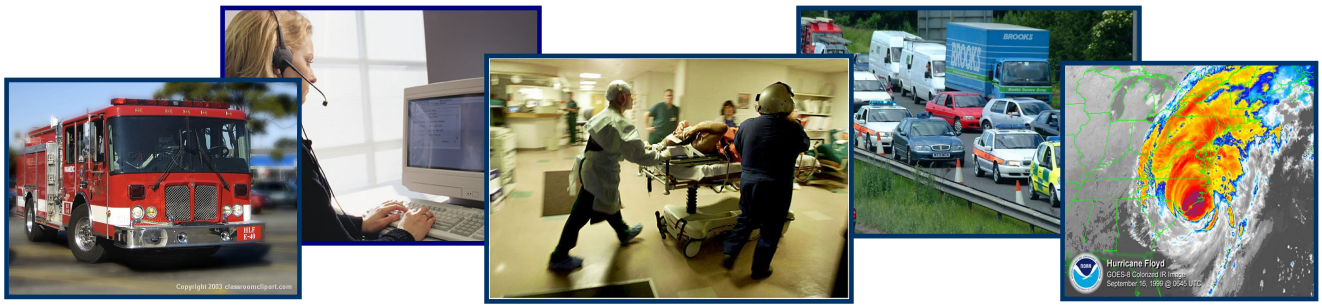

EMERGENCY DATA INTEROPERABILITY DEMONSTRATION

October 27, 2004

On October 27th the Emergency Interoperability Consortium (EIC), along with the George Washington University Homeland Security Policy Institute and the ComCARE Alliance, sponsored an emergency data interoperability demonstration. Technology vendors serving the emergency response community developed interfaces using the recently developed XML-based Emergency Data Exchange Language (EDXL) message "header" to demonstrate information exchange among agencies in the national capital area. Using standardized interfaces and common message sets, the participants demonstrated how a group of cross-jurisdictional government and emergency response agencies can effectively generate, receive, and update emergency messages in real-time — quickly and inexpensively.

Among the event's distinguished speakers was Steve Cooper, Chief Information Officer for the Department of Homeland Security, who engaged the audience in an interactive question and answer session. Cooper stressed the importance of data interoperability and the need for rapid progress saying that "for multi-jurisdictional emergency events, data interoperability is the highest priority." Describing the event, Cooper went on to say, "The faster we can move to take successes like this…and make them pervasive across the country, the safer all of us will be."

Steve Cooper, CIO for the Department of Homeland Security

"The demonstration today is a direct result of the leadership DHS has shown in helping us bring together so many different organizations to help develop these standards," said Matt Walton, Chairman of the EIC and Vice Chairman of E Team, Inc. "We have over 100,000 emergency response organizations of various kinds, most of which make their own decisions on which communications and information systems they should buy. We need these common data standards so they can all share emergency information."

The narrator of the demonstration, Dr. Jack Potter, Vice Chair of ComCARE and Director of Emergency Medical Services for Valley Health System, said, "Common standards allow for the development of an architecture that supports data sharing of any type, from an individual, everyday car crash to a mass casualty disaster. We can use the same system for both."

The Emergency Data Exchange Language (EDXL) Project

Many individual constituencies within the emergency response community have been working within their own professions to develop and adopt standards for emergency data exchange. Unfortunately, many of these individual standards are often inconsistent with those of other emergency response organizations. This creates a significant problem when data exchange is needed between constituencies and across jurisdictions, as it often is in daily and mass emergencies.

The need for data interoperability using common standards has been identified as a key issue by the Department of Homeland Security (DHS) through OMB's Disaster Management eGov Initiative.

DHS is facilitating a process, organized by the ComCARE Alliance, to bring together leaders of key emergency organizations that have been developing specialized XML standards for their individual professions. The project's goal is to coordinate the requirements definition and the data set content for emergency information sharing *between* these professions.

The demonstration took place in front of a full-capacity crowd at The George Washington University.

Participants from various XML data initiatives representing law enforcement, public safety, EMS, emergency medicine, emergency management and transportation are involved in the project. Their involvement is important because they bring knowledge of existing data initiatives such as the Global Justice XML Data Model (GJXDM), the IEEE ITS Incident Management (IM or 1512) Initiative, the National EMS Information System (NEMSIS) standard recently issued by the National Highway Traffic Safety Administration and EMS groups, 9-1-1 standards, and emergency management standards being developed by the Emergency Interoperability Consortium (EIC) and OASIS.

The project is using a phased approach. The first phase included the development of a draft message "header" specification to be added "in front of" emergency XML messages of all kinds. Its core use is in message routing. Any properly formatted XML message (e.g. Common Alerting Protocol; Amber Alert) can be a "payload", the actual message content within the header.

Subsequent phases include the careful review of profession-specific "data dictionaries" to develop a list of "common terms" that can be used across professions. These terms, in turn, will be used to populate additional standards that are planned for development in later phases of the project.

Demonstration Overview

The demonstration highlighted a terrorist plot that involved the hijacking of commercial trucks for use as possible weapons. The incident scenario played out as follows:

Credible intelligence obtained by a federal agency indicated that there was a terrorist plot to hijack commercial tanker trucks and drive them into government buildings in the nation's capital. The federal agency issued a terrorism alert and put government and emergency response agencies on high alert.

Two trucks were hijacked, one in Guilford County, NC and another outside of Nashville, TN. Both were headed towards DC filled with highly hazardous materials. Around the same time, a van passed through the toll booths on I-95 South outside of the Ft. McHenry Tunnel and set off a radiological sensor indicating very high levels of radiation, high enough to be a potential dirty bomb, headed towards DC.

Due to the data sharing capabilities being demonstrated and fast response by the emergency response agencies involved, one of the tanker trucks and the van were stopped and the criminals apprehended. Unfortunately, the other tanker truck crashed and released a large quantity of highly toxic chlorine into the air at the I-495/Rt. 50 intersection in Prince George's County, MD. Messages were sent to and from a multitude of emergency response agencies in the capital region using numerous applications. Actions were taken to manage the events as they unfolded. Chlorine inhalation instructions were able to be sent to first responders and alerting companies were able to alert government officials and the public to evacuate the area within a half mile radius of the spill.

During the demonstration, numerous different systems were able to send and receive messages, a capability that does not exist today. If this scenario were to unfold today,

- How would agencies in Nashville, TN know what agencies to contact in the capital region?
- Would they know which agencies have a need to know about this potential terrorist activity?
- How would information on a system being used in Guilford County, NC get transferred to systems in the capital region?

Even within the capital region a cross-jurisdictional system to share data among multiple agencies of all types does not exist. These are the issues that are being resolved in part by the EDXL project and that were addressed during the demonstration.

Describing an incident similar to the demonstration scenario that occurred a few years back, Frederick County, MD Emergency Manager, John Markey, said that what would have been very helpful at the time is software that enabled him to instantly broadcast a message explaining the incident to a wide variety of agencies. "I need to get the information about this type of event to a large group of people, both geographically and to various levels of government, and I want to be able to do that quickly," Markey said.

Demonstration Mechanics

First, all of the systems being demonstrated were using a common format to route messages, the EDXL header, and a common standard for the content of the messages, the Common Alerting Protocol (CAP), allowing all of the systems to talk in the same language. Second, the demonstration showed that by using common standards, multiple options for data messaging are possible. Specifically, as indicated in Figure 1, four methods of communication using the header are possible.

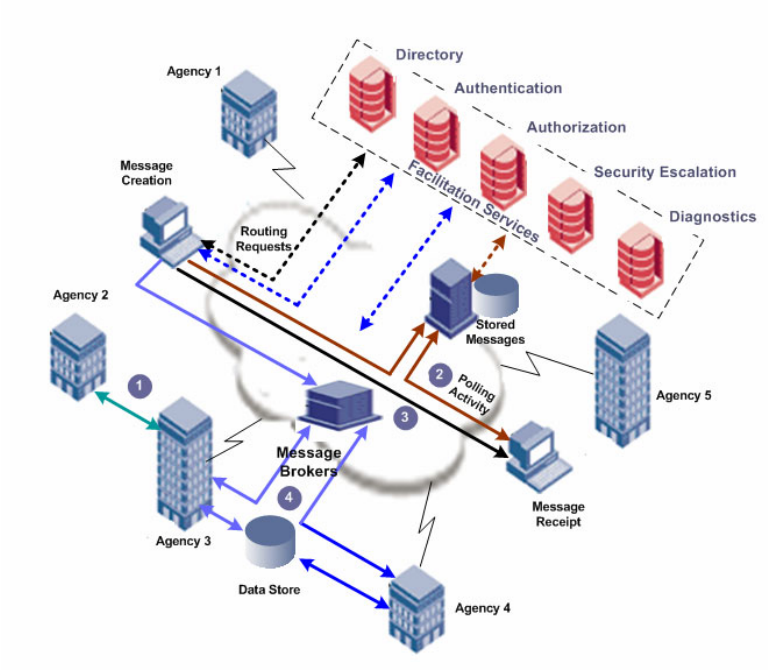

FIGURE 1: Emergency Data Interoperability Operations

1. *Direct agency to agency (application to application) communication*
   Agencies that have a pre-existing relationship with another agency can share data between systems as long as an interface between the two systems is developed in advance.

2. *Multiple agency communication using a posting service*
   The Disaster Management Interoperability Server (DMIS) is an example of a Web service that provides responders with communication tools that allow them to share information with other responder organizations. Responder groups receive and transmit information over the Web, enabling them to rapidly develop and exchange incident information with other responder organizations. Simply put, agencies can post messages to DMIS and other authorized agencies can pull those messages into their own systems.

3. *Multiple agency communication using facilitation services*
   The Emergency Provider Access Directory (EPAD), being created by the ComCARE Alliance, is a geospatially-enabled electronic directory that supports the geographic targeting and cooperative exchange of timely and relevant emergency incident information. Emergency response agencies and authorized private entities register in the directory indicating their geographic and incident information preferences as well as their prioritized contact information, identifying computer addresses, fax numbers, telephone numbers, and designated back-up agencies. The simple act of registration supports the automatic routing of vital information about a mass emergency or a single event to the appropriate authorities quickly and securely. Therefore, an agency can generate a message with a specified event type and location and query EPAD to determine to whom the message should be sent and how it should be sent.

4. *Multiple agency communication using an Intelligent Message Broker (IMB)*
   This can include any combination of the above but involves the use of a message broker in between different systems, connected to facilitation services like EPAD, DMIS, or both, to collect messages and disseminate them to appropriate end users.

When messages were generated, the data was delivered in real-time to the other systems participating in the demonstration. One system could query EPAD directly and then send (or not send) the message directly to other users based on the information returned by EPAD, instructions entered into the directory by the agencies themselves. Similarly, a message could be delivered to DMIS, where it is stored and made available to the agencies whose systems can pull the messages into their systems.

Once systems are capable of receiving XML messages using the EDXL header, there are numerous ways information can be shared. This was demonstrated successfully during the interoperability event.

PARTICIPATING ORGANIZATIONS

Blue 292	www.blue292.com
ComCARE Alliance	www.comcare.org
DICE Corporation	www.dicecorp.com
DisasterHelp	www.disasterhelp.gov
Disaster Management	www.cmi-services.org
Emergency Interoperability Consortium	www.eic.org
ESI	www.esi911.com
E Team	www.eteam.com
Fire Monitoring Technologies International Inc.	www.openaccess.ca
The GWU Homeland Security Policy Institute	www.homelandsecurity.gwu.edu
Maryland Institute for EMS Systems	www.miemss.org
Maryland Interoperability Initiative	
MyStateUSA	www.mystateusa.com
Proxicom	www.proxicom.com
SDI	www.sdicorp.com
Towson University	cgis.towson.edu
Virginia Hospital and Healthcare Association	www.vhha.com; www.vhha-em.com
Xybernaut	www.xybernaut.com

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