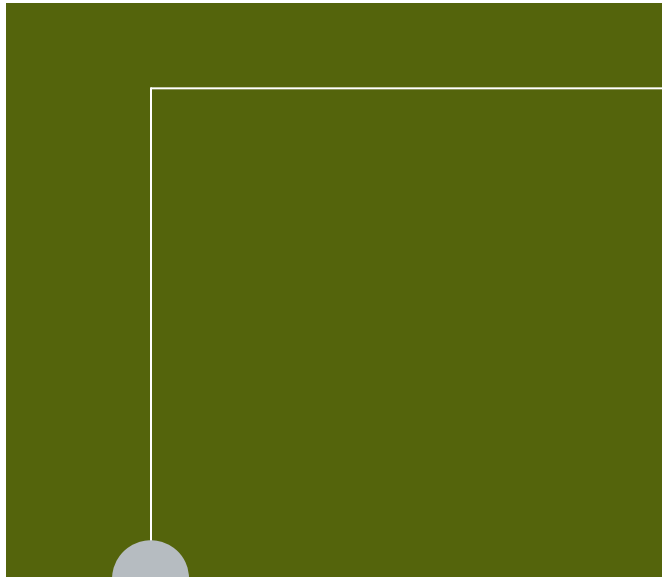


*'THE WHOLE COMMUNITY
RESPONDS'*

*3-1-1 AND CUSTOMER
SERVICE REQUEST
MANAGEMENT: LOCAL
GOVERNMENT'S NEW
TECHNOLOGY PARADIGM FOR
HOMELAND SECURITY AND
DISASTER PREPAREDNESS*



WHITE PAPER

**MOTOROLA TECHNOLOGY IN
LOCAL GOVERNMENT SERIES**

SUMMER 2004 ISSUE

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INTRODUCTION

‘THE WHOLE COMMUNITY RESPONDS’

Harsh and sometimes horrific experiences with local disasters – not just terror, but more commonplace weather and other emergencies – have taught America’s cities and counties a lesson of tremendous import. Our local First Responders – police, fire, and emergency management personnel – can no longer shoulder the primary burden of homeland security and disaster preparedness. From preparation and prevention to response, recovery, and analysis, it takes the whole community to cope with the threat of large-scale emergencies.

“The Whole Community” means just that – all of local government as well as the citizenry, businesses, private-sector agencies, and local operatives of state and federal government. Just look inside one of the new emergency operations centers (EOCs) popping up in major municipalities across the nation. When Houston fully activated its year-old EOC for the 2004 Super Bowl, for instance, senior representatives of some three-dozen public and private agencies joined the mayor in the multi-million-dollar, high-security, state-of-the-art facility. Outside the EOC, Houston’s Customer Service Request Management (CSR) system coordinated activities of thousands of city personnel, while its 3-1-1 center for city services handled thousands more non-emergency calls for help and information from citizens and visitors. All together, this enormous technology-enabled collaborative effort ensured security during four days of exuberant festivities in America’s fourth largest city.



Houston’s new Emergency Communications Center houses the city’s high-security, state-of-the-art Emergency Operations Center.



Director Gloria Bingham, with an operator in Houston's 3-1-1 call center, insists on outstanding customer service. "You have to practice being nice every day," she says. "Daily service builds the credibility needed in a disaster. There's nothing worse in a disaster than losing credibility."

The same 3-1-1 call center and CSRM technology that helped Houston prevent disaster during the NFL championship also helped the whole city collaborate and cope with inundation during 2001's Tropical Storm Allison. The 3-1-1 call center staff used CSRM to intake and track through completion the thousands citizens' service requests during the storm's floods and for the months of recovery efforts after the storm. CSRM handled a record numbers of requests – especially for bulk pick-up of items such as rotting carpet, damaged furniture and appliances, spoiled food, and storm debris – by routing requests electronically to the responsible city departments and tracking each individual request through to completion. CSRM even provided detailed accounting of clean-up efforts as required for disaster relief funding from the State of Texas and the Federal Emergency Management Agency (FEMA).

No single technology "does it all." But a number of American cities and counties are using CSRM technology as their core system for managing 3-1-1 call centers, citizens' requests for service, and essential work processes across local government. In the "post-9/11" era, local governments in Allentown, Baltimore, Chicago, Houston, Chattanooga and Miami-Dade, among other cities and counties, also are discovering that CSRM technology fosters a new paradigm of collaboration and interoperability for homeland defense and disaster management.

This report explores in-depth how CSRM technology makes this new paradigm possible – and cost-effective for today's cash-strapped cities and counties.

CHICAGO, AUGUST 2, 2002: Seven inches of rain – more than 2 billion gallons – overwhelm city sewers, but not 9-1-1 as in a 1998 flood. Instead, informed residents direct more than 49,900 calls to 3-1-1, the city's non-emergency number for local government services. "The CSR tracking system became an important tool... to pinpoint locations that were having more severe problems and then... mobilize the resources to address those problems as quickly and effectively as we could,"

Ted O'Keefe, Chicago's director of 3-1-1 city services

PART 1

THE 'WHOLE COMMUNITY' EMERGENCY MANAGEMENT PARADIGM

How Local Governments Use 3-1-1 Call Centers and Customer Service Request Management Technology for Collaboration and Interoperability

All too often, says Chicago's 3-1-1 City Services Director Ted O'Keefe, discussions of homeland security and disaster preparedness focus almost exclusively on the efforts, technologies, and equipment of police, fire, and emergency management organizations. Sometimes dubbed a "boots and suits" mentality, this narrow focus ignores the crucial emergency management role of other government and private-sector organizations – and the citizenry at large. It also does a disservice to the First Responders on the front lines of disaster, who require the human and technological support of the entire community in order to serve and protect it.

"Particularly with natural disasters and homeland security," O'Keefe argues, "it goes beyond police and fire – involving departments responsible for water flow, for traffic and transportation, for logistical support for law enforcement, for making sure roads are clear, water is safe, water infrastructure is intact, and so on."

This "whole community" approach to emergency management is emerging as the predominant paradigm for Chicago and a growing number of other American cities and counties. The "whole community" trend – though greatly accelerated by the lessons learned in the aftermath of September 11, 2001, terrorist tragedies – actually represents a logical extension of community policing and related initiatives that emerged in the 1980s and '90s, fostered nationwide by the U.S. Department of Justice's Office of Community Oriented Policing Services (COPS). Community policing's basic thrust: to strengthen the day-to-day relationships between local law enforcement and the community it serves, creating familiarity and trust that can reduce crime and increase community collaboration in times of crisis. In all likelihood, community policing has been a significant factor in America's declining rates of violent crime – a consistent overall trend since the 1970s.

Many of the concepts underlying community policing also have sparked other important changes in the way local government operates – often resulting in unanticipated benefits. Perhaps the best example is the introduction of 3-1-1 in the late 1990s. Created to alleviate overloading of 9-1-1 call centers by non-emergency calls to police, fire, and emergency medical services (EMS), 3-1-1 has become in many cities and counties a remarkably efficient and effective gateway for citizens to interact with local government – and has been literally a lifesaver in times of crisis.

The full impact of 3-1-1 has been made possible not so much by sophisticated telephony – a critical component of enhanced or e-9-1-1 systems – but more by the information management technology that underlies an advanced 3-1-1 call center operation. Utilizing a customer service request management (CSR) system, the 3-1-1 call center efficiently answers inquiries and intakes large volumes of citizens' service requests. The CSR system then manages the end-to-end process of fulfilling citizens' service requests – and manages as well many more service requests internally generated by local government supervisors and personnel.

"Our mayor has been preaching to us... that it's never any one agency's responsibility to solve all the problems. It's not just the police's problem to keep neighborhoods safe, it's not just one agency responding to emergency situations. We're cognizant that we all have a role to play and these partnerships among agencies are critical."

*Ted O'Keefe
Director, 3-1-1 City Services
City of Chicago*

Interoperable Systems, Collaborative Community

To make possible this end-to-end management of service requests, the CSRM system must interact with city and county governments' multiple computer systems, and it must manage processes across multiple departments and other local government entities. In other words, to function successfully, 3-1-1 and CSRM must be highly interoperable, and the organizations that use it must learn to be highly collaborative. Interoperability and collaboration are two of the most critical characteristics of homeland security and disaster preparedness.

In a public safety context, efforts to improve interoperability – narrowly defined as the ability for computer and communications systems to work together seamlessly – often focus on public safety radio systems. And without doubt, the ability (or inability) of different departments' radio equipment to communicate profoundly impacts these agencies' ability to work together, especially in large-scale crises.

More broadly defined, however, the concept of interoperability involves promulgating a new paradigm of technology-enabled interdepartmental and interagency collaboration – not just with radios, but also with computer systems, and not just with systems, but also the people and processes of local government and local communities. This new paradigm offers profound ramifications for how cities and counties cope in times of disaster – natural, manmade, intentional or inadvertent. And this paradigm of interoperability and collaboration addresses many of the most critical problems repeatedly identified in studies and analyses of past crises and how they can and should be handled better. A 2002 COPS white paper, *Local Law Enforcement Responds to Terrorism: Lessons in Prevention and Preparedness*, notes:

The recent terrorist attacks ... reaffirmed the importance of communications interoperability – the compatibility of differing systems and the ability for effective information flow to occur – among law enforcement agencies and the constituencies they serve. Interoperability should be occurring locally among neighboring law enforcement agencies, regional task forces, across levels of government, with emergency services such as fire and rescue, and within the community itself.



"Interoperability ... is a huge issue" for homeland security and disaster management, says Barbara Block, a staffer in the Dallas, Texas, Office of Emergency Preparedness, shown here in the city's underground Emergency Operations Center discussing the topic with John Kincaid, Dallas' 9-1-1/3-1-1 call center interim manager.

The following two sections examine in more depth the local government experience of interoperability and collaboration viewed from two perspectives – an external vantage point of government interacting (via 3-1-1) with the community of citizens, and an internal look at how the disparate agencies and technologies of local government can interoperate and collaborate (via CSRM systems) as one powerfully integrated community of public servants.

1.1 CONNECTING WITH THE CITIZENS IN TIMES OF CRISIS: THE REMARKABLE IMPACT OF 3-1-1

On September 17, 2001, police in the Texas state capital went live with the city's 3-1-1 phone number for police non-emergency calls. Funded by U.S. Department of Justice grant money intended to help Austin reduce its volume of non-emergency calls to 9-1-1, the launch of the 3-1-1 service launch originally was slated for September 11, but delayed in the chaotic aftermath of the terrorist attacks. As it turned out, the timing of 3-1-1's introduction to Austin couldn't have been better.

"Without 3-1-1 for the anthrax scares that occurred post-9/11," the enormous spike in citizens' calls to Austin Police "would have completely shut down 9-1-1," says Edward Harris Jr., the city's technical services bureau deputy director, who is in charge of emergency communications, forensics, and technical services. Moreover, the timing of the launch – amidst an unprecedented national crisis – resulted in extensive publicity for the new 3-1-1 service, despite the police department's dearth of marketing funds to introduce it to the city's residents.

"The day we went live every newscast promoted 3-1-1, and the promotion lasted for a month and a half, so everybody responded," Harris explains. "Today, 3-1-1 fields more calls than 9-1-1, so I can honestly say lives were saved."

Austin's remarkable experience with 3-1-1 – during a crisis and day-to-day – is not surprising to cities like Chicago and Baltimore, where 3-1-1 has been in operation even longer and has repeatedly proven itself



Ed Harris Jr. on the floor of Austin's new state-of-the-art center for 3-1-1, 9-1-1, and dispatch operations: "I can honestly say lives were saved" by the timely introduction of the Texas capital's 3-1-1 service in September, 2001.

invaluable not only during terrorist scares but also during more routine rain storms, summer heat waves and winter blizzards. Though one immediate and tangible benefit of 3-1-1 in a crisis is the prevention of 9-1-1 call center overload – ensuring that genuine emergency calls always get answered immediately – there are many ways 3-1-1 impacts how communities respond to crisis events.

For citizens in local communities, 3-1-1 provides a trusted source of information and answers to questions – where’s the nearest cooling center for my elderly grandmother who has no air conditioning? – as well as a single point of contact to report problems and then track their resolution. Like 9-1-1 and 4-1-1 (for directory information), 3-1-1 has proven to be an easily remembered number – successful publicity and education campaigns in Chicago, Baltimore, Allentown, Austin, Birmingham, Chattanooga, and elsewhere have demonstrated that citizens and businesses not only recall the number, but understand when it’s appropriate to use 3-1-1 vs. 9-1-1. Moreover, many citizens also have learned how to access many 3-1-1 services via the Internet, an e-government innovation which further reduces call center burden.

For Austin’s 3-1-1, The Results Are In

After nearly three years in operation, Austin Police have accumulated a wealth of statistical evidence indicating 3-1-1’s remarkable impact on emergency communications and police performance in the city. Deputy Chief Ed Harris Jr. and his colleague Robyn Hood-Fuentes, operations assistant manager for the Austin Police Emergency Communications Division, cite three pivotal improvements:

- **Reduced 9-1-1 call volumes.** Austin set a modest initial goal for 3-1-1 to reduce by 15% the estimated 60% of 9-1-1 calls that were non-emergency in nature. Actual results far exceeded anyone’s expectations – a 26% reduction of 9-1-1 calls in 3-1-1’s first year, a 31.5% reduction in calendar year 2002, and a 42.4% drop in 2003.
- **Efficient non-emergency incident handling.** Austin’s 3-1-1 operation employed various procedural innovations developed by Hood-Fuentes to improve police responsiveness to citizens in both emergency and non-emergency situations. Non-emergency crime incidents can be reported in their entirety over the phone, with follow-up by civilian crime scene investigators when necessary. This process improvement dramatically improves citizens’ satisfaction while freeing sworn police officers to focus on more urgent tasks.
- **Faster emergency response.** By combining more efficient non-emergency procedures noted above with enhanced call processing techniques, Austin police have managed to shave more than two minutes from police response times for “Priority 1” emergency calls – an extraordinary achievement in the First Responder context, when seconds literally make the difference between life and death. In 1999, the department’s Priority 1 response time averaged 8 minutes 59 seconds. By 2002, the average was cut by a full minute, to 7 minutes 57 seconds. Today, response time averages only 6 minutes 51 seconds.

Police dispatcher at her station in Austin’s new emergency communications facility, which includes 3-1-1, 9-1-1 and dispatch operations.



The deployment of 3-1-1 varies from city to city and county to county, dependent largely upon the breadth and depth of services local government makes available via 3-1-1. In general, there are two main approaches to implementing 3-1-1. One approach involves using 3-1-1 for non-emergency police and First Responder calls, as in Austin and Baltimore. The other approach is known as the “city services” model, often dubbed “One Call to City Hall” and used by Chicago, Houston, Los Angeles, and Chattanooga, which have replaced dozens or even hundreds of local government phone numbers with 3-1-1. However, it’s important to note that these general approaches can dovetail – Austin, for example, gradually rolled out 3-1-1 and CSRМ to provide access to all city services after initially launching with a focus on non-emergency police and related services.

Cities and counties also vary in terms of which agencies are responsible for 3-1-1 and how closely it is integrated with 9-1-1 call center operations. In Houston, 3-1-1 is managed by a director, Gloria Bingham, who operates the call center facility downtown and reports directly to the city’s Mayor. In Chicago and Austin, 3-1-1 and 9-1-1 are treated as separate operations (though in Austin, all operators now work together in the same Combined Emergency Communications facility). In any case, cities and counties that use 3-1-1 all emphasize the critical importance of integration between 3-1-1 and 9-1-1 systems – specifically, the ability to hand off incorrectly dialed calls with a push of a button. Dallas takes this integration a step further – 3-1-1 and 9-1-1 operations are completely combined under a single director, John Kincaid, with some 200 city call-takers fully cross-trained to enable on-the-fly switching between emergency and non-emergency calls.

The Importance of 3-1-1 Customer Service

No matter the model and the particulars of its deployment, a major emphasis in 3-1-1 – beneficial to both citizens and local government – is to make each call as productive as possible. Essentially, this means 3-1-1 should not function as a glorified switchboard, with city operators transferring calls to another department. Rather, 3-1-1 operators are highly trained customer service specialists using scripts and knowledge bases to handle each caller’s problem immediately. In this way, 3-1-1 directly reduces non-value-added process and administrative overhead and increases staff productivity – as demonstrated in Austin, where 3-1-1 directly translates into more cops on the beat to handle major crimes and large-scale emergencies.

Operator handles a call to 3-1-1 in Dallas, Texas, where 3-1-1 and 9-1-1 call center operations are fully integrated. From the same workstation, the city’s cross-trained call-takers can instantly switch between emergency and non-emergency functions depending on the volume of incoming calls.



The importance of customer service cannot be overstated – it’s crucial to 3-1-1’s role in a crisis, says Gloria Bingham, Houston’s 3-1-1 director.

“When I go to other cities, I’m sometimes offended by hearing the way government speaks to citizens,” she says. “You have to practice being nice every day. Daily service builds the credibility needed in a disaster. There’s nothing worse in a disaster than losing credibility.”

Because of 3-1-1’s emphasis on customer service, 3-1-1 dramatically elevates the individual citizen’s ability to engage with local government – and over time, increases the citizen’s confidence and trust in local authorities. As a result, citizens can become willing participants in homeland security and disaster management – not only turning to government for counsel in times of crisis, but also proactively reporting day-to-day problems and suspicious incidents in timely fashion. In Baltimore, for example, citizens are encouraged to report dead bird carcasses to 3-1-1 – like public safety analogs to the canary in the mine shaft, dead birds can be a leading indicator of West Nile Virus outbreaks and also could provide crucial early warning in the event of a chemical or biological attack.

1.2 BREAKING DOWN THE BARRIERS TO CRISIS TEAMWORK: ORGANIZATIONAL COLLABORATION AND INTEROPERABILITY THROUGH CUSTOMER SERVICE AND WORK ORDER MANAGEMENT

Back in the mid-1990s, a weather catastrophe shocked Dallas, Texas, leaders into recognition of the city’s inadequate technology infrastructure for handling large-scale emergencies. Veteran firefighter John Kincaid, now interim manager of Dallas’ 9-1-1/

3-1-1 call center, recalls how chaos erupted on May 5, 1995, during a night-time storm that dumped five inches of rain onto the city in one hour. A building collapse and flash floods caused mass casualties – including 16 dead – and the city found itself dispatching ill-prepared suburban fire department companies to high-rise buildings.



City Hall in Dallas, Texas, includes fire dispatch (above), police dispatch, the emergency operations center, and the 9-1-1/3-1-1 call center. “We consider public safety an essential part of city services and vice versa,” says John Kincaid, interim call center manager (above, right, with colleagues in the city’s state-of-the-art fire dispatch center).

That night's rainfall also triggered a flood of calls to 9-1-1, and "the volume actually brought the mainframe to its knees – we were taking calls on scraps of paper and we ran out of equipment to handle the calls," remembers Raymond Sweeney, Kincaid's predecessor as Dallas' 9-1-1/3-1-1 director. "After that, the city council started looking at the problem seriously."

Almost a decade later – after overseeing the implementation of 3-1-1 and its underlying customer service request management (CSRM) system, along with other enhancements to the city's emergency management infrastructure – Sweeney retired this spring with much greater confidence in the city's preparedness for crises, whether natural or man-made. "If we had a homeland security incident," he says, "we'd be better set up than most cities because of our 'one call to city hall' concept."

In recent years, Dallas, Chicago, and other municipalities have used this "one call to city hall" concept, enabled by CSRM technology, to break down traditional technology, process, and management barriers between departments and organize all of local government into a coherent team for emergency management as well as day-to-day operations. The concept requires cities and counties to embrace a new mindset as well as new technologies.

"We consider public safety an essential part of city services and vice versa," Kincaid explains, citing as one example the water department's critical role to ensure adequate water flow for firefighters during multi-alarm blazes. In fact, Kincaid emphasizes, water is just one of 28 city departments whose calls are handled by 3-1-1 – and which are potentially on call for disaster because their work is coordinated via the city's CSRM system. "With [CSRM], since we have one application for 3-1-1, one database to work with, it's a real advantage," he adds.

How CSRM Enables Collaboration and Interoperability

As in Dallas, the same vision of technology-enabled inter-organizational collaboration predominates in Chicago today – in stark contrast to traditional approaches to emergency management, says Ted O'Keefe, the city's director of 3-1-1 city services.

"Right now, in discussions around homeland security or critical events, a lot of what we focus on is First Responders, meaning police and fire," O'Keefe explains. "Particularly with natural disasters and homeland security, it goes beyond police and fire – involving departments responsible for water flow, for traffic and transportation, for logistical support



Figure 1.2.1: The CSRM system functions as a hub connecting (and making interoperable) numerous other local government systems and technology-enabled processes that together manage emergencies as well as day-to-day operations.

for law enforcement, for making sure roads are clear, water is safe, water infrastructure is intact, and so on. All of those logistics are managed by 3-1-1 and our [CSRM] system.”

The CSRM system facilitates this city-wide coordination by functioning as a hub (see diagram 1.2.1, above) that connects (and makes interoperable) not only 3-1-1 service request intake, but also numerous other local government technologies and technology-enabled processes that often previously worked as disconnected or poorly integrated systems:

- Geographical information systems (GIS), a valuable tool developed at great expense in recent years by many local governments but to date often utilized in limited ways;
- Computer-aided dispatch (CAD) systems for police, fire, and EMS;
- Various other systems and databases developed by cities and counties to manage financial data, property and building records, police and other First Responder data, local government assets (vehicles and equipment), and other government records and processes;
- Legacy systems, often running on antiquated mainframes, used to manage on a departmental level many of the same processes that the CSRM system manages on an enterprise (cross-departmental) level;
- Mobile computing and communications devices, ranging from pagers and handheld computers to laptops and vehicular mobile data terminals (MDTs) used increasingly by First Responders as well as many other local government agencies to rapidly and efficiently manage and communicate with their staff in the field;
- Performance management systems and processes designed to measure results and thereby institute greater accountability for local government agencies (such as variations of the CitiSTAT process pioneered in New York City and used to great effect by local governments in Baltimore, Chattanooga, Tenn., and elsewhere).

Real-life examples abound of how this “hub model” of CSRM and related technologies enable a collaborative, interoperable local government that improves daily efficiency and service to citizens and performs with vastly improved effectiveness in a crisis. (*Part 3 of this report explores this aspect of 3-1-1 and CSRM in greater depth.*)

For homeland security and disaster management, CSRM routinely coordinates emergency response, public information, and incident tracking during and after flooding, hurricanes, tornadoes, snow and ice storms, and other weather-related emergencies, as well as during potential or actual terror threats and other human-caused crises. CSRM, integrated with other systems, provides a central repository of all damage and incident reports, generates alerts (and directs the response of) First Responders and other departmental personnel, and provides an analytical tool to monitor and analyze with great precision both the impact of the crisis and the performance of the city or county’s response. (*Part 2 of this report discusses in more depth how 3-1-1 and CSRM facilitate the end-to-end emergency management process.*)

“Right now, in discussions around homeland security or critical events, a lot of what we focus on is First Responders, meaning police and fire. Particularly with natural disasters and homeland security, it goes beyond police and fire – involving departments responsible for water flow, for traffic and transportation, for logistical support for law enforcement, for making sure roads are clear, water is safe, water infrastructure is intact, and so on. All of those logistics are managed by 3-1-1 and our [CSRM] system.”

Ted O’Keefe, Chicago’s director of 3-1-1 city services

For example, Baltimore, Dallas, Chicago, and Houston all use CSRM to intake 3-1-1 requests from citizens during heat emergencies, mobilize cooling facilities such as libraries, coordinate efforts by human services staff and city transport to get endangered citizens to cooling centers, dispatch (often via wireless handheld devices) building code enforcement inspectors to ensure buildings are providing adequate cooling, and throughout the emergency track the status and resolution of each individual citizen's complaint to ensure no one "falls through the cracks."

During one such heat emergency, Chicago's Ted O'Keefe personally came to the aid of an elderly citizen whose concerned relative living in California contacted 3-1-1 after unsuccessful attempts to reach his sister. O'Keefe quickly was able to assure the caller that city personnel went in person to contact and aid the senior citizen – but discovered, through a neighbor, that she was in fact out of town.

In fact, using CSRM can deliver many of the benefits of streamlined citizen-to-government and intra-governmental communication and collaboration without the implementation of a 3-1-1 call center. In Akron, Ohio, for example, CSRM implementation combined with business process improvements delivered benefits well in advance of putting in place its planned 3-1-1 call center – created the streamlining of local government operations that paid for the CSRM investment and justified the capital investment in 3-1-1.

On the other hand, Austin opted to introduce 3-1-1 initially, to be followed this year and subsequently by its full CSRM implementation and a gradual rollout of 3-1-1 and CSRM-enabled processes to other city departments. The CSRM implementation has been awaiting completion of numerous other infrastructure improvements coming online – including some \$90 million in radio communications equipment and a \$6 million facility for combined emergency operations management and communications functions such as 9-1-1, 3-1-1, and dispatch.

This state-of-the-art infrastructure overhaul has been more than 10 years in the making by Austin's city government and its key partners, the first responder organizations in surrounding Travis County, according to Scott Swearingin, assistant director of Austin's Office of Emergency Management. He says implementation of CSRM will cap this visionary transformation by enabling the eventual roll-out of 3-1-1 and service request management to all local government departments, citywide and even countywide.

Thus, cities and counties have the flexibility to implement the "Whole Community" model of emergency and day-to-day management in manageable stages – in a manner fitting their unique local requirements and resource constraints.

PART 2

EMERGENCY MANAGEMENT WITH CUSTOMER SERVICE REQUEST SYSTEMS

Preparation and Prevention, Response, Recovery, Analysis: The Full-Life-Cycle Solution for Homeland Security and Disaster Preparedness

Miami-Dade, Fla., which combines city and county into one integrated local government, opted to implement its new 3-1-1 phone number and customer service request management system as the community's comprehensive emergency management system as well as a day-to-day system to manage service requests and work orders for various local departments and agencies. The emergency management capability will be a vital for the region, where large-scale tropical storms and hurricanes are commonplace and where, in its role as a gateway to Latin America and numerous other international destinations, homeland security is as well a critical concern for local government.

As part of its deployment of CSRM as an emergency management system, the Miami-Dade emergency operations center (EOC) is implementing a CSRM knowledgebase that contains all key information required by EOC staff to respond to calls from the public, as well as to create emergency-related service requests.

Once an emergency situation is declared, 3-1-1 and the CSRM system can be used to generate a variety of outbound messages and alerts to citizens, condominium and other homeowner associations, and other community entities that have registered to receive these types of alert messages. As use and familiarity with the 3-1-1 phone number increases among Miami-Dade citizens, that translates into improved ability for Miami-Dade officials to disseminate key information to citizens about an emergency. Moreover, with the municipality's

Working Together in the Texas Capital

Anthrax scares in the fall of 2001, ice storms in 1998 and 2001, and serving as a reception community for Texas' coastal storm evacuees all have underscored the importance of collaborative preparedness for Austin and surrounding Travis County's emergency management leaders. In the city and county's new Emergency Operations Center, opened in early 2004, Austin Police's Robin Hood-Fuentes is flanked by (left) Pete Baldwin, the Travis County emergency management coordinator, and Scott Swearingin, assistant director of the city's Office of Emergency Management.

"People learned how much better it worked if you worked together – both in major emergencies and day-to-day," Baldwin says. "Beyond the city and county, we have very strong ties with neighboring counties, and we are continually working on interoperability and coordinating regional response."



deployment of wireless handheld devices for a number of departments' field personnel, the CSRM system gives local government an improved ability to identify changing dynamics of an emergency and then direct field personnel accordingly.

As Miami-Dade and other cities and counties have discovered, the highly flexible framework of 3-1-1 and CSRM – integrated with geographic and other government information systems – provides an ideal platform for many aspects of local homeland security and disaster preparedness. The performance of 3-1-1 and CSRM have been addressed in Part 1 of this report; this section, Part 2, provides an overview of how CSRM functions in each of four stages of emergency management:

- **Preparation and prevention** – ensuring preparedness for any emergency, and using intelligence generated by the system to discover and prevent crises before they occur
- **Response** – coordinating the actions of the entire local community in response to a crisis
- **Recovery** – managing the generally non-emergency activities that frequently are much more extensive and time-consuming in the aftermath of an emergency
- **Analysis** – using CSRM's data gathering, analysis, and reporting features to critically evaluate emergency response and develop recommendations for future improvements

CSRM for Preparation and Prevention

CSRM functions as an emergency preparedness tool in two primary ways. First, because it manages on a daily basis the end-to-end process of service requests and work order completion, it provides at any point in time an instant "handle" on the status of work going on in many areas of local government. Used in conjunction with geographic information systems and real-time location devices on vehicles, local government supervisors as well as emergency management personnel literally can know the precise location and status of every work crew and vehicle in the community.

For the all-important effort to prevent crises – in particular, large-scale accidents and homeland security events – CSRM in conjunction with the 3-1-1 call center provides a powerful tool for incident reporting and trend analysis of seemingly disconnected problems and events.

"The 311 system [CSRM], as the information hub for all City services, is one of the keys to successfully coordinating the efforts of multiple City departments before and during complex emergencies and special events," says Ron Huberman, executive director of Chicago's Office of Emergency Management and Communications. "In many ways, it is the oil that keeps the machine running smoothly."

In Baltimore, "one of the indicators tracked in our bio-terrorism surveillance system is the number of animal carcasses retrieved throughout the city," explains Elliot Schlanger, the city's chief information officer. "Our citizens initiate these requests for animal carcass pick-ups, which are recorded and managed through the [CSRM] system. These requests are then exported out of CSRM into the bio-terrorism system, helping support the intelligence-gathering that might indicate the symptoms of a biological attack."

“The 311 system [CSRM], as the information hub for all city services, is one of the keys to successfully coordinating the efforts of multiple city departments before and during complex emergencies and special events. In many ways, it is the oil that keeps the machine running smoothly.”

Ron Huberman, executive director of Chicago's Office of Emergency Management and Communications

Like Baltimore, which also tracks dead bird reports from calls to 3-1-1 as part of its protocol for identifying West Nile Virus outbreaks, Chicago uses CSRM data to track dead animal reports that could be an early indicator of disease as well as possible chemical or biological terrorist attacks. The city also uses data collected via 3-1-1 and 9-1-1, input by city workers into CSRM, and extracted from other city systems to track stolen city property, analyze patterns of seemingly disconnected incidents, and proactively monitor the status of critical infrastructure.

Emergency Response During a Crisis

During a crisis, CSRM routinely coordinates myriad aspects of emergency response by local government agencies acting in support of First Responders. It is particularly useful (especially in conjunction with 9-1-1 and 3-1-1 call centers) for communicating accurate information to the general public as well as for intake and tracking of individual incidents reported either by citizens in the community or by local government personnel. CSRM, integrated with other systems, provides a central repository of all damage and incident reports, generates alerts to (and directs the response of) both First Responders as well as other departmental personnel. And in the chaos of a crisis, the data captured in CSRM provides an analytical tool to monitor the unfolding crisis and determine how to assign appropriate resources in response.

The City of Chicago, according to Ted O’Keefe, 3-1-1 city services director, has found the combination of 3-1-1 and CSRM to be particularly useful for situation analysis during large-scale weather events such as damaging wind-and-rain storms.

“The system highlights the areas where people are calling for help – so it is not just a random set of calls,” O’Keefe explains. “When a number of people call to say trees were pulled out of the ground, for example, these calls can be sorted geographically and can be mapped. It begins to paint a picture of where the heaviest storm damage has occurred – we can see the storm hit a lot harder along the 47th Street corridor, for instance – and by mapping these calls out, the department can begin to see where to send investigators in the region. They’re able to respond intelligently – it helps them to target their resources to the area that’s most affected and begin to triage the response to the area most in need.”

A recent homeland security exercise in Chicago also demonstrated the importance of having remotely located backup systems in place – one of the bitter lessons learned in New York City after September 11, 2001.

“We’ve established a disaster recovery protocol” for 3-1-1 and CSRM, O’Keefe explains. “Should our network go down, we could still access our data from a server in Arizona. It’s a redundant production server at the ready, and we back up to it every four minutes. Within minutes of simulating a disaster in Chicago, simulating that we no longer had server access, we were able to access the system through the disaster recovery protocol we’ve put in place.”

Recovery in the Aftermath of Disasters

Arguably, CSRM performs its most valuable work during the recovery phase of a large-scale disaster, handling a diverse array of crucial though non-emergency tasks that other emergency-related systems – such as computer-aided dispatch for police, fire, and EMS – are not at all equipped to address. Most importantly, CSRM provides the capability to coordinate the recovery across the entirety of local government and the community at large.



"It takes a community to recover from a disaster," says Sharon Nalls, coordinator of Houston's Office of Emergency Management, shown here at a command workstation in the city's emergency operations center studying a computer simulation of a large-scale storm striking the nearby Texas coastline – unfortunately, not an uncommon real-life event in Houston, a sprawling metropolis where major flooding occurs, on average, at least once every year.

"It takes a community to recover from a disaster," says Sharon Nalls, coordinator of Houston's Office of Emergency Management. As recounted in the introduction to this report, Houston leveraged CSR extensively in the aftermath of Tropical Storm Allison, which slammed the city in November of 2001. The 3-1-1 call center staff used CSR to intake and track through completion the thousands citizens' service requests that poured in during the months of recovery efforts after the storm. Aside from reporting building and infrastructure damage, a large number of these requests involved bulk pick-up of items such as rotting carpet, damaged furniture and appliances, spoiled food, and storm debris.

Nalls also notes that "you cannot underestimate the importance of damage assessment – our budgets aren't designed with disaster buffers, so it's an addition to normal operating budgets." The CSR system is an invaluable tool for accounting of both damage caused as well as effort incurred in cleanup.

"We have limited resources ... so efficient response is critical," says Gloria Bingham, Houston's 3-1-1 director. "It's getting harder and harder to declare disasters and get funding." After Allison, however, that effort was made much easier because CSR provided detailed accounting of clean-up efforts as required for disaster relief funding from the State of Texas and the Federal Emergency Management Agency (FEMA).

Analysis After the Crisis

As with reporting of damage and recovery efforts, the comprehensive data contained in the CSR system becomes a highly useful tool when local government leaders retrospectively analyze the event to determine what could be done better. For example, Houston took a hard look at its response during and after Tropical Storm Allison. Despite its new emergency operations center and extensive experience handling prior storms – a

significant flood strikes Houston an average of once yearly – Allison still taught some important lessons, according to Nalls, the city’s Office of Emergency Management coordinator.

“Our response was a motivated community, but not necessarily good planning, so now the emphasis is on [improving] our plans and identifying the gaps in our response,” she explains.

Chicago’s O’Keefe emphasizes that “this kind of transparent system ensures accountability – it’s given us an accurate understanding of just what we’re doing and how long it’s taking us to do it. This system enables us to establish benchmarks [based on prior experience] for service delivery. ... It really provides a wealth of information that city managers can use ... to establish realistic goals, both for themselves and for the [greater community].”

“This kind of transparent system ensures accountability – it’s given us an accurate understanding of just what we’re doing and how long it’s taking us to do it.”

Ted O’Keefe, Chicago’s director of 3-1-1 city services

PART 3

THE BIG PICTURE PAY-OFF FOR 3-1-1 AND CUSTOMER SERVICE REQUEST

Cities and Counties across America Reap Remarkable Returns from Investing in Emergency Management Technology that Pays Daily Dividends

Skepticism about government is arguably at one of its highest points in decades. Politicians are generally deemed untrustworthy. Government is often viewed as a bloated, unproductive bureaucracy. Perhaps most importantly, citizens fear their communities will not be able to respond to an emergency, be it a natural disaster, or worse, a terrorist attack on American soil. With such concerns running rampant among constituents, political leaders in America’s cities are looking for ways to demonstrate success.

Enter 3-1-1 and customer service request management (CSRSM), an innovative technology-enabled approach to increase government effectiveness and citizen satisfaction during crises and day-to-day. In effect, 3-1-1 gives a citizen access to all areas of its local government via three simple, memorable digits. Phone book blue pages are rendered obsolete. No longer do citizens need to guess which department to contact, then get shuffled from department to department when they dial wrong numbers.

“We expect members of the public to go through more than a hundred numbers in the blue pages and find the right [one] to call to register a complaint,” commented David Eichenthal, director of the Office of Performance Review for the City of Chattanooga, Tenn., in a 2003 special report from *American City & County* magazine.

“With 3-1-1, we’re shifting the burden back to government.”

With 3-1-1, a highly skilled customer service representative asks questions to determine how best to help the caller. Then, using sophisticated scripts and database tools, the representative either resolves the issue on the spot or enters a service request into the CSRSM system and provides a service request tracking number for future reference. In some cases, when needed, the representative routes the caller to that department with a “live handoff” – ensuring a connection with the right person to help. The result: a satisfied – if not somewhat pleasantly surprised – citizen who is able to get his or her problem solved quickly.

Largely invisible to the citizen, CSRSM handles what happens behind the scenes to satisfy the citizen’s service request. On a daily basis, CSRSM creates transparency and accountability while streamlining processes within

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*David Eichenthal
Director, Office of
Performance Review
Chattanooga, Tenn.*



"If you want to let the mayor know you don't like a decision, or you want to cast your 'vote' on an important issue, you just call 3-1-1. We've created an accountability mechanism [and] I believe we've earned the respect of the citizens of Houston," says Gloria Bingham, 3-1-1 director. Left, one of Bingham's service representatives handles a citizen's inquiry in Houston's 3-1-1 call center.

and among local government departments. It accomplishes this feat by its holistic ability to manage, from start to finish, virtually any request for service involving one or more participating departments. This service-oriented approach can have remarkable impact. Chicago, for example, improved sewer department response time by 83 percent and slashed delivery time for new garbage cans from 17 days to two days. In Baltimore, the mayor can confidently promise constituents that missed garbage pickups and potholes, for example, can be resolved within a day.

3-1-1 and CSRM: 'It's all about improving citizens' lives'

Unlike the private sector, where return on investment is frequently measured in costs saved or revenues gained, government measure of success hinges heavily on a safer and more satisfied community. "It's all about improving citizens' lives," said John Kost, managing vice president for public sector worldwide at Gartner, the Stamford, Conn.-based industry analyst and research group. "The more a city can get its workers out of the office and into the streets meeting community needs, the more effective that government can be."

With 3-1-1 and CSRM, government becomes an integrated workflow engine, enabling multiple departments to work together to resolve issues reported to the call center. Consider a severe thunderstorm and its impact on a neighborhood. Power is out in hundreds of homes. Trees are down. Street lights are out. The drainage infrastructure has reached capacity, and flooding is blocking roads. In the old days, taking care of such a situation would involve stacks of paper, and duplicate or improperly timed deployment of workers from multiple government departments.

With 3-1-1 and CSRM, calls from the community are mapped, electronic work orders are issued, and prioritization of activity occurs with just a few keystrokes. Forestry department employees clear fallen trees, sanitation employees ensure drainage ducts are open, and electric workers restore power and fix street lights. All this occurs in a streamlined fashion, and all in an appropriate order.

"Our city's departments are able to respond intelligently," says Chicago's 3-1-1 City Services Director Ted O'Keefe. "It helps them to target their resources to the area that's most affected and begin to triage the response to the area most in need."

More than just a community complaint line, 3-1-1 in conjunction with CSRM enables government to better organize its own workload. For example, in Chicago, O’Keefe says more than 60 percent of all logged entries into CSRM are input by government staff, not from citizens via 3-1-1 or the Web. Thus, the system operates as an organizational tool to keep all departments operating efficiently.

Measuring Results of Technology Investment

However, measuring such technology-enabled performance improvements can be challenging for government, particularly in the financial terminology such as return-on-investment (ROI) that’s commonplace in the private sector but more unusual for the non-profit public sector.

“People have to understand how to use these technologies to create efficiencies and how to build a strong business case,” Kost says. “But local government hasn’t done a very good job to date in calculating the ROI, in understanding the economic impact of one sort of investment vs. another.”

Still, a number of cities and counties have made progress. Most cities that use 3-1-1 and/or CSRM have instituted measurements that track performance linked to certain departmental goals. In Baltimore, for example, missed trash pick-up is to be resolved in one day, graffiti in less than a week, and a water leak in less than 24 hours. The city’s CIO, Elliot Schlanger, also has attached numbers to the city’s remarkable technology-driven improvements, citing ballpark figures of nearly \$50 million in “positive impact” over two years based on reductions in overtime, absenteeism and accident time, reduced operation costs, increased revenue streams, and termination of costly, low-priority purchases and programs. The city also has experienced one of America’s most remarkable drops in crime in only a few years.

“It’s the real-time delivery of information that has allowed Baltimore to achieve these best-in-class results,” Schlanger says. “3-1-1 has put accountability back into government, and our citizens have responded with resounding praise.” Citizen polls back up his assertions.

Chicago’s O’Keefe claims that, because of CSRM’s ability to flag multiple service requests for the same problem, “we calculate our savings in millions by avoiding duplicate dispatch for the same service.” Akron, Ohio, has paid for its CSRM investment, and then some, through CSRM-enabled process improvements enabling it to increase service levels while attrition gradually reduced its workforce in many departments. Dallas, Texas, was able to close down eight satellite 9-1-1 call centers, replacing them with a single, more cost-effective operation for 9-1-1 and 3-1-1.

Such results help to build a dual-case justification for investing in 3-1-1 and CSRM – an emergency management solution that transforms day-to-day operations of cities and counties – which in turn enhances preparedness and response to disaster. This validates the notion that “the best system for homeland security is one you use every day.”

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