California Emergency Operations Center (CalEOC)

Category: Data, Information and Knowledge Management

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State: California

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Effective information management during a disaster is a vital component for saving lives and reducing suffering. Information needs to be gathered and shared; resources must be gathered quickly and efficiently to contain the impact of the emergency. In California, the Governor’s Office of Emergency Services is responsible for managing multi-agency and multi-jurisdictional responses to emergencies in the state. Unifying emergency response efforts that may include hundreds to thousands of individuals requires a tool that seamlessly aggregates all response activities for situational awareness and decision support.

On October 1, 2013, the California Governor’s Office of Emergency Services (CalOES) implemented a new Web-enabled crisis information management system called California Emergency Operations Center (CalOEC). The system allows emergency managers at dozens of state and federal agencies and departments, including the California Highway Patrol, California National Guard, Federal Emergency Management Agency (FEMA), and all 58 Counties within California to collaborate and share real-time situational awareness with first responders, emergency medical services, public works, and other public safety stakeholders during a disaster. CalOEC generates real-time information, providing resource tracking, situational analysis, and emergency notifications to the public via wireless emergency alerts.

CalOEC was first tested during California’s statewide exercise, Golden Guardian in May 2013, which involved over 50 different state, local, and federal agencies. The system officially went live in October 2013, and since then, CalOEC has been a crucial tool for enhancing the state’s emergency response and recovery capabilities. CalOEC is currently supporting California’s Drought Response efforts in the State Operations Center and has been used for several incidents including recent floods and the devastating Rim Fire which was the third largest wildfire in California history. The system facilitates coordination with private sector organizations to support donations of goods and services to governments and non-governmental organizations like the Red Cross.
SECTION 2: BUSINESS PROBLEM AND SOLUTION

Problem: California is a large and diverse state. In any kind of emergency, communication and the ability to gather information and quickly allocate resources can save lives, reduce the destruction of property, or both. California has a long history of standardized emergency response, developing best practices that serve as the model for emergency managers nationwide. However, this state did not have a system that seamlessly aggregated all response activities for situational awareness and decision support. Supporting a standardized emergency response capability requires collecting real-time information and unifying all elements of California’s emergency management community into a single integrated system. This lack of a single integrated response system created the following issues:

- CalOES found it difficult to fulfill its operational responsibility of keeping all stakeholders informed of incidents and events occurring across the state on a daily basis. County and local government emergency responders completed situational reports that were sent to the State Operations Center. Several local governments were unable to escalate critical, time-sensitive information to state government in a traceable and efficient manner. These issues were either the results of using disparate templates, sending reports to the wrong department, or manually exporting and importing information from a local government system to a state system. Interoperability with local government systems was either unpredictable or non-existent.

- California’s resource management business process did not include a seamless repository of resources available in the state. In addition, there was no single common operational picture available to facilitate coordination and distribution of resources among the various stakeholders. As a result, resources could be over-committed to areas in least need, impacting others where resources are scarce. During an emergency, CalOES coordinates emergency response resources between counties and outside stakeholders including, but not limited to, other state agencies, the National Guard, U.S. Forest Service, and the FEMA. Resources must be identified, tracked, and allocated to ensure that they reach the right people at the right time. To facilitate coordination, resource reports were collected and illustrated on static maps with time stamps. Creating these maps was labor-intensive and the data was usually outdated by the time the maps were distributed via electronic mail to all stakeholders.

- The information collected and distributed during an emergency was not adequately protected and did not meet all the minimum information security requirements defined in state policy. Furthermore, user groups and roles were not clearly delineated to prohibit access to certain information. Emergency personnel had access to information not specific to their areas of responsibility. This could result in the inadvertent release of unconfirmed emergency event information to other stakeholders or the public. Information such as the coroner’s
death count is an example of data that must be secured and confirmed before it is released.

- A feasibility study report found that only 16 of California’s 58 counties used an emergency management system. The remaining counties primarily used Microsoft Office tools and manual processes. The report also found that of the 16 counties that used an emergency management system, none of these systems had the ability to interface with each other or any state agencies.

**Solution**: The California Emergency Operations Center (CalEOC) is a new web-enabled crisis information system that allows emergency managers at dozens of state and federal agencies and departments, including the California Highway Patrol, California National Guard, Federal Emergency Management Agency (FEMA), and all 58 Counties within California to collaborate and share real-time situational awareness with first responders, emergency medical services, public works, and other public safety stakeholders during a disaster.

Prior to initiating the project, CalOES conducted an extensive feasibility study to determine the business needs of the organization and the needs of the 58 county emergency operation centers. Stakeholders had very specific functionality, maintenance, and budgetary requirements. A proprietary incident and event management application appeared to be the only solution that could meet everyone’s needs.

**Solution Architecture**: CalOES concluded that the best cost-effective approach was to procure a commercially available software solution with consideration for customization and/or modifications. This solution provided the lowest risk path to implementation and ensured that the timeline would meet the performance period requirements of the federal grant used to fund the project. Utilizing federal grants helped minimize the financial impact to the state and most importantly to local governments.

The business and technical requirements required the vendor to make significant changes to its application. These included database modifications, building new interfaces, and developing some completely new modules. Each modification was closely scrutinized to ensure it did not violate legal mandates, that it provided a quantifiable benefit, and that it supported a compelling business need. In several cases, business processes were changed to align with the solution’s capability, as long as the process did not negatively impact emergency responsiveness. Overall, the project had a positive influence on developing real process efficiencies both from a maintenance and operational standpoint.
**Security:** CalOES took great steps to ensure that the information generated and collected within CalEOC was protected and met all the state information security requirements. Access to the application is limited only to authorized personnel and privileges are based on varying levels of role-based security. In addition, the system uses two-factor authentication and encryption technology to protect sensitive data across the network. The Web-based platform also implements Secure Socket Layer to ensure each connection to the system is secure and protected against unauthorized access.

**Testing:** The CalOEC was tested in May, 2013 during California’s statewide exercise, the Gold Guardian. This exercise involved over 50 different state, local and federal agencies and provided stakeholders an opportunity to test the core functionality of the system. Several issues were identified and resolved before the system went live on October 1, 2013.

**Project Management:** This project followed a traditional project management methodology, utilizing milestone based planning and team building. Prior to the initiation stage, a feasibility study was completed to identify and confirm issues with the previous system. The study identified 14 key objectives and over 100 business and technical requirements to develop a comprehensive request for proposal (RFP). Over 90% of the project requirements were met, with the remaining planned for future enhancements. Below are some of the key problems identified during the requirement gather phase.

**Cost:** Overall the project progressed as planned and came in within budget. The timeline experienced a two month delay due to design revisions and expansion the scope of the user acceptance testing. Nevertheless, the project was able to meet the October implementation target date. The project’s initial costs of $2.4M came in at 27% less than what was originally proposed and recurring IT costs such as maintenance and licensing incurred a 46% increase. Considering the enhanced functionality and usability of CalEOC, the increased recurring cost was acceptable. The project is currently in a one year performance evaluation period in which final acceptance will be determined in October 2014.

**SECTION 3: SIGNIFICANCE OF THE PROJECT**

CalOEC has changed the way California responds to emergency situations across the state. The system is currently supporting California’s Drought Response in the State Operations Center and has been used for several incidents including recent floods. The system was also essential for emergency response coordination for the devastating Rim Fire—the third largest wildfire in California history. CalOEC now provides CalOES with the ability to better manage and track statewide incidents in real time. It allows all users statewide to electronically submit and update incidents reports to a centrally managed database that has the ability to intelligently and electronically escalate an incident if needed.
The Web-based system provides real-time, common operational picture to facilitate coordination and distribution of resources between stakeholders. It allows real-time geographic depictions and maps (e.g., road closures, seismic activities, levee status, resource assignments, etc.) to deliver situational intelligence of the entire event. Information overload was a concern; therefore, the system is “self-servicing” allowing users to access information that is pertinent only to their specific areas of responsibility.

**Beneficiaries:** A key significance is that because it is web-based, it provides access to all emergency managers in the state allowing local governments or other state agencies to use CalEOC to manage their events from anywhere as long as they have an Internet connection. The system provides mobile access to event information that can easily be updated by the personnel on the front lines of the emergency. CalOEC is available to all 58 counties in the state and greatly enhances the state’s capability to respond to any emergency in the state. The system is a single platform that not only solves the issues with disparate templates but it also increases the familiarity of the system among thousands of users. Furthermore, the system keeps static contact information readily available to quickly populate situational reports. With regard to interoperability, CalEOC can be integrated with other emergency information management systems, allowing local agencies to continue using their own system.

**Strategic /NASCIO Priorities:** The overall approach and vision of CalEOC was to centralize and consolidate shared services within a single platform for supporting emergency managers across the state. This aligns with NASCIO’s CIO Priorities and California’s strategic goals of responsive, accessible and mobile government, but also efficient and reliable services. Clearly defining user requirements early and finding a commercially provided solution with customizable options helped lower our cost and keep the timeline on track.

**SECTION 5: BENEFITS OF THE PROJECT**

CalOEC benefits California’s residents by providing an integrated, seamless response to any incident or statewide emergency. A quick, coordinated response effort by state and local governments and emergency responders can save lives, reduce suffering, and help reduce property damage in certain situations. CalEOC is now available to all 58 counties effectively enhancing the state’s capability to respond to any emergency in the state. Specifically, CalEOC has provided the following benefits:

- Local, state, tribal, and federal governments are able to efficiently escalate critical, time-sensitive information to the Governor’s Office of Emergency Services.

- Improved emergency response both at the local and state level:
  - The ability to provide real-time information to, and between, state and local responders greatly enhances their ability to quickly communicate and coordinate effectively.
- Seamless communication of situational reports and resource requests without duplicate entry.

- Mobile access and resource-tracking from the field.

- Establishes a closer working relationship among state, local and federal government organizations.

- Significant Cost Savings
  - Providing a single crisis management system for the entire state, allows other state agencies and county emergency operation centers to defer funds to other projects.
  - Costs related to maintenance and licensing are solely paid by Cal OES using Department of Homeland Security grants. The project’s initial costs were approximately $2.4M with an annual expense of $197,000 for licensing and maintenance.
  - Total costs savings if a local or state agency were to incorporate a similar system independently are estimated to be approximately $50,000 to $70,000 for initial implementation with $100,000 annually for maintenance, licensing, and training.
  - 41 out of 58 counties are currently using CalEOC as their primary crisis management tool. In total, initial costs would be over $2M and annual maintenance and licensing fees would total over $4M if each county were to procure similar independent systems.

- Coordination with private sector organizations to support donations of goods and services to governments and non-governmental organizations like the Red Cross.

In summary, the CalEOC project was an ambitious undertaking, involving the coordination of hundreds of stakeholders from federal, state and local government entities. The project addressed many issues such as inadequate reporting, inefficient resource tracking, and limited security/access control to information. Resolving these fundamental functions of emergency response now allows emergency managers throughout the state to focus on critical activities that ensure preservation of life, property, and the environment.