

Distributing Emergency Data Using Messaging Standards

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In my article, “Why Should Emergency Managers Care about Data Standards” (Sept. 2009 *IAEM Bulletin*), I discussed data standards and how they could be used to allow interoperability among different software systems by agreeing on how they exchange data. This article will focus on what can be done with those data packets.

Development of EDXL Program

There is another standard developed through the U.S. Dept. of Homeland Security Science and Technology Directorate’s Emergency Data Exchange Language (EDXL) program. The EDXL-Distribution Element (DE) was developed specifically for routing emergency data. The Organization for the Advancement of Structured Information Standards (OASIS) Emergency Management Technical Committee developed the specification from the initial requirements and ratified the EDXL-DE as an International Standard in 2006.

EDXL is a suite of data standards being developed to provide for interoperable communication of all types of emergency data between disparate systems and all levels of government. The EDXL DE, Resource Messaging (RM), and Hospital Availability Exchange (HAVE) standards support DHS’ SAFECOM Continuum and have become ratified through the OASIS process. The emergency management community is installing the EDXL standards all over the world.

The Distribution Element (DE) specifies the data that describes to whom and under what circumstances you send/receive data. It can be envisioned as an envelope where the DE has the addressing information expressed in such a way that it can be read without opening the envelope. This allows software systems to move the data

in the envelope without having to read (process) the contents. The envelope contains data such as a CAP (Common Alerting Protocol) message, an RM or HAVE message, or simply a spreadsheet or document. It also may contain multiple messages or “payloads” that pertain to the same incident. By providing a data standard for this type of addressing, a routing system, like a postal service, can manage the movement of the envelopes.

In addition to basic addressing data, the DE specifies the functional role of the sender/receiver, the type of incident and the confidentiality of the payload. (See www.oasis-emergency.org for a complete definition of the DE). The delivery area can be described by a geographic location or by political or administrative codes. This allows for messages to be routed in the same way no matter the jurisdictional boundaries. This becomes a powerful ability to route messages to one or more recipients based on business or process-driven rules.

Routing of Messages

Have you ever opened up the hidden part of an e-mail message? There is quite a bit of routing information provided that means nothing to most of us. However, it allows routers to be able to move your e-mail to the location it was intended to reach. Routers are being developed for routing emergency messages in a similar way. The business rules for the routers are developed to route messages based on the data in the DE. In that way, data can get to the desired recipient(s) without the sender having to decide each time where the data should go.

Let’s look at an example. We have a train wreck that involves a chemical spill. The sensor on board

the train almost instantly detects chlorine and is capable of producing a CAP message with date, time, geographic location, etc. This message is packaged in a DE and sent to multiple locations based on the geographic location of the incident. The train carrier, local EMA or other defined recipients get the initial message defined by the business rules in the router. Depending on the rules defined, there is a verification of the incident before the message is further distributed. There is a jpeg image that the train carrier has obtained of the incident that has been acquired from onboard cameras and can also be packaged in the envelope with other data. Routing rules may be set such that once the local EMA is notified, a CAP message is sent to first responders calling them to action. At the appropriate time or under predefined conditions, CAP messages can be sent to sound public alerting devices that are in the geographic area of the incident. EAS, sirens and telephone alerting systems can all be engaged. You can readily see how much time can be saved by employing these message routing techniques.

Interoperability Demonstration at IAEM/EMEX 2009

During the IAEM Annual Conference in Orlando, there will be an interoperability demonstration using these data standards. You will be able to see software systems communicating using the CAP, DE and HAVE. Please take time to stop by EMEX Booth 411 during the conference. A panel discussion to address these topics will be held Nov. 4 from 11:00 a.m.-12:00 p.m.

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