



Smart Public Safety Emergency Planning and Response Solutions

A White Paper from Frost & Sullivan in
Conjunction with Hexagon Safety & Infrastructure

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50 Years of Growth, Innovation and Leadership

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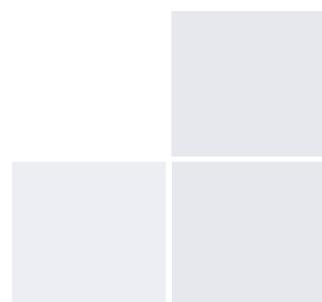
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EXECUTIVE SUMMARY

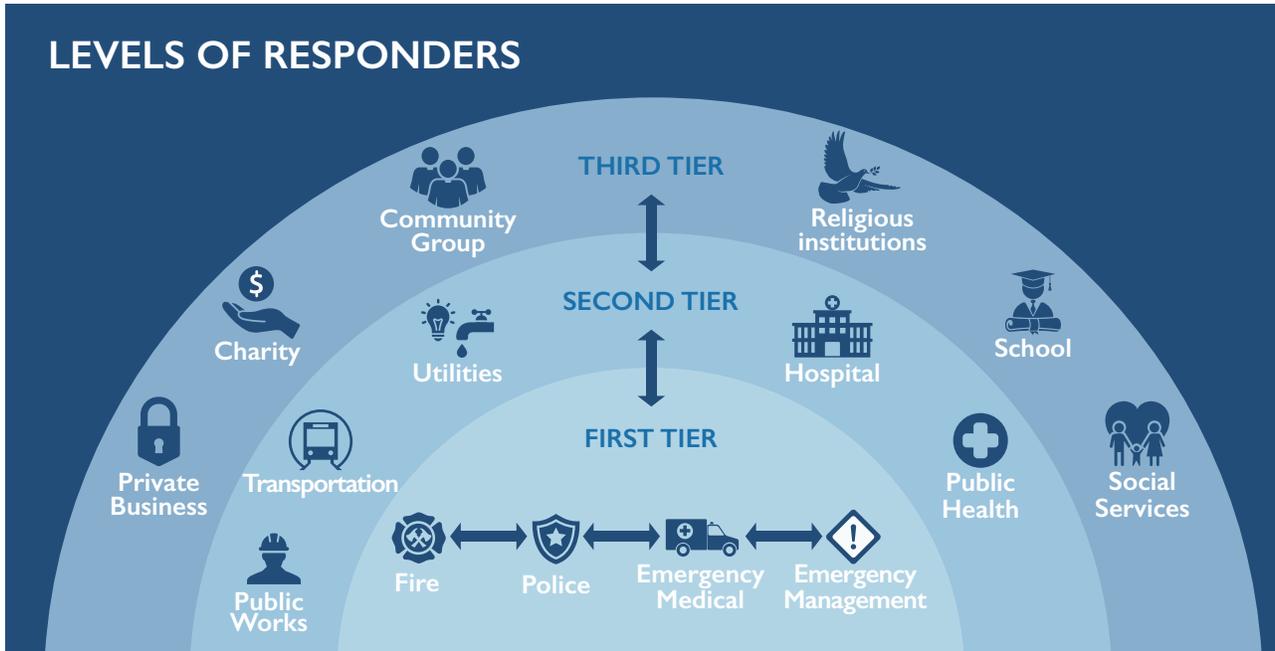
Planning for and responding to large-scale events and emergencies has never been more complex and unpredictable. National, state, provincial, and local organizations tasked with public safety must now contend with coordinating activities for entertainment events, natural disasters, industrial accidents, environmental emergencies, power outages, cyber-attacks, terrorism, and more. Municipalities are under increasing pressure to present their city as a safe and stable place for business and tourism. Accordingly, continuously improving major incident management is a high priority for all communities, due to the potential for loss of life and damage to property, the economy, and the environment.

For example, extreme weather events, including wildfire, accounted for roughly \$880 billion in property losses in the US alone over the past decade, according to US National Oceanic and Atmospheric Administration (NOAA) reports. After planning and training, a tool to immediately transition to incident response and recovery helps to save lives and mitigate damages when incidents do occur.



Planning for major events and emergencies require public safety officials to work with a broad team, including secondary and tertiary responders, such as utilities, health services, and voluntary and community groups. Public safety organizations at all levels continually look to improve the effectiveness and operational value of their incident management capability.

Incident managers seek a “force multiplier” that can significantly enhance the situational awareness for the entire team. Each team member needs the right information at the right time, so that resources can be deployed as effectively, efficiently, and safely as possible. Public safety officials need technology tools that facilitate advance planning and training, information sharing, and communications. In addition, the tool must help manage the entire emergency operations life cycle, integrate with existing systems and tools, and be easy to use and cost effective. Software solutions that address this set of needs are in high demand.



PART I: INTRODUCTION TO STATE & PROVINCIAL, REGIONAL, AND LOCAL PUBLIC SAFETY EMERGENCY MANAGEMENT

One of the biggest challenges for emergency management personnel is the inability to efficiently share information and coordinate actions, both within and across organizations and jurisdictions. Around the world, standards like the US Federal Emergency Management Agency’s (FEMA) National Incident Management System/Incident Command System (NIMS/ICS) are designed to provide a common framework for cross-agency resources coordination.



Within this construct, however, operational gaps remain as communications architectures, software applications, and network devices are selected and implemented by individual agencies. Because of this fragmented strategy, communications and data sharing is a recurring issue, and it is often difficult for public safety leaders to plan in advance, access data, and conduct efficient training for their teams. Challenges in maintaining current situational awareness, common understanding of objectives, chain of command, and other operational tasks remain. Additionally, the ability to assess

post-event operational histories in a comprehensive way, and the NIMS requirement to integrate lessons learned into future plans, remains problematic.

A high priority for public safety organizations is to be ready for all events, planned and unplanned. In order to achieve this, basic responses need to be ready in advance and realistic scenario and practical training completed for all personnel. Planning, developing standard operating procedures, and sharing contact information ensures that the best

use of limited resources will be made, especially if these preparations are able to adapt to changing situations on the ground. Planning and training in advance can help reveal any potential problem areas and operational gaps that can occur when independent local agencies work together across operational and jurisdictional borders. Tools that enhance the ability to share information and coordinate actions (build a common operational picture and action plans) and efficiently include the entire life cycle of emergency operations help identify and mitigate any hidden problems.

Public safety best practices include comprehensive planning and response applications that provide a high level of situational awareness and coordination functions to improve collaboration without changing the day-to-day systems and processes of team members. The best of these applications have a flexible architecture for easy implementation, provide a complete event history to enable post-event reviews, enable training and simulation, facilitate data visualization and predictive analytics, reinforce network security, and are cost efficient.

PART 2: OVERVIEW OF AGENCY CHALLENGES, GOALS, AND SPENDING TRENDS FOR EMERGENCY MANAGEMENT PLANNING APPLICATIONS

Public safety organizations face several challenges on the road to improving existing planning and response technology. The first pain point for any agency is the total cost of ownership to maintain their existing systems and/or add a new capability. Second, a major incident management solution that enables and improves the ability to manage the entire life cycle of emergency operations is necessary. This will ensure continuity, completeness, and visibility of records while maintaining a full operational history.

State and local agency goals for their planning and response technology tools focus on continuously improving the ability to meet the FEMA core capability goals:

- Prevention & Protection
- Mitigation
- Response
- Recovery

Emergency management planning application technology must have the ability to manage the entire life cycle of emergency operations, and improve cross-agency and field communications.

US Federal Emergency Management Agency (FEMA) Capability Targets

Investment in first responder command and control technologies is growing. Global spending for public safety incident management software tools was estimated at \$6.75 billion for 2016, with a projected growth rate of 6% through 2026. These investments include service costs, data storage, video management, control room hardware, and all software costs.

The ability to conduct realistic training for all levels of public safety officials and across skill sets is vital for effective planning and emergency response. Planning and response solutions that enable training are vital because they save time, effort, and money. Agencies sometimes overlook the importance of planning and training, not just on physical equipment, but on the development, communications, coordination, and execution of plans within the four capabilities.



A good planning and response solution is the same for day-to-day use and for incident training; is easy to use, intuitive, and menu-driven; reduces training time; enhances workflow; incorporates lessons learned; and helps create realistic training scenarios. A planning and response tool that enhances day-to-day operations and planning is the most efficient.

As agencies invest in newer technologies that provide more data across a range of video, text and voice sources, it is even more important that they have the right software to store, analyze, and make sense of this information in times of emergency and disaster so that they can execute the most efficient and effective response with the tools they have available. Local communities; county, state and provincial agencies; and federal governments in North America and around the world are adopting new products and features that embrace the existing IT ecosystem, and are interoperable, scalable, upgradable, and affordable.

PART 3: EMERGENCY MANAGEMENT SOLUTION CASE STUDIES

Case Study 1: Switzerland Federated Approach – Deploying a Common Incident Command System

What was the challenge?

Establish a powerful incident command system to enable public safety organizations from multiple jurisdictions to collaborate on major events and incidents that cross borders to support fast and efficient event planning and response, and also harnesses the collective capabilities of diverse responders, while providing a single source of information.

Why was it a challenge?

Major incidents do not align with jurisdictional boundaries or individual public safety functions, so improved cooperation and incident management across the various police, fire, EMS, and Swiss Rail safety and security authorities was necessary.

What was implemented?

A multi-client and scalable state-level incident command system that supports local as well as cross-jurisdictional planning and operations. The system covers all public safety functions in the sub-region and cross-border areas. Up-to-date task lists and map-sharing to enhance the ability to define and monitor resources and operations were put into effect.

What was the outcome?

Operations were harmonized through joint processes and scenarios. The system structure allows all organizations access to the central server, providing availability and user-friendliness that support complex joint incident management for operations ranging from individual Cantons, to the entire east of Switzerland, and even cross-border operations with Lichtenstein. Operating a common platform also allowed fast and effective escalation from local to regional command.

Case Study 2: Alberta Canada Wild Fires – Prepare, Plan, Train for Events in Advance

What was the challenge?

Crews fighting the fires operated through different command centers making effective coordination and communications difficult. Conducting relevant and effective planning for fire season, and gaining insight on the progress of training for both firefighters and incident managers, is a continuing challenge. The challenge is to mitigate and reduce casualties and property damage through evacuation planning and resource coordination.

Why was it a challenge?

With an extremely large geographic area to cover; the need to consider managing multiple ongoing and new fires, and a wide variety of jurisdictions and organizations with limited resources and inconsistent event terminology, it is very challenging to prioritize and coordinate efficient planning and response training.

What was implemented?

Enhanced emergency planning and preparation to improve regional collaboration and resource sharing. A training program that emphasized a map-based data approach that included factors such as weather dryness levels, potential lightning strikes, and wind patterns. Likely evacuation zones and approach routes were created, and reports could be quickly distributed and updated. An organization's Incident Command System (ICS) often provides an effective platform from which to link additional and specific training and other planning tools.

What was the outcome?

Alberta's adoption of a new Incident Command System has enhanced communications and resource management under a unified command. Emergency preparedness managers improved their ability to schedule and conduct needed training for local agencies and volunteer groups in areas that were anticipated to have the most immediate need, thus improving preparedness, incident response, mitigation, and recovery operations.

Case Study 3: German Federal Police – Share Information and Coordinate Actions

What was the challenge?

One of Europe's largest police forces needed to improve management of planned and unplanned major events, such as the recent G7 Summit in Bavaria. A software solution that could integrate seamlessly with their existing Computer-Aided Dispatch (CAD) suite and facilities was required.

Why was it a challenge?

As a joint operation, a solution was needed that could easily integrate the German Federal Police and the local Bavarian State Police. How could planning and operations be coordinated using the existing CAD systems, support multiple field offices, enable mobile and dispersed operations, and be cost efficient?

What was implemented?

A web-based, flexible architecture to provide a common operational picture for management functions and operational decisions during an emergency was put into effect. The scalable software solution presented a single source of information alongside standard dispatch workflows. Enhanced security features that utilize the existing IT environment were introduced.

What was the outcome?

Emergency preparedness and response operations have improved, especially the ability to share information, log events, visualize and analyze spatial data, and maintain common understanding of operations and tasks across disparate organizations.

Case Study 4: 2016 Olympic Games, Rio de Janeiro, Brazil – Manage the Entire Life Cycle of Emergency Operations

What was the challenge?

Ensuring the safety and security of athletes, dignitaries, and tourists. How can emergency response plans and resources be prioritized to cover multiple sites and venues with multiple events occurring simultaneously?

Why was it a challenge?

The Military Fire Department of the State of Rio de Janeiro (CBMERJ) had never had such a large-scale and high-profile event to manage, and there were specific criminal threats to consider. A planning and response solution that could be quickly and easily implemented while controlling costs was necessary.

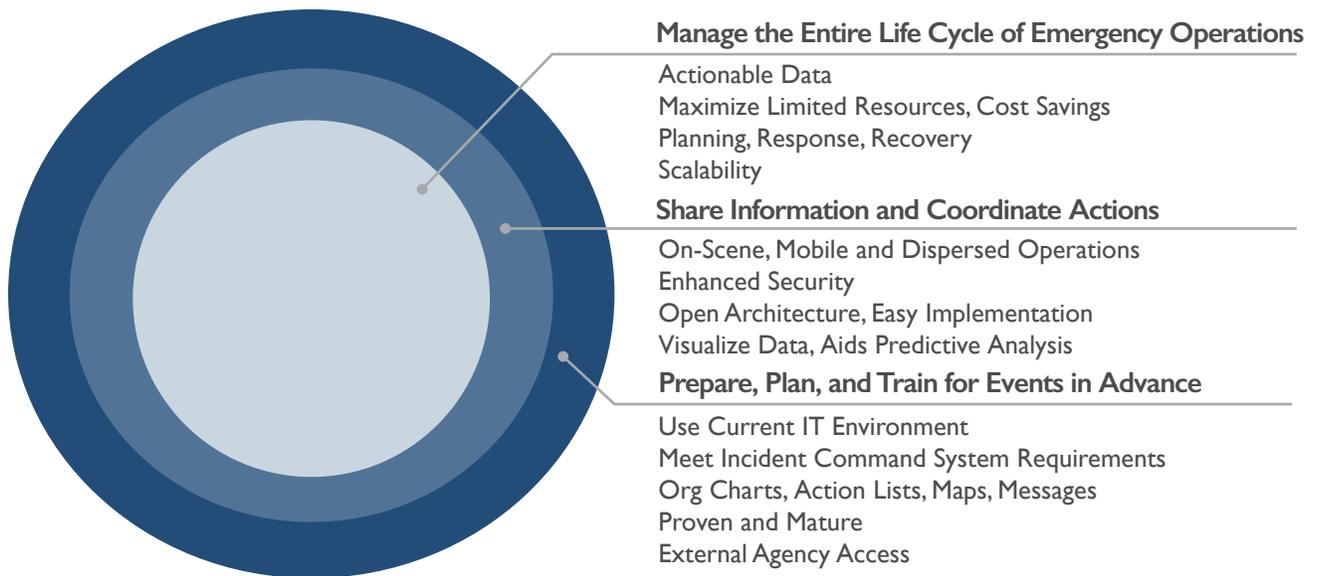
What was implemented?

CBMERJ deployed a suite of public safety and geospatial solutions to provide situational awareness, coordination, and reporting for commanders. Coordination with emergency services, police, and event staff was emphasized.

What was the outcome?

CBMERJ was able to efficiently manage the entire continuum of public safety for the Olympics. The solution enabled planning and preparedness, efficient responses to the few incidents that arose, and continued operations. The lessons learned were then leveraged to improve next-day operations.

State, Provincial, and Local Public Safety Emergency Management



PART 4: INTERGRAPH PLANNING & RESPONSE SOLUTION EVALUATION AND ASSESSMENT

Many public safety and emergency planning organizations around the world have found that the Intergraph Planning & Response application tool is a straightforward and uncomplicated way to meet core capability planning goals and incident command system (ICS) requirements. It is an indispensable software tool for pre-planning and managing events and incidents. With the mature, yet innovative tool, organizations with a wide variety of mission tasks and at all operational levels currently manage the entire life cycle of operations—from planning to response to recovery. The Intergraph Planning & Response software easily integrates with existing IT infrastructure and applications. A special feature of Intergraph Planning & Response is its comprehensive scope that offers continuity between planning and operations, and ensures all information is linked and current. The application is simple to use, intuitive, menu- and template-driven, and previous event logs/lessons learned can be repurposed to develop or modify future plans and conduct realistic training at any time. An inherent calendar is used to deconflict resources and plans. Existing SOPs and other required documents can be added as required.

Intergraph Planning & Response is different from other public safety application tools. The emphasis is on enhancing the ability to conduct prior planning, and, once an incident occurs, maximize the ability to seamlessly communicate and collaborate. Everyone from incident commanders to first responders on scene, to sister agencies and diverse

external support resources can be kept informed with accurate and actionable information and communications. The application is a single unified solution for all organizations, and provides for standard and unique requirements at all operational stages. It is scalable; provides contact lists, org charts, history logs; and highlights essential information and task priorities while eliminating manual entries and duplication—all of which make for precise communications, planning, faster incident response and recovery, as well as training. Integration with Intergraph Computer-Aided Dispatch or other CAD platforms enables agencies to create or add information from either system, avoids redundant or missing actions, and provides a full record of operations, which is essential for post-event review. ICS standards and protocols provide a framework and model within which Intergraph Planning & Response can be adapted.

Intergraph Planning & Response is widely used, with a variety of global public safety organizations with diverse mission responsibilities currently improving their performance and productivity, and reducing the cost of ownership. Advanced performance enables users to determine the location and status information of all resources and supports individual or multiple agencies, jurisdictions, and dispersed operations, including on-scene or site command, and Tactical or Emergency Operations Centers.

Intergraph Planning & Response is web-based and supports mobile access. Additional particular aspects of the application include access to pre-determined objectives/tasks/checklists, organization and resource charts, contact information, maps and overlay symbology, weather, a variety of messaging systems and formats, integration of unmanned systems, social media, and communications with the press/media/public. Most importantly, Intergraph Planning & Response interfaces with existing computer-aided dispatch and other external public safety systems.

Implementing Intergraph Planning & Response enables incident commanders to better communicate with the Emergency Management Team, first responder agencies, secondary layer of responders (public works, utilities, etc.), and third layer of responders (businesses, schools, aid groups, etc.). With this application emergency management professionals generate team task assignments and reports, with no clutter. Only essential information and tools required by the individual user and task are displayed, and dynamic operational/procedural changes can be quickly and easily updated and applied. The product provides a common operational picture for users and incident commanders.

PART 5: THE LAST WORD

The opportunity for public safety organizations to quickly update their emergency preparedness planning and response, incident communications, recovery, and training with a cost-effective, user-friendly, and innovative application is here.

To reach the core capability target goals of prevention and protection, mitigation, response, and recovery, a unified solution that supports the entire life cycle of emergency operations is necessary. In this way, public safety organizations can plan and train for events in advance, coordinate actions when an incident does occur, and incorporate lessons learned with no disruption or operational gaps.



A wide variety of public safety organizations, including the German Federal Police, Brazilian CBMERJ, and cross-border Canadian Pacific Railway, are applying the Intergraph Planning & Response application to help meet emergency

management challenges and goals. These customers are demonstrating how to comply with government mandates, improve operations, and reduce costs with a flexible and high-performance product. Intergraph Planning & Response improves situational awareness and coordination, and advances the level of public safety.

To initiate a complimentary and secure lab demonstration on how Intergraph Planning & Response can augment and improve your organization's planning and response, please schedule a conversation at 1.256.730.2000, or visit: <http://www.hexagonsafetyinfrastructure.com/ipr>.

“*Intergraph Planning & Response was an exceptional source of support for us and our processes throughout this major event. We are beyond impressed with the possibilities this tool will offer us in the future in respect to event management and situational planning.*”

—Chief Master Sergeant Richard Altermatt, Basel-Stadt Cantonal Police, Switzerland

NEXT STEPS



Schedule a meeting with our global team to experience our thought leadership and to integrate your ideas, opportunities and challenges into the discussion.



Interested in learning more about the topics covered in this white paper? Call us at 877.GoFrost and reference the paper you're interested in. We'll have an analyst get in touch with you.



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