

Emergency Data Exchange Language (EDXL) Overview and Phased Approach

Background

Multiple efforts are being pursued by federal, state and local organizations and agencies to advance emergency response and management information sharing and data exchange. Each organization tends to focus on their own communities and pursue different approaches ranging from data-driven to define and standardize data and specific terminology (represented by data models), to business function / process-driven to define and standardize messaging interfaces structured around functional areas.

While multiple layers are required to address this larger initiative, the EDXL initiative is focused on developing specific inter-professional, inter-agency emergency messages used to accomplish specific mission tasks. These emergency messages will utilize standardized data content generated by other efforts.

The outcome of the EDXL effort will be a set of standards that govern emergency response messaging (information sharing) across the local, state, tribal, national and non-governmental organizations of different professions that provide emergency response and management services. Once a given EDXL message format is standardized, any technology vendor or organization can easily develop their EDXL-based messaging interface.

EDXL

The goal of the EDXL initiative is to facilitate emergency information sharing and data exchange across the local, state, tribal, national and non-governmental organizations of different professions that provide emergency response and management services. The effort focuses on standardization of *specific* messages to facilitate emergency communication and coordination particularly when more than one profession is involved. Once standardized, any technology vendor or organization can easily develop their XML-based messaging interface.

The EDXL Practitioners group drives priorities and requirements for specific EDXL messages sets and messaging components. The objective is to rapidly deliver implementable standard messages in an incremental fashion directly to emergency response agencies in the trenches, providing seamless communication and coordination supporting each particular process. The effort first addresses the most urgent needs and proceeds to subsequent message sets in a prioritized fashion. The goal is to incrementally develop and deliver standards. The following table summarizes the scope of EDXL.

EDXL is...	EDXL is not...
National focus – cross-organization and agency	Strictly a Federal or single emergency profession effort
Messaging-driven definition and standardization to allow communication regardless of data structure differences	Data-driven definition and standardization
Specific functional area / process driven in the context of emergency response	Generic, or focused on other processes
A transaction-based design facilitating XML development of specific messages	A data model or data dictionary
An “Open container Model”. Flexible and extensible for unstructured content.	Closed and structured
A <i>consumer</i> and re-user of data content and models developed by other initiatives.	A <i>producer</i> of data models

An Inclusive, Phased Approach

The EDXL initiative is a national effort including a diverse and representative group of local, state and federal emergency response organizations and professionals, following a multi-step process. A group of practitioners from leading emergency response organizations prioritize specific message sets and define base requirements. The Disaster Management standards arm of the PMO then drafts high-level specifications, A diverse national working group comprised of emergency response and business subject matter experts representing the diversity of organizations in the field (including content-development initiatives) turns this high level draft into detailed requirements and a complete draft specification. Following field demonstrations and final reviews by practitioners and industry organizations, the draft specification is then submitted to a standards body for formal development of a public standard.

Standard Message Sets

The following summarizes EDXL components and message sets identified to date for standardization activity. It is important to distinguish between the “Distribution Element” vs. the other message sets described below. “Distribution Element” may be thought of as a “container” which facilitates the “routing” of message sets (any properly formatted XML emergency message) to recipients. The message sets (e.g. Alerts,

Resource Messages) are carried as “payloads” that are routed by the Distribution Element.

1. **Distribution Element** – An EDXL “Distribution Element” has been developed following the process described above. The OASIS Emergency Management Technical Committee is now reviewing it to make it a public standard. The Distribution Element may be thought of as a “container” which facilitates the “routing” of message sets (any properly formatted XML emergency message) to recipients. The Distribution Element carries and routes “payload” message sets (such as Alerts or Resource Messages), by specifying key routing information such as incident type and affected geography, as well as basic information such as message type, sending agency and target (distribution) area.

A series of demonstrations starting in October 2004 verified application of the Distribution Element by demonstrating generation, receipt and update of common message sets across different emergency technology tools owned by a diversity of government jurisdictions and emergency response agencies. A growing number of emergency technology vendors are using the Distribution Element in ongoing demonstrations and are prepared to incorporate it into their production systems when it becomes an official standard.

2. **Alert Message Set** – The Common Alerting Protocol (CAP) was developed by many of the same parties and processes as EDXL. It was originally sponsored by the Partnership for Public Warning. It became an official OASIS standard in 2004. It has been adopted as a payload within EDXL messages, due to the flexibility of the EDXL “open container model”. CAP messages facilitate the exchanging of hazard emergency alerts and public warnings. Any other accepted standard XML format can also be the payload carried and routed by the EDXL distribution element.
3. **Resource Message set** – The initial EDXL practitioner group said last fall that its next priority was message sets regarding *Resource Messaging* (RM). They asked for messages to request (or respond to requests) for persons and things required in emergencies. A draft document addressing a Resource Message has been developed and is being considered by the Standards Working Group. A number of detailed scenarios are being analyzed to determine the wide range of specific interagency and inter-profession resource messages.
4. **Geographic Information Systems (GIS)** – Following Resource Management Messaging, the next priority is to provide message sets addressing GIS information. The GIS message set addresses the need to *identify, track, trend, or forecast* events and resources. This message set also addresses the need to establish the geospatial context; to communicate about geographic features and things through standard symbols and associated information. For example, a GIS message may assist an emergency responder to assess the geographic scope of an event, to locate a required resource, to pinpoint where a resource needs to report, or to assess other geographic considerations related to an event. The symbology

for this message will be “consumed” from efforts led by FEMA, FGDC and other applicable efforts developing common mapping symbols.

5. **Situation Status** – Situation status is a report providing the overall status of an event and the subsequent emergency response.
6. **Other specific message sets** – Additional message needs will be addressed as the Practitioners raise the need for them.