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Societal security — Emergency management — Message structure for exchange of information

*Sécurité sociétale — Gestion des urgences — Message structures pour
échanger d'information*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 292, *Security and resilience*.

Introduction

Clear situation awareness is a key factor for effective emergency response. The building of an operational picture is based on the integration and assessment of information collected from the different teams of responders and other information sources. It relies on exchange of information. The ability to exchange information in a timely and secure manner is critical to the effective conduct of emergency management.

This Technical Report proposes a structured message in order to facilitate these exchanges. The message is flexible with regard to the regulations of nations and organizations. It helps the operational information exchange between organizations, especially when different terminologies or different languages are used as in civil–military cooperation, trans-border collaboration or multi-agency emergencies. It enables all involved organizations to co-operate with a high level of interoperability as described in ISO 22320.

This Technical Report is based on results from the CEN Workshop Agreement CWA 15931 published in March 2009 as the Tactical Situation Object (TSO) by a European Frame Work Program 6 project.

Societal security — Emergency management — Message structure for exchange of information

1 Scope

This Technical Report describes a message structure for the exchange of information between organizations involved in emergency management. An organization can ingest the received information, based on the message structure, in its own operational picture.

The structured message is called Emergency Management Shared Information (EMSI).

This Technical Report describes the message structure built in order to facilitate interoperability between existing and new information systems.

The intended audience of this Technical Report is control room engineers, information systems designers and decision makers in emergency management.

NOTE The EMSI can be used complementary to other message protocols, as for example the common alert protocol (CAP).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 22300, *Societal security — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22300 apply.

NOTE All terms and definitions contained in ISO 22300 are available on the ISO Online Browsing Platform: www.iso.org/obp.

4 The EMSI message

4.1 General

An EMSI describes a part of the operational picture at a particular time. It is exchanged between nodes in order to transfer information and describes events, resources and missions (see [Figure 1](#)).

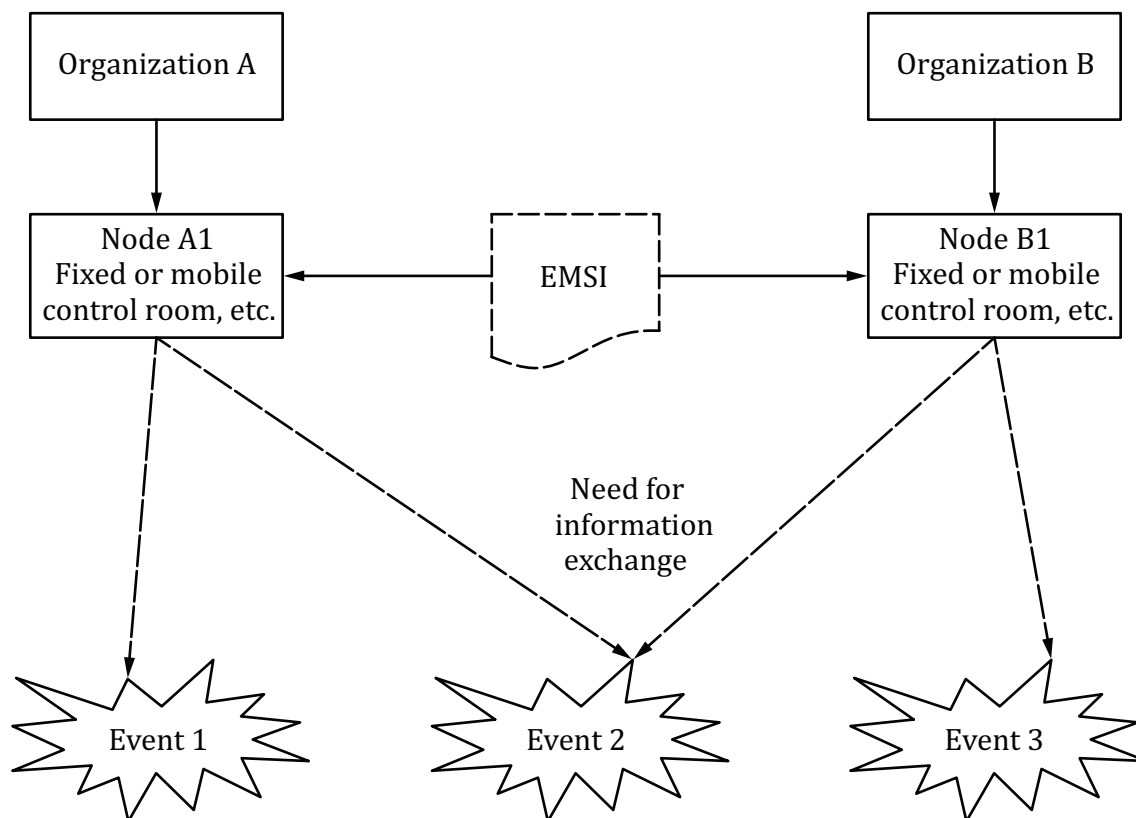
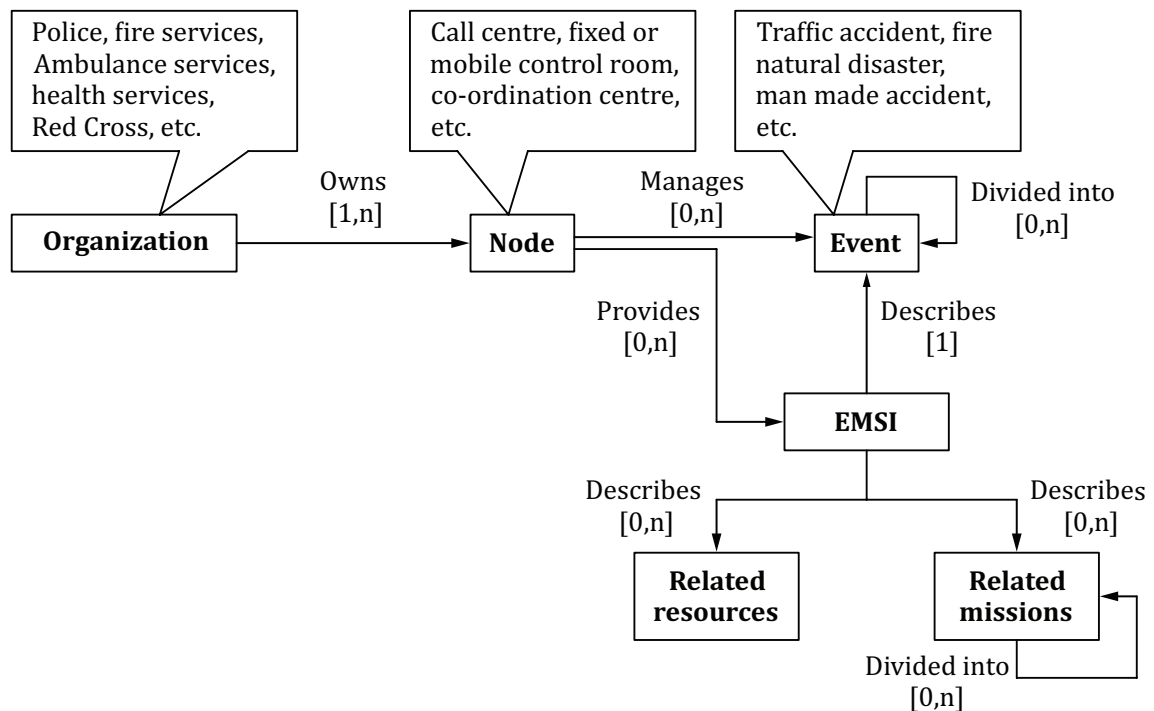


Figure 1 — Exchange of EMSI between organizations

An EMSI can be used peer-to-peer at the same level of the command hierarchy or up and down the hierarchy. This information contributes to the situational awareness of organizations involved for facilitating coordination of plans and actions.

[Figure 2](#) describes in an object model the entities which are involved in the EMSI.



Key

Cardinality:

- [1] The element is mandatory. Only one value can be provided.
- [0,1] The element is optional. If it is present, only one value can be provided.
- [0..n] The element is optional. If it is present, several values can be provided.
- [1..n] The element is mandatory. Several values can be provided.

NOTE Arrows in the diagram represent relationships according to cardinality but not information flows.

Figure 2 — EMSI described in an object model

An organization owns one or more nodes. A node can manage events.

The message structure is hidden from the user. The applications handling the EMSI present the information to users in their own language, applying their own set of symbols.

The objective of this Technical Report is to agree on the set of information with the following properties:

- useful to share between responders and that represent the situation;
- simple enough in order to enable agreement on use and implementation;
- extensive enough to support the planning and decision making process.

4.2 EMSI content

The Emergency Management Information Sharing contains the following information.

- a) Identification of the EMSI:
 - 1) identifier of the individual message;
 - 2) identification of its originator;

- 3) time of creation;
 - 4) relation to any other EMSI;
 - 5) organization level, confidentiality and urgency of the information;
 - 6) links to external information;
 - 7) date and time of creation of EMSI.
- b) Description of the event:
- 1) limited assessment of the event;
 - 2) date and time when the event was declared;
 - 3) date and time of the observation;
 - 4) location of the event and associated geographical information;
 - 5) enumeration of the casualties found;
 - 6) prediction of future casualties.
- c) Description of the resources:
- 1) resources each organization has available for the event;
 - 2) resources in use;
 - 3) resource capabilities;
 - 4) resource position.
- d) Description of the missions:
- 1) missions in progress;
 - 2) missions foreseen.

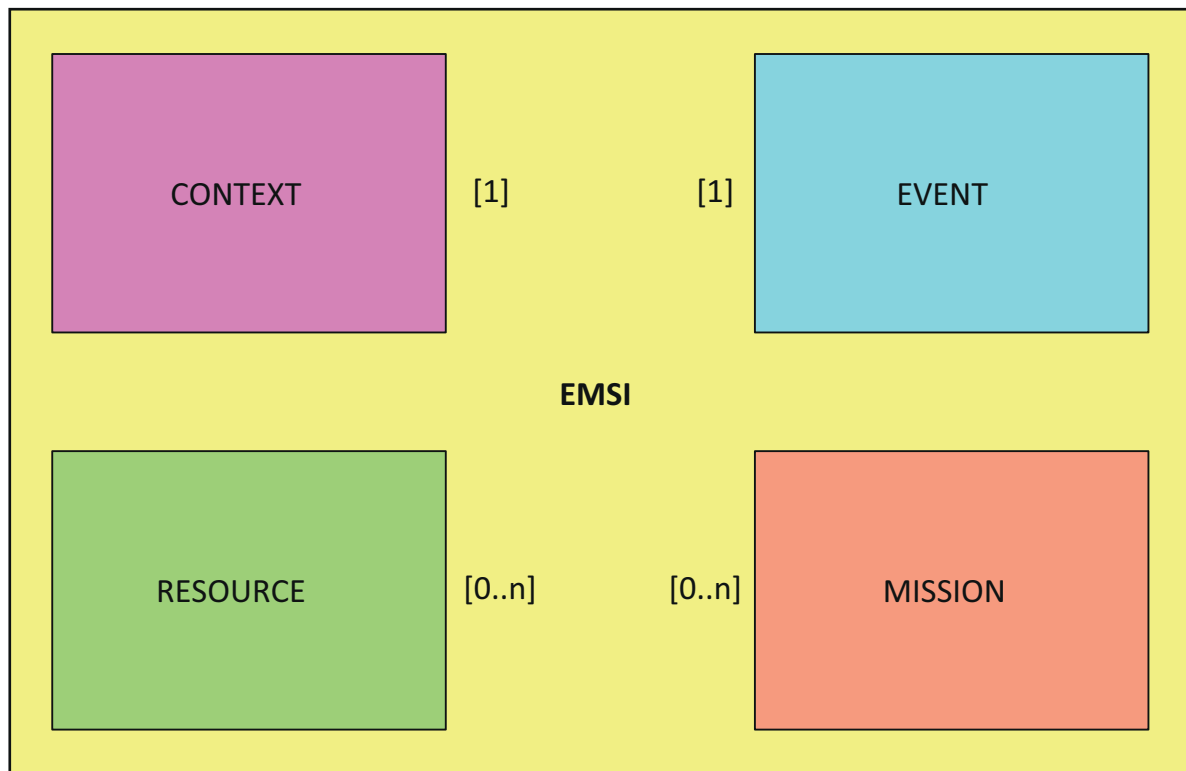
4.3 EMSI structure

An EMSI is organized in four elements groups.

- CONTEXT: identification of the EMSI;
- EVENT: description of the event;
- RESOURCE: allocated or available resource(s) to/for the event;
- MISSION: description of mission(s).

CONTEXT and EVENT are mandatory while RESOURCE and MISSION are optional.

[Figure 3](#) shows this structure.

**Key**

Cardinality:

- [1] The element is mandatory. Only one value can be provided.
- [0..n] The element is optional. If it is present, only one value can be provided.

Figure 3 — Content and structure of EMSI**4.4 General rules for the definition of elements**

An element within an EMSI is described by its name, definition, type, cardinality and value domain. An element may be subdivided hierarchically into sub elements which may be subdivided further hierarchically and so on. All sub-elements in the hierarchy are simply called elements.

The following three types of elements can be used in the EMSI structure.

- a) Elements which are defined solely by their types: string of characters, integer value, double or float value. These values may be constrained including: limited number of characters for the strings; minimum and maximum values for numerical elements.

EXAMPLES Identifiers, coordinates (latitude, longitude, height), address.

- b) Elements which are defined by their type (always “string of characters”), but constrained to a limited fixed list of valid values.

EXAMPLES SECLASS, Security classification of the EMSI, string (enumeration),

CONFID = confidential,

RESTRC = restricted,

SECRET = secret,

TOPSRT = top secret,

UNCLAS = unclassified,

UNMARK = unmarked.

- c) Elements which are defined by their type (always “string of characters”), but constrained to an extensive list of valid values.

EXAMPLE RTYPE CLASS, type of the resource: rescue team, vehicle, tent, water purifier, etc..., string (maximum 80 characters); the complete list of values may be described in a specific part of the data elements and codes specification in the form of a dictionary.

4.5 Rules for the list of elements

The content of the field <Element name> reflects entities in the real world and is worded in English. It should not be longer than 32 characters.

The use of free text in the field <Value domain> should be limited as it cannot be automatically interpreted or translated. A free text field should not exceed 500 characters.

In case that the value domain is an extensive list, the field <Value domain> of the element description refers to a dictionary of codes.

4.6 Implementation of the EMSI

It is recommended to use XML when implementing the EMSI.

5 The EMSI codes dictionary

5.1 The role of the codes

The use of codes rather than free text gives the possibility to automatically translate information into language appropriate to the user.

A significant number of elements values are defined by codes representing real world concepts.

5.2 Rules

5.2.1 Code structure

The code for each individual item is expressed as a hierarchical structure subdivided into code elements. The code elements are separated by a slash.

5.2.2 Code elements

Code elements are composed from one up to eight characters taken from the unaccented upper case Latin alphabet (A...Z) and 10 digits (0...9).

5.2.3 Examples

EXAMPLE 1 A fire appliance in a road vehicle with breathing apparatus support.

- a) MAT/VEH/ROADVE/FRFGTN/BREATH

MAT: material

/VEH: vehicle

/ROADVE: road vehicle

/FRFGTN: fire appliance

/BREATH: with breathing apparatus support

EXAMPLE 2 If the observer does not know the category of the vehicle the code generated could be MAT/VEH/ROADVE.

EXAMPLE 3 An EMSI makes sure that the information can be translated to different languages (see [Figure 4](#)).

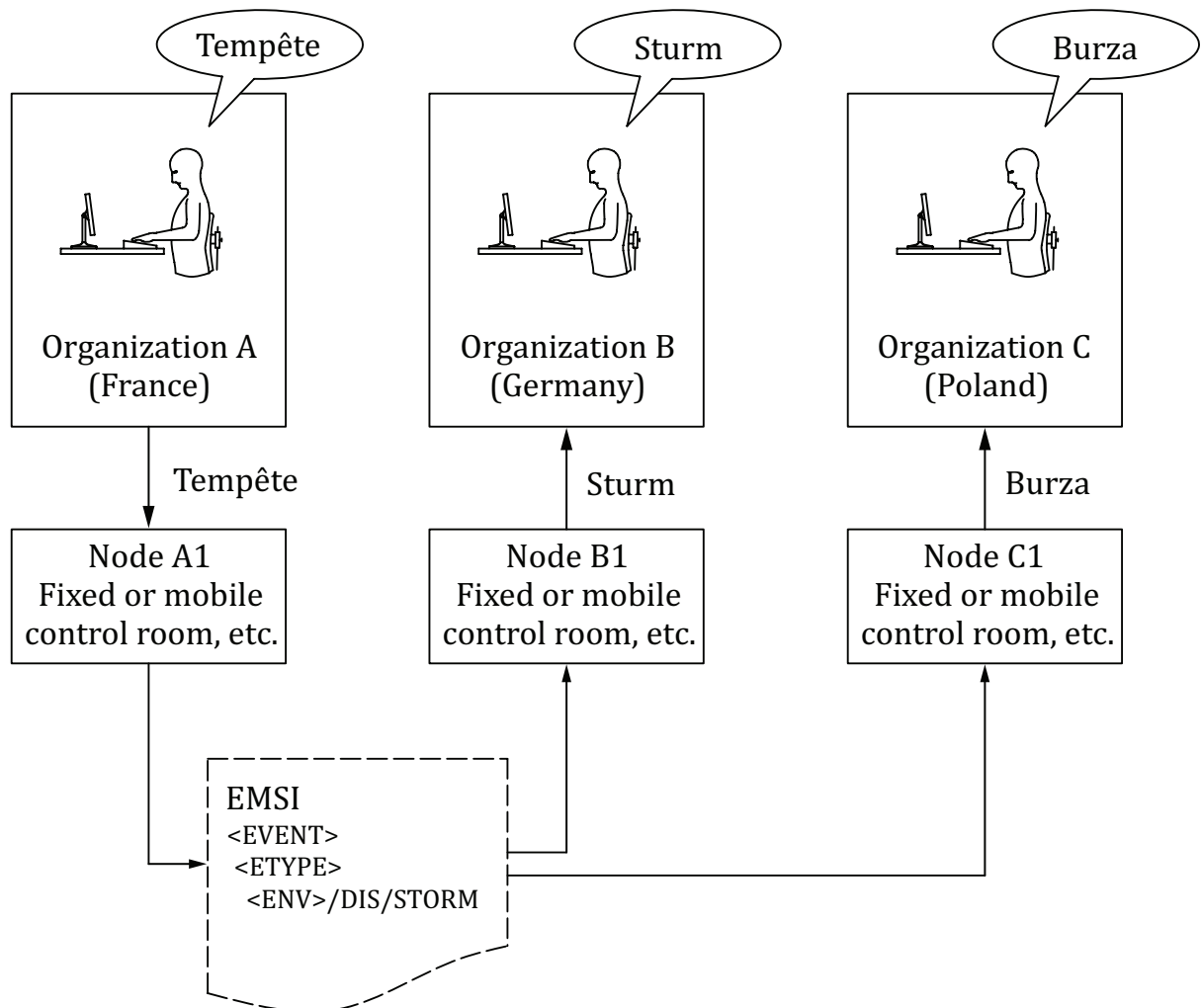


Figure 4 — Code translated automatically to the language of the operator

This example shows how the event of a storm will be encoded in an EMSI message and disseminated to emergency management information systems operators in different countries.

<EVENT>

<ETYPE>

<ENV>/DIS/STORM

will be translated to "tempête" in French, "Sturm" in German and "burza" in Polish on the graphical user interface.

Annex A
(informative)

Example of EMSI messages

This Annex describes examples of EMSI messages using XML. Users will not, in general, manipulate the messages directly, but through interactive and user-friendly tools based on graphical windows with maps and tables for the creation and the modification of the EMSI elements. This example is based on a scenario involving a collision between a truck and a high speed train in the vicinity of a medium-size city.



Figure A.1 — Example

NOTE In the different diagrams of this example, the Google Earth® software¹⁾ has been used for the display of the satellite image and the vector overlays.

Scenario: Witnesses call the 112 emergency number and provide a first assessment of the situation. These pieces of information are entered in the information system of the Call Centre. Then the Call Centre dispatches the alert to the control rooms of two of the organizations which are involved in such incidents: the police and the fire service.

The first EMSI message used for this purpose includes two elements, the CONTEXT and the description of the EVENT:

EMSI message	additional information
<pre><?xml version="1.0" encoding="UTF-8"?> <EMSI_2_0 xmlns="http://tacticalsituationobject.org/schemas/EMSI/2_0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <CONTEXT> <ID>CC112_200711191724_015</ID></pre>	Unique EMSI file identifier (for the 112 Call Centre)

1) Google Earth® is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.

<pre> <MODE>ACTUAL</MODE> <MSGTYPE>ALERT</MSGTYPE> <CREATION>2007-11-19T17:24:00.0Z</CREATION> <URGENCY>URGENT</URGENCY> <ORIGIN> <ORG_ID>FR_112_DEP35</ORG_ID> </ORIGIN> </pre>	Important: this is the unique identifier of the originating node (the 112 Call Centre).
<pre> </CONTEXT> </pre>	
<pre> <EVENT> <ID>CC112_200711191720_EV03</ID> <NAME>Accident train Betton 19112007</NAME> <ETYPE> <CATEGORY>/TRP/COL</CATEGORY> <ACTOR>/VEH/TRK</ACTOR> <ACTOR>/VEH/TRN</ACTOR> <LOCTYPE>/RAIL/TRK</LOCTYPE> <LOCTYPE>/ROAD</LOCTYPE> </ETYPE> <SOURCE>HUMOBS</SOURCE> <SCALE>2</SCALE> </pre>	Important: This is the unique identifier of the current event in the node. Initial description of the incident: it is a collision. The initial assessment is that this incident is a domestic incident, which will require several response units for a limited duration.
<pre> <DECL_DATIME>2007-11-19T17:24:00.0Z</DECL_DATIME> <CASUALTIES> <CONTEXT>PRELIM_STAT</CONTEXT> <TRIAGERED>10</TRIAGERED> </pre>	Preliminary assessment of the casualties: 10 persons are requiring the highest priority for treatment or evacuation.
<pre> </CASUALTIES> <EGEO> <TYPE>/GEN/INCGRD</TYPE> <POSITION> <LOC_ID>BETTON</LOC_ID> <TYPE>POINT</TYPE> <COORD> <LAT>48.18</LAT> <LON>-1.63</LON> </COORD> </POSITION> </EGEO> </pre>	Approximative location of the incident ground
<pre> </EVENT> </EMSI_2_0> </pre>	

At the reception of this first message, the fire service control room decides to send several vehicles for providing first rescue and for assessing more precisely the situation. It informs the other agencies involved by providing a **second EMSI message**, which includes the CONTEXT, the description of the EVENT, the description of 3 RESOURCES and the description of their MISSIONs:

EMSI message	additional information
<pre> <?xml version="1.0" encoding="UTF-8"?> <EMSI_2_0 xmlns="http://tacticalsituationobject.org/schemas/EMSI/2_0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" > <CONTEXT> <ID>SDIS35_200711191727_033</ID> <MODE>ACTUAL</MODE> <MSGTYPE>ALERT</MSGTYPE> <CREATION>2007-11-19T17:27:00.0Z</CREATION> <URGENCY>URGENT</URGENCY> <ORIGIN> <ORG_ID>FR_SDIS35</ORG_ID> </ORIGIN> </CONTEXT> <EVENT> <ID>SDIS35_200711191727_EV033</ID> <DECL_DATIME>2007-11-19T17:24:00.0Z</DECL_DATIME> <REFERENCE> <ORG_ID>FR_112_DEP35</ORG_ID> <OTHER_EVENT_ID>CC112_200711191720_EV03</OTHER_EVENT_ID> </REFERENCE> <EGEO> <TYPE>/GEN/INCGRD</TYPE> <POSITION> <LOC_ID>BETTON_ACC</LOC_ID> <TYPE>POINT</TYPE> <COORD> <LAT>48.18</LAT> <LON>-1.63</LON> </COORD> </POSITION> </EGEO> </EVENT> <RESOURCE> <RTYPE> <CLASS>/MAT/VEH/RAODVEH/FRFGTN/RSC</CLASS> </RTYPE> <ID>VSAB_BET01</ID> <RGE0> </pre>	Unique EMSI file identifier (for the fire services node) Important: This is the unique identifier of the originating node (the fire service node). The event identifier used in the fire service node. Important: The event is the same than the event declared in the 112 Call Centre. Location is still the same, no casualty assessment A rescue engine is sent from the fire station to the incident place, with an estimated time of arrival (ETA).

<pre> <DATIME>2007-11-19T17:32:00.0Z</DATIME> <TYPE>INC</TYPE> <POSITION><LOC_ID>BETTON_ACC</LOC_ID></POSITION> </RGE0> <STATUS>IN_USE/MOBILE</STATUS> </RESOURCE> <RESOURCE> <RTYPE> <CLASS>/MAT/VEH/RAODVEH/FRFGTN/FRF</CLASS> </RTYPE> <ID>FPT_REN05</ID> <RGE0> <DATIME>2007-11-19T17:34:00.0Z</DATIME> <TYPE>INC</TYPE> <POSITION><LOC_ID>BETTON_ACC</LOC_ID></POSITION> </RGE0> <STATUS>IN_USE/MOBILE</STATUS> </RESOURCE> <RESOURCE> <RTYPE> <CLASS>/MAT/VEH/RAODVEH/FRFGTN/FRF</CLASS> </RTYPE> ... </RESOURCE> <MISSION> <TYPE>/SAV/RTA</TYPE> <STATUS>IPR</STATUS> <RESOURCE_ID>VSAB_BET01</RESOURCE_ID> </MISSION> <MISSION> ... </MISSION> <MISSION> ... </MISSION> </pre>	A fire engine is sent from the fire station to the incident place, with an estimated time of arrival (ETA). Another fire engine is sent from the fire station to the incident place (this section is not detailed here).
<pre> three missions are defined for the three resources </pre>	

The police services also send their own vehicles to the incident place. They inform the other organizations by sending a similar EMSI message, describing that five vehicles are moving to the incident place (this EMSI message will have its own EMSI identifier — POL35_200711191727_126 for example, its own event identifier — POL35_200711191727_EV055 for example), and will refer to the event identifier initially provided by the Call Centre (this EMSI message is not displayed in this document, it is very similar to the previous EMSI message).

Later, the fire services vehicles arrive on the incident place. They organize the rescue operations and provide a new assessment of the situation to their control room. They find that the truck was transporting some hazardous material which may result in a pollution. The fire services control room provides **an EMSI message with an update of the description of the incident** to the other organizations:

EMSI message	additional information
<pre> <?xml version="1.0" encoding="UTF-8"?> <EMSI_2_0 xmlns="http://tacticalsituationobject.org/schemas/EMSI/2_0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <CONTEXT> <ID>SDIS35_200711191727_038</ID> ... </CONTEXT> <EVENT> <ID>SDIS35_200711191727_EV033</ID> <ETYPE> <CATEGORY>/TRP/COL</CATEGORY> <ACTOR>/VEH/TRK/HZD</ACTOR> <ACTOR>/VEH/TRN/PAS</ACTOR> <LOCTYPE>/RAIL/TRK</LOCTYPE> <LOCTYPE>/ROAD</LOCTYPE> </ETYPE> <SCALE>3</SCALE> <RISK_ASSESSMNT>INCREA</RISK_ASSESSMNT> <REFERENCE> <ORG_ID>FR_112_DEP35</ORG_ID> <OTHER_EVENT_ID>CC112_200711191720_EV03</OTHER_ EVENT_ID> </REFERENCE> <CASUALTIES> <CONTEXT>PRELIM_STAT</CONTEXT> <TRIAGERED>20</TRIAGERED> <TRIAGEYELLOW>50</TRIAGEYELLOW> </CASUALTIES> <EGEO> <TYPE>/GEN/INCGRD</TYPE> <POSITION> <LOC_ID>BETTON_ACC</LOC_ID> <TYPE>POINT</TYPE> <COORD> <LAT>48.180789329817</LAT> <LON>-1.6349108183391</LON> </COORD> </POSITION> </EGEO> <EGEO> <TYPE>/DGR/CBRNHZ</TYPE> </pre>	The CONTEXT element is similar to the previous one – except that a new unique EMSI identifier is provided. The event identifier remains the same. The description of the event is improved, providing more details (the truck transports hazardous materials, the train transports passengers). The event scale is escalated to level 3. The casualty assessment is refined, as new information is provided by responders who are on the scene. The location of the incident is more precise. The description of the location of the event is more detailed, by defining that there is a CBRN hazardous location.

<pre> <POSITION> <LOC_ID>BETTON_ACC</LOC_ID> </POSITION> <WEATHER>WWE015</WEATHER> <WEATHER>/HUM/CORECT</WEATHER> </ECEO> </EVENT> </EMSI_2_0> </pre>	Information related to the weather on the incident place is provided (wind direction and speed at ground elevation, no precipitation).
--	--

Taking into account the new information, the fire services decide to

- deploy a medical mobile unit to the incident ground for rescuing the affected casualties, and
- run a preliminary pollution dispersion model, in order to assess if the local population shall be evacuated or confined.

As a result, **a new EMSI message describing these new pieces of information** is provided by the fire services to the other organizations.



Figure A.2 — Example

EMSI message	additional information
<pre> <?xml version="1.0" encoding = "UTF-8"?> <EMSI_2_0 xmlns="http://tacticalsituationobject.org/schemas/EMSI/2_0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <CONTEXT> <ID>SDIS35_200711191727_058</ID> ... </CONTEXT> <EVENT> <ID>SDIS35_200711191727_EV033</ID> <REFERENCE> <ORG_ID>FR_112_DEP35</ORG_ID> <OTHER_EVENT_ID>CC112_200711191720_EV03</OTHER_EVENT_ID> </REFERENCE> <CASUALTIES> <CONTEXT>INITIAL_STAT</CONTEXT> <TRIAGERED>18</TRIAGERED> <TRIAGEYELLOW>35</TRIAGEYELLOW> <TRIAGEGREEN>125</TRIAGEGREEN> </CASUALTIES> <EGEO> <TYPE>/GEN/INCGRD</TYPE> <POSITION> <LOC_ID>BETTON_ACC</LOC_ID> <TYPE>POINT</TYPE> <COORD> <LAT>48.180789329817</LAT> <LON>-1.6349108183391</LON> </COORD> </POSITION> </EGEO> <EGEO> <TYPE>/DGR/CBRNHZ</TYPE> <POSITION> <LOC_ID>BETTON_ACC</LOC_ID> </POSITION> <WEATHER>WWE015</WEATHER> <WEATHER>/HUM/CORECT</WEATHER> </EGEO> <EGEO> <DATIME>2007-11-19T19:00:00.0Z</DATIME> </pre>	The CONTEXT element is similar to the previous one – except that a new unique EMSI identifier is provided. The casualty assessment is refined, again as additional information is provided by the medical team who is present near the incident place. A new area description is provided: the calculated coverage of the toxic cloud for the next hour (ground elevation).

```

<TYPE>/DGR/CBRNHZ</TYPE>
<POSITION>
  <NAME>Toxic area - result of simulation -concentra-
tion=30 ppm</NAME>
  <TYPE>SURFACE</TYPE>
  <COORD>
    <LAT>48.18078710062477</LAT>
    <LON>-1.634745657644245</LON>
  </COORD>
  <COORD>
    <LAT>48.18169465517513</LAT>
    <LON>-1.636277772659113</LON>
  </COORD>
  <COORD>
    <LAT>48.18302319659502</LAT>
    <LON>-1.640964580517434</LON>
  </COORD>
  <COORD>
    <LAT>48.18343926167838</LAT>
    <LON>-1.643352682109139</LON>
  </COORD>
  <COORD>
    <LAT>48.18273583232308</LAT>
    <LON>-1.645418495735825</LON>
  </COORD>
  <COORD>
    <LAT>48.18113861655801</LAT>
    <LON>-1.645440299781541</LON>
  </COORD>
  <COORD>
    <LAT>48.17990784284083</LAT>
    <LON>-1.642693176671372</LON>
  </COORD>
  <COORD>
    <LAT>48.17980528797887</LAT>
    <LON>-1.638188168647105</LON>
  </COORD>
  <COORD>
    <LAT>-1.634745657644245</LAT>
    <LON>48.18078710062477</LON>
  </COORD>
</POSITION>
</EGEO>
</EVENT>
<RESOURCE>
  <RTYPE>
    <CLASS>/FAC/OPR/HSPFLD</CLASS>

```

The EMSI file describes the fact that a mobile medical infrastructure is deployed, providing its location.

```
</RTYPE>
<NAME>Advanced Medical Post 35_01</NAME>
<RGeo>
  <TYPE>INC</TYPE>
  <POSITION>
    <TYPE>POINT</TYPE>
    <COORD>
      <LAT>48.1805832</LAT>
      <LON>-1.6316603</LON>
    </COORD>
  </POSITION>
</RGeo>
</RESOURCE>
</EMSI_2_0>
```

This scenario could continue with additional exchanges of EMSI messages.

Annex B (informative)

EMSI elements and codes

B.1 EMSI elements

This Annex provides a detailed description of an EMSI message based on the rules of this Technical Report.

[Figure B.1](#) summarizes all the elements included in EMSI. They are detailed in this Annex.

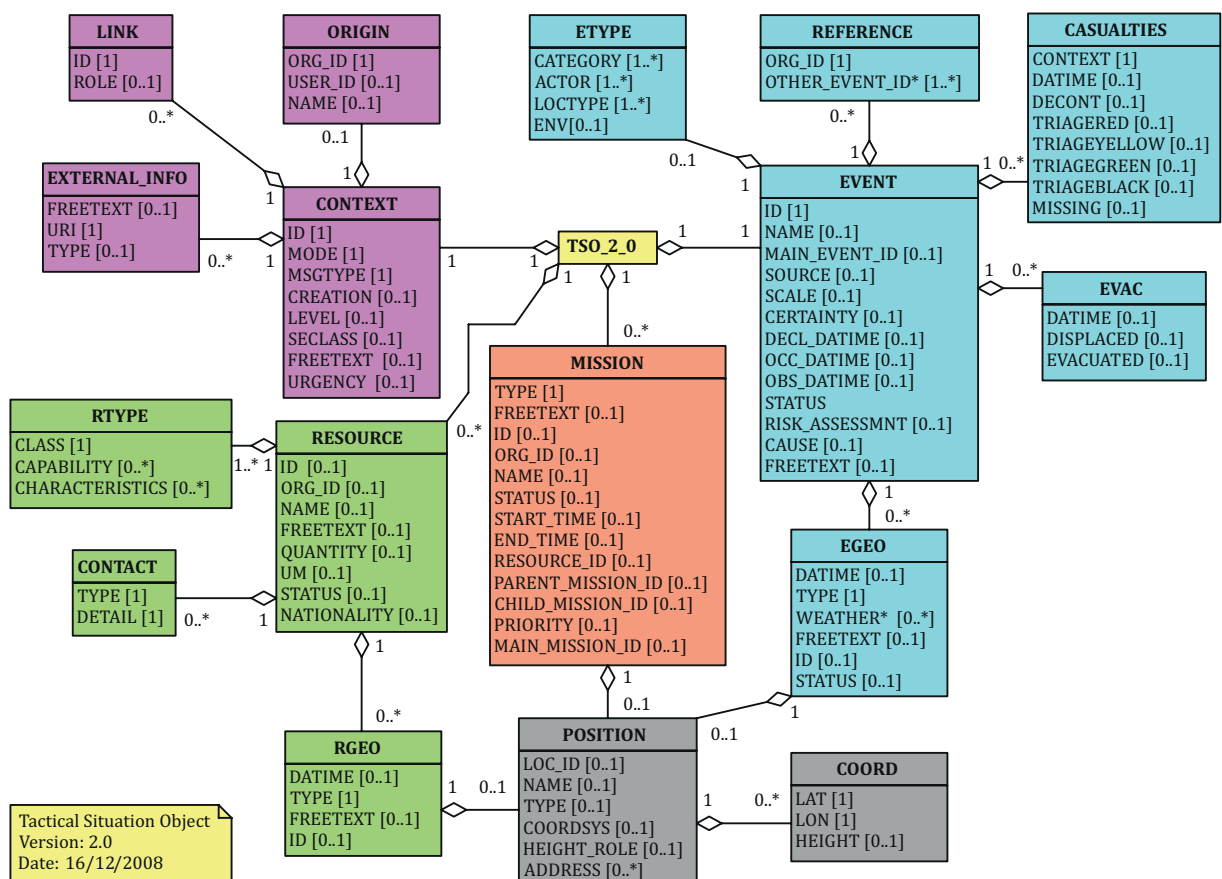


Figure B.1 — EMSI data elements

Table B.1 — EMSI elements

Element name	Definition	Type	Cardinality	Notes or value domain
1. CONTEXT	Identifies the context of the EMSI.	group	REQUIRED, 1	
2. EVENT	Describes the event that the EMSI relates to.	group	REQUIRED, 1	
3. RESOURCE	Describes the resources (human, vehicles, other hardware, etc...) which the EMSI node has the authority to deploy and is related to the event and context reported in the EMSI.	group	OPTIONAL, [0..n]	
4. MISSION	Describes the missions which are completed, are ongoing, or are planned and is related to the event and context reported in the EMSI.	group	OPTIONAL, [0..n]	

Table B.2 — CONTEXT elements and sub-elements

Element name	Definition	Type	Cardinality	Notes or value domain
1. ID	Provides the identifier of the EMSI. It shall be unique.	string (40 characters maximum)	REQUIRED, 1	The EMSI identifier is used to create cross references between EMSIs, and shall be globally unique. Examples of methods to generate global id's are Universally Unique Identifier (UUID) standardized by The Open Software Foundation (OSF), Globally Unique Identifiers (GUID) by Microsoft or by linking together a number of identification elements, such as an organization URL, an agent identifier and date and time. Any such encoding is outside the scope of this specification.
2. MODE	States whether the EMSI is related to an actual event (ACTUAL value), an exercise (EXERCISE value) or a test (SYSTEM value) for messages that support alert network internal functions or (TEST value) for technical testing only, all recipients disregard.	string (enumeration)	REQUIRED, 1	Consistent with the CAP protocol v1.0 (cap.alert.status.code).
3. MSGTYPE	Describes the nature of the message.	string (enumeration)	REQUIRED, 1	Consistent with the CAP protocol v1.0 (cap.alert.type.code). The possible values are: ACK = Acknowledges receipt and acceptance of the message(s) identified in reference, ALERT = Initial information requiring attention by targeted recipients, CANCEL = Cancels the earlier message(s) identified in reference, ERROR = indicates rejection of the message(s) identified in reference, UPDATE = Updates and supersedes the earlier message(s) identified in reference.
4. CREATION	Describes the date and time when the EMSI was created.	date and time	OPTIONAL, 0 or 1	The date and time of the creator computer. NOTE: Recipients should not assume that the date and time are accurate.
5. LINK	Provides a link to one or more EMSI files	group	OPTIONAL, [0..n]	
6. LINK ID	Provides the identifier (ID) of another EMSI to which this EMSI is related.	string (maximum 40 characters)	REQUIRED, 1	
7. LINK ROLE	Define the relation of the linked EMSI.	string (maximum 6 characters)	OPTIONAL, 0 or 1	The complete list of values is in the codes dictionary.
8. LEVEL	Describes the level of the node creating this EMSI file.	string (enumeration)	OPTIONAL, 0 or 1	STRTGC = strategic, OPR = operational, TACTCL = tactical
9. SECLASS	Describes the security classification of the EMSI.	string (enumeration)	OPTIONAL, 0 or 1	CONFID = confidential, RESTRC = restricted, SECRET = secret, TOPSRT = top secret, UNCLAS = unclassified, UNMARK = unmarked. NOTE: This element provides nodes with information on how to handle this message. Security classification implementation is not covered by this document.
10. FREETEXT	Allows free text description.	string (maximum 500 characters)	OPTIONAL, 0 or 1	This element is used to add free text information.
11. URGENCY	Defines the urgency of the message.	string (enumeration)	OPTIONAL 0 or 1	Values are URGENT or NOT_URGENT

Table B.2 (continued)

Element name	Definition	Type	Cardinality	Notes or value domain
12. ORIGIN	Provides the identity of the creator of the EMSI.	group	OPTIONAL, 0 or 1	
13. ORIGIN_ORG_ID	The unique identifier of an organization element.	string (maximum 40 characters)	REQUIRED, 1	See the CONTEXT/ID element note for information about globally unique identifiers.
14. ORIGIN_USER_ID	It provides the unique identifier of the user who created the EMSI.	string (maximum 80 characters)	OPTIONAL, 0 or 1	It shall be unique inside each organization.
15. ORIGIN_NAME	It provides the name which identifies the agency and the EMSI node.	string (maximum 80 characters)	OPTIONAL, 0 or 1	NOTE: Subsequently, other information such as contact point, telephone number or address can be provided in this element.
16. EXTERNAL_INFO	Describes links to additional external information.	group	OPTIONAL, [0..n]	Originators should consider how this reference may affect the interpretation of the EMSI in the case where the referenced external information is not available to the recipient.
17. EXTERNAL_INFO_FREE-TEXT	Allows free text description of the external information.	string (maximum 500 characters)	OPTIONAL, 0 or 1	
18. EXTERNAL_INFO_URI	Provides a full absolute URI.	string (maximum 200 characters)	REQUIRED, 1	Typically a Uniform Resource Locator that can be used to retrieve the resource file over the network (Internet, Intranet).
19. EXTERNAL_INFO_TYPE	Describes the type of the attached information.	string (maximum 8 characters)	OPTIONAL, 0 or 1	Such as photo, map, manual, website etc. The complete list of values is in the codes dictionary.

Table B.3 — EVENT elements and sub-elements

Element name	Definition	Type	Cardinality	Notes or Value Domain
1. ID	Describes the identifier of the event for the creator of the EMSI.	string (maximum 40 characters)	REQUIRED, 1	This identifier shall be unique inside the node.
2. NAME	Provides a name for the event.	string (maximum 40 characters)	OPTIONAL, 0 or 1	It is the responsibility of the node to have unique event names.
3. MAIN_EVENT_ID	Provides a link to the main event.	string (maximum 40 characters)	OPTIONAL, 0 or 1	In this case, the current event is a sub-event of this main event
4. ETYPE	The type of the event, which is the collation of several facets.	group	OPTIONAL, 0 or 1	
5. ETYPE CATEGORY	The description of the scenario which leads to the event.	string (maximum 80 characters)	REQUIRED, [1..n]	The complete list of values is in the codes dictionary.
6. ETYPE ACTOR	Describes the type of the endangered object(s).	string (maximum 80 characters)	REQUIRED, [1..n]	The complete list of values is in the codes dictionary.
7. ETYPE LOCTYPE	Describes the type of the location where the event is taking place.	string (maximum 80 characters)	REQUIRED, [1..n]	The complete list of values is in the codes dictionary.
8. ETYPE ENV	Describes the general environment (or context) of the event.	string (maximum 80 characters)	OPTIONAL, [0..n]	The complete list of values is in the codes dictionary.
9. SOURCE	Describes the origin of the declaration of the event.	string (enumeration)	OPTIONAL, 0 or 1	Possible values are: COMFOR (computer forecast), HUMDEED (human deduction), HUMOBS (human observation), SENSOR (sensor observation).
10. SCALE	Describes the severity of the event.	integer (between 1 and 5 included)	OPTIONAL, 0 or 1	- Level 1 — The event is dealt with by resources deployed on the initial pre-planned response. - Level 2 — The event is dealt with by resources deployed solely by the affected organization. - Level 3 — The event is dealt with by resources deployed by the affected organization, supported by mutual aid assistance from neighbouring organizations under normal arrangements. - Level 4 — The event is dealt with by resources deployed by the affected organization, supported by mutual assistance from organizations anywhere within the affected country. This assistance may be obtained through the use of a national co-ordination centre. - Level 5 — This response level covers the management of any incoming aid to help the organization respond to an event and will be facilitated by the affected government using the existing protocols used by the United Nations, the European Union and the North Atlantic Treaty Organization (NATO).
11. CERTAINTY	Provides a percentage probability of occurrence of the event.	integer (between 0 and 100 included)	OPTIONAL, 0 or 1	NOTE: This is typically used for computerised prediction of a future event such as a flood prediction according to meteorological models.

Table B.3 (continued)

Element name	Definition	Type	Cardinality	Notes or Value Domain
12. DECL_DATETIME	Describes the date and time of the declaration of the event. This may refer to a future occurrence.	date and time	OPTIONAL, 0 or 1	
13. OCC_DATETIME	Describes the date and time of the occurrence of the event. This may refer to a future occurrence.	date and time	OPTIONAL, 0 or 1	
14. OBS_DATETIME	Describes the date and time of the information contained in this EMSI.	date and time	OPTIONAL, 0 or 1	
15. STATUS	Describes the current status of the event.	string (enumeration)	OPTIONAL, 0 or 1	COM = event complete, IPR = event in progress, NST = event not started, STOP = event under control, no need for additional resource
16. RISK_ASSESSMNT	States the predicted evolution of the event.	string (enumeration)	OPTIONAL, 0 or 1	Possible values are: INCREA (increasing), DECREA (decreasing), STABLE (stable).
17. REFERENCE	Provides the list of events identifiers which may be related to the same event.	group	OPTIONAL, [0..n]	The software using the EMSI files in different nodes shall provide the capability to map identifiers for the same event coming from different nodes.
18. REFERENCE ORG_ID	Defines the unique identifier for a node creating the EMSI.	string (maximum 40 characters)	REQUIRED, 1	If the element OTHER_EVENT_ID is provided.
19. REFERENCE OTHER_ EVENT_ID	States the identifiers for the same event, used by other agencies.	string (maximum 40 characters)	REQUIRED, [1..n]	It shall help to maintain the consistency between agencies which have their own identification schemes.
20. CASUALTIES	Provides the number of the actual or predicted casualties.	group	OPTIONAL, [0..n]	This is the description of the actual casualties if there is no DATIME element or for predicted casualties, at the time of the DATIME element.
21. CASUALTIES CONTEXT	Defines the context related to the casualties element.	string (enumeration)	REQUIRED, 1	REQ_ACTION (requiring action) ALR_TREATED (already treated) PRED_URGENT (predicted urgent) PRED_MEDIUM (predicted medium term) INITIAL_STAT = unconfirmed initial statement, indicates the nature of the event PRELIM_STAT = preliminary assessment, made by an emergency responder on scene, who may not be qualified to perform triage but whose description of the incident is accepted.
22. CASUALTIES DATIME	Describes the date and time of the predicted context.	date and time	OPTIONAL, 0 or 1	
23. CASUALTIES DECONT	Provides the number of casualties who need treatment against CBRN agents in the current context.	integer	OPTIONAL, 0 or 1	

Table B.3 (continued)

Element name	Definition	Type	Cardinality	Notes or Value Domain
24. CASUALTIES TRIAGERED	Provides the number of casualties at the "RED" priority level in the current context.	integer	OPTIONAL, 0 or 1	This category has the highest priority for treatment or evacuation, as urgent resuscitative interventions are required to ensure survival of the casualty. Examples include airway obstruction, respiratory emergencies, shock and severe trauma. It is likely that such cases will die within 2 h in the absence of appropriate medical treatment.
25. CASUALTIES TRIAGEYELLOW	Provides the number of casualties at the "YELLOW" priority level in the current context.	integer	OPTIONAL, 0 or 1	This comprises cases that require early treatment, particularly surgery, and it is recommended that evacuation to a surgical facility takes place within 6 h of injury. Examples include visceral injury, closed thoracic injury without threatening asphyxia, major limb injuries and fractures, closed head injury, open eye injury and moderate burns.
26. CASUALTIES TRIAGEGREEN	Provides the number of casualties at the "GREEN" priority level in the current context.	integer	OPTIONAL, 0 or 1	Treatment is less urgent in this category and can be deferred if there are other casualties requiring limited treatment or evacuation assets. Examples include simple closed fractures, soft tissue injury, closed chest injury and maxillary-facial injury.
27. CASUALTIES TRIAGEBLACK	Provides the number of casualties at the "BLACK" priority level in the current context.	integer	OPTIONAL, 0 or 1	This category refers to casualties whose injuries or illnesses are so serious that they have minimal chances of survival or who are dead on arrival. Should there be competition for limited medical resources, such cases will have lower priority for evacuation or treatment, despite the severity of their condition. Examples include brain-stem death and terminal illness.
28. CASUALTIES MISSING	Provides the number of individuals reported or presumed missing, kidnapped, etc. in the current context.	integer	OPTIONAL, 0 or 1	
29. EVAC	Provides the number of the evacuated people.	group	OPTIONAL, [0..n]	
30. EVAC DATIME	It provides the date and time of the predicted context.	date and time	OPTIONAL, 0 or 1	
31. EVAC DISPLACED	Provides the number of people who are moved due to the event in the current context.	integer	OPTIONAL, 0 or 1	
32. EVAC EVACUATED	Provides the number of individuals who are undergoing the process of being moved in the current context.	integer	OPTIONAL, 0 or 1	
33. EGEO	Provides the geographical location of the event.	group	OPTIONAL, [0..n]	NOTE: Several geographical locations could be provided, for example if several affected areas are described.
34. EGEO DATIME	Describes the date and time for this geographical location.	date and time	OPTIONAL, 0 or 1	For example for predicting future damage. When provided, this element provides the date and time for a forecast. If it is not provided, it indicates that the information describes the current situation

Table B.3 (continued)

Element name	Definition	Type	Cardinality	Notes or Value Domain
35. EGEO TYPE	Describes the type of area.	string (maximum 80 characters)	REQUIRED, 1	If geographical information can be classified with several types, it shall provide several EGEO elements. One main EGEO element shall describe the details of the area (including the EGEO/ POSITION element with a EGEO/POSITION/COORD sub-element and a EGEO/POSITION/LOC_ID element). Then other EGEO elements (of the other types) shall also provide a EGEO/POSITION element providing the same value for the EGEO/POSITION/ LOC_ID (and without repeating the COORD values). The complete list of values is in the codes dictionary.
36. EGEO WEATHER	Describes the weather at the location.	string (maximum 40 characters)	OPTIONAL, [0..n]	Where several WEATHER elements are present, all are applicable. The complete list of values is in the codes dictionary.
37. EGEO FREETEXT	Provides free text information for description of the location and its significance in the context of the event.	string (maximum 500 characters)	OPTIONAL, 0 or 1	
38. EGEO POSITION	Provides the position of the EGEO element.	group	REQUIRED, 1	All elements of POSITION are optional, but at least one shall be provided. It could be only the LOC_ID, only the NAME, or only the TYPE and COORD, or a combination of at least 2 of these elements.
39. EGEO ID	Defines the identifier for this geographical area (for later reference).	string (maximum 40 characters)	OPTIONAL, 0 or 1	This ID shall be unique inside an event for the node.
40. EGEO STATUS	Provides the status of GEO elements independently of the status of the event they relate to.	string (enumeration)	OPTIONAL, 0 or 1	The valid values are: PLANNED, IN PLACE and GONE.
41. CAUSE	Cause of this event.	string (enumeration)	OPTIONAL, 0 or 1	Valid values are: ACC = accidental, DEL = deliberate, NAT = natural
42. FREETEXT	Provides free text information for describing the event.	string (maximum 500 characters)	OPTIONAL, 0 or 1	