



Emergency Data Exchange Language (EDXL) Distribution Element Version 2.0

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<http://docs.oasis-open.org/emergency/edxl-de/v2.0/edxl-de-v2.0.pdf>

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Additional artifacts:

This prose specification is one component of a Work Product that also includes:

- XML schemas: <http://docs.oasis-open.org/emergency/edxl-de/v2.0/cs02/schema/>
- XML examples: <http://docs.oasis-open.org/emergency/edxl-de/v2.0/cs02/examples/>

Related work:

This specification replaces or supersedes:

- *Emergency Data Exchange Language (EDXL) Distribution Element, v. 1.0*. 01 May, 2006. OASIS Standard. http://docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.pdf

This specification is related to:

- *Emergency Data Exchange Language (EDXL) Hospital Availability Exchange (HAVE) Version 1.0*. Latest version. http://docs.oasis-open.org/emergency/edxl-have/v1.0/emergency_edxl_have-1.0.html
- *Emergency Data Exchange Language Resource Messaging (EDXL-RM) 1.0*. Latest version. <http://docs.oasis-open.org/emergency/edxl-rm/v1.0/EDXL-RM-SPEC-V1.0.html>
- *Emergency Data Exchange Language (EDXL) Common Types (CT) Version 1.0*. Latest version. <http://docs.oasis-open.org/emergency/edxl-ct/v1.0/edxl-ct-v1.0.html>

- *Emergency Data Exchange Language (EDXL) Customer Information Quality (CIQ) Profile Version 1.0*. Latest version. <http://docs.oasis-open.org/emergency/edxl-ciq/v1.0/edxl-ciq-v1.0.html>

Declared XML namespace:

- urn:oasis:names:tc:emergency:EDXL:DE:2.0

Abstract:

This Distribution Element 2.0 (DE 2.0) specification describes a standard message distribution format for data sharing among emergency information systems. The DE 2.0 serves two important purposes:

(1) The DE 2.0 allows an organization to wrap separate but related pieces of emergency information, including any of the EDXL message types, into a single “package” for easier and more useful distribution;

(2) The DE 2.0 allows an organization to “address” the package to organizations or individuals with specified roles, located in specified locations or those interested in specified keywords.

This version of the DE expands the ability to use local community-defined terms, uses a profile of the Geographic Markup Language (GML) , follows best practices for naming conventions, provides the capability to link content objects, supports extensions, and is reorganized for increased flexibility and reuse of common types. The DE 2.0 packages and addresses emergency information for effective distribution with improved standardization and ability to be tailored for user needs.

Status:

This document was last revised or approved by the OASIS Emergency Management TC on the above date. The level of approval is also listed above. Check the “Latest version” location noted above for possible later revisions of this document.

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1 Introduction

1.1 Purpose

The primary purpose of the Distribution Element 2.0 is to facilitate the routing of any properly formatted emergency message to recipients. The Distribution Element may be thought of as a "container". It provides the information to route "payload" message sets (such as Alerts or Resource Messages), by including key routing information such as distribution type, geography, incident, and sender/recipient Ids.

The DE 2.0 specification joins the published suite of Emergency Data Exchange Language (EDXL) standards. The EDXL continuing goal 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. EDXL accomplishes this goal by focusing on the standardization of specific messages (messaging interfaces) to facilitate emergency communication and coordination particularly when more than one profession or governmental jurisdiction is involved.

The published suite of EDXL Standards includes:

- The Common Alerting Protocol v1.2 specification (EDXL-CAP)
- The Distribution Elements specification v1.0 (EDXL-DE)
- The Hospital AVailability Exchange specification v1.0 (EDXL-HAVE)
- The Resource Messaging specification v1.0 (EDXL-RM)
- The Situation Reporting v1.0 (EDXL-SitRep)

1.2 History

The Disaster Management (DM) eGov Initiative of the Department of Homeland Security (DHS) determined in 2004 to launch a project to develop interagency emergency data communications standards. It called together a group of national emergency response practitioner leaders and sought their guidance on requirements for such standards. In June, 2004 the first such meeting identified the need for a common distribution element for all emergency messages. Subsequent meetings of a Standards Working Group developed detailed requirements and a draft specification for such a distribution element (DE).

During the same period the DM Initiative was forming a partnership with industry members of the Emergency Interoperability Consortium (EIC) to cooperate in the development of emergency standards. EIC had been a leading sponsor of the Common Alerting Protocol (CAP). Both organizations desired to develop an expanded family of data formats for exchanging operational information beyond warning.

EIC members participated in the development of the DE, and in the broader design of the design of a process for the development of additional standards. This was named Emergency Data Exchange Language (EDXL).

The goal of the EDXL project 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. EDXL will accomplish this goal by focusing on the standardization of specific messages (messaging interfaces) to facilitate emergency communication and coordination particularly when more than one profession is involved. It is not just an "emergency management" domain exercise.

40 It is a national effort including a diverse and representative group of local, state and federal emergency
41 response organizations and professionals, following a multi-step process. Just as a data-focused effort
42 targets shared data elements, the EDXL process looks for shared message needs, which are common
43 across a broad number of organizations. The objective is to rapidly deliver implementable standard
44 messages, in an incremental fashion, directly to emergency response agencies in the trenches, providing
45 seamless communication and coordination supporting each particular process. The effort first addresses
46 the most urgent needs and proceeds to subsequent message sets in a prioritized fashion. The goal is to
47 incrementally develop and deliver standards.

48 EDXL is intended as a suite of emergency data message types including resource queries and requests,
49 situation status, message routing instructions and the like, needed in the context of cross-disciplinary,
50 cross-jurisdictional communications related to emergency response.

51 The priorities and requirements are created by the DM EDXL Standards Working Group (SWG) which is a
52 formalized group of emergency response practitioners, technical experts, and industry.

53 The original draft DE specification was trialed by a number of EIC members starting in October, 2004. In
54 November, 2004, EIC formally submitted the draft to the OASIS Emergency Management Technical
55 Committee for standardization.

56 Since its official release, the DE has been adopted and used by a number of communities and
57 applications and as a result, a few significant enhancements were recommended. The OASIS
58 Infrastructure Framework Subcommittee took on the task of assembling the list of suggestions,
59 considering potential solutions, and recommending an evolved version DE 2.0. This document describes
60 the DE 2.0 and contains references to the schema and examples for download.

61 **1.3 Structure of the EDXL Distribution Element**

62 The EDXL Distribution Element (DE) comprises an <edxlDistribution> element as described hereafter,
63 optional <targetArea> elements describing geospatial or political target area for message delivery, and a
64 set of <contentObject> elements each containing specific information regarding a particular item of
65 content. The included content may be any XML or other content type or a URI to access the content.

66 The <edxlDistribution> block may be used without content to form the body of a routing query to, or
67 response from, a directory service.

68 **1.3.1 <edxlDistribution>**

69 The <edxlDistribution> element asserts the originator's intent as to the dissemination of that particular
70 message or set of messages.

71 Note that use of the <edxlDistribution> element does not guarantee that all network links and nodes will
72 implement the asserted dissemination policy or that unintended disclosure will not occur. Where sensitive
73 information is transmitted over distrusted networks, it should be encrypted in accordance with the Web
74 Services Security (WSS) standard [http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-](http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf)
75 [message-security-1.0.pdf](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
76 Technical Committee http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wss, or some
77 other suitable encryption scheme.

78 **1.3.2 <descriptor>**

79 The <descriptor> element enables the user to describe the message with information useful for routing
80 the message, including elements such as senderRole, recipientRole and keyword.

81

82 1.3.3 <targetArea>

83 The <targetArea> is a container element for a geospatial or political area representing the source, target,
84 or other area relevant for distributing the message content. It contains data necessary to the originator's
85 intent, based on location targeting, as to the dissemination of that particular message or set of messages.
86 Multiple <targetArea> elements are allowed and can be grouped under a <targetAreas> element,
87 specifying the <areaKind> and the type of <areaGrouping>, such as union or intersection . If multiple
88 <targetArea> elements are used, then the order top-to-bottom represents precedence, with the top
89 <targetArea> preferred.

90 1.3.4 <contentObject>

91 The <contentObject> is a container element for specific messages. The <contentObject> element MUST
92 either contain a <contentXML> content container or a <otherContent> container. Additional elements
93 (metadata) used for specific distribution of the <contentObject> payload or hints for processing the
94 payload are also present in the <contentObject> container element.

95 1.3.5 ValueLists

96 The EDXL-DE 2.0 uses a ValueList structure to enable communities to have user-defined lists of values
97 for elements such as senderRole, recipientRole, keywords, and many others. The first example is a user-
98 defined Valuelist specifying recipient roles:

```
99     <recipientRole>  
100         <ct:ValueListURI>urn:myagency.gov:sensors:recipientRole</ct:ValueListURI>  
101         <ct:Value>Situational Awareness Apps</ct:Value>  
102         <ct:Value>Warning Devices</ct:Value>  
103     </recipientRole>
```

104 This first example contains two recipient roles, one role whose value is “Situational Awareness Apps” and
105 one role whose value is “Warning Devices”. These are notional roles created for this example. The roles
106 are identified as values from a list whose unique Uniform Reference Identifier (URI) is
107 “urn:myagency.gov:sensors:recipientRole”. When using a ValueList the user can specify a user-
108 defined list by URI (either using the “urn:...” format or the more familiar “http://...” format) and then include
109 user-defined values from that list. This ValueList structure has several advantages, the ValueList: (a)
110 provides flexibility for local communities to use community-defined terms and vocabulary; (b) allows for
111 the external maintenance of local or standardized lists; and (c) avoids the problems inherent in attempting
112 to constantly update hardcoded enumerations in a specification.

113

114

115 1.3.6 Linking Content Objects and Other DE 2.0 Components

116 A new feature of the EDXL-DE 2.0 is the ability to specify links between content objects. This linking
117 ability is a useful new feature of the DE 2.0, allowing users to specify meaningful connections among
118 content objects.

119 For example, if a DE 2.0 message contains two alerts and three images, it's now possible to specify by
120 links that two of the images go with the first alert and the third image is tied to the other alert.

121 The linking feature can also be used to link separable parts of a DE 2.0 message. These separable parts
122 are the global elements, EDXLDistribution, Descriptor, Content, ContentDescriptor, and ContentObject.

123 For example, the new EDXL-DE 2.0 allows the Descriptor portion of the DE 2.0 to be used independently
124 of the Content portion of the DE 2.0, as would be commonly done when using a “wrapper” other than the
125 DE-provided EDXLDistribution element. In a SOAP message, the DE 2.0 Descriptor might appear in the
126 SOAP header while the DE 2.0 Content appears in the SOAP body. If needed or desired, a link can be
127 used to tie the Descriptor to the Content to make the connection between the two explicit. The new DE
128 2.0 linking feature supports two use cases: one where the user wants to show a connection between or
129 among content objects and the other where the user wants to explicitly link other separable DE 2.0
130 components.

131 The new linking feature is enabled using the W3C standard Xlink. For example, here is a link tying a DE
132 2.0 Descriptor element to a DE 2.0 Content element:

```
133 <de:Link xlink:from="de_descriptor" xlink:to="de_content"  
134 xlink:arcrole="http://www.oasis.org/de/arcroles/isDescriptorOf" xlink:title="is Descriptor of"/>
```

135 Here are a few examples linking content objects:

```
136 <de:Link xlink:from="contentObject_1" xlink:to="contentObject_2"  
137 xlink:arcrole="http://www.oasis.org/de/arcroles/isImageOf" xlink:title="is Image of"/>
```

```
138 <de:Link xlink:from="contentObject_3" xlink:to="contentObject_4"  
139 xlink:arcrole="http://www.oasis.org/de/arcroles/isVideoOf" xlink:title="is Video of"/>
```

```
140 <de:Link xlink:from="contentObject_5" xlink:to="contentObject_6"  
141 xlink:arcrole="http://www.oasis.org/de/arcroles/isAudioOf" xlink:title="is Audio of"/>
```

143 Xlink is a standard specification providing several attributes which can be added to elements to support
144 linking. In the examples above, the “from” and “to” attributes reference the values of xlink label attributes
145 that have been added to the DE 2.0 components or content objects respectively. In the second example,
146 the link is referring to a content object whose xlink:label attribute has been set to “contentObject_2” and is
147 also referring to another content object whose xlink:label attribute has been set to “contentObject_1”. By
148 using these labels as element identifiers, the link connects one to another. Users can specify user-defined
149 labels and roles, and thereby create meaningful connections among content objects or among DE 2.0
150 components.

151 This section is merely an introduction to the linking concept. For more details, see the examples and also
152 see the Xlink specification itself and referenced tutorials.

153 **1.3.7 Common Types**

154 Several Element Types, such as TargetArea, borrow re-usable elements from the EDXL Common Types
155 that apply to and support multiple areas of the DE 2.0 messages. For instance TargetArea relies on the
156 EDXL-CIQ profile for geopolitical info and on the EDXL-GSF profile for geographical information.
157 The Supporting Elements Model distinguishes three groups of elements: CommonTypes (EDXL-CT),
158 Contact Information (EDXL-CIQ) and Location Information (EDXL-GSF).

159 The following elements are used in this specification and can be found at the locations cited in the norm-
160 ative references in Section 1.6 below.

Supporting Element	Defined In
EDXLLocationType	EDXL-CT
EDXLGeoLocationType	EDXL-GSF

Supporting Element	Defined In
EDXLGeoPoliticalLocationType	EDXL-CT
ValueListURI	EDXL-CT
Value	EDXL-CT

161

162 **1.3.8 Community Extensions**

163 The DE 2.0 now supports supplemental inclusion of community-defined sets of name/value pairs, referred
 164 to here as “Community Extensions” or simply “Extensions” for short. For example, if you send a DE
 165 message with an alert or image about an earthquake, you might want to include some specific earthquake
 166 data, like the magnitude and depth of the earthquake. There are no earthquake-specific fields in the DE;
 167 however, your community can extend the DE to include that information which you represent as a set of
 168 parameter elements specifically designed to represent earthquake data. The “Community Extensions”
 169 concept solves several major problems for improving information sharing and developing standards for
 170 the emergency management community. First, the nature of emergencies is that the unexpected will
 171 happen and emergency managers need flexibility to send whatever information is needed. Second, an
 172 emergency begins and often stays local, so local authorities and users need control to send the
 173 information they decide is important to address the current emergency. Third, communities need the
 174 opportunity to explore potential new standards. The parameter name/value extension mechanism, along
 175 with the registration and best practice guidance, provides an on-ramp for communities to determine what
 176 works well for them. Those Community Extensions which are most successful can be incorporated
 177 formally into future standards.

178

179 **1.4 Applications of the EDXL Distribution Element**

180 The primary use of the EDXL Distribution Element is to identify and provide information to enable the
 181 routing of encapsulated payloads, called Content Objects. It is used to provide a common mechanism to
 182 encapsulate content information.

183 **1.5 Terminology**

184 The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD
 185 NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this specification are to be interpreted as de-
 186 scribed in [IETF RFC 2119](http://www.ietf.org/rfc/rfc2119).

187 In addition, within this Specification, the keyword “CONDITIONAL” should be interpreted as potentially
 188 “REQUIRED” or “OPTIONAL” depending on the surrounding context. The term payload refers to some
 189 body of information contained in the distribution element. The term “REQUIRED” means that empty
 190 elements or NULL values are NOT allowed.

191 **1.6 Normative References**

192 **[RFC 2119]**

S. Bradner. *Key words for use in RFCs to Indicate Requirement Levels*.
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222 [ciq/v1.0/csd02/](http://docs.oasis-open.org/emergency/edxl-ciq/v1.0/csd02/) , September, 2011

223 **[EDXL-CT]**
224 W. Joerg, OASIS Committee Specification Draft Emergency Data Exchange
225 Language Common Types <http://docs.oasis-open.org/emergency/edxl-ct/v1.0/csd02/>
226 , November, 2011

227 **[EDXL-GSF]**
228 W. Joerg, OASIS Committee Specification Draft Emergency Data Exchange
229 Language GML Simple Features [http://docs.oasis-open.org/emergency/edxl-](http://docs.oasis-open.org/emergency/edxl-gsf/v1.0/csd01/)
230 [gsf/v1.0/csd01/](http://docs.oasis-open.org/emergency/edxl-gsf/v1.0/csd01/) , September, 2011]

231 **[EDXL-HAVE]**
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233 OASIS Standard 01 [http://docs.oasis-](http://docs.oasis-open.org/emergency/edxlhave/v1.0/emergency_edxl_have-1.0.html)
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242 1.0. 4 May 2012. OASIS Committee Specification Draft 01 / Working Draft 18.

243 **1.7 Non-normative References**

244 **[EDXL General Functional Requirements]**

245 *EDXL General Functional Requirements*, [http://www.oasis-](http://www.oasis-open.org/committees/document.php?document_id=10031&wg_abbrev=emergency)
246 [open.org/committees/document.php?document_id=10031&wg_abbrev=emergency](http://www.oasis-open.org/committees/document.php?document_id=10031&wg_abbrev=emergency),
247 November 2004.
248

249 **[EDXL Distribution Element Implementer's Guide]**

250 *EDXL Distribution Element Implementer's Guide*, [http://www.oasis-](http://www.oasis-open.org/committees/document.php?document_id=14120&wg_abbrev=emergency)
251 [open.org/committees/document.php?document_id=14120&wg_abbrev=emergency](http://www.oasis-open.org/committees/document.php?document_id=14120&wg_abbrev=emergency),
252 August 2005.
253

254 **2 Design Principles & Concepts (non-normative)**

255 **2.1 Design Philosophy**

256 Below are some of the guiding principles of the Distribution Element:

- 257 1. Provide an Open Container Model to enable dissemination of one or more emergency messages
- 258 2. Provide flexible mechanisms to inform message routing and/or processing decisions
- 259 3. Enable dissemination of messages based on geographic delivery area
- 260 4. Use and re-use of data content and models developed by other initiatives
- 261 5. Support business process-driven specific messaging needs across emergency professions
- 262 6. Support everyday events and incident preparedness, as well as disasters
- 263 7. Facilitate emergency information sharing and data exchange across the local, state, tribal,
264 national and non-governmental organizations of different professions that provide emergency
265 response and management services
- 266 8. Multi-use format - One message schema supports multiple message types (e.g., alert / update /
267 cancellations / acknowledgments / error messages) in various applications (actual / exercise / test
268 / system message.)

269 **2.2 Requirements for Design**

270 The Distribution Element specification should:

- 271 1. Define a compound XML structure (or an equivalent single structure if transcoded into another
272 format) including the required and optional elements defined below.
- 273 2. Specify a desired delivery area, expressed in geospatial coordinates or using
274 political/administrative codes.
- 275 3. Allow the ability to encapsulate a payload or set of payloads
- 276 4. Take a modular approach to the enumerations of element values which may evolve over time,
277 e.g. by referring to a separate schema for those enumerations.
- 278 5. Specify unique distribution and sender identifiers
- 279 6. Specify the date and time the distribution was sent
- 280 7. Specify the actionability of the distribution message (e.g., real-world, test, exercise)
- 281 8. Specify the functional type of the distribution message (e.g., report, request, update, cancellation,
282 etc.)

- 283 9. Specify that the following elements may be present in a valid payload:
- 284 (a) A specification of the format of the distribution message (e.g., the URI of an XML Schema for
285 the message)
- 286 (b) The functional role and/or type of the sender of the distribution message
- 287 (c) One or more functional role and/or type of desired recipients of the distribution message
- 288 (d) One or more types of response activity involved
- 289 (e) A reference to the type of incident
- 290 (f) One or more characterizations of the etiology of the subject event or incident (e.g., terrorism,
291 natural, under investigation, etc.)
- 292 (g) The incident name or other identifier of one or more event or incident
- 293 (h) A reference to one or more response types.
- 294 (i) One or more specific recipient addresses (as a URI).
- 295 (j) Specify an assertion of the confidentiality level of the combined payloads.
- 296 10. In addition, the Content Object element contained within the Distribution Element SHOULD:
- 297 (a) Allow the encapsulation of one or more payloads in each of the Content Object elements.
- 298 (b) Specify the functional role and/or type of the sender of each payload
- 299 (c) Specify one or more functional roles and/or types of desired recipients of each payload
- 300 (d) Specify an assertion of the confidentiality level of each payload.
- 301 11. Provide or refer to specific lists (enumerations) of values and definitions for:
- 302 (a) Types of incidents
- 303 (b) Types of hazards and/or events
- 304 (c) Types of agencies
- 305 (d) Types of response activity
- 306 (e) The functional role and/or type of the sender
- 307 (f) The functional roles and/or types of desired recipients
- 308 (g) The incident name or other identifier of one or more event or incident.

309 **2.3 Example Usage Scenarios**

310 Note: The following examples of use scenarios were used as a basis for design and review of the EDXL
311 Distribution Element Message format. These scenarios are non-normative and not intended to be
312 exhaustive or to reflect actual practices.

313 **2.3.1 Distribution of Emergency Messages or Alerts Based on Geographic** 314 **Delivery Area and Incident Type**

315 The terror alert level has been raised to RED. Credible intelligence indicates that terrorist groups in the
316 Mid-Atlantic region are seeking to conduct an attack in the next 48 hours. The Department of Homeland
317 Security sends an emergency alert message, and using the Distribution Element, distributes it to all
318 emergency agencies in the specified area.

319 **2.3.2 Encapsulation and Distribution of One or More Emergency** 320 **Messages or Alerts or Notifications**

321 A Radiological sensor triggered at a prominent Tunnel toll booth. Radiation alarm levels indicates possible
322 dirty bomb. Authorities decide to send multiple messages to a number of jurisdictions. The user sends an
323 EDXL Distribution Element with two encapsulated CAP messages. The first one notifies the area where
324 the sensor has been triggered. The second one is an alert to emergency response agencies that the state
325 Emergency Operation Center (EOC) has been activated, and requests the agencies to be on alert.

326 **2.3.3 Distribution of Resource Messages or Reports**

327 The Local EOC has a need for additional resource/support, but is unsure what specifically to request. A
328 free-form request for information and resource availability is prepared, and is sent to the state EOC and
329 other organizations (person to person) using the Distribution Element. The Local EOC receives an
330 acknowledgment message from the State EOC, as well as a request for Information on additional details
331 of the requested resource. Both of these messages are contained within a single Distribution Element.

332 **2.3.4 Distribution of Well-Formed XML Messages**

333 A huge crash, involving a car and a HAZMAT truck, occurs at a busy junction on an inter-state freeway.
334 Separate automatic notifications of both the car crash and the HAZMAT carrier are sent using the
335 Vehicular Emergency Data Set (VEDS), contained in the Distribution Element. The Transportation
336 Management Center (TMC) shares information (related to the above incident) with the adjacent TMC,
337 using the IEEE 1512 Incident Management Message Set. These sets of messages are exchanged using
338 the EDXL Distribution Element.

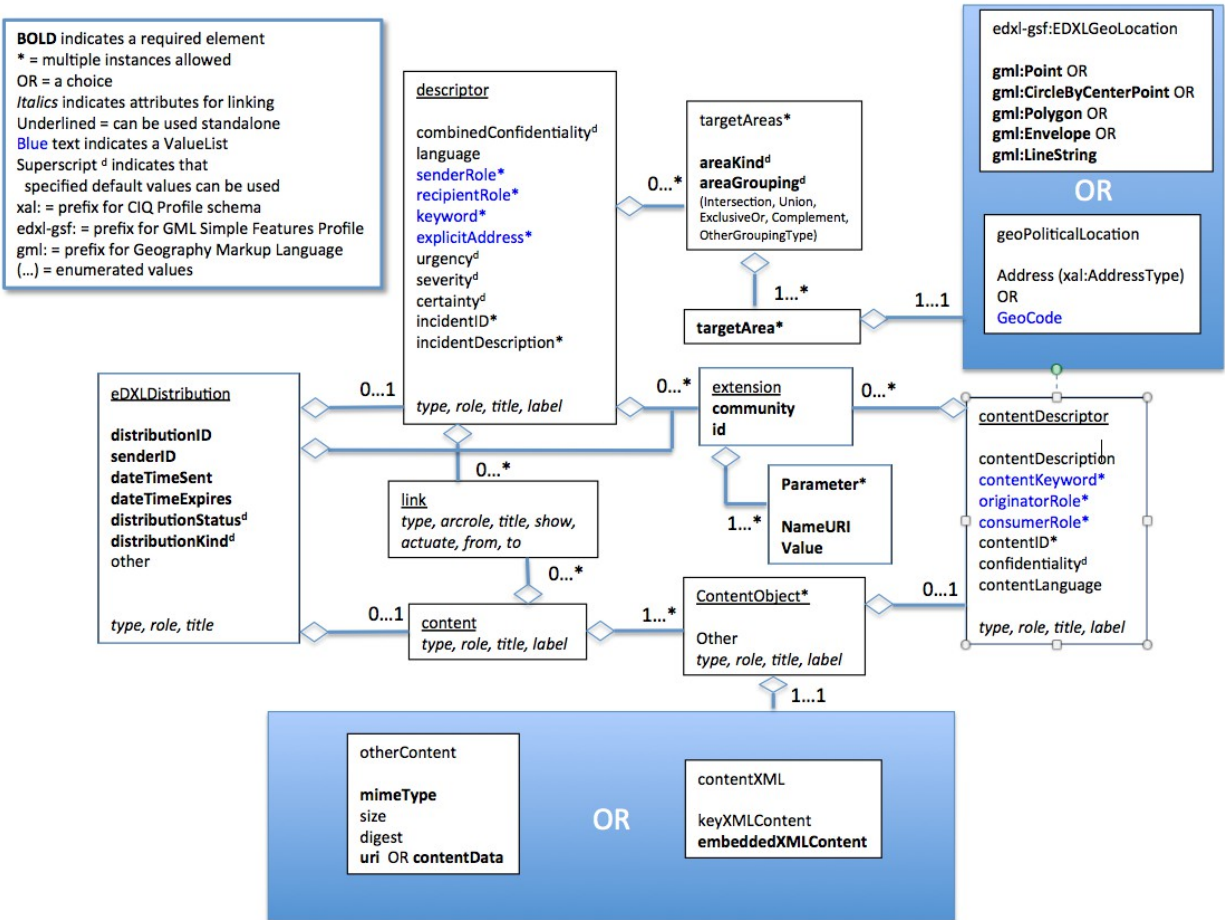
339

3 EDXLDistribution Element Structure (normative)

340

3.1 Document Object Model

341



343

3.2 Data Dictionary

3.2.1 EDXLDistribution Element and Sub-elements

346 The Distribution Element, <edxDistribution> is the container element for all data necessary to the
 347 originator's intent as to the dissemination of the contained message or set of messages.

Element	edxDistribution
Type	XML Structure
Usage	CONDITIONAL , MUST be used once and only once when an EDXL envelope is desired, top level container
Definition	A container of all of the elements related to the distribution of the content messages.
Comments	1. The <edxDistribution> element includes administrative envelope information as well as

	<p>optionally one <descriptor> block and one <content> block.</p> <p>2. Use of the <edxlDistribution> element 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 over untrusted networks, 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), or some other suitable encryption scheme.</p> <p>3. This element can be the source or destination for a link. See Section 1.3.5.</p>
Sub-elements	<p>distributionID [1..1]</p> <p>senderID [1..1]</p> <p>dateTimeSent [1..1]</p> <p>dateTimeExpires [1..1]</p> <p>distributionStatus [1..1]</p> <p>distributionKind [1..1]</p> <p>descriptor [0..1]</p> <p>content [0..1]</p> <p>other [0..*]</p>
Used In	top level element

348

Element	descriptor
Type	XML Structure
Usage	OPTIONAL , MAY be used once and only once; can be used as a top level element when used outside of the edxlDistribution envelope.
Definition	A container of all of the substantive elements related to describing the distribution of the content messages as a whole.
Comments	1. This element can be the source or destination for a link. See Section 1.3.5.
Sub-elements	<p>combinedConfidentiality [0..1]</p> <p>language [0..1]</p> <p>senderRole [0..*]</p> <p>recipientRole [0..*]</p> <p>keyword [0..*]</p> <p>explicitAddress [0..*]</p>

	<p>targetAreas [0..*]</p> <p>urgency [0..1]</p> <p>severity [0..1]</p> <p>certainty [0..1]</p> <p>incidentID [0..*]</p> <p>incidentDescription [0..*]</p> <p>link [0..*]</p> <p>ext:extension [0..*]</p>
Used In	edxIDistribution or independently if an alternative envelope is used.

349
350

Element	ext:extension
Type	XML Structure
Usage	OPTIONAL , MAY be used multiple times.
Definition	This element supports a “Community Extension”, a set of parameter name/value pairs representing information supplemental to the main body of the standard.
Comments	<p>1.The <extension> block is in the form of the example shown below:</p> <pre> <ext:extension> <ext:community>http://mycommunity.org</ext:community> <ext:id>layer1</ext:id> <ext:parameter> <ext:nameURI>http://mycommunity.org/layer1/urgency</ext:nameURI> <ext:value>Low</ext:value> </ext:parameter> </ext:extension> </pre> <p>2. Use of the <extension> block should be used for optional supplemental information. The elements with enumerated values provided in the main body of the standard provide the greatest interoperability; however, the <extension> block provides flexibility for local communities to utilize their own supplemental terminology and information when needed. See Section 1.3.8.</p>
Sub-elements	<p>community [1..1]</p> <p>id [1..1]</p> <p>parameter [1..*]</p> <p> nameURI [1..1]</p> <p> value [1..1]</p> <p>See Appendix C for the referenced extension schema</p>
Used In	descriptor

351
352

	contentDescriptor
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Element	content
Type	XML Structure
Usage	OPTIONAL , MAY be used once and only once; may be used outside of EDXLDistribution if an alternative envelope to <edxLDistribution> is used.
Definition	A container for the contentObject and any links among content objects
Comments	1.The <content> block must contain one or more <contentObject> blocks and optionally one ore more <link> elements. 2. This element can be the source or destination for a link. See Section 1.3.5.
Sub-ele-ments	contentObject [1..*] link [0..*]
Used In	EDXLDistribution or independently if an alternative envelope is used.

353
354

Element	link
Type	XML Structure
Usage	OPTIONAL , MAY be used multiple times
Definition	A method for linking <contentObject> elements or other elements
Comments	1.The link element includes attributes from the xlink:arcLink attributeGroup, consisting of type="arc", xlink:arcrole, xlink:title , xlink:show, xlink:actuate, xlink:from, and xlink:to. The role attribute indicates a property of the resource, the title indicates a human-readable description of the resource, and the label attribute provides a way for an arc-type element to refer to it. The xlink:from attribute defines the start of a link by referencing a resource's "label" attribute while the xlink:to attribute defines the endpoint of a link by referencing the ending resource label. Since label attributes are available in the DE content, contentObject, and descriptor elements, the link element can be used to link any of these elements. For example, content objects can be linked to each other and to descriptor elements. The linkage is useful to associate content objects when multiple pieces of content are included in one DE or to link a descriptor to content when the two elements are separated, as when using an alternative envelope to the edxLDistribution element, for example when using a SOAP envelope. For more information on xlink, see the XLINK specification referenced in Section 1. 2. See Section 1.3.5 for a summary overview of the new DE linking capability. 3. <descriptor> elements can utilize the resourceLink attributes defined in Xlink 1.1.
Used In	content descriptor

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356

Element	distributionID
Type	ct:EDXLStringType
Usage	REQUIRED , MUST be used once and only once
Definition	The unique identifier of this distribution message.
Comments	<p>1.Uniqueness is assigned by the sender to be unique for that sender.</p> <p>2.The identifier MUST be a properly formed -escaped if necessary- XML string.</p> <p>3.The string length of the identifier MUST be less than 1024.</p>
Used In	edxIDistribution

357

Element	senderID
Type	ct:EDXLStringType
Usage	REQUIRED , MUST be used once and only once
Definition	The unique identifier of the sender.
Comments	<p>1.Uniquely identifies human parties, systems, services, or devices that are all potential senders of the distribution message.</p> <p>2. In the form actor@domain-name.</p> <p>3.Uniqueness of the domain-name is guaranteed through use of the Internet Domain Name System, and uniqueness of the actor name enforced by the domain owner.</p> <p>4.The identifier MUST be a properly formed -escaped if necessary- XML string.</p>
Used In	edxIDistribution

358

Element	dateTimeSent
Type	ct:EDXLDateTimeType
Usage	REQUIRED , MUST be used once and only once
Definition	The date and time the distribution message was sent.
Comments	1. The Date Time combination must include the offset time for time zone. Must be in the restricted W3C format for the XML [dateTime] data type, see ct:EDXLDateTimeType.
Used In	edxIDistribution

359

360

Element	dateTimeExpires
Type	ct:EDXLDateTimeType
Usage	REQUIRED , MUST be used once and only once
Definition	The date and time the distribution message should expire.
Comments	1. The Date Time combination must include the offset time for the time zone. Must be in the restricted W3C format for the XML [dateTime] data type, see ct:EDXLDateTimeType.
Used In	edxIDistribution

361

Element	distributionStatus
Type	One of a selection of enumerated values
Usage	REQUIRED , MUST be used once and only once
Definition	The action-ability of the message.
Comments	1. The Value must be one of: <ul style="list-style-type: none"> a. Actual - "Real-world" information for action b. Exercise - Simulated information for exercise participants c. System - Messages regarding or supporting network functions d. Test - Discardable messages for technical testing only. e. Unknown – The distributionStatus is not known f. NoAppropriateDefault – The distributionStatus is known but the provided default values are so inappropriate that to choose one would be entirely misleading.
Used In	edxIDistribution

362

363

Element	distributionKind
Type	One of a selection of enumerated values
Usage	REQUIRED , MUST be used once and only once
Definition	The function of the message.
Comments	1. The value must be one of: <ul style="list-style-type: none"> a. Report - New information regarding an incident or activity b. Update - Updated information superseding a previous message c. Cancel - A cancellation or revocation of a previous message

	<p>d. Request - A request for resources, information or action</p> <p>e. Response - A response to a previous request</p> <p>f. Dispatch - A commitment of resources or assistance</p> <p>g. Ack - Acknowledgment of receipt of an earlier message</p> <p>h. Error - Rejection of an earlier message (for technical reasons)</p> <p>i. SensorConfiguration - These messages are for reporting configuration during power up or after Installation or Maintenance.</p> <p>j. SensorControl - These are messages used to control sensors/sensor concentrator components behavior.</p> <p>k. SensorStatus - These are concise messages which report sensors/sensor concentrator component status or state of health.</p> <p>l. SensorDetection - These are high priority messages which report sensor detections.</p> <p>m. Unknown – The distributionStatus is not known</p> <p>n. NoAppropriateDefault – The distributionStatus is known but the provided default values are so inappropriate that to choose one would be entirely misleading.</p>
Used In	edxIDistribution

364

Element	combinedConfidentiality
Type	One of a selection of enumerated values.
Usage	CONDITIONAL , Must be present when confidentiality is used in a content object
Definition	Confidentiality of the combined distribution message's content.
Comments	<p>1. The <combinedConfidentiality> indicates the confidentiality of the combined <contentObject> sub-elements. Generally the combined confidentiality is the most restrictive of the <confidentiality> elements in the container <contentObject> element, but it can be more restrictive than any of the individual <confidentiality> elements.</p> <p>2. The <combinedConfidentiality> element MUST be present if a <confidentiality> element is present in any of the <contentObject> elements.</p> <p>3. The value must be one of:</p> <ul style="list-style-type: none"> a. Unclassified b. Classified
Used In	descriptor

365

366

Element	language
Type	xsd:language
Usage	OPTIONAL , MAY use once and only once
Definition	The primary language (but not necessarily exclusive) used in the payloads.
Comments	1. Valid language values are supplied in the ISO standard [RFC3066] . 2. The language MUST be a properly formed -escaped if necessary- XML string.
Used In	descriptor

367

368

Element	senderRole
Type	ct:ValueListType
Usage	OPTIONAL , MAY use multiple
Definition	The functional role of the sender, as it may determine message routing decisions.
Comments	<p>1. The list and associated value(s) is in the form:</p> <pre><senderRole> <ct:ValueListURI>valueListURI</ct:ValueListURI> <ct:Value>value</ct:Value> </senderRole></pre> <p>2. The <ct:ValueListURI> is the Uniform Resource Name of a published list of values and definitions, and <ct:Value> is a string (which may represent a number) denoting the value itself.</p> <p>3. Multiple instances of the <ct:Value>, May occur with a single <ct:ValueListURI> within the <senderRole> container.</p> <p>4. Multiple instances of <senderRole> MAY occur within a single <descriptor> container</p> <p>5. Numerous organizations provide role definitions; the external role references provided are examples only. The IF committee does not endorse and/or approve any particular role definition external references.</p> <p>Example Role External References: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf http://www.ccc.ca.gov/emer/Pages/RolesCapabilities.aspx https://www.niem.gov/training/Documents/Mod09_NIEM_PI_How_NIEM_uses_XML.pdf</p>
Sub-elements	ValueListURI [1..1] Value [1..*]
Used In	descriptor

369

Element	recipientRole
Type	ct:ValueListType
Usage	OPTIONAL , MAY use multiple
Definition	The functional role of the recipient, as it may determine message routing decisions.
Comments	<p>1. The list and associated value(s) are in the form:</p> <pre><recipientRole> <ct:ValueListURI>ValueListURI</ct:ValueListURI> <ct:Value>value</ct:Value> </recipientRole></pre> <p>2. The <ct:ValueListURI> is the Uniform Resource Name of a published list of values and definitions, and the <ct:Value> is a string (which may represent a number) denoting the value itself.</p> <p>3. Multiple instances of the <ct:Value>, MAY occur with a single <ct:ValueListURI> within the <recipientRole> container.</p> <p>4. Multiple instances of <recipientRole> MAY occur within a single <descriptor> container.</p> <p>5. Numerous organizations provide role definitions; the external role references provided are examples only. The IF committee does not endorse and/or approve any particular role definition -external references.</p> <p>Example Role External References: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf http://www.ccc.ca.gov/emer/Pages/RolesCapabilities.aspx https://www.niem.gov/training/Documents/Mod09_NIEM_PI_How_NIEM_uses_XML.pdf</p>
Sub-elements	ct:ValueListURI [1..1] ct:Value [1..*]
Used In	Descriptor

371

372

Element	keyword
Type	ct:ValueListType
Usage	OPTIONAL , MAY use multiple
Definition	The topic related to the distribution message, as it may determine message routing decisions.
Comments	<p>1. The list and associated value(s) is in the form:</p> <pre><keyword> <ct:ValueListURI>ValueListURI</ct:ValueListURI> <ct:Value>value</ct:Value></pre>

	<p></keyword></p> <p>2. The <ct:ValueListURI> is the Uniform Resource Name of a published list of values and definitions, and the <ct:Value> is a string (which may represent a number) denoting the value itself.</p> <p>3. Multiple instances of the <ct:Value>, MAY occur with a single <ct:ValueListURI> within the <keyword> container.</p> <p>4. Multiple instances of <keyword> MAY occur within a single <edxIDistribution> container.</p> <p>5 Examples of things <keyword> might be used to describe include event type, event etiology, incident ID and response type.</p>
Sub-elements	<p>ct:ValueListURI [1..1]</p> <p>ct:Value [1..*]</p>
Used In	descriptor

373

374

Element	explicitAddress
Type	XML Structure
Usage	OPTIONAL , MAY use multiple
Definition	The identifier of an explicit recipient.
Comments	<p>1. Identifies human parties, systems, services, or devices that are all potential recipients of the distribution message.</p> <p>2. The explicit address of a recipient in the form:</p> <p>1. <explicitAddress> <explicitAddressScheme> explicitAddressScheme </explicitAddressScheme> <explicitAddressValue> explicitAddressValue </explicitAddressValue> </explicitAddress ></p> <p>The content of <explicitAddressScheme> is the distribution addressing scheme used, and the content of <explicitAddressValue> is a string denoting the addressees value.</p> <p>2. 3. Multiple instances of the <explicitAddressValue > MAY occur with a single < explicitAddressScheme> within the <explicitAddress > container.</p> <p>4. Multiple instances of <explicitAddress > MAY occur within a single <descriptor> container.</p>
Sub-elements	<p>explicitAddressScheme[1..1]</p> <p>explicitAddressValue[1..*]</p>
Used In	descriptor

375

Element	urgency
Type	One of a selection of enumerated values.
Usage	OPTIONAL , MAY be used once and only once
Definition	The urgency of the content of the message.
Comments	<p>1. The value must be one of:</p> <ul style="list-style-type: none"> a. "Immediate" - Responsive action SHOULD be taken immediately b. "Expected" - Responsive action SHOULD be taken soon (within next hour) c. "Future" - Responsive action SHOULD be taken in the near future d. "Past" - Responsive action is no longer required e. "Unknown" - Urgency not known f. "NoAppropriateDefault" – The urgency is known but the provided default values are so inappropriate that to choose one would be entirely misleading.
Used In	descriptor

376
377
378

Element	severity
Type	One of a selection of enumerated values.
Usage	OPTIONAL , MAY be used once and only once
Definition	The severity of the content of the message.
Comments	<p>1. The value must be one of:</p> <ul style="list-style-type: none"> a. "Extreme" - Extraordinary threat to life or property b. "Severe" - Significant threat to life or property c. "Moderate" - Possible threat to life or property d. "Minor" – Minimal to no known threat to life or property e. "Unknown" - Severity unknown f. "NoAppropriateDefault" – The severity is known but the provided default values are so inappropriate that to choose one would be entirely misleading.
Used In	descriptor

379
380

Element	certainty
Type	One of a selection of enumerated values.

Usage	OPTIONAL , MAY be used once and only once
Definition	The certainty of the content of the message.
Comments	<p>1. The value must be one of:</p> <ul style="list-style-type: none"> a. "Observed" – Determined to have occurred or to be ongoing b. "Likely" - Likely (p > ~50%) c. "Possible" - Possible but not likely (p <= ~50%) d. "Unlikely" - Not expected to occur (p ~ 0) e. "Unknown" - Certainty unknown f. "NoAppropriateDefault" – The severity is known but the provided default values are so inappropriate that to choose one would be entirely misleading.
Used In	descriptor

381
382

Element	incidentID
Type	ct:EDXLStringType
Usage	OPTIONAL , MAY use multiple times
Definition	The human-readable text uniquely identifying the incident/event/situation associated with the Content.
Comments	1. MUST be a properly formed -escaped if necessary- XML string.
Used In	descriptor

383

Element	incidentDescription
Type	ct:EDXLStringType
Usage	OPTIONAL , MAY use once and only once
Definition	The human-readable text describing the incident/event/situation associated with the ContentObject.
Comments	1. MUST be a properly formed -escaped if necessary- XML string.
Used In	descriptor

384

385 **3.2.2 targetAreas Element and Sub-elements**

386 The <targetAreas> is a container element for the geospatial or political areas targeting or describing the
387 message content. It indicates the originator's intent based on location targeting as to the dissemination of
388 that particular message or set of messages. The <targetArea> utilizes the EDXL GML SimpleFeatures
389 Profile, which should be consulted for detailed description of <targetArea> sub-elements.

390

Element	targetAreas
Type	XML Structure
Usage	OPTIONAL , MAY use multiple
Definition	A container for TargetArea information.
Comments	1. The <targetAreas> block must contain one <areaKind> block, one <areaGrouping> block, and one or more <targetArea> elements.
Sub-elements	areaKind [1..1] areaGrouping [1..1] targetArea [1..*]
Used In	descriptor

391

Element	areaGrouping
Type	One of a selection of enumerated values.
Usage	REQUIRED , MUST be used once and only once.
Definition	The container element for location information.
Comments	1. The value must be one of: "Intersection", "Union", "ExclusiveOr", "Complement", "Other-GroupingType", "Unknown", "NoAppropriateDefault".
Used In	targetAreas

392

Element	targetArea
Type	XML Structure
Usage	OPTIONAL , MAY use multiple
Definition	The container element for location information.
Comments	<p>1. If multiple Sub-elements appear in a single <targetArea> element then it should be in the document order with most accurate representation first.</p> <p>2. Multiple <targetArea> blocks may appear in a single <targetAreas>element.</p>
Sub-elements	edxl-gsf:EDXLGeoLocation [0..*] ct:EDXLGeoPoliticalLocation [0..*]
Used In	targetAreas

393

394

Element	areaKind
Type	One of a selection of enumerated values.
Usage	REQUIRED , MUST use once and only once.
Definition	Specifies the kind of area, for example “SourceTargetArea” or “DistributionTargetArea”.
Comments	1. The value must be one of “SourceTargetArea”, “DistributionTargetArea”, “OtherTargetArea”, “Unknown”, or “NoAppropriateDefault”
Used In	targetAreas

395

396 **3.2.3 contentObject Element and Sub-elements**

397 The <contentObject> element is the container element for specific messages. The <contentObject>
 398 element MUST either contain a <contentXML> content container or a <otherContent> content container.
 399 Additional elements (metadata) used for specific distribution of the <contentObject> payload or hints for
 400 processing the payload are also present in the <contentObject> container element.

Element	contentObject
Type	XML Structure
Usage	OPTIONAL , MAY use multiple
Definition	The container element for message data and content.
Comments	<p>1. The <contentObject> is the container element for specific messages.</p> <p>2. The <contentObject> may have an optional attribute that defines a namespace prefix which resolves ambiguous element names.</p> <p>3. The <contentObject> contains an optional <contentDescriptor> to describe the content.</p> <p>4. The <contentObject> element MUST contain exactly one of the two content formats:</p> <p><contentXML>, for valid namespaced XML content</p> <p>or</p> <p><otherContent>, containing either a <uri> element, for reference to the content’s location, or a <contentData> element, for data encapsulated in the message.</p> <p>5. This element can be the source or destination for a link. See Section 1.3.5.</p>
Sub-elements	<p>contentDescriptor [0..1]</p> <p>Either contentXML [1..1] or otherContent [1..1])</p> <p>Other [0..*]</p>
Used In	edxIDistribution or Stand-alone

401

Element	contentDescriptor
Type	XML Structure
Usage	OPTIONAL , MAY use once and only once
Definition	The description of the message content object
Comments	1. This element can be the source or destination for a link. See Section 1.3.5.
Sub-elements	<p>contentDescription [0..1]</p> <p>contentKeyword [0..*]</p> <p>originatorRole [0..*]</p> <p>consumerRole [0..*]</p> <p>contentID [0..*]</p> <p>confidentiality [0..1]</p> <p>contentLanguage [0..1]</p> <p>ext:extension [0..*]</p>
Used In	edxIDistribution or Stand-alone

402
403

Element	contentDescription
Type	ct:EDXLStringType
Usage	OPTIONAL , MAY use once and only once
Definition	The human-readable text describing the content object.
Comments	MUST be a properly formed -escaped if necessary- XML string.
Used In	contentDescriptor

404

Element	contentKeyword
Type	ct:ValueListType
Usage	OPTIONAL , MAY use multiple
Definition	The topic related to the message data and content, as it may determine message distribution and presentation decisions.
Comments	<p>1. The list and associated value(s) are in the form:</p> <pre><contentKeyword> <ct:ValueListURI>ValueListURI</ct:ValueListURI> <ct:Value>value</ct:Value> </contentKeyword></pre> <p>The <ct:ValueListURI> is the Uniform Resource Identifier of a published list of values and definitions, and <ct:Value> is a string (which may represent a number) denoting the</p>

	<p>value itself.</p> <p>2. Multiple instances of the <ct:Value>, MAY occur with a single <ct:ValueListURI> within the <contentKeyword> container.</p> <p>3. Multiple instances of <contentKeyword> MAY occur within a single <contentObject> container.</p>
Sub-elements	<p>ValueListURI [1..1]</p> <p>Value [1..*]</p>
Used In	ContentDescriptor

405

Element	originatorRole
Type	ct:ValueListType
Usage	OPTIONAL , MAY use multiple
Definition	The functional role of the message originator, as it may determine message distribution and presentation decisions.
Comments	<p>1. The list and associated value(s) are in the form:</p> <pre><originatorRole> <ct:ValueListURI>ValueListURI</ct:ValueListURI> <ct:Value>value</ct:Value> </originatorRole></pre> <p>The <ct:ValueListURI> is the Uniform Resource Identifier of a published list of values and definitions, and <ct:Value> is a string (which may represent a number) denoting the value itself.</p> <p>2. Multiple instances of the <Value>, MAY occur with a single <ValueListURI> within the <OriginatorRole> container.</p> <p>3. Multiple instances of <originatorRole> MAY occur within a single <contentObject> container.</p>
Sub-elements	<p>ct:ValueListURI [1..1]</p> <p>ct:Value [1..*]</p>
Used In	contentDescriptor

Element	consumerRole
Type	ct:ValueListType
Usage	OPTIONAL , MAY use multiple
Definition	The functional role of the message consumer, as it may determine message distribution and presentation decisions.
Comments	<p>1. The list and associated value(s) are in the form:</p> <pre><consumerRole> <ct:ValueListURI>ValueListURI</ct:ValueListURI> <ct:Value>value</ct:Value> </consumerRole></pre> <p>The <ct:ValueListURI> is the Uniform Resource Name of a published list of values and definitions, and <ct:Value> is a string (which may represent a number) denoting the value itself.</p> <p>2. Multiple instances of the <ct:Value>, MAY occur with a single <ct:ValueListURI> within the <consumerRole> container.</p> <p>3. Multiple instances of <consumerRole> MAY occur within a single <contentObject> container.</p>
Sub-elements	ct:ValueListURI [1..1] ct:Value [1..*]
Used In	contentDescriptor

Element	contentID
Type	ct:EDXLStringType
Usage	OPTIONAL , MAY be used multiple times.
Definition	An identifier for a contentObject.
Comments	<p>1. Multiple instances of contentID MAY occur within a contentDescriptor.</p> <p>2. The identifier MUST be a properly formed -escaped if necessary- XML string.</p> <p>3. The string length of the identifier MUST be less than 1024.</p>
Used In	contentDescriptor

Element	confidentiality
Type	One of a selection of enumerated values.
Usage	OPTIONAL , MAY use once and only once

Definition	Special requirements regarding confidentiality of the content of this <contentObject>.
Comments	<p>1. The value must be one of:</p> <ul style="list-style-type: none"> a. Unclassified b. Classified <p>2. The extension mechanism defined in Section 1.3.8 can be used to provide a more specific classification value from an externally-managed, community-appropriate classification list.</p>
Used In	contentDescriptor

409

Element	contentLanguage
Type	xsd:language
Usage	OPTIONAL , MAY use once and only once
Definition	Specifies the language of this particular content object
Comments	<p>1. Valid language values are supplied in the ISO standard [RFC3066].</p> <p>2. The language MUST be a properly formed -escaped if necessary- XML string.</p>
Used In	contentDescriptor

410

Element	<i>other</i>
Type	XML content from any namespace other than the DE 2.0 namespace
Usage	OPTIONAL , MAY be use to add an unlimited number of XML elements for enveloped signing process.
Definition	Special requirements allowing for signature of the content of a <ContentObject>.
Comments	<p>1. There is no mandatory validation of the elements if the namespace reference can not be located.</p> <p>2. MUST be a properly formed XML string – escaped, if necessary.</p> <p>3. Element names cannot duplicate other element names in the contentObject. Such duplication would prevent validation due to the ambiguity introduced.</p> <p>4. This element may be used for signatures. Use the “extension” element for other types of supplemental information.</p>
Used In	contentObject

411 3.2.4 otherContent Element and Sub-elements

Element	otherContent
Type	XML Structure
Usage	CONDITIONAL , MUST use once if ContentXML is not used
Definition	Container for content provided in a non-XML MIME type.

Comments	<p>1. The <otherContent> container MUST contain either <contentData> or <uri> or both.</p> <p>2. If the <uri> element is used in conjunction with the <contentData> element, it must reference a data location that contains the same data as is contained in the <contentData> element.</p>
Sub-elements	<p>contentType [1..1]</p> <p>size [0..1]</p> <p>digest [0..1]</p> <p>uri [0..1]</p> <p>contentData [0..1]</p>
Used In	contentObject

412

Element	mimeType
Type	ct:EDXLStringType
Usage	REQUIRED , MUST be used once and only once
Definition	The format of the payload.
Comments	<p>1. MIME content type and sub-type as described in [RFC 2046].</p> <p>2. The string length of the identifier MUST be less than 1024.</p> <p>3. MUST be a properly formed -escaped if necessary- XML string.</p>
Used In	otherContent

413

Element	size
Type	xsd:integer
Usage	OPTIONAL , MAY use once and only once
Definition	The file size of the payload.
Comments	1. Value must be in bytes and represent the raw file size (not encoded or encrypted).
Used In	otherContent

414

Element	digest
Type	xsd:base64Binary
Usage	OPTIONAL , MAY use once and only once
Definition	The digest value for the payload.
Comments	1. Used to ensure the integrity of the payload.

	<p>2. Calculated using the Secure Hash Algorithm (SHA-1)</p> <p>3. MUST be a hexadecimal representation of a SHA-1 Hash followed by a BASE 64-encoding to be carried in a non-CDATA element.</p>
Used In	otherContent

415

Element	uri
Type	xsd:anyURI
Usage	OPTIONAL , MAY use once and only once; but REQUIRED if contentData not used
Definition	A Uniform Resource Identifier that can be used to retrieve the identified resource.
Comments	<p>1. May be a full absolute URI, typically a Uniform Resource Locator, that can be used to retrieve the resource over the Internet.</p> <p>2. May be a relative URI naming a file. This may be just a pointer to a file or specifically to the file represented in the <ContentData>.</p>
Used In	otherContent

416

Element	contentData
Type	xsd:base64Binary
Usage	OPTIONAL , MAY use once and only once; but REQUIRED if uri not used
Definition	The base-64 encoded data content.
Comments	<p>1. MAY be used either with or instead of the <Uri> element in contexts where retrieval of a resource via a URI is not feasible.</p> <p>2. MUST be a properly formed -escaped if necessary- XML string.</p>
Used In	otherContent

417 3.2.5 contentXML Element and Sub-elements

Element	contentXML
Type	XML Structure
Usage	CONDITIONAL , MUST use once and only once if otherContent is not used
Definition	Container for valid-namespaced XML data.
Comments	An optional namespace attribute may be included.

Sub-elements	keyXMLContent [0..1] embeddedXMLContent [1..1]
Used In	contentObject

418

Element	keyXMLContent
Type	XML content from any namespace other than the DE 2.0 namespace
Usage	OPTIONAL , MAY use once and only once
Definition	A container element for collected fragments of valid XML.
Comments	<ol style="list-style-type: none"> 1. Extracts must come from the XML document contained within the <embeddedXMLContent> element within the current <contentObject> block. 2. All content within this element MUST be explicitly namespaced as defined in the enclosing <contentObject> tag. 3. MUST be a properly formed -escaped if necessary- XML string.
Used In	contentXML

419

Element	embeddedXMLContent
Type	XML content from any namespace other than the DE 2.0 namespace
Usage	CONDITIONAL , REQUIRED if parent element contentXml is present, MAY use only one per content object
Definition	The <embeddedXMLContent> element is an open container for valid XML from an explicit namespaced XML Schema.
Comments	<ol style="list-style-type: none"> 1. The content MUST be a separately-namespaced well-formed XML document. 2. The enclosed XML content MUST be explicitly namespaced as defined in the enclosing <embeddedXMLContent> tag. 3. Enclosed XML content may be encrypted and/or signed within this element. 4. This element MUST be present if parent element, contentXML, is present.
Used In	contentXML

420

421

422

423 3.2.6 explicit Addressing

Element	explicitAddressScheme
Type	ct:EDXLStringType

Usage	REQUIRED , MUST use once and only once
Definition	Identifies the distribution addressing scheme used.
Comments	1. MUST be a properly formed -escaped if necessary- XML string.
Used In	explicitAddress

424

Element	explicitAddressValue
Type	ct:EDXLStringType
Usage	REQUIRED , MAY use multiple
Definition	A properly formed -escaped if necessary- XML string denoting the addressees value.
Comments	1. MUST be a properly formed -escaped if necessary- XML string.
Used In	explicitAddress

425

426 **4 Conformance**

427 An XML 1.0 element is a conforming EDXL-DE-v2.0 Message if and only if:

428 a) it meets the general requirements specified in Section 3;

429 b) if its namespace name is "urn:oasis:names:tc:emergency:EDXL:DE:2.0", and the element is valid
430 according to the schema located at [http://docs.oasis-open.org/emergency/EDXL-DE-v2.0/EDXL-DE-
v2.0.xsd](http://docs.oasis-open.org/emergency/EDXL-DE-v2.0/EDXL-DE-
431 v2.0.xsd)

432 c) if its namespace name is "urn:oasis:names:tc:emergency:EDXL:DE:2.0", then its content(which in-
433 cludes the content of each of its descendants) meets all the additional mandatory requirements provided
434 in the specific subsection of Section 3 corresponding to the element's name.

435

436 **Appendix A Acknowledgments**

437 The following individuals have participated in the creation of this specification and are
438 gratefully acknowledged

Participants:

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449 Jeff Waters, DOD

450
451
452
453

454

Appendix B EDXL-DistributionElement XML Schema

455 The EDXL-DistributionElement XML Schema is provided here for convenience, the schema can be down-
456 loaded at the OASIS website: <http://docs.oasis-open.org/emergency/>

457

```
458 <?xml version="1.0" encoding="UTF-8"?>
```

459

```
<!--
```

460

```
Emergency Data Exchange Language (EDXL) Distribution Element Version 2.0
```

461

```
Committee Specification Draft 02 / Public Review Draft 02
```

462

```
10 April 2013
```

463

```
Copyright (c) OASIS Open 2012. All Rights Reserved.
```

464

```
Source: http://docs.oasis-open.org/emergency/edxl-de/v2.0/csprd03/schema/
```

465

```
-->
```

```
466 <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
```

```
467 xmlns:xlink="http://www.w3.org/1999/xlink"
```

```
468 xmlns:edxl-gsf="urn:oasis:names:tc:emergency:edxl:gsf:1.0"
```

```
469 xmlns:ct="urn:oasis:names:tc:emergency:edxl:ct:1.0"
```

```
470 xmlns="urn:oasis:names:tc:emergency:EDXL:DE:2.0"
```

```
471 xmlns:gml="http://www.opengis.net/gml/3.2"
```

```
472 xmlns:ext="urn:oasis:names:tc:emergency:edxl:extension:1.0"
```

```
473 targetNamespace="urn:oasis:names:tc:emergency:EDXL:DE:2.0"
```

```
474 elementFormDefault="qualified" attributeFormDefault="unqualified" ver-
```

```
475 sion="1.0CD">
```

```
476 <xs:import namespace="http://www.w3.org/1999/xlink" schemaLocation="./oth-
```

```
477 er-supporting-schema/xlink.xsd"/>
```

```
478 <xs:import namespace="urn:oasis:names:tc:emergency:edxl:gsf:1.0"
```

```
479 schemaLocation="./other-supporting-schema/EDXLCT_wd06/edxl-gsf.v1.0.xsd"/>
```

```
480 <xs:import namespace="urn:oasis:names:tc:emergency:edxl:ct:1.0"
```

```
481 schemaLocation="./other-supporting-schema/EDXLCT_wd06/edxl-ct-v1.0-wd05.xsd"/>
```

482

```
483 <xs:import namespace="urn:oasis:names:tc:emergency:edxl:extension:1.0"
```

```
484 schemaLocation="./other-supporting-schema/EDXLCT_wd06/edxl-ext-v1.0.xsd"/>
```

485

```
486 <xs:element name="edxlDistribution" type="DEDistributionType"/>
```

```
487 <xs:complexType name="DEDistributionType">
```

```
488 <xs:complexContent>
```

```
489 <xs:extension base="DEEnvelopeType">
```

```
490 <xs:sequence>
```

```
491 <xs:element ref="descriptor" minOccurs="0" maxOccurs="1"/>
```

```
492 <xs:element ref="content" minOccurs="0" maxOccurs="1"/>
```

```
493 <xs:element name="other" type="AnyXMLType" minOccurs="0" maxOccurs="unbound-
```

494

```
ded"/>
```

```
495 </xs:sequence>
```

```
496 <xs:attributeGroup ref="xlink:extendedAttrs"/>
```

```
497 </xs:extension>
```

```
498 </xs:complexContent>
```

```
499 </xs:complexType>
```

```
500 <xs:complexType name="DEEnvelopeType">
```

```
501 <xs:sequence>
```

```
502 <xs:element name="distributionID" type="ct:EDXLStringType" minOccurs="1"/>
```

```
503 <xs:element name="senderID" type="ct:EDXLStringType" minOccurs="1"/>
```

```
504 <xs:element name="dateTimeSent" type="ct:EDXLDateTimeType" minOccurs="1"/>
```

```
505 <xs:element name="dateTimeExpires" type="ct:EDXLDateTimeType" minOccurs="1"/>
```

```
506 <xs:element name="distributionStatus" type="DistributionStatusType" minOc-
```

507

```
curs="1"/>
```

```
508 <xs:element name="distributionKind" type="DistributionKindType" minOccurs="1"/>
```

```
509 <xs:element ref="ext:extension" minOccurs="0" maxOccurs="unbounded" />
```

```
510 </xs:sequence>
```

```
511 </xs:complexType>
```

```
512 <xs:element name="descriptor" type="DEDescriptorType"/>
```

```
513 <xs:complexType name="DEDescriptorType">
```

```
514 <xs:sequence>
```

```
515 <xs:element name="combinedConfidentiality" type="ConfidentialityType" minOc-
```



```

516     curs="0"/>
517     <xs:element name="language" type="xs:language" minOccurs="0"/>
518     <xs:element name="senderRole" type="ct:ValueListType" minOccurs="0" maxOc-
519     curs="unbounded"/>
520     <xs:element name="recipientRole" type="ct:ValueListType" minOccurs="0" maxOc-
521     curs="unbounded"/>
522     <xs:element name="keyword" type="ct:ValueListType" minOccurs="0" maxOccurs="un-
523     bounded"/>
524     <xs:element name="explicitAddress" type="ValueSchemeType" minOccurs="0" maxOc-
525     curs="unbounded"/>
526     <xs:element name="targetAreas" type="TargetAreasType" minOccurs="0" maxOc-
527     curs="unbounded"/>
528     <xs:element name="urgency" type="UrgencyType" minOccurs="0"/>
529     <xs:element name="severity" type="SeverityType" minOccurs="0"/>
530     <xs:element name="certainty" type="CertaintyType" minOccurs="0"/>
531     <xs:element name="incidentID" type="ct:EDXLStringType" minOccurs="0" maxOc-
532     curs="unbounded"/>
533     <xs:element name="incidentDescription" type="ct:EDXLStringType" minOccurs="0"
534     maxOccurs="unbounded"/>
535     <xs:element ref="link" minOccurs="0" maxOccurs="unbounded"/>
536     <xs:element ref="ext:extension" minOccurs="0" maxOccurs="unbounded" />
537   </xs:sequence>
538   <xs:attributeGroup ref="xlink:resourceAttrs"/>
539 </xs:complexType>
540 <xs:element name="content" type="DEContentType"/>
541 <xs:complexType name="DEContentType">
542   <xs:sequence>
543     <xs:element ref="contentObject" minOccurs="1" maxOccurs="unbounded"/>
544     <xs:element ref="link" minOccurs="0" maxOccurs="unbounded"/>
545   </xs:sequence>
546   <xs:attributeGroup ref="xlink:resourceAttrs"/>
547 </xs:complexType>
548 <xs:element name="link" type="DELinkType"/>
549 <xs:complexType name="DELinkType">
550   <xs:attributeGroup ref="xlink:arcAttrs"/>
551 </xs:complexType>
552 <xs:element name="contentDescriptor" type="DEContentDescriptorType"/>
553 <xs:complexType name="DEContentDescriptorType">
554   <xs:sequence>
555     <xs:element name="contentDescription" type="ct:EDXLStringType" minOccurs="0"
556     maxOccurs="1"/>
557     <xs:element name="contentKeyword" type="ct:ValueListType" minOccurs="0" maxOc-
558     curs="unbounded"/>
559     <xs:element name="originatorRole" type="ct:ValueListType" minOccurs="0" maxOc-
560     curs="unbounded"/>
561     <xs:element name="consumerRole" type="ct:ValueListType" minOccurs="0" maxOc-
562     curs="unbounded"/>
563     <xs:element name="contentID" type="ct:EDXLStringType" minOccurs="0" maxOc-
564     curs="unbounded"/>
565     <xs:element name="confidentiality" type="ConfidentialityType" minOccurs="0"
566     maxOccurs="1"/>
567     <xs:element name="contentLanguage" type="xs:language" minOccurs="0" maxOc-
568     curs="1"/>
569     <xs:element ref="ext:extension" minOccurs="0" maxOccurs="unbounded"/>
570   </xs:sequence>
571 </xs:complexType>
572 <xs:element name="contentObject" type="DEContentObjectType"/>
573 <xs:complexType name="DEContentObjectType">
574   <xs:sequence>
575     <xs:element ref="contentDescriptor" minOccurs="0" maxOccurs="1"/>
576     <xs:choice minOccurs="1" maxOccurs="1">
577       <xs:element name="contentXML" type="ContentXmlType"/>
578       <xs:element name="otherContent" type="OtherContentType"/>
579     </xs:choice>
580     <xs:element name="other" type="AnyXMLType" minOccurs="0" maxOccurs="unbounded"/>

```

```

581     </xs:sequence>
582     <xs:attributeGroup ref="xlink:resourceAttrs" />
583 </xs:complexType>
584 <xs:complexType name="OtherContentType" mixed="false">
585   <xs:sequence>
586     <xs:element name="mimeType" type="ct:EDXLStringType" minOccurs="1" />
587     <xs:element name="size" type="xs:integer" minOccurs="0" />
588     <xs:element name="digest" type="xs:base64Binary" minOccurs="0" />
589     <xs:choice>
590       <xs:sequence>
591         <xs:element name="uri" type="xs:anyURI" />
592         <xs:element name="contentData" type="xs:base64Binary" minOccurs="0" />
593       </xs:sequence>
594       <xs:element name="contentData" type="xs:base64Binary" />
595     </xs:choice>
596   </xs:sequence>
597 </xs:complexType>
598 <xs:complexType name="ContentXmlType" mixed="false">
599   <xs:sequence>
600     <xs:element name="keyXMLContent" type="AnyXMLType" minOccurs="0" maxOccurs="1" />
601     <xs:element name="embeddedXMLContent" type="AnyXMLType" minOccurs="1" maxOc-
602 curs="1" />
603   </xs:sequence>
604 </xs:complexType>
605 <xs:complexType name="AnyXMLType">
606   <xs:sequence>
607     <xs:any namespace="##other" processContents="strict" maxOccurs="1" />
608   </xs:sequence>
609   <xs:anyAttribute namespace="##other" processContents="lax" />
610 </xs:complexType>
611 <xs:complexType name="TargetAreasType">
612   <xs:sequence>
613     <xs:element name="areaKind" type="AreaKindType" minOccurs="1" maxOccurs="1" />
614     <xs:element name="areaGrouping" type="AreaGroupingType" minOccurs="1" maxOc-
615 curs="1" />
616     <xs:element name="targetArea" type="TargetAreaType" minOccurs="1" maxOc-
617 curs="unbounded" />
618   </xs:sequence>
619 </xs:complexType>
620 <xs:complexType name="TargetAreaType">
621   <xs:choice>
622     <xs:element ref="edxl-gsf:EDXLGeoLocation" minOccurs="1" maxOccurs="1" />
623     <xs:element name="geoPoliticalLocation" type="ct:EDXLGeoPoliticalLocationType"
624 minOccurs="1" maxOccurs="1" />
625   </xs:choice>
626 </xs:complexType>
627 <xs:complexType name="ValueSchemeType">
628   <xs:sequence>
629     <xs:element name="explicitAddressScheme" type="ct:EDXLStringType" />
630     <xs:element name="explicitAddressValue" type="ct:EDXLStringType" minOccurs="1"
631 maxOccurs="unbounded" />
632   </xs:sequence>
633 </xs:complexType>
634 <xs:simpleType name="AreaKindType">
635   <xs:restriction base="ct:EDXLStringType">
636     <xs:enumeration value="SourceTargetArea" />
637     <xs:enumeration value="DistributionTargetArea" />
638     <xs:enumeration value="OtherTargetArea" />
639     <xs:enumeration value="Unknown" />
640     <xs:enumeration value="NoAppropriateDefault" />
641   </xs:restriction>
642 </xs:simpleType>
643 <xs:simpleType name="AreaGroupingType">
644   <xs:restriction base="ct:EDXLStringType">
645     <xs:enumeration value="Intersection" />

```

```

646     <xs:enumeration value="Union"/>
647     <xs:enumeration value="ExclusiveOr"/>
648     <xs:enumeration value="Complement"/>
649     <xs:enumeration value="OtherGroupingType"/>
650     <xs:enumeration value="Unknown"/>
651     <xs:enumeration value="NoAppropriateDefault"/>
652   </xs:restriction>
653 </xs:simpleType>
654 <xs:simpleType name="ConfidentialityType">
655   <xs:restriction base="ct:EDXLStringType">
656     <xs:enumeration value="Unclassified"/>
657     <xs:enumeration value="Classified"/>
658   </xs:restriction>
659 </xs:simpleType>
660 <xs:simpleType name="CertaintyType">
661   <xs:restriction base="ct:EDXLStringType">
662     <xs:enumeration value="Observed"/>
663     <xs:enumeration value="Likely"/>
664     <xs:enumeration value="Possible"/>
665     <xs:enumeration value="Unlikely"/>
666     <xs:enumeration value="Unknown"/>
667     <xs:enumeration value="NoAppropriateDefault"/>
668   </xs:restriction>
669 </xs:simpleType>
670 <xs:simpleType name="DistributionKindType">
671   <xs:restriction base="ct:EDXLStringType">
672     <xs:enumeration value="Report"/>
673     <xs:enumeration value="Update"/>
674     <xs:enumeration value="Cancel"/>
675     <xs:enumeration value="Request"/>
676     <xs:enumeration value="Response"/>
677     <xs:enumeration value="Dispatch"/>
678     <xs:enumeration value="Ack"/>
679     <xs:enumeration value="Error"/>
680     <xs:enumeration value="SensorConfiguration"/>
681     <xs:enumeration value="SensorControl"/>
682     <xs:enumeration value="SensorStatus"/>
683     <xs:enumeration value="SensorDetection"/>
684     <xs:enumeration value="Unknown"/>
685     <xs:enumeration value="NoAppropriateDefault"/>
686   </xs:restriction>
687 </xs:simpleType>
688 <xs:simpleType name="DistributionStatusType">
689   <xs:restriction base="ct:EDXLStringType">
690     <xs:enumeration value="Actual"/>
691     <xs:enumeration value="Exercise"/>
692     <xs:enumeration value="System"/>
693     <xs:enumeration value="Test"/>
694     <xs:enumeration value="Unknown"/>
695     <xs:enumeration value="NoAppropriateDefault"/>
696   </xs:restriction>
697 </xs:simpleType>
698 <xs:simpleType name="SeverityType">
699   <xs:restriction base="ct:EDXLStringType">
700     <xs:enumeration value="Extreme"/>
701     <xs:enumeration value="Severe"/>
702     <xs:enumeration value="Moderate"/>
703     <xs:enumeration value="Minor"/>
704     <xs:enumeration value="Unknown"/>
705     <xs:enumeration value="NoAppropriateDefault"/>
706   </xs:restriction>
707 </xs:simpleType>
708 <xs:simpleType name="UrgencyType">
709   <xs:restriction base="ct:EDXLStringType">
710     <xs:enumeration value="Immediate"/>

```

```
711     <xs:enumeration value="Expected"/>
712     <xs:enumeration value="Future"/>
713     <xs:enumeration value="Past"/>
714     <xs:enumeration value="Unknown"/>
715     <xs:enumeration value="NoAppropriateDefault"/>
716   </xs:restriction>
717 </xs:simpleType>
718 </xs:schema>
719
720
```

Appendix C EDXL-DistributionElement 2.0 Community Extension XML Schema

The EDXL-DistributionElement 2.0 XML Schema imports a separate schema for providing Community Extensions. This defaults schema is provided below for convenience, but it is also available at: <http://docs.oasis-open.org/emergency/>

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ext="urn:oasis:names:tc:emergency:edxl:extension:1.0"
  xmlns:ct="urn:oasis:names:tc:emergency:edxl:ct:1.0"
  targetNamespace="urn:oasis:names:tc:emergency:edxl:extension:1.0"
  elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:import namespace="urn:oasis:names:tc:emergency:edxl:ct:1.0"
    schemaLocation="./edxl-ct-v1.0-wd05.xsd"/>
  <xs:element name="extension">
    <xs:annotation>
      <xs:documentation>Base element to allow communities to extend/augment an EDXL
data standard</xs:documentation>
    </xs:annotation>
    <xs:complexType>
      <xs:sequence>
        <xs:element name="community" type="xs:anyURI">
          <xs:annotation>
            <xs:documentation>Unique identifier of the community</xs:documentation>
          </xs:annotation>
        </xs:element>
        <xs:element name="id" type="xs:anyURI">
          <xs:annotation>
            <xs:documentation>Unique identifier for this extension</xs:documentation>
          </xs:annotation>
        </xs:element>
        <xs:element name="parameter" type="ext:ParameterType" maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="ParameterType">
    <xs:annotation>
      <xs:documentation>Group of elements used to extend/augment an EDXL data stand-
ard</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="nameURI" type="ext:ParameterNameType">
        <xs:annotation>
          <xs:documentation>Unique identifier of a parameter</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="value" type="ext:ParameterValueType" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ParameterNameType">
    <xs:simpleContent>
      <xs:extension base="xs:anyURI">
        <xs:attribute name="XPath" type="xs:string" use="optional"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="ParameterValueType">
    <xs:simpleContent>
      <xs:extension base="ct:EDXLStringType">
        <xs:attribute name="uom" type="xs:string" use="optional"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
  </xs:sequence>
</xs:schema>
```

```
782     </xs:simpleContent>
783     </xs:complexType>
784 </xs:schema>
```

786

Appendix D Revision History

Revision	Date	Editor	Changes Made
Edxl-de-v2.0-wd02	26 Sept 2011	Jeff Waters	First Full Working Draft
Edxl-de-v2.0-wd03	11 Oct 2011	Jeff Waters	Added recommended changes by Martena Gooch, as recorded in the document at http://www.oasis-open.org/apps/org/workgroup/emergency-if/download.php/43842/de-notes-fixed-in-wd02.doc
Edxl-de-v2.0-wd04	18 Oct 2011	Jeff Waters	Added recommended changes by Martena Gooch.
Edxl-de-v2.0-wd05	25 Oct 2011	Jeff Waters	Added recommended changes by Werner Joerg, including multiplicities for sub elements
Edxl-de-v2.0-wd08	31 Jul 2012	Jeff Waters	Removed DistributionReference, added AreaGrouping, and addressed other recommended changes to add flexibility and streamline schema
Edxl-de-v2.0-wd09	21 Aug 2012	Jeff Waters	Restored RecipientRole, SenderRole, Keyword, updated diagram, and performed other cleanup
Edxl-de-v2.0-wd11	21 May 2013	Jeff Waters	Added extension element and schema, lower-cased element names, changed ValueList / Default choices with straight enumerations (since the extension mechanism allows for community-defined values)