PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile

Common Alerting Protocol

CAP·IT
Common Alerting Protocol - Italian Profile

Emergency Data Exchange Language (EDXL) Common Alerting Protocol (CAP) v1.2
Italian Profile (IT) Version 1.0

Releases

DRAFT		
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Approved by	--- ---	--

Status: **DRAFT**

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Introduction

The OASIS EDXL CAP standard Common Alerting Protocol is an XML data format for all types of alerts and notifications. It is fully compatible with all existing inter-systems communication channels.
The CAP protocol is based on the following principles:

- **complete**: the message must contain all information necessary to define the emergency and must be self-consistent;
- **simple and portable**: the data format used is XML but the structure is abstract and can be adapted to other formats; its use does not require particular technical skills except for the use of the data format. Also, it is easily accessible to both expert and general users;
- **multipurpose**: the CAP can be employed for multiple uses and message types;
- **interoperable**: it can be used on any system compatible with the protocol and interoperable with other data types at both international and interdisciplinary level;

Protocol's specific features are:

- flexible geographic tergeting, using models based on latitude/longitude and geospatial representations in three dimensions;
- multilingual and multi-audience message delivery;
- validation and time expiration of messages;
- message cancellation/update functions;
- templates for defining complete and valid alert messages;
- compatibility with digital signature systems;
- support for digital images and audio;
- ability to add system type-specific parameters;

In order to implement activity management systems for alerts, alarms, notifications and information, including IT-Alert, the Italian CAP profile is here outilned.

The use of this profile is not necessarily limited to the entities federated in ***the AlertHub Federation Registry*** but it is also available for all those willing to use the specific concepts defined in this profile.

Terminology

The **keywords** used in this document, written in capital letters and displayed in the following chart with their original English version should be interpreted according to the original English definitions specified in RFC2119[1].

Italian	English
DEVE	**MUST / SHALL**
NON DEVE	**MUST NOT / SHALL NOT**
OBBLIGATORIO	**REQUIRED**
DOVREBBE	**SHOULD**
NON DOVREBBE	**SHOULD NOT**

[1] RFC 2119, http://www.ietf.org/rfc/rfc2119.txt

CONSIGLIABILE	**RECOMMENDED**
POTREBBE / PUÒ	**MAY**
FACOLTATIVO	**OPTIONAL**

The **Profile** as used herein is a collection of rules, lists, and content directions that refers to and conforms to the CAP v1.2 standard.

Regulatory references

Civil Protection Department	The Civil Protection Department is a structure of the Presidency of the Council of Ministers. Established in 1982 to grant the country a body able to organize and coordinate all the national resources to ensure assistance to the population in case of major emergency. The dramatic delay in relief and the lack of coordination that characterized the management of the earthquake in Irpinia in 1980 highlighted the need to establish a structure responsible for civil protection at any time. By Law no. 225 of 1992, the Department became the connection point of the National Service of Civil Protection, in charge of addressing, promoting and coordinating the entire system. Since January 2, 2018, the National Service is regulated by the Civil Protection Code (Legislative Decree. n.1 of January 2, 2018). The Code reformed all the existing legislation on the subject, and includes all levels of government: State, Regions, Autonomous Provinces and local authorities. The Department, working in close connection with those components, deals with all the activities of risks forecast, prevention and mitigation, relief and assistance to populations affected by disasters, contrast and management of the emergency.
Controlled vocabularies	Section 5.3.1 of the Public Administration ICT Three-Year Plan 2019/2021 (https://docs.italia.it/italia/piano-triennale-ict/pianotriennale-ict-doc/it/2019-2021/05_dati-della-pubblica-amministrazione.html#vocabolari-controllati-e-modelli-dati) defines controlled vocabularies and data models as a common and shared method to organize recurring codes and nomenclatures in a standardized and normalized format.
dateTime	N. Freed, XML Schema Part 2: Datatypes Second Edition, http://www.w3.org/TR/xmlschema-2/#dateTime, W3C REC-xmlschema-2, October 2004.
ISO 639.2	Codes for the Representation of Names of Languages, 18 October 2010. http://www.loc.gov/standards/iso639-2/php/English_list.php

namespaces	T. Bray, Namespaces in XML, W3C REC-xml-names-19990114, January 1999. http://www.w3.org/TR/REC-xml-names/
RFC2046	N. Freed, Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types, IETF RFC 2046, November 1996. http://www.ietf.org/rfc/rfc2046.txt
RFC2119	S. Bradner, Key words for use in RFCs to Indicate Requirement Levels, IETF RFC 2119, March 1997. http://www.ietf.org/rfc/rfc2119.txt
RFC2141	R. Moats, URN Syntax, IETF RFC2141, May 1997. http://www.ietf.org/rfc/rfc2141.txt
RFC3066	H. Alvestrand, Tags for the Identification of Languages, IETF RFC 3066, January 2001. http://www.ietf.org/rfc/rfc3066.txt
RFC3121	K. Best, A URN Namespace for OASIS, IETF RFC 3121, June 2001. http://www.ietf.org/rfc/rfc3121.txt
WGS 84	National Geospatial Intelligence Agency, Department of Defense World Geodetic System 1984, NGA Technical Report TR8350.2, January 2000. http://earth-info.nga.mil/GandG/tr8350_2.html
XML 1.0	T. Bray, Extensible Markup Language (XML) 1.0 (Third Edition), W3C REC-XML-20040204, February 2004. http://www.w3.org/TR/REC-xml/
XMLSIG	Eastlake, D., Reagle, J. and Solo, D. (editors), XML-Signature Syntax and Processing, W3C Recommendation, February 2002. http://www.w3.org/TR/2002/REC-xmldsig-core-20020212/

CAP-IT scheme definition

The CAP-IT scheme, as per CAP Oasis standard, consists of 3 blocks (Alert, Info, Resource)

ALERT

The <alert> element gives basic information about the message: purpose, source, and status. The <alert> element also provides for a unique identifier for the message and the possibility to combine it with other messages. This element can be used stand-alone for message acknowledgements, deletions, or other system functions, but most commonly, it will include at least one <info> element.

INFO

The <info> element describes an expected or actual event in terms of urgency (time available for preparation), severity (intensity of impact), and certainty (confidence in observation or prediction), as well as providing both categorical and textual descriptions of the event reported in the message. It may also provide instructions for the appropriate response from message recipients and other details (duration, technical parameters, contact information, links to additional information sources, etc.). Multiple <info> segments can describe different parameters (e.g., "bands" of different probability or intensity) or provide information in multiple languages.

RESOURCE

The <resource> element provides optional reference to additional information related to the <info> segment whereby it is possible to define an "attached" object to the message, such as an image, a shape file, or an audio file.

AREA

The <area> element describes the geographic area covered by the <info> element. Textual and coded descriptions are supported. However, preferred representations use geospatial shapes (polygons and circles) and an altitude or an altitude range.

Naming convention of CAP-IT files

To easily organize, search, and retrieve CAP-IT messages, a naming convention is here outlined.

	Part 1	Sep.	Part 2	Sep.	Part 2	Sep.	Extension
	Sender of the message	_ (underscore)	Message identifier	_ (underscore)	Date/Time Epoch	. (dot)	xml
Field CAP-IT	<sender>		<identifier>		<sent> (epoch conversion)		
Example	PCM-DPC	_	55f91a3f-48de-4d4b-88b0-b010fb252d28	_	1552894200	.	xml

Eg: **PCM-DPC_55f91a3f-48de-4d4b-88b0-b010fb252d28_1552894200.xml**

The file should be composed as follows:

In case the file name does not appear in the designated format, the system delivering the file will rename it and verify that the composition parts of the file match the values entered and signed in the message, thus renaming the file with correct values in case of a negative verification of the message.

Chart representation of the layout

#	*	Tag name	Functional description and controls	Admitted values/ Examples
AL		<alert>	**Alert** Element containing all the data of the alert message. The element is MANDATORY. It must include the xmlns attribute referencing the CAP URNas namespace, e.g., <alert xmlns="urn:oasis:names:tc:emergency:cap:1.2">. The only accepted value is "cap:1.2". **Date type** / **Minimum occ.** / **Maximum occ.**: --------- / 0 / 1	
AL01		<identifier>	**Message Id** Unique identifier of the message. The value is MANDATORY. The message identifier is defined through the generation of a UUID Version 4. It MUST be verified that no messages have been produced with the same <identifier> identifier. **Date type** / **Minimum occ.** / **Maximum occ.**: xs:string / 1 / 1 **Notes**: Validation regex pattern: ^[0-9A-F]{8}-[0-9A-F]{4}-[4][0-9A-F]{3}-[89AB][0-9A-F]{3}-[0-9A-F]{12}$	**Value** **UUID v4:** *55f91a3f-48de-4d4b-88b0-b010fb252d28*
AL02		<sender>	**Sender of the message** Code entity generating the CAP-IT alert message. The value is MANDATORY. The value must be globally univocal; hence, CAP-IT producing entities are collected in the EDXL-IT Federation. It MUST be checked that the "<sender>" is an existing and active entity code in the EDXL-IT federation and, subsequently, it MUST be checked that the message is signed with one of the keys registered for the message generator <source> and the entity responsible for the transmission (or application user) <senderName>. The EDXL-IT federation entity code MAY consist of: • IPA code in case of registered entity in the Index of Public Administrations • IPA Code + UO in case of Organizational Unit of an entity registered in the Index of Public Administrations • IPA Code + AOO in case of Homogeneous Organizational Area of an entity registered in the Index of Public Administrations • OID of the Register of WMO Members Alerting Authorities • EDXL-IT entity code for entities not registered in the Index of Public Administrations. **Reference Index:** AlertHub Federation Registry **Date type** / **Minimum occ.** / **Maximum occ.**: xs:string / 1 / 1 **Notes**: The Department of Civil Protection, The National Fire Corps, and the National Center for Aeronautical Meteorology and Climatology may use the WMO OID but are recommended to use the PA Index Code. Other organizations without a PA Index Code, prior to being surveyed with an EDXL-IT entity code will be required to use the OID if listed on the WMO registry.	**Index** AlertHub Federation Registry https://alerthub.protezionecivile.it/federation-registry https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/alerthub-federation-registry Formats: xml **Values** **Cod. IPA:** *PCM* **Cod. IPA + UO:** *PCM-11015* **Cod. IPA + AOO:** *PCM-DPC* **OID WMO:** *2.49.0.0.380.1* **Cod. EDXL-IT:** *DPC*

#	*	Tag name	Functional description and controls	Admitted values/ Examples
AL03		<sent>	**Message creation date/time** Date and time of creation of the message. The value is MANDATORY. It must not be specified a date/time superior to 1 minute from the time reported by the NTP (Network Time Protocol) servers of I.N.R.I.M. (National Institute of Metrological Research). Further information: https://www.inrim.it/node/643. The Date/Time format consists of: • YYYY: year • MM: month • DD: day • T: indicates the symbol "T" which defines the start of the time section • hh: hour • mm: minutes • ss: seconds • +zh:zm: indicates the amount of hours to add with respect to UTC (Greenwich Mean Time); for Italy define +01:00 during standard time period, +02:00 during daylight saving time period. Alphabetic time zone identifiers such as "Z" must not be used; the time zone for UTC must be expressed as 00:00, +00:00 or -00:00. **Date type**: xs:dateTime; **Minimum occ.**: 1; **Maximum occ.**: 1	**Value** **YYYY-MM-DDThh:mm:ss+zh:zm:** *2020-04-14T07:30:00+01:00*
AL04		<status>	**State of the message** Code that specifies the appropriate message handling mode. The value is MANDATORY. If <status> is valued at "Exercise", "System" or "Test" then <note> MUST be valued with detailed information. It MUST be verified that the expressed code value is present in the controlled vocabulary. **Reference Controlled Vocabulary:** CAP-IT-status **Date type**: xs:string; **Minimum occ.**: 1; **Maximum occ.**: 1 **Notes**: Values: • Actual • Exercise • System • Test • Draft	**Controlled Vocabulary** CAP-IT-status https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-status Format: csv, xml, json **Values** Actual – Reale – Real Message Exercise – Esercitazione – Exercise Message System – Sistema – System Message Test – Test – Test Message Draft – Bozza – Draft message unusable
AL05		<msgType>	**Message type** Code defining the nature of the message. The value is MANDATORY. If <msgType> is set to "Update", "Cancel", "ACK" or "Error" <references> MUST be set to the message(s) being referenced. If <msgType> is set to "Error", then <notes> MUST be filled with detailed information. It MUST be checked that the expressed code value is present in the controlled vocabulary. **Reference Controlled Vocabulary:** CAP-IT-msgType **Date type**: xs:string; **Minimum occ.**: 1; **Maximum occ.**: 1	**Controlled Vocabulary** CAP-IT-msgType https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-messagetype Format: csv, xml, json **Values** Actual – Reale – Real Message Exercise – Esercitazione – Exercise Message System – Sistema – System Message Test – Test – Test Message

<table>
<tr><th>#</th><th>*</th><th>Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>Notes</td><td>Values:
• Alert
• Update
• Cancel
• Ack
• Error</td></tr>
</table>
</td><td></td></tr>
<tr><td>AL06</td><td></td><td><source></td><td>
<table>
<tr><th>Source</th></tr>
<tr><td>Identification code of the source of the message.</td></tr>
<tr><td>The value is OPTIONAL (valorization is recommended).

The compilation of the <source> node increases the confidentiality and reliability of the message because it references the EDXL-IT Federation census and associates with both the specified <sender> and <senderName> node as well as with the certificates that can be used to sign the message.</td></tr>
<tr><td>Index Reference:
AlertHub Federation Registry</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
</td><td>
<table>
<tr><th>Index</th></tr>
<tr><td>AlertHub Federation Registry
https://alerthub.protezionecivile.it/federation-registry

https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/alerthub-federation-registry

Format: xml</td></tr>
</table>
<table>
<tr><th>Values</th></tr>
<tr><td>Automated System: IT-Alert
Attended system: IT-Alert-OperatorXYZ</td></tr>
</table>
</td></tr>
<tr><td>AL07</td><td></td><td><scope></td><td>
<table>
<tr><th>Distribution</th></tr>
<tr><td>Code for defining the delivery method of the message.</td></tr>
<tr><td>The value is MANDATORY.

<<scope> MAY be set to "Restricted" or "Private" only by entities with "scopeEnabled" set to "TRUE" in AlertHub Federation Registry. All other entities MUST value it as "Public".

It MUST be checked that if <scope> is valued at "Restricted", <restriction> must be valued; if <scope> is valued at "Private", <addresses> must be valued.

It MUST be checked that the expressed code value is present in the Controlled Vocabulary.</td></tr>
<tr><td>Controlled Vocabulary reference:
CAP-IT-scope</td></tr>
<tr><td>Reference Indexes:
AlertHub Federation Registry
EDXL-IT Scope Index</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>1</td></tr>
</table>
<table>
<tr><td>Notes</td><td>Values
• Public
• Restricted
• Private</td></tr>
</table>
</td><td>
<table>
<tr><th>Controlled Vocabulary</th></tr>
<tr><td>CAP-IT-scope
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/alerthub-federation-registry

Formati: csv, xml, json</td></tr>
</table>
<table>
<tr><th colspan="3">Values</th></tr>
<tr><td>Public</td><td>Pubblico</td><td>Messaggio pubblico</td></tr>
<tr><td>Restricted</td><td>Riservato</td><td>Distribuzione del messaggio solo a specifici gruppi</td></tr>
<tr><td>Private</td><td>Privato</td><td>Distribuzione a specifici indirizzi</td></tr>
</table>
</td></tr>
<tr><td>AL08</td><td></td><td><restriction></td><td>
<table>
<tr><th>Message broadcast to user groups/profiles/entities</th></tr>
<tr><td>Groups or distribution lists to send the message to.</td></tr>
<tr><td>The value is CONDITIONAL.

It MUST be checked that <restriction> is correctly filled in if <scope> is valued at "Restricted".</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
<table>
<tr><td>Note</td><td>If <scope> is valued “Restricted”:
Occ. Minime: 1
Occ: Massime: 1</td></tr>
</table>
</td><td>
<table>
<tr><th>Single value</th></tr>
<tr><td>[category]
c:volunteers

[lista-distribuzione]
l:exercize-xyz</td></tr>
</table>
<table>
<tr><th>Multiple values</th></tr>
<tr><td>If multiple values are necessary, use a dot and a space as string division.</td></tr>
</table>
</td></tr>
<tr><td>AL09</td><td></td><td><addresses></td><td>
<table>
<tr><th>Message broadcast to user groups/profiles/entities</th></tr>
</table>
</td><td>
<table>
<tr><th>Single value</th></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>#</th><th>*</th><th>Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td></td><td></td><td></td><td>
Code or receiving address to send the message to, defined in the CAP-IT-GroupsAddresses index (not public).

The value is CONDITIONAL.

It MUST be checked that <addresses> is correctly filled in if <scope> is valued at "Private".

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
<tr><td>Notes</td><td colspan="2">If <scope> is valued at “Private”:
Minimum occ: 1
Maximum occ: 1</td></tr>
</table>
</td><td>
[code]
c:PCM-DPC

[distribution_address]
i:https://api.organizzazione.it

[distribution_address]
i:xxxx@organizzazione.it

Multiple values

If multiple values are necessary, use a space as string division.

[code] [code] [distribution_address]
c:PCM-DPC c:M_INN-VDF i:xxxx@organizzazione.it
</td></tr>
<tr><td>AL10</td><td></td><td></td><td><code></td><td>
Code describing a specific message management

Code identifying a specific message management or profile it has been converted from, in order to apply specific indications of the source profile.

The value is CONDITIONAL (valorization is recommended).

The default value is "CAP-IT:1.0".

The value MAY refer to a source CAP profile it was converted from; in this case, the value refers to the controlled vocabulary CAP-IT-code and must be compliant with the source CAP file defined in the <parameter> "originMessageFile", "originMessageCapProfile", "originMessageIdentifier", "originMessageSender", "originMessageDateTime", "originMessageHash" which, in this case, become mandatory values (the parameters are defined in the controlled vocabulary CAP-IT-Parameter).

It MUST be checked that the expressed code value is contained in the controlled vocabulary.

Reference controlled vocabulary:
CAP-IT-code

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>Illimitate</td></tr>
</table>
</td><td>
Controlled Vocabulary

CAP-IT-code
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-code

Formats: csv, xml, json
</td></tr>
<tr><td>AL11</td><td></td><td></td><td><note></td><td>
Notes

Text describing the purpose or the meaning of the message.

The value is CONDITIONAL.

It MUST be checked that <note> is filled in if <status> is valued at "Exercise" and/or if <msgType> is set to "Error".

If <status> is valued at "Exercise" and <msgType> is valued at "Error", the two reasons must be reported, using the status and the semicolon (;) before the text: Exercise; and Error; starting a new line for each status.

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
<tr><td>Notes</td><td colspan="2">if <status> is valued at "Exercise" and/or if <msgType> is set to "Error":
Minimum occ.: 1
Maximum occ: 1</td></tr>
</table>
</td><td>
Single value

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
69 word text.

Multiple values

Exercise; Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
Error: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
140 word text.
</td></tr>
</table>

#	*	Tag name	Functional description and controls	Admitted values/ Examples
AL12		<references>	**Referenced message identifier** Identifier of the message(s) to which the message refers. The value is CONDITIONAL. The value is composed of the values of the <sender>,<identifier>,<sent> nodes. It MUST be checked that the identifier refers to a previously accepted and loaded message. It MUST be checked that <references> is filled in if <msgType> is valued at "Update", "Cancel", "Ack" or "Error". **Date type**: xs:string; **Minimum occ.**: 0; **Maximum occ.**: 0 **Note**: If <msgType> is valued at "Update", "Cancel", "Ack" or "Error": Minimum occ.: 1 Maximum occ: 1	**Single value** *Sender1,55f91a3f-48de-4d4b-88b0-b010fb252d28,2020-04-14T07:30:00+01:00* **Multiple value** If it is necessary to define more values, use a space as string division. *Sender1,55f91a3f-48de-4d4b-88b0-b010fb252d28,2020-04-14T07:30:00+01:00 Sender2,71e2498f-d93c-4c23-87e9-cc4d8615c073,2020-04-14T07:30:00+01:00*
AL13		<incidents>	**Reference message identifier (different aspects of the single alert)** Messages referring to different aspects of a single alert. The value is OPTIONAL. The value is composed of the values of the nodes <sender>, <identifier>,<sent>. It MUST be checked that the identifier refers to a previously accepted and loaded message. **Date type**: xs:string; **Minimum occ.**: 0; **Maximum occ.**: 0	**Single value** *Sender1,55f91a3f-48de-4d4b-88b0-b010fb252d28,2020-04-14T07:30:00+01:00* **Multiple values** If it is necessary to define more values, use a space as string division. *Sender1,55f91a3f-48de-4d4b-88b0-b010fb252d28,2020-04-14T07:30:00+01:00 Sender2,71e2498f-d93c-4c23-87e9-cc4d8615c073,2020-04-14T07:30:00+01:00*
IN		<info>	**Information** Element containing the informative section of the alert message, possibly in more than one language. In case the <msgType> node is valued in "Ack" or "Error", it is not necessary to define an <info> element. The element is OPTIONAL. **Date type**: --------; **Minimum occ.**: 0; **Maximum occ.**: illimitate	
IN01		<language>	**Language** Definition of the language used by the <info> element of the message. The value is OPTIONAL. If the <language> node is not specified, it assumes the value of "en-US". It is advisable to define messages in Italian language too, so always specify a <language> node with the value of "en-US", possibly in the first place. Multiple languages can be defined by repeating multiple <info> elements. It MUST be checked that the code is RFC-5646[2] compliant. **Date type**: xs:language; **Minimum occ.**: 0; **Maximum occ.**: 1 **Notes**: To specify multiple languages, the <info> element must be repeated. Compared to the standard that references RFC-3066, which is deprecated, the CAP-IT profile references RFC-5646 which, in	**Value** **it-IT**

[2] RFC-5646: Tags for Identifying Languages (https://tools.ietf.org/html/rfc5646)

<table>
<tr><th>#</th><th>*</th><th colspan="3">Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td></td><td></td><td colspan="3"></td><td>
<table>
<tr><td></td><td>terms of substance and usage, does not create interoperability problems.</td></tr>
</table>
</td><td></td></tr>
<tr><td>IN02</td><td></td><td colspan="3"><category></td><td>
<table>
<tr><th>Category</th></tr>
<tr><td>Category(s) indicating the message.</td></tr>
<tr><td>The value is MANDATORY.

It is recommended to indicate only one <category> node even if it is possible to define several nodes in the same <info> element.

It is recommended not to use the "Other" category except for particular cases that must not be classified under the defined categories.

It MUST be checked that the expressed code value is contained in the checked vocabulary.</td></tr>
<tr><td>Reference controlled vocabulary:
CAP-IT-category</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>illimitate</td></tr>
<tr><td>Notes</td><td colspan="2">Values:
Geo
Met
Safety
Security
Rescue
Fire
Health
Env
Transport
Infra
CBRNE
Other
The categories can be further detailed using the controlled vocabulary CAP-IT-event in the <event> node.</td></tr>
</table>
</td><td>
<table>
<tr><th>Controlled Vocabulary</th></tr>
<tr><td>CAP-IT-category
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-category

Formats: csv, xml, json</td></tr>
</table>
<table>
<tr><th colspan="3">Values</th></tr>
<tr><td>Geo</td><td>Geophysics</td><td>Geophysics including landslides</td></tr>
<tr><td>Met</td><td>Meteorology</td><td>Meteorology including floods</td></tr>
<tr><td>Safety</td><td>Security</td><td>General emergency and public safety</td></tr>
<tr><td>Security</td><td>Security Force</td><td>Law enforcement, military, homeland security, local and private security</td></tr>
<tr><td>Rescue</td><td>Rescue</td><td>Rescue and recovery</td></tr>
<tr><td>Fire</td><td>Fires</td><td>Firefighting and rescue</td></tr>
<tr><td>Health</td><td>Health</td><td>Medicine and public health</td></tr>
<tr><td>Env</td><td>Environment</td><td>Pollution and other environmental categories</td></tr>
<tr><td>Transport</td><td>Transportation</td><td>Public and private transportation</td></tr>
<tr><td>Infra</td><td>Infrastructure</td><td>Utilities, telecommunications, and other non-transportation infrastructure</td></tr>
<tr><td>CBRNE</td><td>CBRNE</td><td>Chemical, biological, radiological, nuclear, or high explosive threat or attack</td></tr>
<tr><td>Other</td><td>Other</td><td>Other</td></tr>
</table>
</td></tr>
<tr><td>IN03</td><td></td><td colspan="3"><event></td><td>
<table>
<tr><th>Event</th></tr>
<tr><td>Type of event object of the message.</td></tr>
<tr><td>The value is MANDATORY.

The <event> node can also be represented by free text, but it is recommended to use the values defined in the CAP-IT-event controlled vocabulary.</td></tr>
<tr><td>Reference controlled vocabulary:
CAP-IT-event</td></tr>
</table>
</td><td>
<table>
<tr><th>Free tet:</th></tr>
<tr><td>Event xyz</td></tr>
</table>
<table>
<tr><th>Controlled Vocabulary:</th></tr>
<tr><td>CAP-IT-event
https://edxl-it.protezionecivile.it/cap-it/
https://github.com/pcm-dpc/DPC-Data-Hub/cap-it/

Formats: csv, xml, json</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>#</th><th>*</th><th colspan="3">Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td></td><td></td><td colspan="3"></td><td>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>1</td></tr>
</table>
</td><td></td></tr>
<tr><td>IN04</td><td></td><td colspan="3"><responseType></td><td>
<table>
<tr><th>Reaction type</th></tr>
<tr><td>Type of reaction recommended for message recipients.</td></tr>
<tr><td>The value is OPTIONAL.

If multiple reaction types are defined they MUST be consistent with each other.

If values requiring "Instruction" are specified (Shelter, Evacuate, Prepare, Execute, Avoid, Monitor, AllClear), the node <instruction> MUST be compiled; if the message is being processed with a profile other than CAP-IT and does not involve node compilation, <instruction> will take the value "N/A".

It MUST be checked that the expressed code value is included in the controlled vocabulary and that <responseType> is not valued with "Assess" in messages with <scope> "Public".</td></tr>
<tr><td>Reference controlled vocabulary:
CAP-IT-responseType</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>illimitate</td></tr>
<tr><td>Note</td><td colspan="2">Values:
Shelter
Evacuate
Prepare
Execute
Avoid
Monitor
Assess
AllClear
None</td></tr>
</table>
</td><td>
<table>
<tr><th>Controlled Vocabulary</th></tr>
<tr><td>CAP-IT-responseType
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-responsetype

Formats: csv, xml, json</td></tr>
</table>
<table>
<tr><th colspan="3">Values</th></tr>
<tr><td>Shelter</td><td>Ripararsi</td><td>Seek shelter</td></tr>
<tr><td>Evacuate</td><td>Evacuare</td><td>Evacuate</td></tr>
<tr><td>Prepare</td><td>Prepararsi</td><td>Prepare</td></tr>
<tr><td>Execute</td><td>Eseguire</td><td>Perform a pre-planned activity</td></tr>
<tr><td>Avoid</td><td>Evitare</td><td>Avoid the event</td></tr>
<tr><td>Monitor</td><td>Monitorare</td><td>Pay attention to information sources</td></tr>
<tr><td>Assess</td><td>Valutare</td><td>Evaluate information</td></tr>
<tr><td>AllClear</td><td>Cessato allarme</td><td>Event is no longer a threat</td></tr>
<tr><td>None</td><td>Nessuno</td><td>No defined action</td></tr>
</table>
</td></tr>
<tr><td>IN05</td><td></td><td colspan="3"><urgency></td><td>
<table>
<tr><th>Urgency</th></tr>
<tr><td>Urgency of the event subject of the message.</td></tr>
<tr><td>The value is MANDATORY.

The <urgency>, <severity>, and <certainty> nodes are used to specify the emphasis of the message.

It MUST be checked that the expressed code value is present in the controlled vocabulary.</td></tr>
<tr><td>Reference controlled vocabulary:
CAP-IT-urgency</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>1</td></tr>
<tr><td>Note</td><td colspan="2">Values:
Immediate
Expected
Future
Past
Unknown
The CAP-IT-Urgencies controlled vocabulary is defined for the univocal translation into Italian of the general CAP profile codes and descriptions.</td></tr>
</table>
</td><td>
<table>
<tr><th>Controlled Vocabulary:</th></tr>
<tr><td>CAP-IT-urgency
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-urgency

Formats: csv, xml, json</td></tr>
</table>
<table>
<tr><th colspan="3">Values</th></tr>
<tr><td>Immediate</td><td>Immediata</td><td>Reactive intervention that should be immediately executed</td></tr>
<tr><td>Expected</td><td>Prevista</td><td>reactive intervention that should be executed soon (within one hour)</td></tr>
<tr><td>Future</td><td>Futura</td><td>reactive intervention that should be performed in the near future</td></tr>
<tr><td>Past</td><td>Passata</td><td>reactive intervention no longer needed</td></tr>
<tr><td>Unknown</td><td>Sconosciuta</td><td>unknown urgency</td></tr>
</table>
</td></tr>
<tr><td>IN06</td><td></td><td colspan="3"><severity></td><td>
<table>
<tr><th>Severity</th></tr>
</table>
</td><td>
<table>
<tr><th>Controlled Vocabulary:</th></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>#</th><th>*</th><th colspan="4">Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td></td><td></td><td colspan="4"></td><td>
Severity of the event object of the message

The value is MANDATORY.

The <urgency>, <severity>, and <certainty> nodes are used to define the emphasis of the message.

It MUST be checked that the expressed code value is included in the controlled vocabulary.

Reference controlled vocabulary:
CAP-IT-severity

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>1</td></tr>
<tr><td>Notes</td><td colspan="2">Values:
• Extreme
• Severe
• Moderate
• Minor
• Unknown</td></tr>
</table>
</td><td>
CAP-IT-severity
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-severity

Formats: csv, xml, json

<table>
<tr><th colspan="3">Values</th></tr>
<tr><td>Extreme</td><td>Estrema</td><td>Significant Threat to Life or Property</td></tr>
<tr><td>Severe</td><td>Significativa</td><td>Significant Threat to Life or Property</td></tr>
<tr><td>Moderate</td><td>Moderata</td><td>Possible threat to life or property</td></tr>
<tr><td>Minor</td><td>Minima</td><td>Minimal threat to life or property</td></tr>
<tr><td>Unknown</td><td>Sconosciuta</td><td>Severity unknown</td></tr>
</table>
</td></tr>
<tr><td>IN07</td><td></td><td colspan="4"><certainty></td><td>
Certainty

Certainty of the event object of the message.

The value is MANDATORY.

If the message is processed with a profile different from the CAP-IT profile and compliant with CAP 1.0 protocol, for backward compatibility, the value "Very Likely" is converted into "Likely".

The <urgency>, <severity> and <certainty> nodes are used to define the emphasis of the message.

It MUST be checked that the expressed code value is included in the controlled vocabulary.

Reference controlled vocabulary:
CAP-IT-certainty

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>1</td></tr>
<tr><td>Notes</td><td colspan="2">Values:
• Observed
• Likely
• Possibile
• Unlikely
• Unknown</td></tr>
</table>
</td><td>
Controlled vocabulary:

CAP-IT-certainty
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-certainty

Formats: csv, xml, json

<table>
<tr><th colspan="3">Values</th></tr>
<tr><td>Observed</td><td>Osservata</td><td>Established event that has already occurred or is in progress</td></tr>
<tr><td>Likely</td><td>Probabile</td><td>Likely event (p > ~50%)</td></tr>
<tr><td>Possible</td><td>Possibile</td><td>Possible but not likely event (p <= ~50%)</td></tr>
<tr><td>Unlikely</td><td>Improbabile</td><td>Event not expected to occur (p ~ 0)</td></tr>
<tr><td>Unknown</td><td>Sconosciuta</td><td>Unknown certainty of the event</td></tr>
</table>
</td></tr>
<tr><td>IN08</td><td></td><td colspan="4"><audience></td><td>
Public

Target audience for the message.

The value is OPTIONAL.

It MUST be checked that the expressed code value is included in the controlled vocabulary.

Reference controlled vocabulary:
CAP-IT-audience

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
</td><td>
Controlled Vocabulary:

CAP-IT-audience
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-audience

Formats: csv, xml, json

<table>
<tr><th>Value</th></tr>
<tr><td>Audience01</td></tr>
</table>
</td></tr>
<tr><td>IN09</td><td></td><td colspan="4"><eventCode></td><td>
Event

Specific code indicating the type of event in the message.

The value is OPTIONAL.

It MUST be checked that the expressed code value is included in the controlled vocabulary.
</td><td>
Controlled Vocabulary:

CAP-IT-eventCode
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-eventcode

Formats: csv, xml, json
</td></tr>
</table>

#	*	Tag name	Functional description and controls	Admitted values/ Examples
			Reference controlled vocabulary: CAP-IT-eventCode **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | Illimimtate	**Values** <eventCode> <valueName>Code</valueName> <value>Value</value> </eventCode>
IN10		<effective>	**Real Date/Time** Real date and time of message information. The value is OPTIONAL. If defined it MUST be specified as a date/time smaller than any date/time defined in the <expires> node. It must not be specified a date/time superior to 1 minute from the time reported by the NTP (Network Time Protocol) servers of I.N.R.I.M. (National Institute of Metrological Research). Further information: https://www.inrim.it/node/643. The Date/Time format consists of: • YYYY: year • MM: month • DD: day • T: indicates the symbol "T" which defines the start of the time section • hh: hour • mm: minutes • ss: seconds • +zh:zm: indicates the amount of hours to add with respect to UTC (Greenwich Mean Time); for Italy define +01:00 during standard time period, +02:00 during daylight saving time period. Alphabetic time zone identifiers such as "Z" must not be used; the time zone for UTC must be expressed as 00:00, +00:00 or -00:00. **Date type** | **Minimum occ.** | **Maximum occ.** xs:dateTime | 0 | 1	**Value** **YYYY-MM-DDThh:mm:ss+zh:zm:** *2020-04-14T07:30:00+01:00*
IN11		<onset>	**Expected Date/Time** Expected date and time of the start of the event object of the message. The value is OPTIONAL. If defined it MUST be specified as a date/time smaller than any date/time defined in the <expires> node and greater than that defined in the <sent> node. It must not be specified a date/time superior to 1 minute from the time reported by the NTP (Network Time Protocol) servers of I.N.R.I.M. (National Institute of Metrological Research). Further information: https://www.inrim.it/node/643. The Date/Time format consists of: • YYYY: year • MM: month • DD: day • T: indicates the symbol "T" which defines the start of the time section • hh: hour • mm: minutes • ss: seconds • +zh:zm: indicates the amount of hours to add with respect to UTC (Greenwich Mean Time); for Italy define +01:00 during standard time period, +02:00 during daylight saving time period. Alphabetic time zone identifiers such as "Z" must not be used; the time zone for UTC must be expressed as 00:00, +00:00 or -00:00. **Date type** | **Minimum occ.** | **Maximum occ.** xs:dateTime | 0 | 1	**Value** **YYYY-MM-DDThh:mm:ss+zh:zm:** *2020-04-14T07:30:00+01:00*
IN12		<expires>	**Expiration Date/Time** Date and time of expiration of the validity of the information contained in the message.	**Value** **YYYY-MM-DDThh:mm:ss+zh:zm:** *2020-04-14T07:30:00+01:00*

<table>
<tr><th>#</th><th>*</th><th colspan="4">Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td></td><td></td><td colspan="4"></td><td>
The value is OPTIONAL.

If defined, a date/time greater than the date/time defined in the <sent> node and any dates/times defined in the <effective> and <onset> nodes MUST be specified. If not defined, the expiration date/time of the message is, as a rule, set to 12 hours later from the time stated in <sent>.

It must not be specified a date/time superior to 1 minute from the time reported by the NTP (Network Time Protocol) servers of I.N.R.I.M. (National Institute of Metrological Research).
Further information: https://www.inrim.it/node/643.

The Date/Time format consists of:
• YYYY: year
• MM: month
• DD: day
• T: indicates the symbol "T" which defines the start of the time section
• hh: hour
• mm: minutes
• ss: seconds
• +zh:zm: indicates the amount of hours to add with respect to UTC (Greenwich Mean Time); for Italy define +01:00 during standard time period, +02:00 during daylight saving time period.

Alphabetic time zone identifiers such as "Z" must not be used; the time zone for UTC must be expressed as 00:00, +00:00 or -00:00.

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:dateTime</td><td>0</td><td>1</td></tr>
</table>
</td><td></td></tr>
<tr><td>IN13</td><td></td><td colspan="4"><senderName></td><td>
<table>
<tr><th>Message Sender</th></tr>
<tr><td>Name of the entity generating the CAP-IT alert message.</td></tr>
<tr><td>The value is MANDATORY.

The value is relative to the description of the code expressed in the <sender> node that is defined in AlertHub Federation Registry.</td></tr>
<tr><td>Index Reference:
AlertHub Federation Registry</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>1</td><td>1</td></tr>
</table>
</td><td>
<table>
<tr><th>Index</th></tr>
<tr><td>AlertHub Federation Registry
https://alerthub.protezionecivile.it/federation-registry

https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/alerthub-federation-registry

Formats: xml</td></tr>
</table>
<table>
<tr><th>Values</th></tr>
<tr><td>Cod. IPA: Presidency of the Council of Ministers
Cod. IPA + UO: Presidency of the Council of Ministers, Civil Protection Department
Cod. IPA + AOO: Presidency of the Council of Ministers, Civil Protection Department
OID WMO: Civil Protection Department
Cod. EDXL-IT: Presidency of the Council of Ministers, Civil Protection Department</td></tr>
</table>
</td></tr>
<tr><td>IN14</td><td></td><td colspan="4"><headline></td><td>
<table>
<tr><th>Title</th></tr>
<tr><td>Title of the event object of the message.</td></tr>
<tr><td>The value is MANDATORY.

The value should not exceed 160 characters.</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
</td><td>
<table>
<tr><th>Value</th></tr>
<tr><td>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.</td></tr>
</table>
</td></tr>
<tr><td>IN15</td><td></td><td colspan="4"><description></td><td>
<table>
<tr><th>Description</th></tr>
<tr><td>Descriptio of the event object of the message</td></tr>
<tr><td>The value is MANDATORY.</td></tr>
</table>
<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
</td><td>
<table>
<tr><th>Value</th></tr>
<tr><td>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>#</th><th>*</th><th colspan="4">Tag name</th><th>Functional description and controls</th><th>Admitted values/ Examples</th></tr>
<tr><td>IN16</td><td></td><td colspan="4"><instruction></td><td>
Instruction
Instructions concerning actions to be taken by the recipients of the message.
The value is CONDITIONAL.

If values that require "Instructions" are specified (Shelter, Evacuate, Prepare, Execute, Avoid, Monitor, AllClear) you MUST fill in the <instruction> node.
Occ. Minimum: 1
Maximum Occ: 1

If the instruction code is available, this field will be valued with a code to which it is also possible to add a text. In addition to the instruction code that will allow to automatically obtain instructions about the alert, it will be possible to insert further information.

If more than one type of instruction is required, the <info> element must be repeated.

It MUST be checked that the expressed code value is included in the controlled vocabulary.
Reference controlled vocabulary:
CAP-IT-instruction

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
</td><td>
Controlled Vocabulary:
CAP-IT-instruction

Controlled vocabularies and complete data:
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-instruction

Formats: csv, xml, json

Values
Instruction+text: I-01 Ulteriori informazioni…
Only instruction: I-01
Only text: Ulteriori informazioni…
</td></tr>
<tr><td>IN17</td><td></td><td colspan="4"><web></td><td>
Web address
Web address to include more information to the message.
The value is OPTIONAL.

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:anyURI</td><td>0</td><td>1</td></tr>
</table>
</td><td>
Url
https://www.protezionecivile.it/xyz
</td></tr>
<tr><td>IN18</td><td></td><td colspan="4"><contact></td><td>
Contacts
Contact or person responsible for message follow-up and confirmation.
The value is OPTIONAL.

It MUST be checked that the contacts used are amongst those surveyed for the entity defined in the AlertHub Federation Registry.

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>xs:string</td><td>0</td><td>1</td></tr>
</table>
</td><td>
Value
email@dominio.ext
</td></tr>
<tr><td>IN19</td><td></td><td colspan="4"><parameter></td><td>
Parameters
Additional parameters
The value is CONDITIONAL.

It may be MANDATORY under conditions defined in the controlled vocabulary.

It MUST be checked that the expressed code value is included in the controlled vocabulary.
Reference controlled vocabulary:
CAP-IT-parameter

<table>
<tr><th>Date type</th><th>Minimum occ.</th><th>Maximum occ.</th></tr>
<tr><td>---------</td><td>0</td><td>Unlimited</td></tr>
</table>
</td><td>
Controlled Vocabulary:
CAP-IT-parameter
https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-parameter

Formati: csv, xml, json

Values
<parameter>
<valueName>Code</valueName>
<value>Value</value>
</parameter>
</td></tr>
<tr><td>RE</td><td></td><td colspan="4"><resource></td><td>
Resources
Resources related to the event
</td><td>---------</td></tr>
</table>

#	*	Tag name	Functional description and controls	Admitted values/ Examples
			The value is OPTIONAL. **Date type** / **Minimum occ.** / **Maximum occ.**: --------- / 0 / Unlimited	
RE01		<resourceDesc>	**Description** Description of the resource associated with the message The value is MANDATORY. The text must be no more than 150 characters in length. **Date type** / **Minimum occ.** / **Maximum occ.**: xs:string / 1 / 1	**Value** *Image of xyz area*
RE02		<mimeType>	**MIME Type** MIME Type of the resource associated to the event The value is MANDATORY. The system MUST check that the specified <mimeType> is among those authorized in the controlled vocabulary "CAP-IT-mimeType". MIME content types and subtypes are referenced in RFC-2046 and the IANA[3]. Registry. **Reference controlled vocabulary**: CAP-IT-mimeType **Date type** / **Minimum occ.** / **Maximum occ.**: xs:string / 1 / 1	**Controlled Vocabulary:** CAP-IT-mimeType https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/controlled-vocabularies/cap-it-mimetype Formati: csv, xml, json
RE03		<size>	**Dimensions** Estimated size of the resource associated with the event The value is OPTIONAL. The size MUST be expressed in bytes. For resources defined in <uri>, the size SHOULD be specified. **Date type** / **Minimum occ.** / **Maximum occ.**: xs:integer / 0 / 1	**Value** *1500*
RE04		<uri>	**Web address** Web page in URI format of the resource associated with the event The value is OPTIONAL. **Date type** / **Minimum occ.** / **Maximum occ.**: xs:anyURI / 0 / 1	**Value** *https://www.protezionecivile.it/xyz.shp*
RE05		<derefUri>	**Base64 resource**[4] Base64 code of the resource associated with the event The value is MANDATORY. It MAY be specified when it is not possible to retrieve a resource via URI. **Tipo dato** / **Occ. minime** / **Occ. massime**: xs:string / 0 / 0	**Value** *…*

[3] Registro IANA Media Types (http://www.iana.org/assignments/mediatypes)

[4] RFC-4668: The Base16, Base32, and Base64 Data Encodings (https://tools.ietf.org/html/rfc4668)

#	*	Tag name	Functional description and controls	Admitted values/ Examples
RE06		<digest>	**Hash code** Hash code of the resource associated to the event The value is MANDATORY. The Secure Hash Alghorithm to use is the SHA-256. **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | 1	**Value** *79A641BB774CEC431C3E52CCF2170EBA18D8460C*
AR		<area>	**Area** Area affected by the event object of the message The value is OPTIONAL. It is RECOMMENDED to generate a message for each area when the areas are not contiguous. **Date type** | **Minimum occ.** | **Maximum occ.** --------- | 0 | Illimitate	---------
AR01		<areaDesc>	**Description** Description of the area affected by the event The value is MANDATORY. The text must be no more than 150 characters in length. **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 1 | 1	**Value** *Area XYZ*
AR02		<polygon>	**Polygon** Polygon of the area affected by the event The value is OPTIONAL. The polygon MUST be represented by a list, delimited by spaces, of WGS 84 coordinates. There MUST be a minimum of 4 coordinates and the first and last pairs must be the same. **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | unlimited	**Value** *-29.1796875, 11.3507967* *-21.6210938, 34.3071439* *-35.3320313, 40.1788733* *-42.7148438, 35.4606700* *-40.9570313, 25.6415264* *-53.9648438, 30.2970179* *-57.3046875, 27.5277582* *-54.6679688, 17.6440220* *-29.1796875, 11.3507967*
ar.03		<circle>	**Circle** Circle of the area affected by the event The value is MANDATORY. The circle MUST be represented by a central point defined by a WGS 84 coordinate pair and the radius expressed in Km and separated by a space. **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | unlimited	**Value** *-4.694, -39.446 2.235*
AR04		<geocode>	**Geographic code** Geographic code of the area affected by the event The value is MANDATORY. <geocode> SHOULD be accompanied by the definition of the area through the compilation of the <polygon> or <cycle> node. The valueName node contains the file name of the shape reference	**Controlled Vocabulary:** CAP-IT-geodata https://github.com/pcm-dpc/DPC-Data-Hub/tree/master/geodata Formati: shp, geojson, sql, topojson **Value**

#	*	Tag name	Functional description and controls	Admitted values/ Examples
			Controlled reference vocabulary: CAP-IT-geodata **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | Illimitate	*<geocode> <valueName>codice-geocode</valueName> <value>codice</value> </geocode>*
AR05		**<altitude>**	**Specific or minimum altitude** Specific or minimum altitude of the area affected by the event The value is MANDATORY. The value is expressed in feet above mean sea level (WSG 84) **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | 1	**Value** *10*
AR06		**<ceiling>**	**Maximum altitude** Maximum altitude of the area affected by the event The value is MANDATORY. MUST be used only in combination with <altitude>. The value is expressed in feet above mean sea level (WSG 84). **Date type** | **Minimum occ.** | **Maximum occ.** xs:string | 0 | 1	**Value** *30*

download of CAP-IT v1.0 XSD:

- From the repository DPC-Data-Hub in the CAP-IT directory:
  - https://raw.githubusercontent.com/pcm-dpc/DPC-Data-Hub/master/cap-it/xsd/cap-it.xsd

CAP-IT Example

Here is an example of CAP-IT, in this case sent by IT-Alert.

```
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.2">
 <identifier>55f91a3f-48de-4d4b-88b0-b010fb252d28</identifier>
 <sender>PCM-DPC</sender>
 <sent>2020-04-14T07:30:00+01:00</sent>
 <status>Actual</status>
 <msgType>Alert</msgType>
 <source>IT-Alert</source>
 <scope>Public</scope>
 <code>CAP-IT:1.0</code>
 <info>
  <category>Met</category>
  <event>Lorem ipsum dolor sit amet</event>
  <responseType>Shelter</responseType>
  <urgency>Immediate</urgency>
  <severity>Extreme</severity>
  <certainty>Observed</certainty>
  <onset>2020-04-14T07:30:30+01:00</onset>
  <expires>2020-04-14T12:00:00+01:00</expires>
  <senderName>PCM-DPC</senderName>
  <headline>Lorem ipsum dolor sit amet</headline>
  <description>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut
        labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris
        nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate
        velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident,
```

```
            sunt in culpa qui officia deserunt mollit anim id est laborum.
   </description>
   <instruction>Istruzione01 Note aggiuntive alle istruzioni</instruction>
   <web>https://...</web>
   <resource>
    <resourceDesc>json-version</resourceDesc>
    <mimeType>application/json</mimeType>
    <uri>https://.../PCM-DPC_55f91a3f-48de-4d4b-88b0-b010fb252d28_1552894200.json</uri>
   </resource>
   <area>
    <areaDesc>test area decodificata</areaDesc>
    <geocode>
     <valueName>vc</valueName>
     <value>GEO000000000</value>
    </geocode>
   </area>
  </info>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
   [...]
  </Signature>
 </alert>
```

Error management

In order to standardize the responses provided by the various systems that process EDXL-IT CAP-IT messages, error messages related to the path are being defined.

The codes and description of each error message, together with technical details on the error, the title and the text of the message in the multilingual interface are defined in the CAP-IT-Error controlled vocabulary.

Message signature

The CAP-IT message provides for and requires a signature. In AlertHub Federation Registry, all the registered entities can define a set of certificates to sign the message.
In the federation registry it will be possible to download the public certificate to validate the message or refer to the X509 of the signing certificate reported in the xml or json of the EDXL-IT federation.The signature applied to the message is standard XMLDSIG (http://www.w3.org/TR/2002/REC-xmldsig-core-20020212/).
Each message must be validated before the delivery.

Controlled vocabularies and geodata

The use of controlled vocabularies complies with the requirements of the ICT Three-Year Plan of the Italian Public Administration, which aim to provide a structured way to organize codes and recurrent nomenclatures in a standardized and normalized way.

The controlled vocabularies are defined in the same representation of the CAP-IT layout and are:

- CAP-IT-status
- CAP-IT-msgType
- CAP-IT-scope
- CAP-IT-code
- CAP-IT-category
- CAP-IT-event
- CAP-IT-responseType
- CAP-IT-urgency
- CAP-IT-severity

- CAP-IT-certainty
- CAP-IT-audience
- CAP-IT-eventCode
- CAP-IT-instruction
- CAP-IT-parameter
- CAP-IT-mimeType
- CAP-IT-geodata
- CAP-IT-error

Together with the controlled vocabularies, geodata (referenced in the CAP-IT-geodata controlled vocabulary) necessary for the use of predefined areas in the CAP-IT are available.

The controlled vocabularies and geocodes can be accessed and downloaded

- from the DPC-Data-Hub repository in the CAP-IT directory:
  - https://github.com/pcm-dpc/DPC-Data-Hub

Controlled vocabularies are downloadable in the following formats: csv, json, xml (signed).
Geodata can be downloaded in the following formats: shape, geojson, topojson, postgresql dump and are accompanied by metadata in xml.