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Terminologies in crisis and disaster management

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European foreword

CWA 17335 was developed in accordance with CEN-CENELEC Guide 29 'CEN/CENELEC Workshop Agreements – The way to rapid agreement' and with the relevant provision of CEN/CENELEC Internal Regulations – Part 2. It was agreed on 2017-03-01 in a workshop by representatives of interested parties, approved and supported by CEN following a public call for participation made 2017-01-27. It does not necessarily reflect the views of all stakeholders that might have an interest in its subject matter.

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Introduction

In crisis and disaster management two factors contribute to success:

- a) having the appropriate resource available in an adequate time, at the right location and
- b) the action of applying clear authority, communications and directives.

In all cases, precise and clear communication is critical. Experiences of managing large scale crisis and disasters [1] show that not only language barriers, but also differences in the organisation, practices, tools and resources of disaster risk management create potential for miscommunication. Moreover, use of different terms for the same parameters hampers effective information exchange. In order to provide a contextual¹ enriched overview on terms and definitions published by different type of organizations such as a standardization organization or the United Nations, this document was developed as a basis for a common reference vocabulary.

The CWA covers selected key terminologies used by actors during crisis and disaster management for describing needs, actions, situations, tools, missions, resources and any other goods or services needed in large-scale multi-agency and/or transnational disaster risk management.

The intended users of the CWA results are authorities, statutory emergency agencies and other practitioners within the field of disaster risk management, including non-governmental agencies, researchers in disaster and emergency management and the public. Each of these prospective beneficiaries may find some parts more useful than others.

The CWA provides methodologies for comparison of the definitions of terms and the scope of the related source (e. g. terminology standard). It is not a purpose of the CWA to prioritize terms or definitions for one group of users or another.

The analysis of the scope is imperative, because it can lead to misleading conclusions in case a definition is analysed without taking the context of the related source into account. The context of a terminology is typically described in the scope of such documents; the lack of context of a terminology is a limitation hampering its application.

Reference to existing standards (i.e. local, regional, European and international) is given where appropriate.

The CWA represents a best-effort attempt to compile a representative list of terms, taxonomies and definitions that are used and applied in the domains of crisis and disaster management, including social safety, natural disasters, man-made disasters, risk analysis, preparedness, response and recovery. However, the CWA does not intend to provide a complete compilation of existing terms, taxonomies and definitions.

This CWA has limitations and does not address issues of cyber-security, counter-terrorism, border control, critical infrastructure protection directly. Some of the results can eventually be applied to those domains, but not as a primary application area.

The CWA is expected to be used for the improvement of the quality and efficiency of communication between actors in crisis and disaster management, independently of the communication channel being used.

Typical scenarios, where the results of the CWA might be used, include the need for information exchange between the many diverse stakeholders involved or between formal response agencies.

¹ Contextual means provision of information on the source of the data (e.g. ISO, UN, DIN), intended user group (e.g. first responders, CI operators) and area of application (e.g. natural disasters, large scale accidents).

Such communication may take the form of conversations between individuals in groups or of data exchange implemented by computers (and, in general, IT systems).

This CWA was initiated by the FP7 projects EPISECC (Establish Pan-European Information Space to Enhance Security of Citizens, focused on response phase), SecInCoRe (Secure Dynamic Cloud for Information, Communication and Resource Interoperability based on Pan-European Disaster Inventory, focused on preparedness phase), DRIVER+ (Driving Innovation in Crisis Management for European Resilience), SECTOR (Secure European Common Information Space for the Interoperability of First Responders and Police Authorities) and REDIRNET (Emergency Responder Data Interoperability Network), and supported by the FP7 project CONCORDE (Development of Coordination Mechanisms During Different Kinds of Emergencies).

1 Scope

This CEN Workshop Agreement analyses definitions of terms used in crisis and disaster management as well as the scopes of the related source.

Both scopes and definitions from different sources are compiled and compared regarding several aspects such as their context and envisaged audience. Sources could be a terminology standard or web services.

The focus is set in responses to large scale critical events. Small scale incidents managed by daily routine processes of stakeholders are also covered but are not the main focus of this CWA. Selected terminologies predominantly from the domains crisis and disaster management are used for the analysis and are included in the document.

The CEN Workshop Agreement includes terminologies and taxonomies, but no ontologies.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

crisis

unstable condition involving an impending abrupt or significant change that requires urgent attention and action to protect life, assets, property or the environment

[SOURCE: ISO 22300:2018, 3.59]

3.2

definition

representation of a concept by a descriptive statement which serves to differentiate it from related concepts

[SOURCE: ISO/IEC TR 20943-6:2013, 3.1.7]

3.3

disaster

situation where widespread human, material, economic or environmental losses have occurred which exceeded the ability of the affected organization, community or society to respond and recover using its own resources

[SOURCE: ISO 22300:2018, 3.69]

3.4

ontology

specification of concrete or abstract things, and the relationships among them, in a prescribed domain of knowledge

[SOURCE: ISO/IEC 19763-3:2010, 3.1.1.1]

3.5

taxonomy

classification scheme for a subject domain

[SOURCE: ISO/TR 25100:2012, 2.1.8]

3.6

term

word or phrase used to label a concept

[SOURCE: ISO 25964-1:2011, 2.61]

3.7

terminology

technical vocabulary, which establishes a common understanding of concepts by providing their terms and definitions

4 Methodology for the comparison of crisis management related terms and definitions as well as the scope of the sources

4.1 General

This chapter provides methodological approaches on how to compare the purpose of vocabularies such as IFRC 1991 [2] or HM Government 2013 [3] applied predominantly in the domain of crisis and disaster management as well as definitions included in such vocabularies. In addition it includes selected vocabularies from this domain taken from international documents such as standards². Subchapter 4.2.1 includes a description of use cases identified by the participating parties of the CEN Workshop. These use cases reflect future areas of applications of the developed methodology.

These documents, which are considered as sources of concepts and terms, are mainly organised as terminologies. The main objective of such documents is to provide coherent terms, belonging to a particular universe of discourse or a subject area, which will be consistently used in practice.

Considered documents refer to similar subject areas, consequently many of the concepts have exactly or nearly the same meaning. The CWA limits its scope in the initial phase to those terminologies which are a) intended for international use and b) specified in English. Sometimes, the same concepts are defined from different perspectives or needs, creating differences in concepts' descriptions both in size and level of details (such a description can be the definition of a term). Nevertheless, it could be the same concept or "unit of thought" (as defined in ISO 25964-2:2013 [4]) that is considered by terminologies. The other situation is when exactly the same concepts are described by different terms (e.g. car and automobile). It is important to note, that the targeted context of vocabularies can have considerable impact on concepts and their descriptions. Within this document, the targeted context of vocabularies is described in subchapter 4.2.5.2 "Intended User Group" and subchapter 4.2.5.3 "Intended Domain of Application".

Identification of same words in existing terminologies can be performed automatically using word search engines if terminologies are adequately organized, particularly if they are available on the web. The set of identified concepts has to be further examined to assess their semantic similarity. Herein, the

² The CWA does not address cyber-security, counter-terrorism, border control, critical infrastructure protection directly: some of the results of evaluations can eventually be applied to those domains, but not as a primary application area.

methodology proposes indicators to be used for identification of an initial degree of the semantic similarity between concepts, in particular the scope of terminologies and as well as definitions of terms. The first type of indicator is based on the metadata about concepts' source, i.e. terminologies. The second type of indicator allows comparison between descriptions of the same terms from different sources. This process needs to be highly human-driven and results in definition of types of relations (mappings) between two concepts. Identification of a) concepts having exactly the same meaning but different terms, or of b) concepts having nearly the same meaning and different terms, cannot be easily automated and human involvement in this process is strongly recommended. Once identified, such concepts can be further semantically compared with indicators using the same approach. The relationships between concepts proposed in this methodology are:

- exact match: concepts have exactly the same meaning;
- non-exact match: concepts are related either hierarchically (broader or narrower) or they have certain semantic similarity in term of equivalency or they can be associated in some way (the degree of matching can be specified by using the indicator);
- no-match: concepts do not have any significant semantic similarity.

Activities for the correlation and comparison of the terminologies are (visualized in Figure 1):

A1) Methodology specification and preparation

- a) Universe of discourse refinement
- b) Specification of documentation tools (used for online documentation)
- c) Indicator definition (here: application driven)

A2) Collection of informative references: Identification of relevant terminologies³

A3) Data Analysis

- a) Identification of good candidates for mutual comparison:
 - identification of exactly the same single-word terms and their descriptions,
 - identification of same words in single- and multi-word terms (excluding so-called stop words),
 - identification of concepts having exactly the same meaning but different terms
 - identification of concepts having nearly the same meaning and different terms
- b) Establishment of relationships between identified concepts
- c) Creation of adequate organisational structure using identified relationships

A4) Validation of approach (e.g. methods, criteria, indicators)

³ The list of terminologies used in the frame of this CEN Workshop Agreement was created based on recommendations made from working group members.

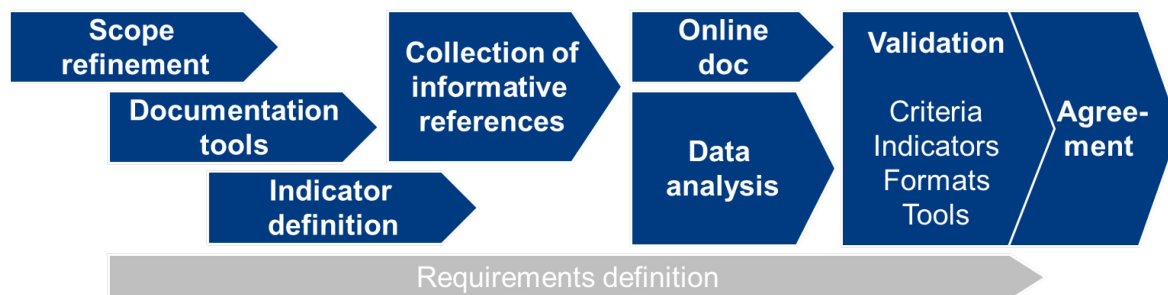


Figure 1 — Overall approach for the methodology

The situations of poorly structured or inconsistent terminologies, like when concepts' descriptions are missing or concepts' terms/descriptions are not distinctively defined, should be carefully examined in the first step. The challenges of terminologies written in different languages are not considered in this methodology.

Once the relationships and the adequate organizational structure are established, a more exact semantic analysis between terminologies can be conducted.

It has to be noted that the methodology described in this document reflects the approach developed by the members of the working group in order to achieve the goals of this CEN Workshop Agreement. In case of performing practical comparison of terminologies and their terms, it is sufficient to apply the developed indicators.

4.2 Methodology specification and preparation (A1)

4.2.1 Universe of discourse refinement (A1a)

The key intention of the CWA is to simplify access to and usage of terminologies as well as to facilitate bridging between different terminologies. Therefore the universe of discourse needs to be determined from an application driven perspective. This is reflected by scenarios describing potential use cases (UCs) for the CWA. Primary questions for the use cases are: Who (type of organization, actor) will use the TER-CDM-THE⁴ (T-C-T) for what purpose (type of action)? Is the T-C-T used directly (spoken or written communication) or mediated by software tools? Secondary question (possible) is: When and where is the use of the T-C-T intended?

The initial set of use cases collected within the CWA working group includes:

- UC1) "Communication, Information exchange" (cp. SG/SDSIE/DPGC): Technical experts are requested to support crisis management staff during a crisis. As crisis management is not part of their day-to-day work, they are provided with the thesaurus incorporated in context specific terminology cards.
- UC2) "Exchange of messages with annotation" (cp. EPISECC): UC2-1: Sender receives hint (e.g., in terms of highlighted text and mouse-over context menu) regarding semantics of typed term. UC2-2: Recipient receives hint about semantics that were used by sender.
- UC3) "Collection of relevant documents for emergency planning" (cp. SecInCoRe): UC3-1 Search string is typed into search engine, hint is provided regarding semantically related terms; UC3-2: Search results are enriched by semantic annotations.
- UC4) "Exchange of real time operational data for EMS" (CONCORDE): UC4-1: User (e.g. 112 or ground responder) selects or writes a term to describe a hazard (e.g. dangerous gas) and

⁴ TER-CDM-THE means terminology in crisis and disaster management thesaurus

semantic search provides the relevant instructions from a linked DB for immediate action to all users in the relevant area. UC4-2: User (e.g. field doctor) inputs injury description of patient, system uses semantic search to recommend best hospital (type of specialty to type of injury match).

- UC5) Training, debrief. Learning, risk analysis: Emergency training exercise leaders use T-C-T to find examples of mistakes and best practice around the same issue across past disaster reports.
- UC6) “Support in the development of project or other activity-specific terminologies” (DRIVER+): Any project or other activity benefits considerably in the frame of its execution if the involved actors have a common understanding of their project related key terms. The repository of terminologies from the CWA initiative can therefore be applied to develop a project terminology enhancing thereby the quality of the outcome”

Use Cases UC1 to UC6 are represented by members of the CWA working group⁵.

4.2.2 Documentation models, formats and tools (A1b)

The use of common formats and tools is essential to facilitate collaboration. Parallel activities need to be supported by these tools. Today, the terminologies should be stored in digital forms appropriate for the intended use: e. g. from pdf or xls document that could be searched and read on any device to open databases that could be linked with other sources of terms and used by software applications. Several efforts have been made to standardise digital form for terminologies and other structures such as dictionaries, vocabularies, controlled vocabularies, taxonomies, thesauri and unified thesaurus. The working group used

- Microsoft Excel for the collection of terminologies (i.e., terms and corresponding meta-data)
- Microsoft Word and PowerPoint for textual and graphical documentation

Besides selected tools which are intuitive and well-known for all participants, the working group considered data models proposed by the standards ISO 25964-1 [5] and ISO 25964-2 and The World Wide Web Consortium (W3C group) Simple Knowledge Organization System (SKOS) [6]. More details on data models can be found in Annex A.1.

4.2.3 Indicator definition (A1c)

The terms and their definitions should be described according to three different main categories of parameters:

1. The terms themselves
2. The definitions themselves
3. The context
 - a) The intended user groups
 - b) The intended domain of application
 - c) The source

For each of these three categories a set of parameters were defined. Parameters should be determined in two ways:

⁵ The different Use Cases have partially similarities, e.g. UC5 can be seen as practical application of UC3.

- Descriptions taken exactly from the source document (citation)
- Categories according to a multiple choice selection scheme (see the proposed multiple choice categories below). This implies some kind of interpretation by someone performing the multiple choice selection.

Indicators are defined on the level of parameters. Based on some kind of algorithm (for instance, string comparison, semantic distance, number of matching assigned keywords), indicators facilitate the comparison of two terms. The indication varies from

- ‘exact match’
- ‘non-exact match’
- ‘no match’

The likelihood that two terms are matching is calculated and assessed based on a weighted aggregation of indications related to single parameters (termMatch + definitionMatch + contextMatch).

The Term Indicator (termMatch)

In case of the term only two indications are possible: ‘exact match’ and ‘no match’.

The Definition Indicator (definitionMatch)

The definition indicator is typically used to compare two definitions of the same term included in two different terminologies. The definition indicator is an assembly of seven parameters all belonging to the definition category. Only parameters belonging to the “multiple choice selection schemes” are used.

A detailed description of the definition indicator can be found in annex A.3.

The Context Indicator (contextMatch)

The context indicator is typically used in order to compare the scopes of two terminologies. The context indicator is an assembly of five parameters from two categories (see subchapter 4.2.5), two belonging to “Intended User Group” category and three to the “Intended Area of Application” category. Only parameters belonging to the “multiple choice selection schemes” are used. A detailed description of the Context Indicator can be found in annex A.2.

4.2.4 Collection of informative references (A2)

The purpose of the collection of references is twofold:

- 1) To give an overview on the sources of terminologies included in the document and used to apply the developed methodology to analyse context and compare definitions
- 2) To give additional background information to the reader

The references can be found in the annex and are structured according to the above mentioned purposes.

4.2.5 Data Analysis – Categories of parameters (A3)

According to the categorisation described in chapter 4.2.3, it is necessary to set up multiple choice selections for the categories “Definition” and the category “Intended User Group”, the category “Intended Area of Application” and the “Source” category. This approach is necessary to allow further and extended search and filter modes to support the intended user groups of the CWA output.

4.2.5.1 Definition parameters

Following a modified model of discourse parsing (resp. clause analysis), the different properties of the definition were identified and became subject to the further abstraction via the drop down options as outlined below. As subject the Type of Organisation and/or the Scenario of Application were identified; implicitly only one predicate or statement about the subject is regarded as necessary in the first place: the relative effect being positive, negative, or neutral.

Several objects were identified and could be transferred to the general or meta-termini as explained below. In addition to this basic frame additional categories indicate modal, local and temporal properties of the definition. They aim at the Range of Escalation, the Type of Region and the specific Phase relevant for the use of the term/the signified (following Saussure).

To estimate the level of discrimination and/or matching of equal terms e.g. from different sources, the following sub-categories (parameters) were identified for the specifics of the definitions to additionally frame the terms. The multiple choice selections for each of the parameters are given in the annex A.5.1 to A.5.7:

- Type of Organisation
- Phase
- Range of Escalation
- Scenario of Application
- Objects
- Effects
- Type of Geographical Area

4.2.5.2 “Intended User Group” - parameters

The following sub-categories are defined to specify the intended user group:

- Type of Organisation
- Type of Geographical Area

The multiple-choice selections for both categories are given in the annex A.5.1 and A.5.7 (the multiple choices are the same as for the Definition categories)

4.2.5.3 Intended Domain of Application parameters

The following sub-categories are defined to specify the intended domain of application:

- Phase
- Range of Escalation
- Scenario of Application

The multiple-choice selections for all categories are given in the annex A.5.2, A5.3 and A5.4 (the multiple choices are the same as for the Definition categories)

4.2.5.4 Source of Term and Definition parameters

The following sub-category is defined to specify the source of term and definition:

- Type of Organisation

The multiple-choice selection is given in the annex A.5.1 (the multiple choice is the same as for the categories for the Type of Organisation)

4.3 Context and Definition Analysis

Evolving from the basis of the categories, indicators, and parameters described in chapter 4.2.5, it becomes obvious that for a feasible comparability but also discrimination of different terms the area of the definition has to be elaborated in detail. Besides this necessity for the later practical applicability in an international, cross-system and cross-organizational context a thorough test of the above-mentioned methodology and the regarding variables was deemed relevant.

To conduct this initial validation test, a selected scope and selected terms were exemplarily elaborated and analysed in respect of their definitions. The Definition parameters (see chapter 4.2.5.1) were applied in addition to the basic information inserted in the excel data collection by the CWA-partners, consisting typically of cited terms and definitions.

The selection was oriented on a variety of aspects as

- a high relevance for the field and the concerned practitioners/intended end users of the CWA-outputs,
- different initial cited definitions of identic terms and linked with this
- different sources of the identic terms

However, the methodology can also be applied in future tackling similar terms and their similarities expressed by their definitions.

Furthermore, the selection aimed at using different layers of complexity to support the validation of different terms relevant and useful for the exchange of information of different stakeholders in multiple types of organizations responsible for and involved in disaster and emergency management.

To this end, several questions concluded into the parametrisation of the specific additive definition section. These questions were crystalized as the following examples show:

- What kinds of organizations are addressed in the definition? (Group: Organization, Region)
- Is there a domain addressed in the definition? (Category, Scenario of application)

In principle, in an examined definition an analysis of a subject, an object and a predicate is conducted following the technique of discourse parsing as explained in chapter 4.2.5.1.

These guiding questions are answered accordingly via the multiple choice selection modes as shown in subchapter 4.2.5.1 and annex A.5.

While the parameters regarding the Type of Organisation as well as the Type of Region are following the analogous points of the other categories, Phase, Range of Escalation and Scenario of Application were transferred from other, generally accepted models in the field of disaster and emergency management. The phases were extracted from the generic disaster management cycle phases [7]. The parameters of the Range of Escalation were deduced from the basic discrimination between large scale disasters – not manageable on local/regional level – and small scale emergencies [8]. The Scenario of Application was extracted from an approach as holistic as possible to cover all possible types of events [9].

The categories referring to the other properties of the discourse parsing as objects and effects were deduced to the most generic level to make them applicable to the broad range of different aspects. In general, the objects were divided into different groups of persons involved in the definition, equipment and infrastructure used or influenced as well as concepts that are relevant and active in the context. Regarding the effects, it has to be underpinned that the intended and immediate effects in the regarding temporal and situational setting have to be evaluated and/or implied. Thus, the parameters can be seen as positive, negative, neutral and nil.

Terms with different definitions in one document (e.g. in regards of different local/temporal/action-related settings) as the following example represents were decided to be combined with the according reference. This will facilitate a clear understanding of the term according to this source without ignoring relevant background information. Thus, terms can be compared and used by the intended stakeholders.

4.4 Quality frame of the Definition

To grant a high reliability while performing comparative analysis of context (typically expressed in a scope) and definitions– specifically in the fields of implicit information like the effect of a defined agent or activity related to a term – the principle of a peer review and validation of the definition analysis was applied. In addition, an indicative quality frame for the definitions per se has to be considered. Special focus is laid on the definitions of the same terms by different documents and/or different organizations in the field that lead to more or less varying outputs.

The result of this combination is, on the one side, reflecting the essence of a term and its meaning for the use in the defined field of emergency and disaster management as well as, on the other side, to listing the objects that a term describes [10].

Further common rules and minimum requirements were identified to add to the quality of the definitions basing on the methodological output of the CWA [11]:

- 1) The definitions of the terms must include the essential attributes specified in the categories and parameters stated in chapter 4.
- 2) The definitions should reach an adequate level of specificity to grant practicability without missing out or including non-applicable agents.
- 3) The definitions must be clear and explain the meaning by the use of other terms that are commonly understood. To clarify them, further definitions according to point 2 may be necessary and sensible.
- 4) The definitions should avoid whenever possible the negation of other terms.
- 5) If possible, the definitions should include input in all given categories to provide all necessary information for the later use of the intended user groups.
- 6) A system of peer review or a four-eye-principle should be applied to support the relevance and validity of the definitions.
- 7) The context of terms and their definitions has to be considered, definitions should not be analyzed in a “stand alone” mode.

By applying these principles and realizing the outputs of the derived methodology as living and growing structure that will be facilitated by the end users, the definitions will contribute to the intended scope outlined in chapter 1.

5 Comparison of selected terms related to crisis and disaster management

5.1 Introduction to chapter and comparison of the scope/purpose of ISO 22300:2018 and UNISDR 2015

It is imperative that the context of terminologies is taken into account before an evaluation of terms and their definitions is executed. One approach to do this is to analyse the scope of terminologies according to the method described in the subchapters 4.2.5.2 (Intended User Group category), 4.2.5.3 (Intended Domain of Application category) and 4.2.5.4 (Source of term and definition). An example is given in Table 1 by analysing the scope of ISO 22300:2018 [12] (chapter 1) and the purpose of UNISDR 2015 [13] (chapter 1, page 2 of UNISDR).

In table 1, the document is specified in line 1, scope or purpose is cited in line 2. Starting from line 3 a classification is made according to the categories intended to specify the Intended User Group (line 3 and 4), the Intended Domain of Application (line 5 to 7) and finally the Source of the Term and Definition. In most cases the words of the scope / purpose triggering the classification are given in parenthesis, e.g. Intergovernmental Expert Group in case of the Intended User Group category for the UNISDR terminology.

It has to be pointed out that the analyses are limited to the scope/purpose shown in the table. It can happen that an organisation may place rationale outside the document including the terminology. Such rationale can be used in addition, but needs to be cited and referenced.

Table 1 — Exemplary analysis of the scopes of ISO 22300:2018 and UNISDR 2015

Document	ISO 22300:2018	UNISDR 2015
Scope/Purpose	This document defines terms used in security and resilience standards	The purpose of this paper is to inform the open-ended intergovernmental expert working group on indicators and terminology on past and recent work on disaster risk reduction terminology as a contribution to the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. The paper outlines the history of disaster risk reduction related terminology since 2001 and recent work facilitated by the United Nations Office for Disaster Risk Reduction (UNISDR) based on consultations with experts, the UNISDR Scientific and Technical Advisory Group, practitioners and partners to reach consensus on definitions. The result is proposed updated terminology on disaster risk reduction (August 2015) including emerging terms used in the Sendai Framework - in particular those terms used in the scope and global targets.
Type of organisation (intended user group parameter)	Not specified	International (Intergovernmental Expert Group, experts, UNISDR)
Type of geographical area (intended user group parameter)	<i>Not specified</i>	<i>International</i>
Phase (intended domain of application parameter)	<i>Not specified</i>	<i>Preparation ("inform... expert working group")</i>
Range of escalation (intended domain of application parameter)	Not specified	Disaster ("disaster risk reduction")
Scenario of application (intended domain of application parameter)	<i>Security, Infra (resilience)</i>	<i>Not specified</i>
Type of organisation (source of Term and definitions parameter)	Not specified	International ("experts, UNISDR Advisory Group, practitioners,..")

The next chapters include comparisons of definitions, because an analysis of the context of the UNISDR 2015 and the ISO 22300:2018 standard is already shown above, it is not included in the following sections. This does not mean, that such an analysis is not recommended.

5.2 “Emergency Management” – Definition comparison of ISO 22300:2018 and UNISDR 2015

In the following Table 2, a comparison of the different definitions of emergency management according to the sources of the ISO 22300:2018 (definition 3.78) and the UNISDR 2015 (page 17) is elaborated. Relevant differences respectively incomplete overlaps are marked in italic to underpin the potential of misunderstandings and thus the importance of a common understanding and language supported by the CWA-outputs.

In table 2, the document is specified in line 1, the term in line 2. Line 3 shows the original definition. Starting from line 4, a classification is made according to the categories intended to specify the Definition (see chapter 4.2.5.1). In most cases, the words found in the definition triggering the classification are given in parentheses, e.g. “management of resources and responsibilities” in case of the Phase-classification for the UNISDR definition. This approach is followed in the subsequent sections of chapter 5.

Table 2 — Exemplary comparison of the definitions for the term “Emergency management”

Document	ISO 22300:2018	UNISDR 2015
Term	Emergency Management	Emergency Management
Definition	Overall approach preventing and managing emergencies that might occur	The organization and management of resources and responsibilities for addressing all aspects of emergencies and effectively respond to hazardous event or disaster
Type of organisation	Not specified	Not specified
Phase	<i>Prevention & response (managing)</i>	<i>Prevention and preparation (management of resources and responsibilities)</i>
Range of escalation	<i>Emergency</i>	<i>Emergency and disaster</i>
Scenario of application	Not specified	Not specified
Objects	<i>Concept (approach)</i>	<i>All categories (resources and responsibilities)</i>
Effect	Positive	Positive
Type of geographical area	Not specified	Not specified

Calculation of the Definition Indicator for the definitions of the term “Emergency Management”

Based on the methodology defined in chapter 4, the similarity between the definitions from the term “emergency management” from ISO 22300:2018 and UNISDR 2015 is calculated. The following table gives an overview on the different parameters and the allocated values in order to illustrate how the indicator is calculated. A definition indicator of 0.875 is obtained. Due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.5 (the last two parameters are not shown in the table).

Table 3 — Overview on all parameters of the definition indicator for the comparison of the term “Emergency management”

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0.5	0.25	1	0.25	0	0	0.5	0.25	1	0.25	0	0	0,625

The text below illustrates the method to allocate values to the parameters of the Definition Indicator in order to demonstrate the application of the Indicator.

- A type of organisation (subject) is “not specified” in both definitions. Accordingly, the correction factor c_1 has to be set to 0.
- Two phases (of the disaster management cycle) are specified in both terminologies, the common option from the multiple choice selection is “prevention”. This implies that rule II (two selected choices of a parameter for one or both terminologies) has to be applied, because one of the two selected options are the same. Therefore the value 0.5 is assigned to Df_{pha} .
- Ranges of escalations are specified in both definitions. In one case two choices (emergency, disaster), in the second case one choice (emergency) is valid. Therefore rule I has to be applied, the value 1 is assigned to Df_{esc} .
- A scenario of application is “not specified” in both definitions. Accordingly, the correction factor c_4 has to be set to 0.
- Objects are specified in both definitions. In one case all choices (all categories), in the second case one choice (concept) is valid. Therefore rule I has to be applied, the value 1 is assigned to Df_{obj} .
- An effect is specified in both definitions (positive). Therefore rule I has to be applied, the value 1 is assigned to Df_{eff} .
- A geographical area is “not specified” in both definitions. Accordingly, the correction factor c_7 has to be set to 0.
- Three out of seven correction factors have to be set to 0 due to lack of specification of the respective parameters. The sum of the remaining correction parameters must be 1. An equal weight for the four parameters is selected. This leads to a value of 0.25 for c_2 , c_3 , c_5 and c_6 .
- Applying the formula from chapter A.1.1.1.2 for the $DefInd$ leads to a value of 0.875
- 4 out of 7 sub parameters are specified leading to a Specification Degree of 0.57 according to table 4
- The adjusted definition indicator $ADefInd$ is therefore 0.5 (not shown in table 2)

5.3 “Hazard” – Definition comparison of ISO 22300:2018, SDSIE 2017 and UNISDR 2015

Another example with obvious differences on the level of concreteness is the description and definition of the term “hazard” defined in different terminologies (ISO 22300:2018, definition 3.99; UNISDR 2015, page 19; SDSIE 2017 [14], page 5) that can be seen below (see following table).

Table 4 — Exemplary comparison of the definitions for the term “Hazard”

Document	UNISDR 2015	SDSIE 2017	ISO 22300:2018
Term	Hazard	Hazard	Hazard
Definition	A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation	Source of danger of natural, endogenous or pandemic nature and not provoked by any intentional human action	Source of potential harm
Type of organisation	Not specified	Not specified	Not specified
Phase	Preparedness (potentially damaging event)	Preparedness (source of danger)	Preparedness (potential harm)
Range of escalation	Not specified	Not specified	Not specified
Scenario of application	<i>Not specified</i>	<i>Geo, Met, Fire, health (not provoked by human action)</i>	<i>Not specified</i>
Objects	<i>Groups of persons (loss of life), infrastructure (property damage)</i>	<i>Not specified</i>	<i>Not specified</i>
Effect	Negative	Negative	Negative
Type of geographical area	Not specified	Not specified	Not specified

Calculation of the Definition Indicator for the definitions of the term “Hazard”

Based on the methodology defined in A.1.1.1.2 the similarity between the definitions from the term “hazard” from ISO 22300:2018, SDSIE 2017 and UNISDR 2015 is calculated. The following table gives an overview on the different parameters and the allocated values in order to illustrate how the Indicator is calculated. A definition indicator of 1 is obtained, due to a Specification Degree of 0.14 the Adjusted Definition Indicator becomes 0.14 (the last two parameters are not shown in the table).

Table 5 — Overview on all parameters of the definition indicator for the comparison of the term “Hazard”

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0,5	0	0	0	0	0	0	1	0,5	0	0	1

The parameters of the Indicator to compare the definitions from ISO 22300:2018 with UNISDR 2015 as well as SDSIE 2017 and UNISDR 2015 are not shown because all parameters are the same as for the

comparisons between ISO 22300:2018 and SDSIE 2017, leading consequently to the same indicator values.

5.4 “Ambulance” vs “Emergency Services” – Definition comparison of CWA 15931-2:2009 (TSO 2009), the ICRC “Ambulance and pre-hospital services in risk situations 2013” and UNISDR 2015

By comparing the definitions of the term “Ambulance” in the TSO 2009 (CWA 15931-2 [15], definition 3.4.6) and a document of the International Committee of the Red Cross and Red Crescent (ICRC “Ambulance and pre-hospital services in risk situations 2013” [16], page 12), the differences and thus the added value of the methodology and application of the CWA are pointed out again. Taking into consideration the partially overlapping term of emergency services as stated in the UNISDR 2015, page 16, the practical value for the end users by a clarified definition for the terms is elaborated in the following table.

Table 6 — Exemplary comparison of the definitions of the terms “Ambulance” and “Emergency services”

Document	TSO 2009	Ambulance and pre-hospital services in risk situations 2013	UNISDR 2015
Term	Ambulance	Ambulance	Emergency services
Definition	A vehicle for conveying sick, wounded, incapacitated, or injured persons.	An ambulance, for the purposes of this publication, is a locally available means of transport that carries, as safely and comfortably as possible, wounded and acutely sick persons to a place where they can receive the emergency medical and/or surgical care they need; it is also where the condition of these patients is stabilized. Transportation may be either from the site of an emergency to a health-care facility or between two health-care facilities.	The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations. Comment: Emergency services include agencies such as civil protection authorities, police, fire, ambulance, paramedic and emergency medicine services, Red Cross and Red Crescent societies, and specialized emergency units of electricity, transportation, communications and other related service organizations. [note from the authors: the comment is part of the definition]
Type of organisation	Not specified	Governmental, NGOs, First responders	Governmental, NGOs, First responders (civil protection authorities, police, fire, ambulance...)
Phase	<i>Response and recovery</i>	<i>Response, recovery</i>	<i>Recovery</i>
Range of escalation	Emergency and disaster	Emergency and disaster	Emergency and disaster
Scenario of application	Not specified	Not specified	Not specified
Objects	<i>Equipment(vehicle)</i>	<i>Equipment (means of transport)</i>	<i>Infrastructure (...specialized emergency units of electricity, transportation, communications ..)</i>
Effect	Positive	Positive	Positive
Type of geographical area	<i>Not specified</i>	<i>Local (locally available means of transport)</i>	<i>Not specified</i>

Based on the methodology defined in chapter 4 the similarity between the definitions from the term “ambulance” from TSO 2009 and from “Ambulance and pre-hospital services in risk situations 2013” is calculated. The following table gives an overview on the different parameters and the allocated values in order to illustrate how the Indicator is calculated. A definition indicator of 1 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.57 (the last two parameters are not shown in the table).

Table 7 — Overview on all parameters of the definition indicator for the comparison of the term “Ambulance”

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.25	1	0.25	0	0	1	0.25	1	0.25	0	0	1

Table 8 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “ambulance” from TSO 2009 and “emergency service” from UNISDR 2015. A definition indicator of 0.8 is obtained, due to a Specification Degree of 0.71 the Adjusted Definition Indicator becomes 0.57 (the last two parameters are not shown in the table).

Table 8 — Overview on all parameters of the definition indicator for the comparison of the term “Ambulance” (TSO 2009) and “Emergency services” (UNISDR 2015)

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
1	0.2	0.5	0.2	1	0.2	0	0	0.5	0.2	1	0.2	0	0	0.8

Table 9 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “ambulance” from “Ambulance and pre-hospital services in risk situations 2013” and “emergency service” from UNISDR 2015. A definition indicator of 0.625 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.36 (the last two parameters are not shown in the table).

Table 9 — Overview on all parameters of the definition indicator for the comparison of the term “Ambulance” (Ambulance and pre-hospital services in risk situations 2013) and “Emergency services” (UNISDR 2015)

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0.5	0.25	1	0.25	0	0	0	0.25	1	0.25	0	0	0.625

5.5 “Resilience” – Definition comparison of ISO 22300:2018, the ICRC “Ambulance and pre-hospital services in risk situations 2013” and UNISDR 2015

The comparison of the definitions of a generic term like “Resilience” given in different documents (ISO 22300:2018, definition 3.192; ICRC 2013, page 44, core principles, line 6; UNISDR 2015, page 26) shows again core overlaps but slight yet relevant differences regarding the temporal aspects given in the category of the phase that is addressed (see the following table).

Table 10 — Exemplary comparison of the definitions of the term “Resilience”

Document	ISO 22300:2018	ICRC 2013	UNISDR 2015
Term	Resilience	Resilience	Resilience
Definition	ability to absorb and adapt in a changing environment	is the ability of an individual or community to bounce back from an adverse event.	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. Comment: Resilience means the ability to “resile from” or “spring back from” a shock. The resilience of a community in respect to any hazard or event is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need. (Note from the authors: the comment is part of the definition of UNISDR)
Type of organisation	Not specified	General Public (individual or community)	General Public (community or society)
Phase	<i>not specified</i>	<i>Response and recovery (bounce back from adverse event)</i>	<i>Preparation, response and recovery (resist, absorb, accommodate.. spring back from a shock, necessary resources...capable of organizing)</i>
Range of escalation	not specified	Emergency and disaster	Emergency and disaster
Scenario of application	Not specified	Not specified	Not specified
Objects	Concept (ability)	Concept (ability)	Concept (ability)
Effect	Positive	Positive	Positive
Type of geographical area	Not specified	Not specified	Not specified

Table 11 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “resilience” from ISO 22300:2012 from ICRC 2013. A definition indicator of 1.0 is obtained, due to a Specification Degree of 0.29 the Adjusted Definition Indicator becomes 0.29 (the last two parameters are not shown in the table).

Table 11 — Overview on all parameters of the definition indicator for the definitions for “Resilience” from ISO 22300:2018 and ICRC 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0	0	0	0	0	1	0.5	1	0.5	0	0	1.0

The parameters of the Indicator to compare the definitions from ISO22300:2018 and UNISDR 2015 are not shown because all parameters are the same as for the comparisons between ISO 22300:2018 and ICRC 2013, leading consequently to the same indicator values.

Table 12 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “resilience” from ICRC 2013 and from UNISDR 2015. A definition indicator of 0.95 is obtained, due to a Specification Degree of 0.71 the Adjusted Definition Indicator becomes 0.67 (the last two parameters are not shown in the table).

Table 12 — Overview on all parameters of the definition indicator for the definitions for “Resilience” from ICRC 2013 and UNISDR 2015

DfOrg	w1	DfPha	w2	Dfesc	w3	Dfsce	w4	Dfobj	w5	Dfeff	w6	Dfreg	w7	DefInd
1	0,2	0.75	0.2	1	0.2	0	0	1	0.2	1	0.2	0	0	0.95

5.6 “Best practice” – Definition comparison of ISO 14621-1:2003 and Oxford English Dictionary 2018

In the following Table 13 a comparison of the different definitions of “best practice” according to the sources of the ISO 14621-1:2003 [17] (definition 2.1.1) and the Oxford English Dictionary 2018 [18] is elaborated.

Table 13 — Comparison of the definitions for the term “Best practice”

Document	ISO 14621-1:2003	Oxford English Dictionary 2018
Term	Best practice	Best practice
Definition	documented process or product developed by the user community, consisting of suppliers and customers, teaming for the purpose of establishing industry guidelines	Commercial or professional procedures that are accepted or prescribed as being correct or most effective.
Type of organisation	General public, Industry (suppliers and customers) Practitioners (User Community)	Not specified
Phase	Prevention, preparedness (guidelines, documented process)	Not specified
Range of escalation	Not specified	Not specified
Scenario of application	Not specified	Not specified
Objects	Groups of persons (teaming), Concept (process)	Concept (procedures)
Effect	Positive	Positive
Type of geographical area	Not specified	Not specified

Table 14 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “best practice” from ISO 14621-1:2003 from the Oxford Dictionary 2018. A definition indicator of 0.75 is obtained, due to a Specification Degree of 0.29 the Adjusted Definition Indicator becomes 0.22 (the last two parameters are not shown in the table).

Table 14 — Overview on all parameters of the definition indicator for the definitions for “Best practice” from ISO 14621-1:2003 and Oxford English Dictionary 2018

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0	0	0	0	0	0.5	0.5	1	0.5	0	0	0.75

5.7 “Psycho-social support” – Definition comparison of UK civil protection lexicon v2.1.1 2013, the IASC Guidelines from 2007 and the International Federation of the Red Cross 2009

In Table 15 a comparison of the different definitions of “psycho-social support” according to the sources of the UK civil protection lexicon 2013 [19] (Version 2.1.1., line 573), the Inter-Agency Standing Committee (IASC) [20] (2007), and the International Federation of Red Cross and Red Crescent Societies (IFRC) [21] (2009) is given.

Table 15 — Comparison of the definitions for the term “Psycho-social support”

Document	UK civil protection lexicon 2013	IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings 2007 [6]	Community-based psychosocial support Participant's book. IFRC 2009 [7]
Term	Psycho-social support	Mental health and psychosocial support	Psycho-social support
Definition	Activity aimed at strengthening the coping strategies of individuals or communities involved in or affected by an incident	The composite term mental health and psychosocial support describes any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorder.	Psycho-social support refers to the actions that address both the psychological and social needs of individuals, families and communities.
Type of organisation	Not specified	Multiple	Multiple
Phase	Recovery (coping strategies)	Recovery (resilience)	Recovery (resilience)
Range of escalation	Emergency, disaster (incident)	Emergency, disaster	Emergency, disaster
Scenario of application	Not specified	Not specified	Not specified
Objects	Groups of persons (individuals or communities)	Groups of persons (individuals, families, communities)	Groups of persons (individuals, families, communities)
Effect	Positive	Positive	Positive
Type of geographical area	Not specified	Global	Global

Table 16 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “psycho-social support” from UK Civil Protection Lexicon 2013 and from IASC 2007. A definition indicator of 1 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.57 (the last two parameters are not shown in the table).

Table 16 — Overview on all parameters of the definition indicator for the definitions for “Psycho-social support” from UK civil protection lexicon 2013 and IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings 2007

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0,25	1	0,25	0	0	1	0,25	1	0,25	0	0	1

Table 17 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “psycho social support” from UK Civil Protection Lexicon 2013 and IFRC 2009. A definition indicator of 1 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.57 (the last two parameters are not shown in the table).

Table 17 — Overview on all parameters of the definition indicator for the definitions for “Psycho-social support” from UK civil protection lexicon 2013 and Community-based psychosocial support Participant’s book. IFRC 2009

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsc	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0,25	1	0,25	0	0	1	0,25	1	0,25	0	0	1

Table 18 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “psycho social support” from IASC 2007 and IFRC 2009. A definition indicator of 1 is obtained, due to a Specification Degree of 0.86 the Adjusted Definition Indicator becomes 0.86 (the last two parameters are not shown in the table).

Table 18 — Overview on all parameters of the definition indicator for the definitions for “Psycho-social support” from IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings 2007 and Community-based psychosocial support Participant’s book. IFRC 2009

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsc	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
1	0,167	1	0,167	1	0,167	0	0	1	0,167	1	0,167	1	1,167	1

5.8 “Assessment” – Definition comparison of ISO/IEC 23988:2007 and Oxford Dictionary 2018

In Table 19 a comparison of the different definitions of “assessment” according to the sources of ISO/IEC 23988:2007 [22] (definition 3.1) and Oxford Dictionary 2018 is given.

Table 19 — Comparison of the definitions for the term “Assessment”

Document	ISO/IEC 23988:2007	Oxford Dictionary 2018
Term	Assessment	Assessment
Definition	test, examination or similar, designed to assess a candidate’s knowledge, understanding or skills in a defined area	The action of assessing someone or something
Type of organisation	Not specified	Not specified
Phase	Preparedness, prevention (test, assess)	Not specified
Range of escalation	Not specified	Not specified
Scenario of application	Not specified	Not specified
Objects	Groups of persons (candidate), Concept (assess)	Concept (action), Groups of persons (someone), Infrastructure (something)
Effect	Neutral	Neutral
Type of geographical area	Not specified	Not specified

Table 20 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “assessment” from ISO/IEC 23988:2007 from Oxford Dictionary 2018. A

definition indicator of 0,875 is obtained, due to a Specification Degree of 0.29 the Adjusted Definition Indicator becomes 0.25 (the last two parameters are not shown in the table).

Table 20 — Overview on all parameters of the definition indicator for the definitions for “Assessment” from ISO/IEC 23988:2007 and Oxford Dictionary 2018

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0	0	0	0	0	0.75	0.5	1	0.5	0	0	0.875

5.9 “Gap” – Definition comparison of ISO 11863:2011 and Oxford Dictionary 2018

In Table 21 a comparison of the different definitions of “gap” according to the sources of ISO 11863:2011 [23] (definition 3.16) and Oxford Dictionary 2018 is given.

Table 21 — Comparison of the definitions for the term “Gap”

Document	ISO 11863:2011	Oxford Dictionary 2018
Term	Gap	Gap
Definition	difference between the level of functionality (or other attribute) which is required and the level of serviceability (capability) which is or will be provided	A space or interval; a break in continuity. A difference, especially an undesirable one, between two views or situations.
Type of organisation	Not specified	Not specified
Phase	Not specified	Not specified
Range of escalation	Not specified	Not specified
Scenario of application	Not specified	Not specified
Objects	Concept (level of functionality, capability)	Concept (views, situations)
Effect	Negative	Negative
Type of geographical area	Not specified	Not specified

Table 22 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “gap” from ISO 11863:2011 from Oxford Dictionary 2018. A definition indicator of 1.0 is obtained, due to a Specification Degree of 0.29 the Adjusted Definition Indicator becomes 0.29 (the last two parameters are not shown in the table).

Table 22 — Overview on all parameters of the definition indicator for the definitions for “Gap” from ISO 11863:2011 and Oxford Dictionary 2018

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0	0	0	0	0	1	1	1	1	0	0	1.0

5.10 “Trial” – Definition comparison of ISO 22300:2018 and Oxford Dictionary 2018

In Table 23 a comparison of the definitions of “testing” according to the source of ISO 22300:2018 (3.258) and “trial” according to Oxford Dictionary 2018 is given. The terms “trial” and “testing” are considered to be closely related to each other, which is also explicitly stated in a note of the ISO document.

Table 23 — Comparison of the definitions for the term “Trial” and “Testing”

Document	ISO 22300: 2018	Oxford Dictionary: 2018
Term	Testing ("trial")	Trial
Definition	procedure for evaluation; a means of determining the presence, quality or veracity of something Note 1 to entry: Testing may be referred to as a “trial”. Note 2 to entry: Testing is often applied to supporting plans.	A test of the performance, qualities, or suitability of someone or something.
Type of organisation	Not specified	Not specified
Phase	Prevention, Preparedness	Not specified
Range of escalation	Not specified	Not specified
Scenario of application	Not specified	Not specified
Objects	Concept (procedure)	Concept (test)
Effect	Positive	Positive
Type of geographical area	Not specified	Not specified

Table 24 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “testing” from ISO 22300:2018 and “trial” from Oxford Dictionary 2018. A definition indicator of 1.0 is obtained, due to a Specification Degree of 0.29 the Adjusted Definition Indicator becomes 0.29 (the last two parameters are not shown in the table).

Table 24 — Overview on all parameters of the definition indicator for the definitions for “Testing” from ISO 22300:2018 and “Trial” from Oxford Dictionary 2018

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0	0	0	0	0	1	0.5	1	0.5	0	0	1.0

5.11 “Response” Definition comparison of ISO 22300:2018, UNISDR 2015 and UK civil protection lexicon 2013

In Table 25 a comparison of the definitions of “response” according to the source of ISO 22300:2018 (definition 3.115) UNISDR 2015 (page 27) and the UK Civil Protection Lexicon 2013 (line 629) is given.

Table 25 — Comparison of the definitions for the term “Response”

Document	ISO 22300:2018	UNISDR 2015 ⁶	UK Civil Protection Lexicon 2013
Term	Incident Response	Response	Response
Definition	actions taken in order to stop the causes of an imminent hazard and/or mitigate the consequences of potentially destabilizing events or disruptions, and to recover to a normal situation Note 1 to entry: Incident response is part of the emergency management process.	Actions taken during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.	Decisions and actions taken in accordance with the strategic, tactical and operational objectives defined by emergency responders. At a high level these will be to protect life, contain and mitigate the impacts of the emergency and create the conditions for a return to normality.
Type of organisation	Not specified	Not specified	First responders, NGOs, Governmental (emergency responders)
Phase	<i>Response, Recovery (consequences .. of events)</i>	<i>Response (immediately after a disaster)</i>	<i>Response, Recovery (return to normality)</i>
Range of escalation	<i>Emergency, disaster (incident)</i>	<i>Disaster</i>	<i>Emergency</i>
Scenario of application	Not specified	Not specified	Not specified
Objects	Groups of persons (actions)	Groups of persons (actions)	Groups of persons (decisions and actions)
Effect	Positive	Positive	Positive
Type of geographical area	Not specified	Not specified	Not specified

Table 26 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “response” from ISO 22300:2018 and from UK Civil Protection Lexicon 2013. A definition indicator of 0.625 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.36 (the last two parameters are not shown in the table).

⁶ Alternative definition (based on UNISDR 2009):

The provision of emergency services and public assistance during or immediate after a disaster in order to save lives, reduce impacts, ensure public safety and meet the basic subsistence needs of the people affected

Comment: Disaster response is predominantly focused on immediate and short-term needs and is sometimes called disaster relief. Effective, efficient and timely response relies on risk-informed preparedness measures, including the development of the response capacities of individuals, communities, organizations, countries and the international community.

The institutional elements of response often include provision of emergency services and public assistance by public and private sectors and community sectors, as well as community and volunteer participation. The division between this response stage and the subsequent recovery stage is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage.

Table 26 — Overview on all parameters of the definition indicator for the definitions for “Response” from ISO 22300:2018 and UK Civil Protection Lexicon 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0.5	0.25	0	0.25	0	0	1	0.25	1	0.25	0	0	0,625

Table 27 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “incident response” from ISO 22300:2018 and “response” from UNISDR 2015. A definition indicator of 0.75 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.43 (the last two parameters are not shown in the table).

Table 27 — Overview on all parameters of the definition indicator for the definitions for “Incident Response” from ISO 22300:2018 and “Response” from UNISDR 2015

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	w7	DefInd
0	0	0.5	0.25	0.5	0.25	0	0	1	0.25	1	0.25	0	0	0.75

Table 28 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “incident response” from ISO 22300:2018 and “response” from UK Civil Protection Lexicon 2013. A definition indicator of 0.875 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.5 (the last two parameters are not shown in the table).

Table 28 — Overview on all parameters of the definition indicator for the definitions for “Incident Response” from ISO 22300:2018 and “Response” from UK Civil Protection Lexicon 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.25	0.5	0.25	0	0	1	0.25	1	0.25	0	0	0.875

5.12 “Recovery” – Definition comparison of ISO 22300 2018, UNISDR 2015, UK civil protection lexicon 2013 and CWA 15931-2 2009

In Table 29 a comparison of the definitions of “recovery” according to the source of ISO 22300:2018 (definition 3.187) UNISDR 2015 (page 25f), the UK Civil Protection Lexicon 2013 (line 602) and the CWA 15-391-2:2009 is given.

Table 29 — Comparison of the definitions for the term “Recovery”

Document	ISO 22300:2018	UNISDR 2015	UK civil protection lexicon 2013	CWA 15931-2:2009
Term	Recovery	Recovery	Recovery	Recovery
Definition	restoration and improvement, where appropriate, of operations, facilities, livelihoods or living conditions of affected organizations, including efforts to reduce risk factors	Decisions and actions aimed at restoring or improving livelihoods, health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development, including build back better to avoid or reduce future disaster risk.	The process of rebuilding, restoring and rehabilitating the community following an emergency	The capability to contact, protect and extract personnel, small groups or units, or materiel.
Type of organisation	Not specified	Not specified	Not specified	Not specified
Phase	<i>Recovery (restoration)</i>	<i>Recovery (restoring, improving)</i>	<i>Recovery (restoring)</i>	<i>Prevention (capability to protect)</i>
Range of escalation	<i>Not specified</i>	<i>Disaster</i>	<i>Emergency</i>	<i>Not specified</i>
Scenario of application	Not specified	Not specified	Not specified	Not specified
Objects	<i>Infrastructure (facilities), Groups of persons (living conditions)</i>	<i>Infrastructure (assets), Groups of persons (activities), Concept (systems)</i>	<i>Infrastructure (rebuilding) Groups of persons (rehabilitating) Concept (process)</i>	<i>Groups of persons (units), Infrastructure (materiel)</i>
Effect	Positive	Positive	Positive	Positive
Type of geographical area	Not specified	Not specified	Not specified	Not specified

Table 30 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “recovery” from ISO 22300:2018 and from UNISDR 2015. A definition indicator of 0.908 is obtained, due to a Specification Degree of 0.43 the Adjusted Definition Indicator becomes 0.39 (the last two parameters are not shown in the table).

Table 30 — Overview on all parameters of the definition indicator for the definitions for “Recovery” from ISO 22300:2018 and UNISDR 2015

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.33	0	0	0	0	0.75	0.33	1	0.33	0	0	0.908

The parameters of the Indicator to compare the definitions from ISO 22300:2018 with UK Civil protection Lexicon 2013 are not shown because all parameters are the same as for the comparisons between ISO 22300:2018 and UNISDR 2015, leading consequently to the same indicator values.

Table 31 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “recovery” from ISO 22300:2018 and from CWA 15931-2:2009. A definition indicator of 0.66 is obtained, due to a Specification Degree of 0.43 the Adjusted Definition Indicator becomes 0.28 (the last two parameters are not shown in the table).

Table 31 — Overview on all parameters of the definition indicator for the definitions for “Recovery” from ISO 22300:2018 and CWA 15931-2: 2009

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0.33	0	0	0	0	1	0.33	1	0.33	0	0	0.66

Table 32 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “recovery” from UNISDR 2015 and from UK Civil Protection Lexicon 2013. A definition indicator of 0.75 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.43 (the last two parameters are not shown in the table).

Table 32 — Overview on all parameters of the definition indicator for the definitions for “Recovery” from UNISDR 2015 and UK Civil Protection Lexicon 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.25	0	0.25	0	0	1	0.25	1	0.25	0	0	0.75

Table 33 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “recovery” from UNISDR 2015 and from CWA 15931-2: 2009. A definition indicator of 0.578 is obtained, due to a Specification Degree of 0.43 the Adjusted Definition Indicator becomes 0.25 (the last two parameters are not shown in the table).

Table 33 — Overview on all parameters of the definition indicator for the definitions for “Recovery” from UNISDR 2015 and CWA 15931-2: 2009

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0	0.33	0	0	0	0	0.75	0.33	1	0.33	0	0	0.578

The parameters of the Indicator to compare the definitions from UK Civil Protection Lexicon 2013 with CWA 15931-2: 2009 are not shown because all parameters are the same as for the comparisons between UNISDR 2015 and CWA 15931-2: 2009, leading consequently to the same indicator values.

5.13 “Prevention” – Definition comparison of ISO 22300:2018 and UNISDR 2015

In Table 34 a comparison of the definitions of “prevention” according to the source of ISO 22300:2018 (definition 3.173) and UNISDR 2015 (page 24f) is given.

Table 34 — Comparison of the definitions for the term “Prevention”

Document	ISO 22300:2018	UNISDR 2015
Term	Prevention	Prevention
Definition	measures that enable an organization to avoid, preclude or limit the impact of an undesirable event or potential disruption	<p>Activities and measures to avoid existing and new disaster risks.</p> <p>Comment: Prevention (i.e. disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts of hazards, vulnerability conditions and exposure through action normally taken in advance of a hazardous event. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake.</p> <p>Prevention measures can also be taken in or after a hazardous event or disaster to prevent secondary hazards or their consequences such as measures to prevent contamination of water supplies or measures to eliminate natural dams resulting of earthquake induced landslides and/or rock falls. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in casual use.</p> <p>[note from the authors: the comment is part of the definition]</p>
Type of organisation	Not specified	Not specified
Phase	Prevention	Prevention
Range of escalation	<i>Emergency and Disaster (potential disruption)</i>	<i>Disaster</i>
Scenario of application	Not specified	Not specified
<i>Objects</i>	<i>Concept (measures)</i>	<i>Concept (measures), Groups of persons (activities)</i>
Effect	Positive	Positive
Type of geographical area	Not specified	Not specified

Table 35 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “prevention” from ISO 22300:2018 and from UNISDR 2015. A definition indicator of 0.75 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.43 (the last two parameters are not shown in the table).

Table 35 — Overview on all parameters of the definition indicator for the definitions for “Prevention” from ISO 22300:2018 and UNISDR 2015

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.25	0.5	0.25	0	0	0.5	0.25	1	0.25	0	0	0.75

5.14 “Disaster” – Definition comparison of ISO 22300:2018, UNISDR 2015 and UK Civil Protection Lexicon 2013

In Table 36 a comparison of the definitions of “disaster” according to the source of ISO 22300:2018 (definition 3.69) UNISDR 2015 (page 11f), the UK Civil Protection Lexicon 2013 (line 207) is given.

Table 36 — Comparison of the definitions for the term “Disaster”

Document	ISO 22300: 2018	UNISDR 2015	UK civil protection lexicon 2013
Term	Disaster	Disaster	Disaster
Definition	situation where widespread human, material, economic or environmental losses have occurred which exceeded the ability of the affected organization, community or society to respond and recover using its own resources	A serious disruption of the functioning of a community or a society due to hazardous events interacting with conditions of vulnerability and exposure, leading to widespread human, material, economic and environmental losses and impacts.	Emergency (usually but not exclusively of natural causes) causing, or threatening to cause, widespread and serious disruption to community life through death, injury, and/or damage to property and/or the environment
Type of organisation	Not Specified	Not specified	Not specified
Phase	<i>Response and Recovery (losses have occurred)</i>	<i>Response (disruption, impacts)</i>	<i>Response (disruption)</i>
Range of escalation	<i>Disaster (exceeded the ability)</i>	<i>Disaster (serious disruption, widespread)</i>	<i>Emergency, Disaster (widespread)</i>
Scenario of application	Not Specified	Not specified	Not specified
Objects	<i>Groups of persons (community)</i> <i>Concept (ability)</i>	<i>Groups of persons (community)</i> <i>Concept (functioning)</i>	<i>Groups of persons (community),</i> <i>Infrastructure, Equipment (property)</i>
Effect	Negative	Negative	Negative
Type of geographical area	Not specified	Not specified	Not specified

Comments UNISDR 2015:

Disasters are a type of hazardous event in which there is significant disruption of the function of all or part of society. The impact of the disaster is often widespread and could last for a long period of time. The impact may test or exceed the capacity of a community or society to cope using its own resources, and therefore may require assistance from external sources, which could include neighbouring jurisdictions, or national or international levels.

Disaster results from the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Consequences may include injuries, disease and other negative effects on human physical, mental and social well-being, together with damage to property, loss of services and environmental degradation.

For the purpose of the scope of the Sendai framework (paragraph 15) the following terms are also considered:

- Small-scale disaster: A type of disaster only affecting local communities which require assistance beyond the affected community.
- Large-scale disaster: A type of disaster affecting a society, which requires national or international assistance.
- Frequent and infrequent disasters: depend on the probability of occurrence and the return period of a given hazard and its impacts. The impact of frequent disasters could be cumulative, or become chronic for a community or a society.
- A slow-onset disaster is defined as one that emerges gradually over time. Slow-onset disasters could be associated with e.g. drought, desertification, sea level rise, epidemic disease.
- A sudden-onset disaster is one triggered by a hazardous event that emerges quickly or unexpectedly. Sudden-onset disasters could be associated with e.g. earthquake, volcanic eruption, flash flood, chemical explosion, critical infrastructure failure, transport accident.

Table 37 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “disaster” from ISO 22300:2018 and from UNISDR 2015. A definition indicator of 0.875 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.5 (the last two parameters are not shown in the table).

Table 37 — Overview on all parameters of the definition indicator for the definitions for “Disaster” from ISO 22300:2018 and UNISDR 2015

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0.5	0.25	1	0.25	0	0	1	0.25	1	0.25	0	0	0.875

Table 38 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “disaster” from ISO 22300:2018 and from UK Civil Protection Lexicon 2013. A definition indicator of 0.625 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.36 (the last two parameters are not shown in the table).

Table 38 — Overview on all parameters of the definition indicator for the definitions for “Disaster” from ISO 22300:2018 and UK Civil Protection Lexicon 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	0.5	0.25	0.5	0.25	0	0	0.5	0.25	1	0.25	0	0	0.625

Table 39 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “disaster” from UNISDR 2015 and from UK Civil Protection Lexicon 2013. A definition indicator of 0.75 is obtained, due to a Specification Degree of 0.57 the Adjusted Definition Indicator becomes 0.43 (the last two parameters are not shown in the table).

Table 39 — Overview on all parameters of the definition indicator for the definitions for “Disaster” from UNISDR 2015 and UK Civil Protection Lexicon 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.25	0.5	0.25	0	0	0.5	0.25	1	0.25	0	0	0.75

5.15 “Crisis” – Definition comparison of ISO 22300:2018, UK Civil Protection Lexicon 2013 and SDSIE 2017

In Table 40 a comparison of the definitions of “crisis” according to the source of ISO 22300:2018 (definition 3.59) SDSIE 2017 (page 9), the UK Civil protection lexicon 2013 (lines 163-165) is given.

Table 40 — Comparison of the definitions for the term “Crisis”

Document	ISO 22300: 2018	UK civil protection lexicon 2013	SDSIE 2017
Term	Crisis	Crisis	Crisis
Definition	unstable condition involving an impending abrupt or significant change that requires urgent attention and action to protect life, assets, property or the environment	<p>1. General definition: an inherently abnormal, unstable and complex situation that represents a threat to the strategic objectives, reputation or existence of an organisation.</p> <p>2. Specific definition - emergency of magnitude and/or severity requiring the activation of central government response</p> <p>3. Personal - acute emotional reaction to a powerful stimulus or demand</p>	<p>Situation where an organization cannot assure any more the accomplishment of its goals at stake by its usual management processes, due to the magnitude of events generated by one or several sources of danger</p> <p>Note1: resilient organizations have implemented management processes that are able to effectively handle some level of degradation of the assets supporting its goals at stake. A crisis occurs when the events have caused a level of degradation going beyond this threshold.</p> <p>Note2: impeachment of usual management processes can be due to disruption of the management chain, disruption of communications or other essential services, damages to key material effectors or blinding effects due to the loss of usual management markers.</p>
Type of organisation	Not specified	Governmental (central government response)	Not specified
Phase	Response (unstable condition)	Response (abnormal situation)	Response (disruption of .. services)
Range of escalation	Not specified	Emergency	Not specified
Scenario of application	Not specified	Not specified	Not specified
Objects	<i>Groups of persons (action)</i> <i>Concept (condition)</i>	<i>Groups of persons,</i> <i>Concept (situation)</i>	<i>Concept (management processes)</i>
Effect	Negative	Negative	Negative
Type of geographical area	Not specified	Not specified	Not specified

Table 41 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “disaster” from ISO 22300:2018 and from UK Civil Protection Lexicon 2013.

A definition indicator of 0.99 is obtained, due to a Specification Degree of 0.43 the Adjusted Definition Indicator becomes 0.43 (the last two parameters are not shown in the table).

Table 41 — Overview on all parameters of the definition indicator for the definitions for “Crisis” from ISO 22300:2018 and UK Civil Protection Lexicon 2013

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.33	0	0	0	0	1	0.33	1	0.33	0	0	0.99

Table 42 gives an overview of the parameters and allocated values originated from the comparison of the definitions of the term “disaster” from ISO 22300:2018 and from SDSIE 2017. A definition indicator of 0,825 is obtained, due to a Specification Degree of 0.35 the Adjusted Definition Indicator becomes 0.43 (the last two parameters are not shown in the table).

Table 42 — Overview on all parameters of the definition indicator for the definitions for “Crisis” from ISO 22300:2018 and SDSIE 2017

DfOrg	c1	DfPha	c2	Dfesc	c3	Dfsce	c4	Dfobj	c5	Dfeff	c6	Dfreg	c7	DefInd
0	0	1	0.33	0	0	0	0	0.5	0.33	1	0.33	0	0	0.825

The parameters of the Indicator to compare the definitions from UK Civil Protection Lexicon 2013 and SDSIE 2017 are not shown because all parameters are the same as for the comparisons between ISO 22300:2018 and SDSIE 2017, leading consequently to the same indicator values.

Annex A (informative)

A.1 Data Models

The most recent technical standard is ISO 25964 “Thesauri and interoperability with other vocabularies” consisting of two parts:

- ISO 25964-1:2011, Part 1: Thesauri for information retrieval – providing recommendations for the development and maintenance of monolingual and multilingual thesauri and specifying a data model and an XML schema for data exchange (<https://www.iso.org/standard/53657.html>), and
- ISO 25964-2:2013, Part 2: Interoperability with other vocabularies – explaining the use of networked resources and specifying mappings between the concepts from multiple thesauri or other structures (<https://www.iso.org/standard/53658.html>).

The data model’s central class is a Concept. Concepts are labelled with terms, members of a Term class. Equivalence, hierarchical and associative relationships between the concepts and their terms are supported too; expressing synonyms, cross references to the compound concepts, superordinate and subordinate terms and semantic associations between the terms. The data model specifies top concepts, concept groups and facets. Notes for concepts and terms provide contextual information and provenance information provides a version history. Such a comprehensive data model could be easily adapted to more simple structures such as terminologies by using some of its features and omitting the others. Also, additional features could be added and thus the data model could be customised for a particular use.

The World Wide Web Consortium (W3C group) developed Simple Knowledge Organization System (SKOS), a common data model for sharing and linking Knowledge Organisation Systems (KOS) such as thesauri, classification schemes and taxonomies via the web. KOS is part of Library Science and SKOS specifies the means for representing and exchanging KOS in a computer network. While ISO 25964-2 defines data model for thesauri and mappings between them, SKOS addresses the publishing of the thesauri or any type of ‘simple Knowledge Organization Systems’ to the Web. To relate concepts to one another, SKOS uses the semantic relations broader, narrower and related from thesaurus standards. SKOS enables concepts from various domains or concept schemas to be linked via several semantic relations: exact match, narrow match, broad match and close match. There are two SKOS extensions: SKOS-XL, an extension for labels; and SKOS-thes, an extension for thesauri covering most of the features of ISO 25964 standard.

An example of using SKOS is AGROVOC multilingual agricultural thesaurus published by United Nations Food and Agriculture Organisation [24] (including over 32,000 concepts available in 23 languages). Another example of using SKOS-thes is EuroVoc, the EU’s multilingual and multidisciplinary thesaurus covering the activities of the EU. EuroVoc contains terms in 26 languages.

A.2 The context indicator

The context indicator is described as

$$ContInd = \left[IUG_{org} * c_1 + IUG_{reg} * c_2 + IDoA_{pha} * c_3 + IDoA_{esc} * c_4 + IDoA_{sce} * c_5 \right]$$

where each parameter is described as in the following table.

Table 43 — Parameters and descriptions of context indicator

<i>ContInd</i>	Context Indicator (Value between 0 and 1, 0 = Worst Case, 1 = Best Case). The IUG_x and $IDoA_x$ (sub-) parameters are each calculated according to set of rules I to III described below and can reach values between 0 and 1
IUG_{org}	Intended User Group – Type of Organisation: category parameter (see section 4.2.5.2), parameter describing the degree of context similarity of the intended user group / type of organisation.
IUG_{reg}	Intended User Group – Region (geographical area): category parameter (see section 4.2.5.2), parameter describing the degree of context similarity of the intended user group / region.
$IDoA_{pha}$	Intended Domain - Phase: category parameter (see section 4.2.5.3), parameter describing the degree of context similarity of the intended domain / phase.
$IDoA_{esc}$	Intended Domain – Range of Escalation: category parameter (see section 4.2.5.3), parameter describing the degree of context similarity of the intended domain / range of escalation.
$IDoA_{sce}$	Intended Domain – Scenario of Application: category parameter (see section 4.2.5.3), parameter describing the degree of context similarity of the intended domain / scenario of application
c_x	<p>Correction parameter for the description of a context similarity between two terminologies. The sum of all c_x must be 1. A possible pre-configuration is to set all five correction parameters to a value of 0.2, depending on the relevance that is given to a specific IUG_x or $IDoA_x$ parameter. In case if in one or both context descriptions no information on one or more IUG_x and/or $IDoA_x$ parameters is given, the respective correction factor needs to be set to 0 (example: no information on the type of organisation is given). In such cases it has to be ensured that the sum of all correction factors is still 1, in case of equal weight of four specified sub-parameters the remaining correction parameters might obtain a value of 0.25 each. The higher the number of not specified sub-parameters, the lower the specification degree gets (see chapter A.1.1.1.3).</p> <p>Rule I. One selected choice of a parameter (e.g. Geo for $IDoA_{sce}$) for one or both terminologies</p> <p>0 – No match between any complying parameters (e.g. governmental, state), match of “not specified” does never count</p> <p>1 – One match between the complying parameters of the two terms (e.g. both have first responders as complying parameter)</p> <p>In case more than 1 choices are selected for both terminologies, rule II or rule III can be applied</p> <p>Rule II. Two selected choices of a parameter (e.g. Geo & Infra for $IDoA_{sce}$) for one or both terminologies</p> <p>0 – No match between any complying parameters (e.g. governmental, state), match of “not specified” does never count</p> <p>0.5 – One match between the complying parameters of the two terms (e.g. both have first responders as complying parameter)</p> <p>1 – Two complying parameters, e.g. first responders and practitioners</p> <p>In case more than 2 choices are selected for both terminologies, rule II or rule III can be applied</p> <p>Rule III. Three or more selected choices of a parameter (e.g. Geo, Fire and Infra for</p>

	IDoA_{sce}) for one or both terminologies 0 – No match between any complying parameters (e.g. governmental, state), match of “not specified” does never count 0.5 – One match between the complying parameters of the two terms (e.g. both have first responders as complying parameter) 0.75 – Two complying parameters, e.g. first responders and practitioners 1 – Three or more complying parameters
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The definition indicator

The definition indicator is described as

$$DefInd = \left[Df_{org} * c_1 + Df_{pha} * c_2 + Df_{esc} * c_3 + Df_{sce} * c_4 + Df_{obj} * c_5 + Df_{eff} * wc_6 + Df_{reg} * c_7 \right]$$

where each parameter is described as in the following table.

Table 44 — Parameters and descriptions of definition indicator

<i>DefInd</i>	Definition Indicator (Value between 0 and 1, 0 = Worst Case, 1 = Best Case). The Df_x (sub-) parameters are each calculated according to set of rules I to III described below and can reach values between 0 and 1.
<i>Df_{org}</i>	Type of Organisation: see section 4.2.5.1, parameter describing the degree of definition similarity of the type of organisation
<i>Df_{pha}</i>	Phase (of event in disaster management cycle): see section 4.2.5.1, parameter describing the degree of definition similarity of the phase
<i>Df_{esc}</i>	Range of escalation: see section 4.2.5.1, parameter describing the degree of definition similarity of range of escalation
<i>Df_{sce}</i>	Scenario of application: see section 4.2.5.1, parameter describing the degree of definition similarity of the scenario of application
<i>Df_{obj}</i>	Objects: see section 4.2.5.1, parameter describing the degree of definition similarity of the object (used or manipulated)
<i>Df_{eff}</i>	Effects: see section 4.2.5.1, parameter describing the degree of definition similarity of the potential effect (of an action or an event)
<i>Df_{reg}</i>	Region: see section 4.2.5.1, parameter describing the degree of definition similarity of the geographical area
<i>c_x</i>	<p>Correction parameter for the description of a definition similarity between two definitions from typically the same terms from different terminologies. The sum of all c_x must be 1. A possible pre-configuration is to set all seven correction parameters to a value of 1/7, depending on the relevance that is given to the specific Df_x parameter. In case in one or both definitions no information on one or more Df_x parameters is given the respective correction factor needs to be set to 0 (example: no information on the type of organisation is given). In such cases it has to be ensured that the sum of all correction factors is still 1, in case of equal weight of six specified sub-parameters the remaining correction parameters might obtain a value of 1/6 each. The higher the number of not specified sub-parameters, the lower the specification degree gets (see chapter A.1.1.1.3).</p> <p>Rule I. One selected choice of a parameter (e.g. Geo for Df_{sce}) for one or both terminologies</p>

	<p>0 – No match between any complying parameters (e.g. governmental, state), match of “not specified” does never count</p> <p>1 – One match between the complying parameters of the two terms (e.g. both have first responders as complying parameter)</p> <p>In case more than 1 choices are selected for both terminologies, rule II or rule III can be applied</p> <p>Rule II. Two selected choices of a parameter (e.g. Geo & Infra for Df_{sce}) for one or both terminologies</p> <p>0 – No match between any complying parameters (e.g. governmental, state), match of “not specified” does never count</p> <p>0.5 – One match between the complying parameters of the two terms (e.g. both have first responders as complying parameter)</p> <p>1 – Two complying parameters, e.g. first responders and practitioners</p> <p>In case more than 2 choices are selected for both terminologies, rule II or rule III can be applied</p> <p>Rule III. Three or more selected choices of a parameter (e.g. Geo, Fire and Infra for Df_{sce}) for one or both terminologies</p> <p>0 – No match between any complying parameters (e.g. governmental, state), match of “not specified” does never count</p> <p>0.5 – One match between the complying parameters of the two terms (e.g. both have first responders as complying parameter)</p> <p>0.75 – Two complying parameters, e.g. first responders and practitioners</p> <p>1 – Three or more complying parameters</p>
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A.3 Specification Degree

The context indicator is composed by five, the definition indicator by seven additive terms (see chapter A.2 and A.3). In several cases one or both context descriptions (such as scopes) or definitions do not contain information on all sub-parameters such as type of organisation or degree of escalation. In such cases a comparison is not possible, the category “not specified” has to be selected for the respective sub-parameter. The respective correction factor has to be set to 0 (e.g., in case of no phase specification in case of calculating the definition indicator, “not specified” has to be chosen out of the Df_{pha} categories and the correction factor c₂ has to be set to 0)

The more sub-parameters cannot be specified, the less specific the information achieved by applying the indicator is getting. In the worst case only one sub-parameter might be described in both definitions and contexts, in such a case the value of the indicator might still reach a value of one not taking into account the very limited information available for the similarity analysis.

In order to take the number of applicable sub-parameters of an indicator into account, the specification degree is introduced. It is recommended to correct the calculated value of the definition or context indicator by multiplying it with the specification degree to compensate for limited available information related to a certain number of described sub-parameters.

The following table gives an overview of the specification degree for the context indicator.

Table 45 — Specification degrees for the context indicator

No. of SP	1	2	3	4	5
SD	0,2	0,4	0,6	0,8	1

No. of SP – Number of subparameters (e.g. Range of Escalation) where information is available in both context descriptions

SD – Specification Degree for the correction of the context indicator

The adjusted context indicator can then be calculated as:

$$AContInd = ContInd * SD$$

The following table gives an overview of the specification degree for the context indicator:

Table 46 — Specification degrees for the definition indicator

No. of SP	1	2	3	4	5	6	7
SD	0,14	0,29	0,43	0,57	0,71	0,86	1

No. of SP – Number of subparameters (e.g. Range of Escalation) where information is available in both definitions

SD – Specification Degree for the correction of the definition indicator

The adjusted definition indicator can then be calculated as:

$$ADefInd = DefInd * SD$$

A.4 Predefined Ranges of Indicators

This section includes the multiple choice selections for all sub categories defined in section 4.2.5.1. They are listed in the order of appearance in section 4.2.5.1.

A.4.1 Type of Organisation

The organization and managing bodies of resources and responsibilities for addressing all aspects of emergencies and effectively respond to a hazardous event or a disaster. They can be explicitly or implicitly mentioned in the definition and offer equivalent choice.

Preselection for multiple choices:

- Governmental
- Industry / other business
- Standardisation
- Research and Education
- NGOs
- International
- General public
- First responders

- Practitioners
- Other (to be specified)
- Not Specified

A.4.2 Phase

The temporal or rather incident oriented location of a definition is focused on the setting of the disaster management cycle. Different models are existing for this pattern but are basically described as

- Prevention (mitigation)
- Preparedness (resilience)
- Response
- Recovery
- Other (to be specified)
- Not Specified

The term/the signified can be relevant for one, some or all of the phases. Looking at the range of application of a terminology it might be (predominantly) developed to be applied in the response phase, to give an example.

A.4.3 Range of escalation

In regards of the overall objective of the CWA, the focus is on large scale events. However, it is highly relevant to identify terms also used for small scale incidents like common emergencies, disasters (large scale) or other ranges of escalation. The preselection thus allows

- Emergency (small scale)
- Disaster (large scale)
- Other (to be specified)
- Not Specified

Again, the defined issue can be subject to one or more of the categories.

A.4.4 Scenario of application

To foster interoperability and facilitate a common understanding of the sub-sets of the definition the scenarios were oriented on the code denoting the category of the subject event of the alert message of the Common Alerting Protocol (CAP) [25] and can also be used in the intended domain of application.

The preselection thus allows

- "Geo" - Geophysical (inc. landslide)
- "Met" - Meteorological (inc. flood)
- "Safety" - General emergency and public safety
- "Security" - Law enforcement, military, homeland and local/private security

- “Rescue” - Rescue and recovery
- “Fire” - Fire suppression and rescue
- “Health” - Medical and public health
- “Env” - Pollution and other environmental
- “Transport” - Public and private transportation
- “Infra” - Utility, telecommunication, other non-transport infrastructure
- “CBRNE” - Chemical, Biological, Radiological, Nuclear or High-
- Other
- Not Specified

A.4.5 Object

The definition of the relevant objects “used” or manipulated in the regarding context were highly abstracted up to the following categories:

- groups of persons
- equipment
- infrastructure
- concept

Thus, all included units with active and passive role in the environment of the term/signified can be subsumed and included.

A.4.6 Effect

The effects in the course of this definition and specifically for further use in the selection and information gathering process of the intended users of the CWA output can be simplified in the following overall categories:

- positive
- negative
- neutral/none

A.4.7 Type of geographical area

The type of region can be defined in accordance with the above mentioned categories as

- Local
- Regional
- National
- International (EU, continent, cross border)

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- Other (to be specified)
- Not Specified

Bibliography

- [1] see e. g. ENISA. 2012, Emergency Communication Stocktaking, A Study into Emergency Communication Procedures, https://www.enisa.europa.eu/publications/emergency-communications-stocktaking/at_download/fullReport (retrieved 2018-06-30)
- [2] THE CODE OF CONDUCT FOR THE INTERNATIONAL RED CROSS AND RED CRESCENT MOVEMENT AND NON-GOVERNMENTAL ORGANISATIONS (NGOs) IN DISASTER RELIEF. 1991, Prepared jointly by the International Federation of Red Cross and Red Crescent Societies and the ICRC <http://www.ifrc.org/Global/Publications/disasters/code-of-conduct/code-english.pdf> (retrieved 2018-06-30)
- [3] GOVERNMENT H.M. 2013, Emergency Response and Recovery, Non statutory guidance accompanying the Civil Contingencies Act 2004, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253488/Emergency_Response_and_Recovery_5th_edition_October_2013.pdf (retrieved 2018-06-30)
- [4] ISO 25964-2:2013, *Information and documentation - Thesauri and interoperability with other vocabularies - Part 2: Interoperability with other vocabularies*
- [5] ISO 25964-1:2011, *Information and documentation - Thesauri and interoperability with other vocabularies - Part 1: Thesauri for information retrieval*
- [6] THE WORLD WIDE WEB CONSORTIUM. (W3C), Semantic Web Deployment Working Group (SWDWG), 2012, Simple Knowledge Organization System (SKOS), <https://www.w3.org/2004/02/skos/> (retrieved 2018-07-13)
- [7] see e.g. VASILESCU L.G., KHAN H., KHAN A. 2008, Disaster Management CYCLE – a theoretical approach, in: *Management & Marketing* 6(1):43-50, January 2008
- [8] see e.g. WHO/EHA. 2002, <http://apps.who.int/disasters/repo/7656.pdf> (retrieved 2018-06-30)
- [9] see e.g. http://www.datypic.com/sc/niem31/t-em_AlertEventDetailsCategoryCodeType.html (retrieved 2018-06-30)
- [10] see Lyons, J., 1977, *Semantics*, vol. I., Cambridge: Cambridge (1977), p. 158 and on
- [11] according to Macagno, F., Walton, D., 2014, *Emotive Language in Argumentation*, New York: Cambridge University Press, Chapter III
- [12] ISO 22300:2018, *Societal Security — Terminology*
- [13] UNISDR. 2015, Proposed Updated Terminology on Disaster Risk Reduction: A Technical Review, August 2015, https://www.preventionweb.net/files/45462_backgroundpaperonterminologyaugust20.pdf (retrieved 2018-06-30)
- [14] SDSIE – Service de défense, de sécurité et d'intelligence économique, *Crisis & crisis management terminology*, March 2017
- [15] CWA 15391-2:2009, *Disaster and emergency management — shared situation awareness — Part 2: Codes for the message structure, Tactical Situation Object (TSO) — Terminology*

- [16] ICRC. 2013, Professional standards for Protection Work, https://www.icrc.org/eng/assets/files/other/icrc_002_0999.pdf (retrieved 2018-06-30)
- [17] ISO 14621-1:2003, *Space systems — Electrical, electronic and electromechanical (EEE) parts — Part 1: Parts management*
- [18] OXFORD ENGLISH DICTIONARY. <https://en.oxforddictionaries.com/> (retrieved 2018-06-30)
- [19] UK civil protection lexicon, 2013, <http://www.devon.gov.uk/glossary/terms.pdf> (retrieved 2018-07-12)
- [20] INTER-AGENCY STANDING COMMITTEE. IASC, 2007, IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings, http://www.who.int/mental_health/emergencies/guidelines_iasc_mental_health_psychosocial_june_2007.pdf (retrieved 2018-07-12)
- [21] INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES. IFRC, 2009, Community-based psychosocial support Participant's book, http://pscentre.org/wp-content/uploads/CBPS_ENParticipant.pdf (retrieved 2018-06-30)
- [22] ISO/IEC 23988:2007, *Information technology — A code of practice for the use of information technology (IT) in the delivery of assessments*
- [23] ISO 11863:2011, *Buildings and building-related facilities — Functional and user requirements and performance — Tools for assessment and comparison*
- [24] AGROVOC multilingual agricultural thesaurus published by United Nations Food and Agriculture Organisation, <http://agrovoc.uniroma2.it/agrovoc/agrovoc/en/> (retrieved 2018-07-20)
- [25] COMMON ALERTING PROTOCOL C.A.P. <http://docs.oasis-open.org/emergency/cap/v1.2/CAP-v1.2-os.html> (retrieved 2018-06-30)