



Flood Control District of Maricopa County

Emergency Notification Database Plan Final Report

June 20, 2012



Expires 9-30-12



4727 E. Bell Road Suite 45-310
Phoenix, Arizona 85032



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APPENDIX A

Scope of Work - Maricopa County Emergency Notification Services 2012-2015 Contract

Emergency Notification Database Plan

1. INTRODUCTION

The Flood Control District of Maricopa County (District or FCDMC) operates and maintains twenty-two (22) dry flood retarding structures (FRS) and dams and has developed emergency action plans (EAPs) for each in accordance with ADWR requirements and the Federal Emergency Management Agency document “Emergency Action Planning – FEMA 64” (April 2004) guidelines. As part of its ongoing dam safety program, these EAPs are periodically reviewed and are updated as necessary. The District coordinates its emergency planning and response activities with the Maricopa Department of Emergency Management (MCDEM), which acts as the emergency notification and management arm of the County. The District has identified a need for streamlining updates to the EAPs, such as notification data. In addition, the District wishes to collaborate with MCDEM to enhance common elements of the EAP notification and response process.

1.1 Project Need

Arizona Administrative Code R12-15-1221 requires that an emergency action plan (EAP) be developed for jurisdictional dams classified as significant or high hazard potential. Hazard classification is based on the potential for property damage and loss of life in the event of a dam failure or significant impoundment. The Arizona Department of Water Resources (ADWR) dam safety rules require notification of downstream jurisdictions of any conditions that may compromise the safety of the dam.

During a recent review of EAP updating procedures, the District's Engineering Division identified a need for improvements to update notification contacts as part of its EAP program, as well as contacts made by its in-house ALERT Operations Center (AOC) during flood emergencies. The District determined that periodic updates to notification data were not fully synchronized between MCDEM, which maintains notification data for all county-wide emergencies, and the District, which is responsible for collecting notification data and is ultimately responsible for notifications during a dam safety emergency for its dam structures.

Additionally, it was determined that, because MCDEM notification duties may overlap with the District's for some structures, a coordinated effort to develop a common database would be advantageous to both agencies.

1.2 Project Authorization

This Emergency Notification Database Plan (ENDP) was authorized in October 2011 by a contract between the District and LTM Engineering, Inc., and is designated Work Assignment No. 2, On-Call Emergency Action Plans for Flood Retarding Structures and Dams, Contract FCD 2010C041, PCN 050.02.01.

2. PROJECT DESCRIPTION

2.1 Desired Base Functionality

MCDEM and the District are interested in developing a common database of contact information for use by MCDEM during an emergency. MCDEM is the emergency planning and coordination arm of Maricopa County and is responsible for emergency notifications. However, the District's subset of emergency contact information for its dam structures is updated independently, and sometimes its contact updates overlap with MCDEM's updates. The two agencies are interested in streamlining the updating process and ensuring that contact information is always current.

Immediate needs for database functionality were identified as follows:

- Formalize development and sharing of contacts
- Eliminate redundant data entry
- Facilitate up-to-date contacts list
- Allow dual editing (MCDEM and the District)
- Develop a strategy for notification of updates

Additionally, MCDEM wishes to be able to export routine (non-emergency) contacts to Microsoft (MS) Outlook.

Finally, MCDEM wishes to automate the process of updating contact information in its Emergency Response Plan (Red Book). MCDEM requires that individual tables of contacts for each group and scenario be published in both printed and electronic (MS Word) forms within the Red Book to ensure a redundant source should a system failure occur during an emergency. Currently, updating the tables is very labor-intensive, and can require one contact update to be inserted many times in various tables.

2.2 Potential Future Functionality

A preliminary diagram of base and future functionality was developed by MCDEM. Based on discussions with both agencies, the diagram was refined and is included as **Figure 1**. Some capabilities include:

- Onscreen link to EAPs
 - A link to a PDF of each EAP could be developed
 - The system would need to keep current with updates to individual EAPs
- Capability to send messages to a contact list for any final identified evacuation areas, determined through GIS by spatial overlay, and where participants may access them
- Comment field to describe the source of the updated information
 - Need to keep a record of comments (e.g., one-year retention)

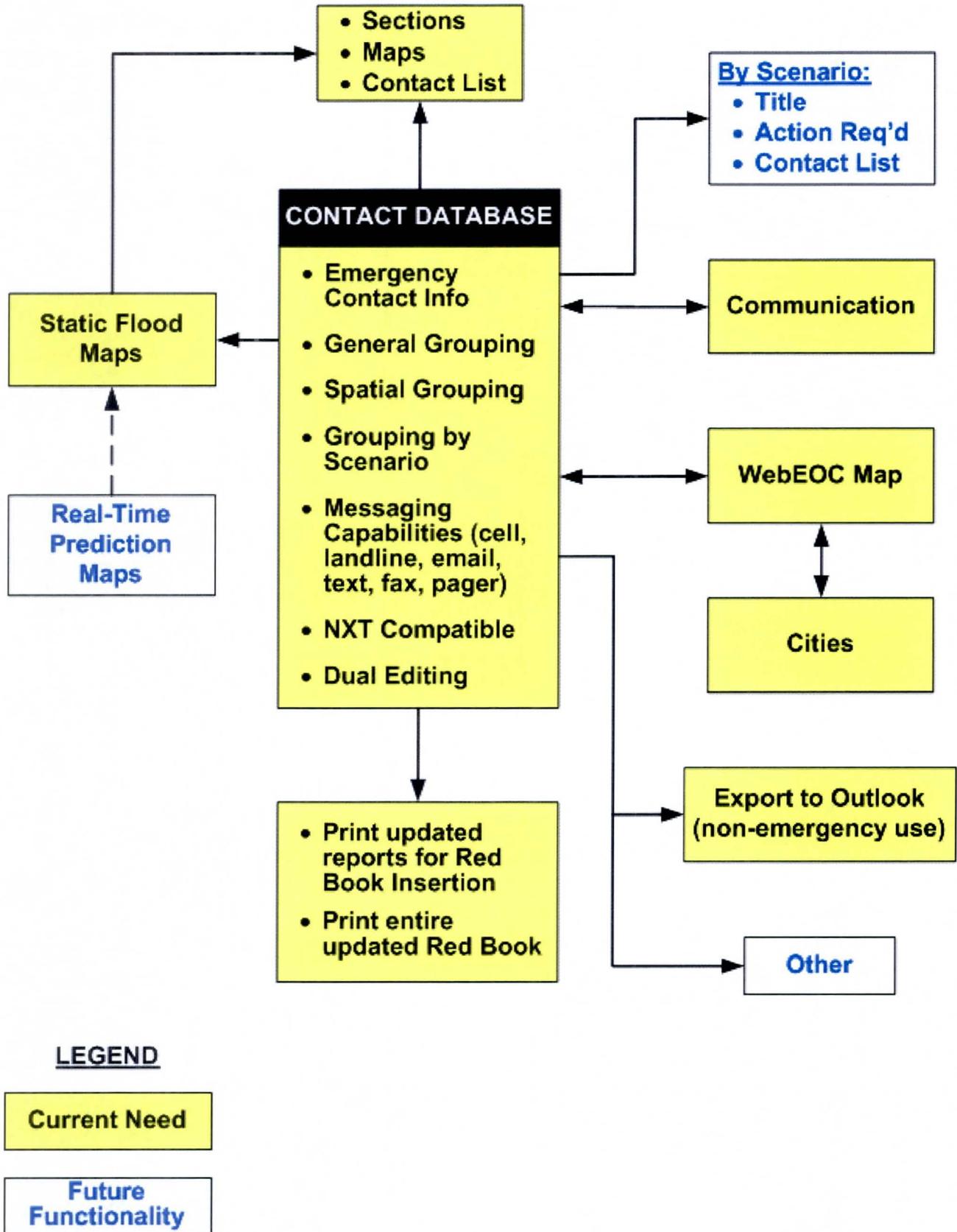


Figure 1: Notification Database Functionality

- Assign fields to record who authored a data change and the date
 - Need report for verification
 - Capability to generate reports of changes and change date; a 1-year retention was suggested, but will be selected at a later date per District retention policies.
- Expansion capability to accommodate a new Red Book annex in the future, new flood control structures, etc.
- Use of a spatial database would be beneficial for calling local agencies affected by flooding or for calling residents in evacuation areas. However, some contacts are not geographically tied, e.g., the Corps of Engineers or NRCS.

3. DATA COLLECTION

The following information was collected as part of this project:

- Current District notification data, procedures, and software used
- Current MCDEM notification data, procedures, and software used
- Information on candidate database programs, including capabilities, system requirements, and limitations.

3.1 MCDEM Administration and Notification Procedures

MCDEM's notification data are stored on a hosted site by Cassidian Communications and are accessed through its Communicator! NXT (NXT) software program. The program acts as an automated phone dialer and is capable of storing and calling multiple groups under multiple scenarios. The system can send messages via telephone (land line and cellular), text, fax, and pager.

Currently, any notification updates received from the District are manually entered into its Red Book (MS Word document). It is noted that no formal procedures are in place for MCDEM to notify the District of updates to its notification database.

Once the Red Book is revised, NXT is updated accordingly. The system is password-protected; MCDEM currently has three administrators (full privileges) who can make modifications to the database and six operators who have system access and can activate a notification.

Additionally, MCDEM keeps an MS Outlook database of routine (non-emergency) contact data for internal use. The Outlook contacts are accessible to all MCDEM staff.

3.1.1 MCDEM Red Book Update Procedures

MCDEM's Red Book was developed a number of years ago, and has undergone periodic major revisions as population has increased and emergency response duties have expanded. Over the years, the word processing software and formatting procedures have also undergone significant revisions. This evolutionary process has caused difficulties in

updating and expanding the document and requires a labor-intensive manual development of the table of contents.

Examples of several sample tables from the Red Book were reviewed, and various methods were discussed to reduce the effort to maintain the Red Book. Currently, the notification tables are updated manually. If a contact is listed numerous times (e.g., Red Cross), the effort is significant. Additionally, the size of the manual dictates a double-sided layout for printing, so each section must begin on the right-hand page. Therefore, additional manipulation and printing is required if changes cause information to move onto the following page.

Other issues identified in the updating process include:

- Some information in the Red Book contains sensitive material and is not distributed to outside parties. Removal of confidential information is done by deleting current page/s information and inserting “this page intentionally left blank”.
- A revision date in the document footer is required to verify that the correct version is being used. The revision date must to be changed several times to accommodate formatting breaks.
- The double-sided printing requirement dictates that sections with an odd number of pages include a blank page.
- Updates for certain structures within the county are forwarded electronically in MS Word format; others are in portable document format (PDF) and must be converted into Joint Photographic Experts Group (JPEG) format. The imported image must then be adjusted to fit within the defined format of the Red Book.
- Currently, each section (appendix, annex, and tab) of the Red Book is marked with section breaks within the single document.
- The current table formatting was developed to enhance readability on the printed copy; this feature should be retained if possible.
- Currently, CDs of the Red Book must be burned and mailed to external customers because the file is too large to email. A file size small enough to email would facilitate the distribution of updates.
- The software’s evolution of document formatting creates significant difficulties when implementing numbered or bulleted items to new or existing sections.

3.2 FCDMC Administration and Notification Procedures

The District develops emergency contact information for each of its EAPs, as well as notification contacts made by its flood warning branch as part of the ALERT monitoring system. Contacts are stored in MS Word documents within the individual EAPs and in its in-house Flood Emergency Response Manual (FERM). Both sets of documents are reviewed periodically and updated as necessary. Any revised EAPs, including updated contact data, are provided to MCDEM as they are completed.

3.3 Procedures of Other Agencies

The City of Phoenix Fire Department (Phoenix Fire) also uses NXT for notifications. Its system includes subscription to a separate module, GeoCast Web, which allows activation of a call-out list based on a selected geographical area. Phoenix Fire hosted a demonstration of its system capabilities for the District, MCDEM, and LTM Engineering.

Phoenix Fire's geographical information system (GIS) covers all of Maricopa County, and its 911 call center provides service to about 75% of the county. Aerial photography is not currently stored in the system. Phoenix Fire has the ability to select basic geometric shapes and sizes for a particular location and automatically generate and execute a call-out list from the coverage. This feature was used successfully to notify approximately 70,000 residences and businesses for a power outage in Mesa in June 2011.

Several agencies were contacted for information on streamlining emergency notification updates. Procedures used by Los Angeles County, California, are similar to those of Maricopa County. Likewise, Pennsylvania Emergency Management Agency (PEMA) has similar constraints and must update several databases when contact information changes. PEMA will be migrating to Knowledge Center, an incident management system, in the near future. Additionally, a local firm is in the process of developing a custom database for its contacts.

Clark County, Nevada, works with a local committee of 35 representatives and limits its notifications to those top-tier groups. In turn, each member entity is responsible for notifying additional lower-tier groups. One member, Clark County Water Reclamation District, includes notification data by reference only; contact data is excluded from its response manual. The contact data is recorded in an MS Excel spreadsheet and updated annually.

4. EVALUATION OF DATABASE OPTIONS

As described below, the options evaluated for potential adaptation fall into two broad categories: enhancement of the current system or development and integration of a separate, stand-alone database. With respect to the development of a stand-alone database, it could be accomplished with either off-the-shelf software or customized.

4.1 Enhancements to Current System

The NXT system currently in use can generate reports of activities such as notifications made and whether or not a notification was acknowledged. However, it does not currently have the capability of tracking changes to the contacts database or of automatically updating the Red Book.

Cassidian, in partnership with Global AlertLink (GAL), offers an incident management component that greatly enhances current capabilities and includes full auditing and report generation capabilities. Additionally, the GAL component can be used to generate a custom Red Book so that a change in contact information would automatically update all occurrences in the Red Book. The report can be set up as separate sections/annexes/tabs to accommodate print versions and can be exported as an MS Word document. The GAL component comes

with an application program interface (API) to the NXT system, technical support, and online training.

Cassidian and GAL hosted a web demonstration of system capabilities on April 5, 2012. Significant advantages of enhancing the current system include:

- A single-source contract provides continuity of service and is easier to manage if compatibility problems are encountered.
- All of the required data are already contained within the system, so no effort is required to populate a contacts database.
- The absence of a separate database eliminates introduction of errors through the development and integration of the outside database.
- NXT and GAL have successfully integrated their products for other customers in the past.
- Recording and auditing of changes are fully supported.
- Annual auditing reports can be set up for automatic generation. Reports can be generated by organizational unit, which allows the District to generate reports for only its structures.
- The Red Book can be generated within the system and updated automatically.
- The Red Book contents can be exported to an MS Word file with a single action.
- Allows automatic notification of changes to contact data.
- Allows export of contact information to MS Outlook.
- Can accommodate a new Red Book annex in the future, new flood control structures, etc.
- Retains spatial data, which could be used by Phoenix Fire to develop geographical call-out lists.

The GAL incident management component also provides significantly expanded capabilities in setting up and activating notification scenarios and in preparing broadcast messages. Activation of a notification scenario can be done remotely with a smartphone.

A disadvantage of the enhanced NXT system is that updates to the Red Book may require additional printing effort and supplies. Updates may need to be made per section rather than on a page-by-page basis. However, the additional effort would be more than offset by eliminating the need for multiple manual updates and generation of revision date and table of contents.

One approach to reduce the update procedures further would be to rearrange the document lay-out so that all contact information is located at the end of a section/tab/index rather than its current lay-out of contact tables throughout each element.

It is noted that NXT is capable of allowing additional access to the District. For example, the District could identify one individual (and possible one back-up) to update contact

information within its system. Access privileges can be customized to limit the risk of inadvertent changes to the database.

4.2 Development of a Standard Database

Various commercially available relational databases were evaluated for potential use in tracking updates to contact information. The following criteria were used for initial screening:

- Compatibility with MS Windows
- Meets ACID (atomicity, consistency, isolation, durability) requirements to ensure that database transactions are processed reliably
- Referential integrity (maintains relational attributes)
- Discrete, complete transaction requirements (no partial transactions)
- Meets Unicode standards

A number of products met the initial screening criteria; some of the more widely used include Oracle, IBM DB2, MS SQL Server, MS Access, and Oracle MySQL. Any of the available packages would need to be populated with the data currently stored in NXT. Additionally, an API would be required to transfer database updates to NXT.

The most significant advantages of purchasing and populating an external database are:

- It has the ability to track changes and generate custom reports for documentation of changes.
- A relational database retains address information for future use in generating lists based on geographic parameters.
- Depending on the package selected, the initial purchase cost may be very low.

A serious flaw in the development of an external database is that it does not meet the fundamental requirement of streamlining updates to the Red Book. None of the packages evaluated offer the capability of automatically updating the Red Book. Therefore, regardless of which software program may be considered, the database would need to be supplemented with publishing software such as Adobe FrameMaker, Corel Ventura, or MS Publisher. These programs have the capability of importing tables that could be generated within the database program. However, publishing software is generally more difficult to learn and is better suited for developing publishing-level layouts than a manual such as the Red Book. Although they offer flexibility in adjusting data to fit on a particular page, additions and deletions are more difficult. Additionally, once information is input, it cannot be converted back to MS Word and maintain the desired formatting.

Other significant disadvantages include:

- A separate database by itself does not meet the requirements of streamlining updates to the Red Book.
- Initial labor needed to populate the database is likely to be substantial.

- Risk of error is introduced in creating and maintaining a separate database.
- An API would have to be created such that all contact data and the hierarchy (i.e., preferences for order of contacts with multiple notification options) is preserved.
- If problems occur, it is more difficult to determine the source of the problem and which vendor is responsible for resolution.

4.3 Development of a Customized Database

Several vendors were contacted for potential development of a customized database. The services offered include migration of notification data from NXT to the new database, development of custom fields for tracking and relational purposes, and development of an API to interface with NXT.

In order to meet the requirement of automated updates to the Red Book, development of a custom database must include the capability of housing the document internally or otherwise linking the manual with the database to achieve this goal.

Advantages to a customized database include:

- It has the ability to track changes and generate custom reports for documentation of changes.
- A relational database retains address information for future use in generating lists based on geographic parameters.
- Customization offers more flexibility in the types of information stored (custom fields) and can meet special requirements.

Disadvantages include:

- Risk of error is introduced in creating and maintaining a separate database.
- An API would have to be created such that all contact data and hierarchy (i.e., preferences for order of contacts with multiple notification options).
- The initial development cost and continued support may be high.
- Because a customized database is a separate product, additional coordination would be required between NXT and the database vendor.
- If problems occur, it is more difficult to determine the source of the problem and which vendor is responsible for resolution.

4.4 Replacement of Current Notification System

A final option considered was to terminate the current service contract and solicit new proposals with an expanded scope of work to include the desired functions. However, this option was eliminated early in the evaluation because it was not considered to be an effective use of County resources. A replacement solicitation would require significant effort to prepare a request for proposal, advertise the project, respond to vendor information requests,

evaluate proposals, select a vendor, and negotiate a new contract. The County recently followed this process and entered into a new three-year agreement with Cassidian for emergency notification system services. The current vendor meets the current contract requirements, which are much more extensive than the proposed enhancements. Additionally, the current vendor is capable of providing the enhanced services. Therefore, the evaluation focused on modifying the existing contract or soliciting a supplemental contract.

5. RECOMMENDATIONS

5.1 System Improvements

It is recommended that MCDEM upgrade its current NXT system to include capabilities similar to those provided by the GAL component of NXT. This could be accomplished by amending the current three-year contract with Cassidian to include the additional features.

The added features should meet the database plan's primary goals to:

- Generate reports of database changes for auditing purposes
- Eliminate redundant data entry
- Reduce the effort to update the Red Book
- Facilitate up-to-date contact information
- Allow editing by both MCDEM and the District
- Develop a strategy for notification of updates
- Export non-emergency contacts to MS Outlook
- Integrate with NXT
- Provide geospatial querying and notifications of designated contacts within an area defined by a GIS polygon or integrate with Reverse 911 to accomplish the same goal.

As previously noted, the GAL incident management component also significantly expands MCDEM's capabilities in setting up and activating notification scenarios and in preparing broadcast messages.

6. IMPLEMENTATION

As described below, implementation of the ENDP requires active participation by both MCDEM and the District.

6.1 MCDEM Responsibilities

The first task in implementing the ENDP is to procure enhancements to the current NXT system, either by modifying its current service contract to include the GAL incident management component.

Alternatively, MCDEM could retain the services of a custom database developer who can also provide automated generation and updates of the Red Book. In either case, MCDEM would also need to perform the following tasks:

- Provide system access to the NXT database for one or two District employees for the purpose of updating notification contacts.
- Develop a consistent format for the Red Book and import its contents to the GAL component (or other database solution).
 - Consider modifying the current format by moving all contact information to the end of a particular section/annex/tab.
- Provide a custom field or capability to track changes to the contacts database (i.e., who initiated a change, source of information, and date of change).
- Develop a scope of work to enhance the current system capabilities (see Section 6.4 below).

6.2 District Responsibilities

- Designate a District employee(s) to act as a liaison to MCDEM regarding EAPs for District structures. The designee would perform the following duties:
 - Provide MCDEM with new or updated EAPs as they are developed, including links to access the EAPs via the WebEOC
 - Update notification contacts within NXT or an external database and send an email notification to MCDEM when any changes are made
 - Generate reports annually of changes to emergency contact information and keep records of the reports for a five-year period
 - Send an email notification to MCDEM when any changes are made to the database.

6.3 Potential Vendors

Several vendors were contacted for information on developing a customized database and interface. Should the District and County proceed with this option, the following vendors could be contacted for interest in providing the service:

1. BSoft Solutions

Hussain Salbi
1365 Wiley Road, Suite 150
Schaumburg, IL 60173
847-781-0800 ext 102
hsalbi@bsoftsolutions.com
www.bsoftsolutions.com

2. Cassidian Communications

Tom Hayes
42505 Rio Nedo
Temecula, CA 92590
508.668.3285
tom.hayes@cassidiancommunications.com
www.CassidianCommunications.com

3. EbizSiteDesigns

Doug Mannella
PO Box 22714
Rochester, NY 14692
585-370-3958
dmannella@ebizsitedesigns.com
www.ebizsitedesigns.com

4. eBRP Solutions Network, Inc.

Perimul Mistry
230 - 7895 Tranmere Drive
Mississauga, ON L5S 1V9 Canada
Perimul.Mistry@eBRP.net
888-480-3277

5. Global AlertLink

Kevin Hall
900 Virginia Street E., Ste. 300
Charleston, WV 25301
304-205-8530
khall@globalalertlink.com
www.globalalertlink.com

6. Logical Imagination

Myke Taylor, MBA
800-657-1494 ext.100
myke@logicalimagination.com
www.logicalimagination.com

6.4 Performance Specifications

The scope of work for the current service contract was provided by the Maricopa County Office of Procurement Services (**Appendix A**). Any enhancements to the current service must also meet these requirements. In addition, performance specifications for the current system and proposed enhancements should include the following requirements:

- Must be fully compatible with WebEOC
- Service must be fully compatible with The Communicator![®] NXT.
- Provide for multiple, simultaneous access for developing and maintaining contact data.
- Contacts must be able to retain sequence-of-notification preferences, including changes to preferences outside normal business hours.
- Must be able to export contacts to Microsoft (MS) Outlook.
- Must be able to house the contents of the Red Book (text and graphics) and be able to print a formatted copy of the entire Red Book as well as individual sections or pages.
- Contents of the Red Book must be expandable to any number of annexes, appendices, and tabs.
- Must be able to export the entire Red Book as a single document formatted as an MS Word document, as well as individual sections or pages as a single document.
- Must be able to generate an up-to-date table of contents for the Red Book and export as an MS Word file along with the Red Book and with individual sections or pages.

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Appendix A
Scope of Work - Maricopa County
Emergency Notification Services 2012-2015 Contract

The following is from Exhibit B, Scope of Work, of the Maricopa County Emergency Notification Services Contract:

2.0 SCOPE OF WORK:

2.1 TECHNICAL REQUIREMENTS – APPLICATION/CONNECTIVITY

- 2.1.1 The emergency notification system shall be able to automate communications and send notifications to individuals based on grouping structures and other criteria (e.g., emergency teams, management, etc.).
- 2.1.2 The emergency notification system shall be operational 99.99% of time.
- 2.1.3 The emergency notification system shall be completely web-based. No hardware or software will be installed on-premise, excluding web browsers.
- 2.1.4 The emergency notification system shall be provided through a service supported by back-up operations geographically separated and redundant architecture (alternate hosted facility).
- 2.1.5 The emergency notification system shall be scalable in the event more phone resources are required. Describe system capability and limitations
- 2.1.6 The emergency notification system shall be able to deliver the message using a calling sequence. If a call recipient is not available on the first device, the emergency notification system will try the next device on the list (and so on).
- 2.1.7 The vendor shall provide access to inbound-only phone lines during an outbound notification. Paged parties can call into the emergency notification system to: (a) confirm receipt of the page, and or (b) obtain additional information.
- 2.1.8 The emergency notification system shall have the ability to record speech via the Internet (i.e., make voice recordings).
- 2.1.9 The emergency notification system shall be able to provide multiple, simultaneous access for developing, maintaining and activating notifications.
- 2.1.10 The emergency notification system shall have the ability to record speech for messages over the phone.

- 2.1.11 The winning proposal shall provide a complete system with all data; e.g. contacts, groups, messages, and scenarios moved to the new system so as to provide a turnkey implication without loss of data or downtime by November 31, 2011.

2.2 TECHNICAL REQUIREMENTS – CAPABILITIES

The solution shall include web-based, scenario-driven functionality for calling employees. Users shall be able to pre-establish multiple scenarios (minimum of 300) that include the following elements:

- 2.2.1 The contacts application element of the emergency notification system should be capable of storing contact information on 20,000 individuals per database.
- 2.2.2 The contacts application element of the emergency notification system shall be able to include a field for a personalized identification code that can be assigned by the user rather than automatically assigned by the emergency notification system.
- 2.2.3 The contacts application element of the emergency notification system shall allow for as many telephone numbers, email addresses, and pager numbers (including multiple pager services) for each individual as desired.
- 2.2.4 The contacts application element of the emergency notification system shall allow Maricopa County to define our own fields (user-defined fields) for, among other purposes, dynamic creation of groups using specific look-up criteria.
- 2.2.5 The contacts application element of the emergency notification system shall be able to automatically poll contacts or allow contacts members to update their own contact information.
- 2.2.6 The contacts application element of the emergency notification system shall be searchable on any field within the contact database.
- 2.2.7 Emergency notification system shall discontinue calling a person once that person has been contact by any calling method.
- 2.2.8 The emergency notification system shall allow the import and export of contact information in a common format.

2.3 TECHNICAL REQUIREMENTS – GROUPING

- 2.3.1 The group application element of the emergency notification system shall allow the user to build notification groups by either (a) dragging and dropping individual contacts into a group, or (b) using look-up criteria of

one or more fields to automatically place contacts in a group at the time of scenario activation.

- 2.3.2 The emergency notification system shall allow any number of groups in a scenario.
- 2.3.3 The emergency notification system shall include the ability to prioritize the groups within a scenario.
- 2.3.4 Contacts shall be able to be in any number of groups.
- 2.3.5 The emergency notification system shall allow import and export of group information in a common format.
- 2.3.6 Individuals (users) that create groups shall be able to grant access to security users for the purpose of updating or deleting the groups where necessary.
- 2.3.7 Individuals that create or modify groups shall be able to define as much criteria as may be necessary to pull in the appropriate contacts.
- 2.3.8 Individuals that maintain groups shall be able to sort individuals within groups by any field within the contact database.

2.4 TECHNICAL REQUIREMENTS – SCENARIOS

- 2.4.1 The scenario application element of the emergency notification system shall allow a user to assign groups to be notified, including as many groups as desired, in addition to:
 - Order in which personnel within a group are to be notified
 - Number of personnel within the group to be notified
- 2.4.2 The scenario application element of the emergency notification system shall allow a user to assign the sequence in which communication devices are to be contacted (e.g., page first, wait, then call work number, wait, then call home number, wait, then call cell number).
- 2.4.3 The scenario application element of the emergency notification system shall allow a user to assign a separate sequence for communication devices to be contacted after-hours.
- 2.4.4 The scenario application element of the emergency notification system shall allow a user to assign the number of attempts to reach individuals and the amount of time to wait between attempts.
- 2.4.5 The scenario application element of the emergency notification system shall be capable of executing multiple scenarios simultaneously without

- user intervention; the system shall also provide the ability to allocate phone line resources based on the priority level of the scenario.
- Low priority scenarios shall yield phone line resources to high priority scenarios.
 - Scenarios with comparable priorities shall share phone line resources.
- 2.4.6 The scenario application element of the emergency notification system shall allow a selection of reports to be distributed to specify contacts.
- 2.4.7 The scenario application element of the emergency notification system shall allow a user to assign the reporting methodology to multiple email recipients.
- 2.4.8 The scenario application element of the emergency notification system shall allow an authorized user to assign specific people the authority to access, modify, delete, or activate certain scenarios.
- 2.4.9 The scenario application element of the emergency notification system shall allow a user to choose whether a personal ID code should be entered before the emergency notification system will deliver the message.
- 2.4.10 The scenario application element of the emergency notification system shall allow a user to choose the answering machine procedures to be used (i.e., whether activation message is delivered, a call-back number or an alternate message).
- 2.4.11 The scenario application element of the emergency notification system shall allow a user to assign the duration of call-out (e.g., 1 hour, 30 minutes, 5 minutes, 24 hours, etc.).
- 2.4.12 The scenario application element of the emergency notification system shall allow a user to assign the sequence of events during the call with the following options:
- Introduction
 - Request for personal ID code
 - Incident-specific (on-the-fly) message
 - Questions (e.g., estimated time of arrival, do you understand, need more time to respond, fit for duty, transfer to live operator, repeat message, and others including user-defined questions)
- 2.4.13 The emergency notification system shall allow import and export of scenario information in a common format.

2.5 TECHNICAL REQUIREMENTS – ACTIVATION

- 2.5.1 Once the user has activated a call list via phone, outbound phone calls shall begin being placed immediately and be delivered at a contracted Service Level Agreement (SLA).
- 2.5.2 The emergency notification system solution shall be capable of processing simultaneous activations without call lists being placed into queue for later delivery.
- 2.5.3 Maricopa County shall be able to activate a call-out from any location (through a PC with Internet access or via a touch-tone phone) given that proper security access is granted.
- 2.5.4 Maricopa County shall be given the option to record a message at the time of activation (on-the-fly) or to use a previously recorded message.
- 2.5.5 The emergency notification system shall include the ability to tag contacts in and out of the call-out at the point of activation.
- 2.5.6 The emergency notification system shall include reports that can be viewed on-line “real time”, emailed or printed to multiple persons/locations.
- 2.5.7 The emergency notification system shall include a variety of reports available for viewing at pre-determined intervals or upon call-out completion.
- 2.5.8 The emergency notification system shall allow an authorized user to stop a call-out and activate it again; only contacting those individuals not previously called.
- 2.5.9 The emergency notification system shall include the ability to stop a call-out via the Internet or phone.
- 2.5.10 Activations do not require vendor intervention, such as an operator.
- 2.5.11 The authorized user shall be able to change scenario options at activation.
- 2.5.12 Activations will be scheduled and automatically activated by the emergency notification system without any user invention.
- 2.5.13 The emergency notification system shall send an e-mail to the system administrator that the scenario has been activated including, date, time and the user who started the activation.

2.6 TECHNICAL REQUIREMENTS – CALL LIST SELECTION

- 2.6.1 The final call list for a scenario used for a call-out shall be based on a single department contact database from which individuals are pulled into groups.
- 2.6.2 The emergency notification system shall have the ability to create groups of individually selected contacts or dynamically based on common information.
- 2.6.3 The emergency notification system shall allow the use of multiple groups for different call-outs and allow a group to be used on more than one call-out.
- 2.6.4 The emergency notification system shall not allow individuals to opt out of future call-outs.

2.7 TECHNICAL REQUIREMENTS – MESSAGES

- 2.7.1 The emergency notification system provides capabilities indicating whether the call recipient has received the notification message via a confirmation receipt.
- 2.7.2 The emergency notification system shall allow for message security. Users shall enter their own unique 1- to 9-digit pin code to receive the notification message.
- 2.7.3 The emergency notification system shall provide Maricopa County with a means to indicate whether to deliver messages to answering machines or voice mail systems and indicate which message will be delivered.
- 2.7.4 The emergency notification system shall include the capability of storing predefined messages per device type, per scenario.
- 2.7.5 The emergency notification system has to provide the means to deliver messages to all devices including: landline, satellite, wireless, email, SMS and alpha and numeric pagers.
- 2.7.6 The emergency notification system shall provide the means for users to record messages via voice (phone or Internet) as well as convert text to speech and deliver the voice message.
- 2.7.7 The emergency notification system shall include the ability to transfer a call-recipient to a conference bridge.
- 2.7.8 The emergency notification system shall not require vendor intervention to record the message to be delivered.

- 2.7.9 Email and fax notifications shall be able to include attachments (drawings, maps, lists, etc.). Define any limitations and exceptions.
- 2.7.10 Email notifications shall have the ability to include the wave file of the voice message.
- 2.7.11 Messages shall have the ability to include auto text such as system, contact, and group or scenario information.
- 2.7.12 Message input shall provide separate verbiage for each device type: live call, voice mail, SMS, pager, email.
- 2.7.13 The emergency notification system shall allow the import and export of all message information in a common format.

2.8 TECHNICAL REQUIREMENTS – DELIVERY CONFIRMATION

- 2.8.1 The emergency notification system shall provide a means for Maricopa County to receive both email and printed reports of notification deliveries.
- 2.8.2 Audit trail reports shall be automatically received at the end of each call-out without requiring a telephone request to the vendor.
- 2.8.3 The emergency notification system shall be able to provide a secure means for message confirmation such that, an individual call-recipient shall have their own unique ID for calling in to get secured messages.
- 2.8.4 Audit trail reports shall be stored on the system for 120 days.

2.9 TECHNICAL REQUIREMENTS – PAGING/EMAIL

- 2.9.1 The emergency notification system shall allow pager script protocols for a particular pager service to be managed by the administrator. Contacts shall be easily associated with appropriate pager services.
- 2.9.2 The emergency notification system shall be able to send pages to all pagers, regardless of whether the pager service provider uses one generic phone number and a PIN or, each pager has its own phone number.
- 2.9.3 For ease-of-use, the emergency notification system shall provide an email interface to allow Maricopa County users to email notifications and reports, including:
 - Storing unlimited email messages
 - Sending different email messages with different call-outs
 - Sending predefined email messages or on-the-fly email messages
 - Maintaining multiple email addresses per person
 - Attachment of files to the email body

- Have the option to attach the body of the message to the email
- Have the option to attach the audio message file to the email.

2.10 TECHNICAL REQUIREMENTS – INBOUND CALLING

- 2.10.1 The emergency notification system shall allow the retrieval of information so; staff can receive updates on subjects such as report to work status, weather-related information, etc.
- 2.10.2 The emergency notification system shall be able to store large amounts of information segments that can be managed remotely through a touch-tone phone (provided security codes) or via the server. Define
- 2.10.3 The emergency notification system shall be able to perform outbound call-outs for staff recalls while simultaneously delivering community information through an inbound calling feature.

2.11 TECHNICAL REQUIREMENTS – ADDITIONAL FEATURES

- 2.11.1 User assistance tools shall include the following:
- Extensive on-line, interactive help including key subject areas and indexed subject matter.
 - All customer data Import / Export capability
- 2.11.2 The vendor shall be able to provide specific training for administrators, creators and users.
- 2.11.3 The vendor shall be able to provide training via web cast, on-site at our facility or off-site at a vendor-hosted facility.
- 2.11.4 The vendor shall provide 24x7x365 support.

2.12 TRAINING (Mandatory):

Prospective Vendors are required to submit with their proposals a thorough training plan and provide comprehensive train-the-trainer sessions for end-users in all aspects of operation, including data entry, scanning, workflow, retrieval and any other necessary functions. Provide hands-on training for technical staff in all aspects of managing, configuring, operating and troubleshooting the software and hardware. Provide an hourly training cost breakdown to include, comprehensive train-the-trainer sessions via web and onsite training per user.

2.13 BUSINESS CONTINUITY; DISASTER RECOVERY; DATA BACKUP and RESTORE; ARCHIVE, RETENTION and DISPOSAL PRACTICES (See Exhibit C)

- 2.13.1 Your current and proposed Business Continuity Practices and Approaches as they relate to the daily operation and possible interruption(s) of service (OUTAGES).
- 2.13.2 Your current and proposed Data Backup and Restore practices. This shall include an explanation of the standards, procedures, methods, cycles, turnover, retention periods and offsite capabilities.
- 2.13.3 Your current and proposed Disaster Recovery Procedures and Standards and how they will be implemented into the proposed system solution to cover any disruptions in service (OUTAGES) and minimize any downtime.

2.14 SYSTEM SECURITY

- 2.14.1 Product shall provide ability to restrict edit access to screens / records.
- 2.14.2 Product shall provide ability to restrict view access to screens/records.
- 2.14.3 Product shall provide logging of all changes to screens/records and identify who has made the changes.
- 2.14.4 Product shall provide adequate access/authorization controls and adjust access (read, write/update, delete) accordingly.
- 2.14.5 Product shall support HTTPS.
- 2.14.6 Product provides programmatic controls for common web vulnerabilities.
- 2.14.7 Product shall comply with the requirements of Maricopa County standards for access from the Internet.