the same time be able to communicate full or partial information to other operation centers or personnel. The communication flow can be fully controlled, single or bi-directional and for a limited or infinite period of time. Based on a user’s access level, information can be pulled or pushed between operation centre servers and alerts and actions can be taken accordingly.

Portable and Mobile Emergency Operations Centers
EmerGeo supports emergency operations in mobile environments. Mobile operations, especially in oil and gas fields, are critical because the off-site locations can be remote and there may be limited access to the network via 3G or Satellite.

Part of the resiliency framework is achieved by having the map data locally stored. Essentially, these mobile operation centers can operate as fully functional and standard operation centers and will communicate to the Main Security Operations Center when there is a network connection.

These mobile operation centers also do not overload network bandwidth because they only share updated information with the Main security operations Center.
This is considered best practice because it allows for operations to be deployed from any remote location using the same ERPs and SOPs as the corporate headquarters.

**Benefits to Implementing EmerGeo Fusionpoint**

- **Tool for monitoring and optimizing day to day activities** – By incorporating GIS and other types of Maps, Dispatch, CCTV, AVLS amongst several other technologies, EmerGeo’s FusionPoint allows for day to day activity coordination. This can, and is not restricted to, security operations, tracking cars, finding closest asset to a point of interest, shortening response time to a standard procedure. By harnessing the capabilities of all its technologies in one single platform, customers are able to optimize logistics from a security operations point of view.

- **Advanced Tool, Simple to use for crisis and disaster management** – EmerGeo Fusionpoint is a proven software tool that is used all over the world for crisis and emergency management. The strength of software lies in its advanced integration engine while providing simple and intuitive user interface. This is a crucial during a crisis where the pressure and the loads of information coming in can act as a deterrent to following SOPs and managing the crisis appropriately.

- **Role Based Security Platform tailored to Customers’ Workflows** – With Single Sign-On (SSO) activated, users in a group will have their own access privileges, functions and roles. Tasks can be monitored, information filtered and resources controlled based on customers’ security model.

- **Advanced communication and information sharing platform** – One of EmerGeo Fusionpoint’s main strengths lies in the controlled information exchange between agencies or operation centers. This software is driven to support multi-agency and multi-operation center interoperability. The type of information, level of access and duration of any information exchange is controlled appropriately.

- **Information logging and full visibility on actions** – All actions and information on Fusionpoint are stored, user signed and time stamped. This allows users (with the correct access) to revisit certain events and evaluate certain metrics in order to capture any potential for improvement in operating procedures and response.

- **Support for different kinds of operation centers** – From Main Security operations centers, to Mobile command vehicles as well as portable Emergency operations centers, customers are able to leverage different connection and communication types to ensure that any situation or incident is dealt with appropriately and the parties maintain situational awareness. The solution proposed by EmerGeo will support full type integration with all kinds of operation centers and connections and will offer an extra layer of resiliency via the mobile Smart Client.
- **Continuous Development program** – A critical capability of Fusionpoint is that other than complete user and administrator training by crisis management experts, we offer 24x7 support as well as local support for simulations, exercises or live events. EmerGeo also facilitates seminars, private and public, in collaboration with Emergency Operations Center experts to discuss best practices and lessons learned.

**RESULTS:**

- Protecting our customers’ people, infrastructure and resources by enhancing crisis and emergency preparedness and response capabilities throughout entire area of operations.
Track Record of Success

Fusionpoint has been deployed in many government and industry organizations, both large and small, around the world and has been disaster tested since 2003. Over the past 6 years, EmerGeo’s business in the Middle East, specifically the UAE, has grown exponentially. The system was first installed in NCEMA and ADNOC in 2006 and has grown to include several OPCOs and government organizations including critical UAE clients. EmerGeo’s reputation in the UAE is based on a proven record of success and excellent support. Some of the high profile worldwide clients include:

<table>
<thead>
<tr>
<th>NORTH AMERICA</th>
<th>MIDDLE EAST</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bruce Power (ON)</td>
<td>Abu Dhabi National Oil Company-ADNOC (UAE)</td>
<td>Emergency Management Australia</td>
</tr>
<tr>
<td>City of Sudbury (ON)</td>
<td>ADMA and other OPCOs operating under ADNOC (UAE)</td>
<td>Gold Coast City Council</td>
</tr>
<tr>
<td>City of Vancouver (BC)</td>
<td>Abu Dhabi Police (UAE)</td>
<td>Western Australia Fire &amp; Emergency Services</td>
</tr>
<tr>
<td>Deutsche Bank (NY)</td>
<td>National Crisis &amp; Emergency Mgmt Authority (UAE)</td>
<td></td>
</tr>
<tr>
<td>Defence Research and Development Canada (ON)</td>
<td>UAE Ministry of Interior (UAE)</td>
<td></td>
</tr>
<tr>
<td>Essex County (ON)</td>
<td>Yas F1 Operations Room (UAE)</td>
<td></td>
</tr>
<tr>
<td>Justice Institute of BC – Simulation Lab (BC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Province of Manitoba Emergency Measures (MB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Diego Gas &amp; Electric (CA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State of Arkansas (AR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Windsor (ON)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wake County (NC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterloo Region (ON)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We will provide customer references upon request and can arrange site visits to several Emergency Operations Centers.

Contacts

MIDDLE EAST & AFRICA
EmerGeo Software Solutions Middle East LLC
P.O. Box 114809
Abu Dhabi UAE
Phone: +971 552275667
Fax: +971 2 6581967
Email: info@emergeo.com

REST OF WORLD
SIS EmerGeo Solutions Inc.
1001-1166 Alberni Street
Vancouver, B.C. V6E 3Z3
Phone: +1 604 336 8120
Fax: +1 604 623 4837
Email: info@emergeo.com