

# Emergency Data Exchange Language Standard Message Format

draft 9/23/2004

This draft describes a standard messaging framework for data sharing among emergency information systems using the XML-based Emergency Data Exchange Language (EDXL). While based on the SOAP messaging standard, this format may be used over any data transmission system, including but not limited to the SOAP HTTP binding.

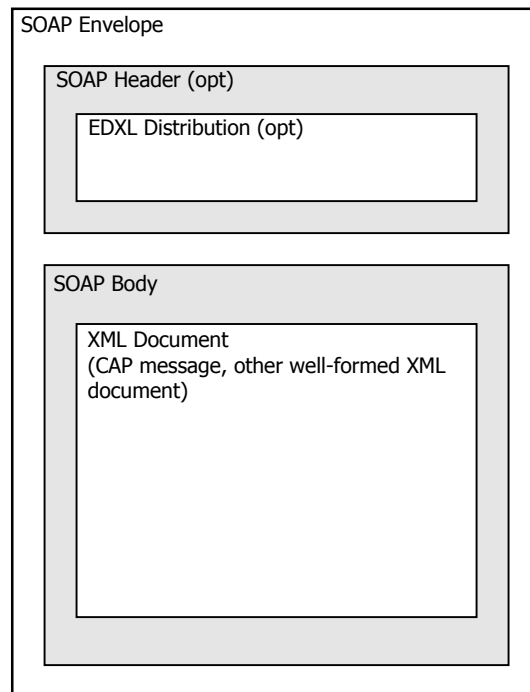
## The SOAP Envelope

The EDXL Standard Message Format is based on the W3C SOAP 1.2 Messaging and Processing recommendations (<http://www.w3.org/TR/soap12-part1/>).

Each SOAP message consists of an <Envelope> element, which encloses an optional <Header> element and a required <Body> element.

The <Body> element may contain any XML document, which will be transferred from end to end over the transmission network(s). The <Header> element may contain elements that inform routing and/or processing of the SOAP message.

Figure 1: Schematic view of SOAP envelope containing an EDXL message



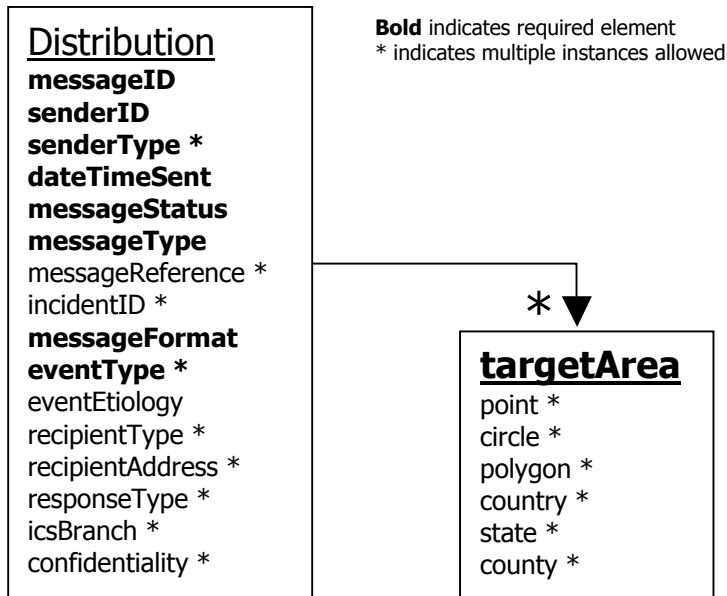
## The EDXL Standard Message Format

The EDXL Standard Message Format (SMF) comprises a SOAP 1.2 message with an optional <Header> containing a <Distribution> element as described hereafter, and a <Body> containing some standard XML message type recognized in EDXL. The <Distribution> element asserts the originator's intent as to the dissemination of that particular message.

Note that use of the SMF <Distribution> feature does not guarantee that all network links and nodes will implement the asserted dissemination policy or that unintended disclosure will not occur. Where sensitive information is transmitted in EDXL SMF, it should be encrypted in accordance with the Web Services Security (WSS) standard <<http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf>> with any updates and errata published by the OASIS Web Services Security Technical Committee <[http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=wss](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wss)>, or some other suitable encryption scheme.

The <Distribution> block may be extracted from a message and used to form the body of a routing query to a directory service. SMF messages which do not contain the specified <Header> and/or <Distribution> elements may be considered to be for unlimited distribution (e.g., public information alerts.) However, some systems may require the <Distribution> header element in order to route messages.

Figure 2: Data Model of EDXL SMF Distribution element



## Components of the <Distribution> Element

The <Distribution> element contains some combination of the child elements described in Table 1. The number of permissible instances of each child element is listed under “Qty” where a quantity of “n” means “unlimited”. Note that child elements within the <Distribution> element may either duplicate or provide different values from comparable elements contained within the message <Body>. The <Distribution> element tag must have an attribute of “relay” with a value of “true” to ensure that the originator’s distribution preferences are shared with all recipients.

Table 1: <Distribution> Child Elements		
Name	Qty	Significance and Values
<messageID>	1	An identifier string for this message, assigned by the sender to be unique for that sender.
<senderID>	1	A unique identifier for the sender in the form <i>user@hostname</i> , with uniqueness of the <i>hostname</i> guaranteed through use of the Internet Domain Name System, and uniqueness of the <i>user</i> name enforced by the domain owner.
<senderType>	1-n	The category of the sender. Value must be drawn from Table 4.
<dateTimeSent>	1	The date and time the message was sent, in the ISO-8601 format for the XML DateTime data type, e.g.: 2004-08-01T16:49:00-07:00
<messageStatus>	1	The actionability of the message. Value must be one of: <b>Actual</b> – “Real-world” information for action <b>Exercise</b> – Simulated information for exercise participants <b>System</b> – Messages regarding or supporting network functions <b>Test</b> – Discardable messages for technical testing only
<messageType>	1	The function of the message. Value must be one of: <b>Report</b> – New information regarding an incident or activity <b>Update</b> – Updated information superceding a previous message <b>Cancel</b> – A cancellation or revocation of a previous message <b>Request</b> – A request for resources, information or action <b>Response</b> – A response to a previous request <b>Dispatch</b> – A commitment of resources or assistance <b>Ack</b> – Acknowledgement of receipt of an earlier message <b>Error</b> – Rejection of an earlier message (for technical reasons)
<messageReference>	0-n	The messageID and senderID of the referenced previous message, concatenated with a “.” between (should appear at least once in all messageTypes except “Report”).
<incidentID>	0-n	The name or other identifier of the incident to which the current message refers.

(more)

<b>Table 1: &lt;Distribution&gt; Child Elements (continued)</b>		
<b>Name</b>	<b>Qty</b>	<b>Significance and Values</b>
<messageFormat>	1	The URI identifying the schema for the message in the <Body>
<eventType>	1-n	The type of event or hazard occasioning the message. Value must be drawn from the codes in Table 3.
<eventEtiology>	0-1	The nature of the event occasioning the message. Value must be one of:  <b>Natural</b> – due to natural phenomenon <b>Manmade</b> – due to lawful human (inc. technological) cause <b>Criminal</b> – due to unlawful act <b>Terrorist</b> – due to act of terrorism <b>Military</b> – due to formal military operations <b>Under Investigation</b> – not yet determined
<recipientType>	0-n	The category of the intended recipients. Value must be drawn from the codes in Table 4.
<recipientAddress>	0-n	A specific address for an individual recipient in the form of a Uniform Resource Indicator (URI).
<responseType>	0-n	The type of response or activity occasioning the message. Values must be drawn from the codes in Table 5.
<icsBranch>	0-n	The ICS section or function to which the message is addressed. Value must be one of:  <b>Operations</b> – immediate operational issues <b>Plans</b> – situation and resource status, intelligence and action planning <b>Intelligence</b> – only if the Intelligence function is NOT within Plans section <b>Logistics</b> – facilities and resources to support operations <b>Finance</b> – timekeeping, procurement, cost tracking and compensation <b>Incident Command</b> – the Incident Commander and Command Staff <b>Area Command</b> – overhead command for multiple incidents <b>Joint Information Center</b> – public information for large/multiple incidents
<confidentiality>	0-n	Special requirements regarding confidentiality of the message contents. Value must be one of:  <b>Personal</b> – Personally-identifiable or confidential information <b>Sensitive</b> – Sensitive information about facilities or processes <b>FOUO</b> – For Official Use Only
<targetArea>	1-n	A complex element that may contain <site>, <polygon>, <circle>, <country>, <state> and <county> elements (see Table 2)

**Table 2: <targetArea> Child Elements**

Name	Qty	Significance and Values
<point>	0-n	<p>A geographic location on the earth's surface represented in the form "<i>latitude,longitude</i>" where <i>latitude</i> and <i>longitude</i> per World Geodetic System 1984 (WGS-84), represented as a comma-delimited pair of floating point values representing decimal degrees (un-projected.) Latitudes range from -90.0 to 90.0 and longitudes may range from -180.0 to 180.0. Example:</p> <p style="text-align: center;">38.26295, -122.07454</p>
<circle>	0-n	<p>An enclosed area within a given radius around a geographic point, represented in the form "<i>latitude,longitude radius</i>". The central point is represented per the specification for &lt;site&gt;, while the space-separated <i>radius</i> value is expressed in kilometers. Example:</p> <p style="text-align: center;">38.26295, -122.07454 15</p>
<polygon>	0-n	<p>An enclosed geographic area within a closed polygon defined by an ordered set of vertices. Represented by a space-delimited series of <i>latitude,longitude</i> pairs (as per the definition of &lt;site&gt;), with the last pair identical to the first. Example:</p> <p style="text-align: center;">42, -124.2102 42, -120.1 39, -120 35.0, -114.6328 34.35, - 120.4418 38.9383, -123.817 42, -124.2102</p>
<country>	0-n	<p>An ISO 3166-1-alpha-2 two-letter country code.</p>
<state>	0-n	<p>An ISO 3166-2 code for a state, province, territory or other primary administrative subdivision. (In the United States, this is equivalent to prefixing the U.S. Postal Service two-letter state abbreviation with "US-"; e.g, "US-VA" for Virginia.)</p>
<county>	0-n	<p>In the United States, a five-digit FIPS 6-4 code for a county, parish, borough (Alaska) or independent city, including the two-digit state/territory prefix. (E.g., "51099" for King George County, Virginia.)</p>

**Table 3: Values for <eventType>**

<i>Geophysical Events</i>
Earthquake Volcano Tsunami / Tidal Wave Landslide Sinkhole / Subsidence Glacier / Iceberg Extraterrestrial Event Geophysical – Not Otherwise Categorized
<i>Meteorological Events</i>
Tornado Hurricane / Tropical Storm Severe Weather Flooding Flash Flooding Avalanche Meteorological – Not Otherwise Categorized
<i>Environmental Events</i>
Chemical Hazard Biological Hazard Radiological Hazard Oil Spill - Land Oil Spill – Waterway Involved Environmental Conditions Watch (e.g., smog conditions, “spare the air,” etc.) Environmental Hazard Warning (e.g., actual smog, smoke, dust, etc.) Agricultural Hazard Environmental – Not Otherwise Categorized
<i>Medical and Public Health Events</i>
Public Health Alert / Watch Public Health Hazard / Warning Medical Emergency – Individual Medical Emergency – Multiple Casualty Medical Emergency – Mass Casualty Medical Facility Bypass Health / Medical – Not Otherwise Categorized

(more)

**Table 3: Values for <eventType> (continued)**

<i>Law / Security Events</i>
Abduction/Kidnapping
Missing Person
AMBER Alert
Violent Crime
Non-violent Crime
Vehicle Theft
Theft of Sensitive Property (special materials or tools, sensitive information, etc.)
Cyber Crime
Access Control / Restriction
Traffic Control / Restriction
Border Control Incident / Restriction
Civil Disturbance
Terrorist or Criminal Threat
Law / Security – Not Otherwise Categorized
<i>Rescue Events</i>
Confined Space Rescue / Urban Search & Rescue
Wildland Search and Rescue
Vehicle Extrication / Rescue
Water Rescue
Marine Search and Rescue
Recovery (Casualty)
Salvage / Property Recovery
Rescue – Not Otherwise Categorized
<i>Fire Events</i>
Structure Fire
Wildfire
Wildland Fire Use
Vehicle Fire
Prescribed Fire / Controlled Burn
Debris / Product Fire
Burned Area Emergency Rehabilitation
Explosion
Fire Alarm
Fire Conditions Watch / Fire Weather Watch / "Red Flag" Alert
Fire – Not Otherwise Categorized

(more)

**Table 3: Values for <eventType> (continued)**

<i>Transportation Events</i>
Air Crash / Accident
Rail Crash / Accident
Roadway Collision / Accident
Commercial Roadway Collision / Accident
Waterway Collision / Accident (non-commercial or unknown)
Commercial Water Transport Collision / Accident
Aircraft Hijacking
Rail Hijacking
Roadway Hijacking
Vessel Hijacking (commercial or non-commercial)
Aircraft Emergency
Rail Emergency
Roadway Emergency
Waterway Emergency
Airway Disruption or Delay
Railway Disruption or Delay
Roadway Disruption or Delay
Waterway Disruption or Delay
Mass Transit Disruption or Delay
Transportation – Not Otherwise Categorized
<i>Infrastructure Events</i>
Building / Structure Collapse
Telecommunications Disruption
Electrical Utility Disruption
Electrical Line Down or Exposed
Fuel Supply Disruption
Natural Gas Leak
Water Supply Disruption
Food Supply Disruption
Information Network Disruption
Mass Media Disruption
Financial Services Disruption
Government Services Disruption
Infrastructure – Not Otherwise Categorized
<i>Other Events</i>
9-1-1 Call
Request for Assistance
Planned Event (Civic events, planned demonstrations, exercises, etc.)
Resource Status Report
Preparedness / Mobilization
Other – Not Otherwise Categorized



**Table 4: Values for <senderType> and <recipientType>**

Agriculture  
Animal Welfare / Services / Veterinary  
Coast Guard  
Commercial  
Educational  
Emergency Management  
Emergency Medical  
Electric Utility  
Environmental  
Financial  
Fire / Rescue  
Natural Gas Utility  
Geophysical  
Government  
Hazardous Materials  
Homeland Security  
Individual / Household  
Intelligence  
Information Sharing and Analysis Center  
Law Enforcement  
Hospital / Healthcare  
Mass Media  
Meteorological  
Military  
National Guard  
Non-governmental / Community Organization  
Recreation  
Park Service / Department  
Public Health  
Poison Control Center  
9-1-1 / Public Safety Answer Point  
Public Works  
Sanitation and Sewer  
Search and Rescue  
Social Services (inc. psychological)  
Telecommunications  
Transportation  
Water Utility  
Warning Agency / Service (non-commercial)

**Table 5: Values for <responseType>**

Air Medical Transportation  
Alerting and Information  
Mass / Aggregate Care  
Cleanup / Mitigation / Overhaul  
Crowd Control  
Decontamination  
Demobilization  
Detention  
Emergency Medical Response / Field Stabilization  
Evacuation  
Aggregate / Mass Feeding  
Finance Services (e.g., timekeeping, payroll, reimbursement)  
Incident Command  
Investigation  
Liaison  
Logistics Support  
Multi-Agency Coordination  
Medical Care  
Medical Transportation (other than AIRTRANS)  
Management / Supervision (other than IC)  
Mobilization  
Monitoring / Observation  
Mortuary Services  
Fire Overhaul / Rehabilitation  
Planning  
Preparation / Hardening  
Quarantine  
Repair / Rehabilitation  
Rescue / Recovery  
Search / Attempt to Locate  
Aggregate / Mass Shelter  
Shelter In Place  
Staging / Standby  
Fire Suppression  
Technical / Expert Support  
Traffic / Access Control  
Transportation Support  
Medical Triage

## Appendix A: Example of a Basic SMF Message

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<soap:Envelope
  xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
  soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">

  <soap:Header>

    <e:Distribution xmlns:e="http://www.dhs.gov/edxl/smf/0.9" soap:relay="true">
      <e:messageID>109137961213591</e:messageID>
      <e:senderID>EDIS@edis.oes.ca.gov</e:senderID>
      <e:senderType>Emergency Management</e:senderType>
      <e:dateTimeSent>2004-08-01T10:00:00-07:00</e:dateTimeSent>
      <e:messageStatus>Test</e:messageStatus>
      <e:messageType>Report</e:messageType>
      <e:messageFormat>http://www.incident.com/cap/1.0</e:messageFormat>
      <e:eventType>Other - Not Otherwise Categorized</e:eventType>
      <e:targetArea>
        <e:polygon>42,-124.2102 42,-120.1 39,-120 35.0,-114.6328 34.35,-114.1 33.108,-
114.6259 33.0,-114.4 32.71,-114.4 32.7151,-114.7197 32.5338,-117.1247 34.28,-120.4418
38.9383,-123.817 40.4533,-124.4522 42,-124.2102</e:polygon>
        <e:state>US-CA</e:state>
      </e:targetArea>
    </e:Distribution>

  </soap:Header>

  <soap:Body>

    <cap:alert xmlns:cap="http://www.incident.com/cap/1.0">
      <cap:identifier>109137961213591</cap:identifier>
      <cap:sender>EDIS@edis.oes.ca.gov</cap:sender>
      <cap:sent>2004-08-01T10:00:00-07:00</cap:sent>
      <cap:status>Test</cap:status>
      <cap:msgType>Alert</cap:msgType>
      <cap:scope>Public</cap:scope>
      <cap:info>
        <cap:language>en-US</cap:language>
        <cap:category>Other</cap:category>
        <cap:event>EDIS message regarding Other from EDIS</cap:event>
        <cap:urgency>Unknown</cap:urgency>
        <cap:severity>Unknown</cap:severity>
        <cap:certainty>Unknown</cap:certainty>
        <cap:expires>2004-008-01T16:00:12-07:00</cap:expires>
        <cap:senderName>EDIS</cap:senderName>
        <cap:headline>EDIS DAILY SYSTEM TEST</cap:headline>
        <cap:description>This is a test of the State of California's "Emergency Digital
Information Service" (EDIS).

EDIS enables authorized agencies to deliver emergency public information and advisories
directly to the news media and the public.

For more information about this system contact the Governor's Office of Emergency
Services, EDIS Program Office at (916) 845-8610.</cap:description>
      <cap:area>
        <cap:areaDesc>Statewide</cap:areaDesc>
        <cap:polygon>42,-124.2102 42,-120.1 39,-120 35.0,-114.6328 34.35,-114.1
33.108,-114.6259 33.0,-114.4 32.71,-114.4 32.7151,-114.7197 32.5338,-117.1247 34.28,-
120.4418 38.9383,-123.817 40.4533,-124.4522 42,-124.2102</cap:polygon>
        <cap:geocode>edis=0</cap:geocode>
      </cap:area>
    </cap:info>
  </cap:alert>

</soap:Body>

</soap:Envelope>
```