D955.31 - SUMMARY OF CONDUCTED STANDARDISATION ACTIVITIES

SP95 - IMPACT, ENGAGEMENT AND SUSTAINABILITY

FEBRUARY 2020 (M70)

Project information

Project Acronym:	DRIVER+
Project Full Title:	Driving Innovation in Crisis Management for European Resilience
Grant Agreement:	607798
Project Duration:	72 months (May 2014 - April 2020)
Project Technical Coordinator:	TNO
Contact:	coordination@projectdriver.eu

Deliverable information

Deliverable Status:	Final
Deliverable Title:	D955.31 - Summary of conducted standardisation activities
Deliverable Nature:	Report (R)
Dissemination Level:	Public (PU)
Due Date:	February 2020 (M70)
Submission Date:	11/03/2020
Subproject (SP):	SP95 - Impact, Engagement and Sustainability
Work Package (WP):	WP955 – Standardisation activities
Deliverable Leader:	DIN
Reviewers:	Chiara Fonio, JRC Marcel van Berlo, TNO Hector Naranjo, GMV Tim Stelkens-Kobsch, DLR
File Name:	DRIVER+_D955.31_Summary of conducted standardisation activities.docx
Version of template used:	V2.2 – February 2019

Revision Table

Issue	Date	Comment	Author
V0.01	27/11/2019	Initial draft	Esther Kähler, DIN Anja Seeliger, DIN
V0.02	05/12/2019	Contribution to Section 4.1, 4.2	Laure Dodin, ARTTIC
V0.03	05/12/2019	Contribution to Sections 2.4	Stine Bergersen, PRIO
V0.04	05/12/2019	Contribution to Section 2.3	Martijn Hendriks, XVR
V0.05	09/12/2019	Contribution to Sections 2.3, 4.1	David Lund, PSCE
V0.06	16/12/2019	Peer Review	Hector Naranjo, GMV
V0.07	25/02/2020	Peer review	Tim Stelkens-Kobsch, DLR
V0.08	25/02/2020	Peer review	Chiara Fonio, JRC
V0.09	25/02/2020	Peer review	Hector Naranjo, GMV
V0.10	25/02/2020	Peer review	Marcel van Berlo, TNO
V0.11	06/03/2020	Final check and approval for submission	Alexander Scharnweber, DLR
V0.12	11/03/2020	Final check and approval for submission	Marijn Rijken, TNO, Project Director
V1.0	11/03/2020	Final check and submission to the EC	Francisco Gala, ATOS

The DRIVER+ project

Current and future challenges, due to increasingly severe consequences of natural disasters and terrorist threats, require the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with Crisis Management. DRIVER+ (Driving Innovation in Crisis Management for European Resilience) is an FP7 Crisis Management demonstration project aiming at improving the way capability development and innovation management is tackled. DRIVER+ has three main objectives:

1. Develop a pan-European Test-bed for Crisis Management capability development:

    a. Develop a common guidance methodology and tool, supporting Trials and the gathering of lessons learnt.
    b. Develop an infrastructure to create relevant environments, for enabling the trialling of new solutions and to explore and share Crisis Management capabilities.
    c. Run Trials in order to assess the value of solutions addressing specific needs using guidance and infrastructure.
    d. Ensure the sustainability of the pan-European Test-bed.

2. Develop a well-balanced comprehensive Portfolio of Crisis Management Solutions:

    a. Facilitate the usage of the Portfolio of Solutions.
    b. Ensure the sustainability of the Portfolio of Solutions.

3. Facilitate a shared understanding of Crisis Management across Europe:

    a. Establish a common background.
    b. Cooperate with external partners in joint Trials.
    c. Disseminate project results.

In order to achieve these objectives, five Subprojects (SPs) have been established. **SP91** *Project Management* is devoted to consortium level project management, and it is also in charge of the alignment of DRIVER+ with external initiatives on Crisis Management for the benefit of DRIVER+ and its stakeholders. In DRIVER+, all activities related to Societal Impact Assessment are part of **SP91** as well. **SP92** *Test-bed* will deliver a guidance methodology and guidance tool supporting the design, conduct and analysis of Trials and will develop a reference implementation of the Test-bed. It will also create the scenario simulation capability to support execution of the Trials. **SP93** *Solutions* will deliver the Portfolio of Solutions which is a database driven web site that documents all the available DRIVER+ solutions, as well as solutions from external organisations. Adapting solutions to fit the needs addressed in Trials will be done in **SP93**. **SP94** *Trials* will organize four series of Trials as well as the Final Demo (FD). **SP95** *Impact, Engagement and Sustainability*, is in charge of communication and dissemination, and also addresses issues related to improving sustainability, market aspects of solutions, and standardisation.

The DRIVER+ Trials and the Final Demonstration will benefit from the DRIVER+ Test-bed, providing the technological infrastructure, the necessary supporting methodology and adequate support tools to prepare, conduct and evaluate the Trials. All results from the Trials will be stored and made available in the Portfolio of Solutions, being a central platform to present innovative solutions from consortium partners and third parties, and to share experiences and best practices with respect to their application. In order to enhance the current European cooperation framework within the Crisis Management domain and to facilitate a shared understanding of Crisis Management across Europe, DRIVER+ will carry out a wide range of activities. Most important will be to build and structure a dedicated Community of Practice in Crisis Management, thereby connecting and fostering the exchange of lessons learnt and best practices between Crisis Management practitioners as well as technological solution providers.

Executive summary

This deliverable presents the results of the standardisation activities conducted by the DRIVER+ project. Having the list of project related standards (presented in **D955.11** *Report on existing standards and standardisation activities in crisis management*) (1) and the identified standardisation potentials (presented in **D955.21** *Report on DRIVER+ standardisation potentials*) (2) as a basis, the project followed three different ways to contribute to national, European and international standardisation work. All standardisation activities are presented in Section 2.

As a first approach, DRIVER+ contributed to two existing standards ISO/DIS 22319 and EN 17173 – one on international level, one European. Further information on the contribution to existing standards is given in Section 2.2.

Secondly, initiated by DRIVER+ partners an additional approach was followed: four CEN Workshop Agreements related to the projects´ main results were developed:

- prCWA 17513:2020 Crisis and disaster management — Semantic and syntactic interoperability.
- prCWA 17514:2020 Systematic assessment of innovative solutions for Crisis Management — Trial guidance methodology.
- prCWA 17515:2020 Building a common simulation space.
- CWA 17335:2018 Terminologies in crisis and disaster management.

The three CWAs indicated as prCWA are in a draft stage and are expected to be published before the end of April 2020. The publication process is conducted by CEN and out of influence of the project. CWA 17335 was published in 2018 and currently serves as a basis for the development of the national Austrian standard S2304 *Integrated Disaster Management – Terms and Definitions*. The CWAs are presented in Section 2.3.

As a third approach, DRIVER+ suggests the societal impact assessment (SIA) framework as a preliminary work item (PWI) to members of *ISO/TC 292 Security and resilience*. PWI are documents which have the aim to result in a standard. The development of standards is restricted to the related standardisation technical committee. This work is presented in Section 2.4.

Section 3 focuses on the DRIVER+ terminology, which is mainly based on standardisation definitions, its further development, and its sustainability. Additionally, the standardisation potentials identified by DRIVER+ but not used for standardisation work were summarized in a standardisation paper. In this paper the standardisation needs identified by the CMINE tasks groups are presented, too.

The standardisation paper and other standardisation output will be presented to and discussed with the H2020 project STAIR4SECURITY as input to their platform on standardisation potentials and pre-standardisation activities. This and other sustainability and cooperation activities are further explained in Section 4.

The 3rd Policy Research Dialogue Roundtable (PRDR) focussed on the cooperation between research projects and standardisation committees. The outcomes will be developed in the form of recommendations to DG HOME.

The achievements of the objectives and the lessons learnt following the different approaches of standardisation are reflected upon in Section 5. Overall, we can conclude that developing four CWAs, writing a Preliminary Work Item proposal for ISO, contributing to existing standards, and writing a paper summarising standardisation potentials all in one research project is outstanding outcome for a research project.

TABLE OF CONTENT

List of Figures

List of Tables

List of Acronyms

Acronym	Definition
3GPP	3rd Generation Partnership Project
ARIB	The Association of Radio Industries and Businesses
ATIS	Alliance for Telecommunications Industry Solutions
BRIDGIT2	Bridge the Gap between Research, Innovation and Standardisation Community (EU founded project)
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosive
CCSA	China Communications Standards Association
CD	Committee draft
CDM	Common information sharing environment service and Data Model
CEN	Comité Européen de Normalisation; English: European Committee for Standardisation
CEN/TC	CEN Technical Committee
CEN/WS	CEN Workshop
CENELEC	European Committee on Electrotechnical Standardisation
CM	Crisis Management
CMINE	Crisis Management Innovation Network Europe
CWA	CEN Workshop Agreement
DG ECHO	The Directorate-General for European Civil Protection and Humanitarian Aid Operations
DG HOME	The Directorate-General for Migration and Home Affairs
EC	European Commission
EFEED	European Economic and Social Committee
EN	European Standard
EPISECC	Establish a Pan-European Information Space to Enhance seCurity of Citizens (EU founded project)
ETSI	European Telecommunications Standards Institute
EU	European Union
FL	Floods
HEIMDALL	EU founded project "Multi-Hazard Cooperative Management Tool for Data Exchange, Response Planning and Scenario Building"
IATE	Inter-Active Terminology for Europe
IEC	International Electrotechnical Commission

ISG	Industry Specification Group
ISO	International Organization for Standardisation
DIS	Draft international standard
ISO/TC	ISO technical committee
IT	Information Technology
LEMA	local emergency management authorities
MC	Mission Critical
MS	Milestone
NWIP	New Work Item Proposal
PM	Person month
PoS	Portfolio of solution
prCWA	Draft CEN Workshop Agreement (pr: projet, French)
PRDR	Policy-Research Dialogue Roundtable
PTT	Push to talk
PWI	Preliminary Work Item
R&D	Research and development
Redirnet	Emergency Responder Data Interoperability Network (EU founded project)
ResiStand	Increasing disaster Resilience by establishing a sustainable process to support Standardisation of technologies and services (EU founded project)
SecInCoRe	Secure Dynamic Cloud for Information, Communication and Resource Interoperability based on Pan-European Disaster Inventory (EU founded project)
SECTOR	Production of Solid Sustainable Energy Carriers from Biomass by Means of Torrefaction (EU founded project)
SIA	Societal Impact Assessment
SP	Standardisation potential
STAIR4SECURITY	Standards, innovation and research for security (EU founded project)
SV	Spontaneous volunteer
SWOT	Strength, weaknesses, opportunities, threats
TC	Technical Committee
TETRA	Terrestrial Trunked Radio
TSDSI	Telecommunications Standards Development Society, India
TTA	Telecommunications Technology Association
TTC	Telecommunication Technology Committee
TWG	Terminology Working Group
WF	wildfire
WS	workshop

1. Introduction

A standard is a document that specifies requirements for products, services and/or processes, laying down their required characteristics. This e.g. helps ensuring the free movement of goods and encourages exports. Standardisation furthermore promotes efficiency and quality assurance in industry, technology, science, and the public sector. It also serves to safeguard people and goods and to improve quality in all areas of life. Standards are developed in a consensus-based process organized by a recognized standards body. Standards reflect the state-of-the-art in their related fields.

Furthermore, standards support everyday work also in Crisis Management (CM). They are consensus-based documents that are approved by a recognized body and provide rules, guidelines or characteristics for activities or their results. Standards are based on consolidated results of science, technology, and experience and therefore promote knowledge and technology transfer. An overview of standards that are relevant for the DRIVER+ project was given in **D955.11** *Report on existing standards and standardisation activities in crisis management* (1)*.*

Standards are developed in technical committees on national, European or international level. This process is organised by standardisation bodies and the results are based on a full consensus of all interest parties. Next to this, a fast track alternative exists: on European level it is called CEN Workshop Agreement, on international level an ISO Workshop Agreement. These documents are developed by a temporally existing group – a CEN or ISO Workshop – and everyone with an interest can contribute. It is not limited to technical committee members and the development of such documents can be easily done within a year. Therefore, one possibility to initiate new standardisation activities for security lies in the exploitation and dissemination of outcomes of research and innovation projects.

Standardisation has been an important mechanism to enhance the sustainability of the DRIVER+ results by supporting the transfer of the project results to the practitioner´s world. Therefore, standardisation potentials were identified amongst the DRIVER+ results as important pillars to build on. They have been presented in **D955.21** *Report on DRIVER+ standardisation potentials* (2). Based on these potentials, taking into account what already exists in standardisation in the area of Crisis Management, standardisation activities started. During the standardisation process, the results of the project have been discussed with external partners representing different perspectives, including organisations who are interested in adopting and implementing project results. This report gives a overview and summary of all conducted standardisation activities supported by DRIVER+.

DRIVER+ followed three different ways to contribute to national, European and international standardisation work. All standardisation activities are presented in Section 2. As a first approach, DRIVER+ contributed to two existing standards ISO/DIS 22319 and EN 17173 – one on international level, one European. Further information on the contribution to existing standards is given in Section 2.2. Secondly, four CEN Workshop Agreements related to the projects´ main results were developed. The CWAs are presented in Section 2.3. As a third approach, DRIVER+ suggested the societal impact assessment (SIA) framework as a preliminary work item (PWI) to members of *ISO/TC 292 Security and resilience*. This work is presented in Section 2.4.

Section 3 focuses on the DRIVER+ terminology, which is mainly based on standardisation definitions, its further development, and its sustainability. Additionally, the standardisation potentials identified by DRIVER+ but not used for standardisation work were summarized in a standardisation paper. In this paper the standardisation needs identified by the CMINE tasks groups are presented, too.

Sustainability and cooperation activities are further explained in Section 4.

The lessons learnt following the different approaches of standardisation are presented in Section 5.

2. Standardisation Activities

Within this Section an overview of the standardisation activities conducted within the DRIVER+ project duration is given. Research projects have three possibilities to influence standards:

- Contribution to existing standards.
- Proposing a New Work Item Proposal (NWIP).
- Development of CEN Workshop Agreements.

Based on the DRIVER+ outcomes, all three possibilities were used.

Project results were used to contribute to existing standards (Section 2.2) four CEN Workshop Agreements (CWAs) were developed based on DRIVER+ results (Section 2.3) and a preliminary work item was prepared based on the Societal Impact Assessment (SIA) developed within DRIVER+ (Section 2.3.5).

Standardisation activities were initiated by DRIVER+ partners but open for everyone to contribute. Therefore, all activities were a joint effort of organisations being part of DRIVER+ as well as project external organisations.

2.1 Preparation of standardisation activities

Standardisation activities are used in DRIVER+ as one way to make the project outcomes sustainable. Therefore, those topics were identified with the potential to be integrated in standards. Afterwards it was decided which topic has the best potential for which kind of standardisation approach: contribution to existing standards, development of a CWA or development of a Preliminary Work Item (PWI) or NWIP. The prevalent standardisation potentials were identified during a standardisation potential workshop in Warsaw in September 2018.

Based on the standardisation potentials identified during the Warsaw standardisation potential workshop (MS 41) and their prioritization (presented in **D955.21** (2)), four topics were selected to become CWAs. One of these ideas was turned into a preliminary work item on international standardisation level. To ensure the involvement of all relevant partners in these standardisation activities, a project internal call was conducted. It aimed to distribute available resources to the DRIVER+ partners who wanted to contribute to standardisation work.

Members of **WP955** *Standardisation activities* were already planned to contribute to standardisation activities from the beginning of the project. However, some partners needed additional resources after explaining their interest to contribute to more than one CWA or becoming a chair/vice-chairperson for a CWA. Other partners did not require a supplementary budget because it could be related to work within other DRIVER+ work packages. An overview about participating DRIVER+ partners as well as the allocation of PMs is presented in Annex 2.

2.2 Contribution to existing standards

Based on project results DRIVER+ contributed to two standards by providing comments to draft standards: EN 17173 *European CBRNE glossary* and ISO 22319 *Volunteer management*.

2.2.1 Process

Everyone can comment on standards when their draft version is published. A draft version of a standard is published when either a new standard is developed, or an old standard is revised. This is an essential part of standardisation process to collect comments by every interested party. The standardisation committee must discuss each comment. Nevertheless, the standardisation committee decides whether they accept or reject received comments.

At the latest every five years, each standard needs to be reviewed regarding its current relevance and actuality. If the standardisation committee decides to revise a standard its draft gets published for commenting – for national (German) standards it is two months, for a European standard and an international standard it is three months. Within this framework, the European standard is understood as an EN standard developed by technical committees from CEN or CENELEC and the international standard is understood as an ISO or IEC standard developed by the technical committees of ISO and IEC.

Comments are always provided to the national standardisation committee, which mirrors the European or international committee in the corresponding country. The corresponding national committee decides which comments they see as relevant for the standard, and in case of European or international standards, they pass those comments to the European or international committee, where they get discussed again.

2.2.2   EN 17173 – European CBRNE glossary

The commenting phase was lasting from Mid-March until Mid-April 2019. During this time, the partners of the Terminology Working Group (TWG) provided the newly developed terms as comments to the standard in Germany and the Netherlands.

The national standardisation committees have to take these comments into account, and the German DRIVER+ partners were invited to discuss the suggestions with the related mirror committee (Firefighting and Fire Protection Standards Committee). This discussion led to the agreement to take three of the eight suggested terms into the European debate within CEN/TC 391. CEN/TC 391 consists of experts from every national mirror committee with a maximum of three national delegates. The German delegated experts agreed to take three DRIVER+ terms into the discussion and share the opinion that the terms will enhance the EN 17173. Five terms were not agreed to be taken into consideration. However, the mirror committee acknowledged them as useful definitions but not fitting into the context of CBRNE.

On European level, CEN/TC 391 rejected all terms for the reason of not being mentioned in a standard yet. Following this decision, DRIVER+ will add their newly defined terms into the three CWAs developed in the context of the project and propose the terms again.

Table 2.1: Suggested terms of DRIVER+ terminology as input for EN 17173

Suggested term	DRIVER+ definition	Decision by German standardisation committee
Best Practice	This encompasses the preferred actions in a specific type of situation to efficiently and effectively achieve a certain objective. Best Practice may be formalised in internal policy documents such as handbooks and standard operation procedures and could be based on one or several Lesson Identified/Lessons Learned approved by decision-makers.	Accepted. But renamed to "good practice".
Civil Society	Part of the population that is linked by common interests, but not part of the professional response and not professionally trained in Crisis Management.	Rejected
Communication between first responders	The process of communication, information sharing and diffusion between professional responders.	Rejected
Community building	Practices directed toward the creation or enhancement of community among individuals within a regional area (such as a neighbourhood) or with a common interest.	Rejected

Societal impact	Dimension of Crisis Management that refers to its unintended positive or negative impacts on different societal groups or society as a whole, as well as on its core values and societal principles as captured for example in fundamental rights, constitutional laws, but also in public debate.	Rejected
Societal impact assessment	The process of identifying, analysing and managing intended and unintended (positive or negative) societal consequences.	Accepted
Societal resilience	Social entities and their abilities to tolerate, absorb, cope with and adjust to environmental and social threats of various kinds.	Accepted
Strategic decision maker	The individual who has the power and is tasked to take a strategic decision. These are elected officials, and high ranking personnel in response organisations/relevant authorities/agencies tasked with the response to the crisis.	Rejected

As there is no suitable standard on European level for disaster management terminology, DRIVER+ will propose the terms during the upcoming revision of ISO 22300 on international level. Unfortunately, no expert of the Dutch standardisation committee is mirroring the work of CEN/TC 391. Therefore, the comments handed in to NEN, the Dutch standardisation organisation, will not be taken to CEN/TC 391 discussion as there is no delegated expert joining the meeting on behalf of the Netherlands.

2.2.3   ISO/DIS 22319 – Guidelines for planning the involvement of spontaneous volunteers

In April 2016, the draft international standard ISO/DIS 22319 on '*Security and resilience — Guidelines for planning the involvement of spontaneous volunteers*' was three months published for commenting on it. As DRIVER+ also deals with the topic of volunteer management, the project partners Fraunhofer IAO (former partner in DRIVER project), AIT, and WWU commented on this draft with the support of DIN.

At this stage of the DRIVER project (July 2016), the findings from the preparation and execution of the experiments 36.1, 36.2, and 42 2 revealed several lessons learned for the involvement of spontaneous volunteers. In the context of experiment 36.1, a prototypical workshop was conducted in Berlin in December 2015, which brought up legislation issues, uncertainties regarding insurance, liability, missing knowledge about skills, and legally needed permissions to conduct some actions (e.g., medical treatment or dealing with food). The experiment 36.2 touched upon how IT-supported volunteer management can play in European Crisis Management systems with different degrees of voluntarism. The experiences with CrowdTasker in EXP 36.2 were further extended by experimenting with IT solutions (e.g., GDACSmobile) to intensify between information managers and the affected population, incl. spontaneous and unregistered volunteers.

In summary, comments were given to the definition of a spontaneous volunteer as well as to the different items of the planning for the involvement of spontaneous volunteers (e.g., input regarding communication channels and type of language). Next to this, the suggestion to develop and install a dedicated incentive management for spontaneous volunteers, as well as a new communication principle were added to the standard to achieve a better alignment with the involved Crisis Management organizations. The comments were sent directly to the secretary for ISO/TC 292 on Security and Resilience and Working Group on Community Resilience, which have been further discussed and considered for the draft standard in their meeting in September 2016 in Edinburgh.

The hereafter published standard ISO 22319:2017 provides guidelines for planning the involvement of spontaneous volunteers (SVs) in incident response and recovery. It is intended to help organizations to establish a plan to consider whether, how, and when SVs can provide relief to a coordinated response and recovery for all identified hazards. It helps identify issues to ensure that the plan is risk-based and can be shown to prioritize the safety of SVs, the public they seek to assist, and incident response staff.

2.3   Development of CEN Workshop Agreements

With 31 European partners, European standardisation plays an important role in the DRIVER+ standardisation strategy. European standardisation is not only essential for setting new standards within the existing technical committees, furthermore, it provides a possibility for European research projects to transfer project results into a publicly available document called CEN/CENELEC Workshop Agreement.

Within the overall project duration, four CEN Workshop Agreements were developed. All CWAs were developed in CEN Workshops in accordance with CEN/CENELEC Guide 29 (3). The process of the initiation of a CEN Workshop was presented in **D955.21** (2). Within Section 2.4.1, the focus lies on the specific development process for each of the CWAs.

In the previous phase of DRIVER+, the CWA on *Terminologies in crisis and disaster management* was initiated and finalised during the current phase of DRIVER+. This CWA is explained in Section 2.4.5.

Furthermore, three CWAs were developed as an outcome of the assessment done by using the ResiStand Assessment Framework (RAF), as presented in **D955.21** (2).

The CWA on *Building a common simulation space* is displayed in Section 2.4.2, the CWA on *Systematic assessment of innovative solutions for crisis management — Trial guidance methodology* is outlined in Section 2.4.3 and the CWA on *Crisis and disaster management — Semantic and syntactic interoperability* in Section 2.4.4.

All four CEN Workshop Agreements cover DRIVER+ identified needs for guidance and standardisation and use DRIVER+ results as a basis and can, therefore, be seen as sustainability tools for the project.

2.3.1   Process

A CEN Workshop needs to be established to enable the development of a CWA. A CEN Workshop is an open platform, for not only the DRIVER+ partners that are interested in the CWA development, but also the public to get involved in the development process.
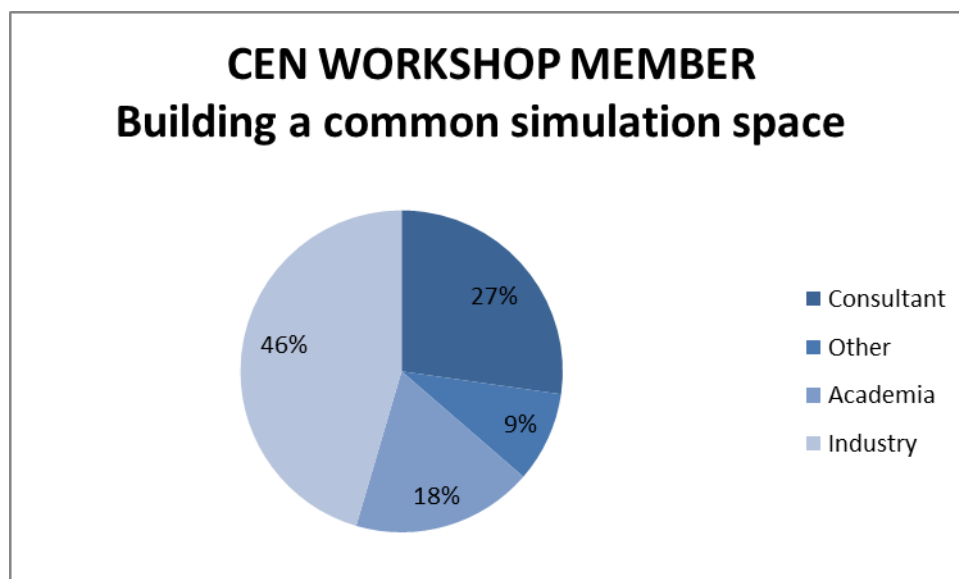
Figure 2.1: Diversity of CEN Workshop Members – Building a Common Simulation Space

For the four CEN Workshops that were established to create the CWAs initiated by DRIVER+ also project external partners became members of the CEN Workshops. This offers an excellent opportunity to discuss and promote the project results outside of the project.

For the development of a standard, the involvement and consensus of the different stakeholders is required. For the development of a CWA three different organisations need to become members of the CEN Workshop. These organisations can be from the same stakeholder group (e.g., researchers). Since DRIVER+ is a project involving different stakeholders, and due to the involvement of the public, stakeholder's diversity was archived.
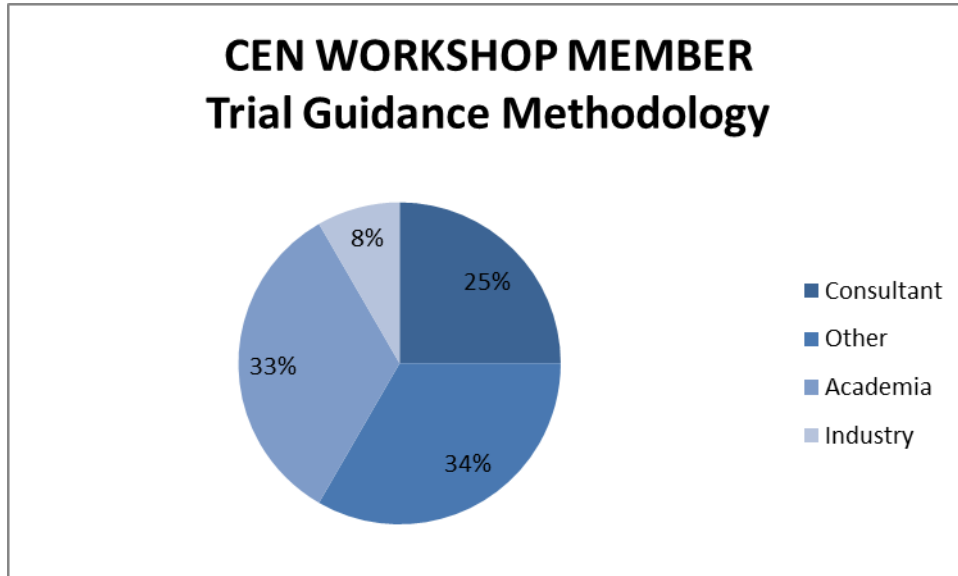
Figure 2.2: Diversity of CEN Workshop Members – Trial Guidance Methodology

The different stakeholders included in the development of the CWA on Building a Common Simulation Environment can be seen in Figure 2.1. In total 11 different organisations became members of this CEN Workshop (CEN/WS 101). The CEN Workshop on the Trial Guidance Methodology, CEN/WS 100, includes 12 members. The stakeholder's diversity can be seen in Figure 2.2. The diversity of the 15 members of the CEN Workshop on Requirements on Information Exchange across Borders and Organisations (CEN/WS 99) are displayed in Figure 2.3.
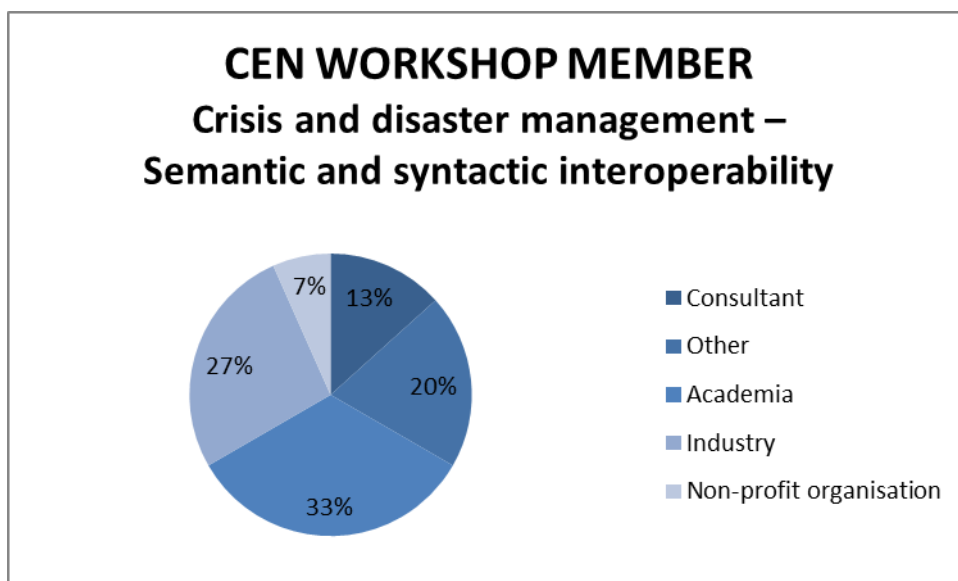
Figure 2.3: Diversity of CEN Workshop Members – Semantic and syntactical interoperability for crisis and disaster management

As the documents are not yet published a more detailed presentation of the participants is not possible.

The above-mentioned stakeholders became members of the CEN Workshop developing the CWA of their interest within the kick-off meeting. After the kick-off meeting, the development process of the CWA starts. Main steps of the development phase can be seen in Figure 2.4.

MANUSCRIPT

In one/several meeting(s) development of draft version manuscript; electronic sessions possible

2ND COMMENT PHASE (OPTIONAL)

Manuscript provided online on CEN website for public comments.

CONSENSUS

Comments discussed, either integrated or declined with reasons until final consensus reached.

DISTRIBUTION

CWA distributed via CCMC to all national members for potential publication

Figure 2.4: CWA development phase

Within the kick-off meeting it was agreed on a table of content for each of the CWAs. Based on this the different chapters of each CWA were drafted by different authors depending on their expertise, discussed during telephone conferences. No CEN Workshop took the possibility of the optional commenting phase due to time constrains. It is aimed to reach the consensus on the draft document within March and approve the CWAs end of March/ beginning of April. Every organization approving the document is listed in the foreword of the CWA document. The final documents will be submitted to CEN afterwards.

As these CWAs are financed by the DRIVER+ project their results will be made freely available as soon as they are published by CEN[1]. For the *CEN Workshop on Terminologies in crisis and disaster management* this is already completed. The publication of the other three CWAs is planned until April 2020.

Table 2.2: Timeline development phase of CWAs

CWA	Kick-off	Manuscript	consensus	submission
Trial Guidance Methodology.	29/04/ 2019	Apr 19 – Dec 19	March 2020	March/April 2020
Requirements on Information Exchange across Borders and Organisations.	29/04/ 2019	Apr 19 – Jan 20	March 2020	March/April 2020
Building a Common Simulation Environment.	09/07/ 2019	July 19 – Jan 20	March 2020	March/April 2020

2.3.2   CWA 17515:2020 Building a common simulation space

Within the world of modelling and simulation, a tendency to provide isolated simulators that work within a very specific domain can be seen. Although this focus on specialized simulators allows increasing the effectiveness of modelling behaviour, as fine-grained as required, it also gives rise to the desire to interconnect multiple simulators together to provide a more generic use of these combined simulators. Interoperability refers to the ability of computerized systems to connect and communicate with one another readily, even if they were developed by widely different manufacturers in different industries.

---

[1] CWA download area available on https://www.cencenelec.eu/research/CWA/Pages/default.aspx.

CWA 17515:2020 defines a technical framework for connecting simulators and supporting tools aiming to facilitate interoperability between multiple stand-alone simulators, in order to jointly create and maintain a common simulation space. It specifies infrastructure and accompanied protocol parameters, common simulation message formats, and a set of services or tools facilitating the common simulation space functionalities. This document is intended to be used by system integrators and developers of individual simulators who jointly want to use an interoperability framework to share (parts of) their own simulation domain with simulators from another domain.

The aim for this CWA is to provide a solid foundation of architectural guidelines to be used for jointly configuring a common simulation space. This CWA does not have the aim to closely integrate connected applications together. The general vision is that simulators are created for one or more specific domain knowledge areas with their own granularity, boundaries and purposes. To closely integrate these simulators would mean to integrate these domains as well, most likely causing irredeemable conflicts in the individual granularities, boundaries and purposes. In order to maintain individuality of the simulators, a common simulation space provides a framework for communication, based on a minimum commonality of the data accepted and produced by the individual simulators and an event-driven design philosophy.

The document provides a set of protocols and associated message formats to facilitate elementary inter-action processes for simulators to function inside a common simulation space. To provide a better understanding of the proposed guidelines, this CWA also provides a repository of example interactions between simulators connected to a common simulation space. These examples are not described to limit the use of this document but are carefully chosen to reflect the most common types of interaction simulators would be expected to encounter when using a common simulation space. Each use case consists of a brief description of its intention, accompanied with a scenario description to provide an example for this use case. Based on this scenario, the desired information exchange flow and the required guidelines, messages, infrastructure and services to implement this flow are defined. Please note that the scenarios used inside each use case can be easily translated to other topics or configurations that serve the same purpose of the use case.

Chairperson: Erik Vullings (TNO).
Vice-chairperson: Martijn Hendriks (XVR Simulation).

2.3.3 CWA 17514:2020 Systematic assessment of innovative solutions for Crisis Management — Trial guidance methodology

Crisis Management is a domain that is constantly confronted with changing environmental influences, varying goals, and partly unstructured processes. Especially in such a dynamically changing and thus challenging domain, it is difficult yet vitally important to continuously identify, assess and finally introduce new innovative solutions to support the decision-makers and operatives in practice. This CWA focuses on the establishment of a methodology to systematically assess such solutions for their applicability in practice. With it, practitioners will be enabled to objectively asses the added value of an innovative solution. It facilitates to improve the dialogue and cooperation between the solution providers and the practitioners that use them. Finally, the methodology will support practitioners in their choice of procurement of the right solutions to fulfil their tasks as efficiently and effectively as possible.

This CWA and the Trial Guidance Methodology introduced within is for CM practitioners. In particular, it is suitable for CM organisations that have identified capability gaps or possible improvement potentials within their processes, practices or procedures. Due to the costs needed to introduce new solutions, the specific requirements on required training, software and workflows as well as the consequently complex interactions between all elements of the socio-technical setup of a CM organization when implementing changed practices, providing specific guidance for the assessment of such solutions is highly beneficial for the affected CM practitioners. This was also realized by CM practitioners and researchers alike during a workshop to identify standardisation potentials at the DRIVER+ General Assembly on 5th September 2018 in Warsaw, which was the initial event starting the standardisation activities.

The scope of the CWA regards the definition of a methodology that enables a systematic and robust assessment of one or more socio-technical solutions (hardware, software, training, procedure, or a mix of those) within a realistic Crisis Management scenario. The target groups of the CWA are CM practitioners concerned with innovation or procurement, public authorities concerned with procurement (or writing tenders), as well as research and development departments in industry and research.

The Trial Guidance Methodology comprises three main phases: preparation, execution and evaluation. Each of these phases consists of a number of further steps, including detailed descriptions for the used processes and methodologies. Besides, the intended CWA comprises the relevant responsibilities to define clear roles of all participants in a solution Trial.

Chairperson: Bernd Hellingrath (University of Münster).
Vice-chairperson: Marie-Christine Bonnamour (Public Safety Communication Europe).

2.3.4 CWA 17513:2020 Crisis and disaster management – Semantic and syntactic interoperability

Current and future challenges, due to increasingly severe consequences of natural disasters and terrorist threats, require the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with crisis and disaster management. Interviews with more than 50 European crisis and disaster managers on past crisis and disasters revealed interoperability as predominant challenge in European disaster management (1). An electronic questionnaire was used to execute the interviews and the results of the inventory showed that in the majority of examined past disasters, requests of stakeholders were predominantly related to problems of information exchange both on a syntactical as well semantic level. Moreover, a large a diversity of applied solutions as well as standards and procedures was shown. In order to face this challenge of a diversity of solutions and procedures as well as lack of interoperability multiple European research projects, e.g. the DG ECHO project Alpdiris and the FP7 projects EPISECC (607078), SecInCoRe (607832), SECTOR (607821) and Redirnet (607768) as well as DRIVER+ (607798) developed platforms allowing to interface IT solutions from the involved actors (in the case of DRIVER+ the platform is called testbed and is a central infrastructure supporting the execution of Trials). Industrial and research partners both from DRIVER+ as well as external actors decided jointly to specify main recommendations for realizing both syntactical as well as semantic interoperability in the frame of this CWA 17513:2020.

CWA 17513:2020 overall defines recommendations to achieve organizational and cross border interoperability on syntactical and semantic level for crisis and disaster management. The document provides syntactical recommendations on the realization of tool connectors to a platform, standardized protocols, validation of transmitted messages, security issues, message distribution approaches and system resilience. Regarding semantic services recommendations on the establishment of semantic resources as well as the establishment of a semantic mapping and matching are given.

CWA 17513:2020 is dedicated to support both practitioners as well as solution providers in the process of the realization of interoperability between IT solutions designed for the application in the crisis and disaster management domain. Practitioners are people who are qualified or registered to practice a particular occupation in the field of security or civil protection, e.g. crisis managers and responders relating to all disciplines of crisis and disaster management and response. Solution providers are those that develop and supply technological solutions that fulfil the requirements defined in this document, with the goal to improve operational capabilities of practitioners.

In addition, use cases for the application of syntactical and semantic services are given. Layer models are described and examples of concepts and topologies are provided.

In the domain of crisis and disaster management there is an increasing request for organization and border crossing information exchange both on national as well as international level. This CEN Workshop Agreement is therefore dedicated to support both practitioners as well as solution providers in the process

of the realization of interoperability between IT solutions designed for the application in the crisis and disaster management domain. The target groups of the document are civil protection authorities, local emergency management authorities (LEMA), fire brigades, police authorities, first responders (e.g. Red Cross, Knights of St. John), actors involved in cross-border operations, military forces involved in crisis and disaster management, critical infrastructure operating forces, companies involved in disaster management and civil protection, and the R&D community.

Chairperson: Georg Neubauer (Austrian Institute of Technology).
Vice-chairperson: David Lund (Public Safety Communication Europe).

2.3.5 CWA 17335:2018 Terminologies in crisis and disaster management

The CWA 17335 is addressing all actors of the national and international crisis and disaster management domain in order to improve mutual understanding in all phases of the crisis management cycle. The CWA offers approaches supporting improved semantic interoperability between IT solutions of different actors such as first responders, authorities and crisis managers.

The CWA can be applied in different fields of applications. Technical experts are often requested to support crisis management staff during a crisis. As disaster and crisis management is typically not part of their daily business, they can use the thesaurus in order to improve communication with the crisis management staff. Another area is the exchange of messages with annotations typically between IT solutions of practitioners. Both sender and receiver receive semantic information including similarities of definitions of key terms while exchanging information. An additional potential application is the collection of relevant documents for emergency planning. A search string might be typed into a search engine and a hint on semantically related is given. Search results can be enriched by semantic annotations. The CWA can also be used to support the development of new context specific terminologies as well as digital thesauri.

The central Austrian crisis and disaster management terminology is specified in the national standard S2304 "Integrated Disaster Management – Terms and Definitions", procedures for the national crisis and disaster management are provided by the National Crisis and Disaster Management (SKKM) that is coordinated by the Austrian Ministry of Interior. In 2018 the committee K246 "Societal Security" of Austrian Standards started a new standardisation initiative with the purpose to specify a methodology for analysing and comparing of crisis and disaster related terms, their definitions as well as context. The new methodology is based on the procedures of the CWA 17335, aligned with the framing of the SKKM and cantered around the vocabulary of the S2304.

This CEN Workshop Agreement analyses definitions of terms used in crisis and disaster management as well as the scopes of the related source based on a set of indicators developed by the members of the CWA. 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.

The DRIVER+ partners AIT (lead), DLR and TNO have participated in the development of the CWA 17335:2018. Additionally, the Paderborn University, the University of Split, Lancaster University, the French ministry SDSIE, the German Council of Foreign Relations, Tom Flynn Consulting and IES Solutions have contributed to the standard, mainly with regard to their background of other crisis management related research projects in which they are involved (i.e. EPISECC (607078), SecInCoRe (607832), ConCorde (607814), and SECTOR (607821)).

2.4   Preliminary Work Item for ISO/TC 292

2.4.1   Background

As DRIVER+ is a European research project, European standardisation activities are of high interest. There-fore, CEN Workshop Agreements were initiated by DRIVER+ (Section 2.3). During the initiation process of a CWA, European TCs need to be considered if the technical committee's scope covers the topic of the proposed CWA. When DRIVER+ proposed the Societal impact assessment framework to CEN/TC 391, as the responsible TC, feedback was received that led to the initiation of a preliminary work item on the international level within ISO/TC 292 *Security and resilience*. A preliminary work item is a document proposed to a TC as a proposal for starting the development on a new standard. The process of the initiation of an ISO standard is therefore explained in Section 2.4.2. Within Section 2.4.3, the process of decision-making regarding the SIA will be described in more detail. Section 2.4.4 introduces the SIA, including the scope, objectives, and content of the preliminary work item.

2.4.2   Process of initiation of an ISO Standard

International Standards are developed by ISO within ISO Technical committees. A TC covers the standar-disation activities within a specific field. All 162 ISO members can decide if they want to be member of a TC. If a national member decides to become a member, it can either be actively involved in the process as a participating member (P-member) with all voting rights, or as an observing member (O-member) which will get informed about the process and outcomes but without voting rights.

ISO standards are developed according to the national delegation principle (Figure 2.5), with each P-member sending delegates to represent the national viewpoint within the TC. This viewpoint is developed in national committees that "mirror" the international committees.

Furthermore, TCs consists of working groups (WGs) that cover one specific topic of the TCs field. In these WGs the actual standards development takes place. Therefore, all national mirror committees send experts to the working group for contributing.
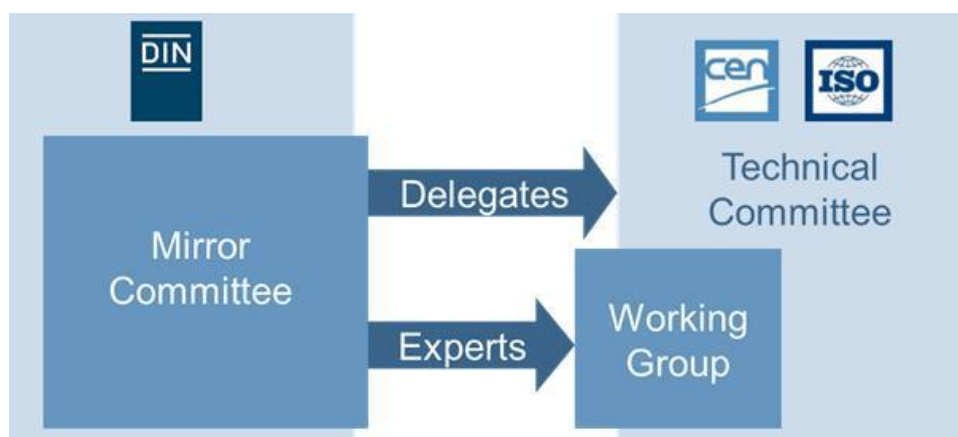
Figure 2.5: National delegation principle

The mirror committees also decide whether or not an International Standard should be adopted as a national standard - this is voluntary, in contrast to the European Standards, which must be taken by EU countries on the national level.

The development process of an international standard starts with a New Work Item Proposal (NWIP). There are five different ways of how a NWIP can be submitted to an ISO/TC. Such proposals can be submitted by:

- A member of the International Organization for Standardisation (ISO), such as DIN.
- The secretariat of that (responsible) technical committee or subcommittee.
- Another technical committee or subcommittee; an international organization that has liaison status.
- The technical management board or one of its advisory groups.
- The Chief Executive Officer.

A NWIP need to be presented using the appropriate form and shall be fully justified and properly documented[2]. A NWIP needs to be approved by a 2/3 majority of the P-members of the technical committee, abstentions are excluded when the votes are counted. Besides, a commitment to participate actively in the development of the project, i.e. to make an effective contribution at the preparatory stage, by nominating technical experts and by commenting on working drafts, by at least 4 P-members in committees with 16 or fewer P-members, and at least 5 P-members in committees with 17 or more P-members, is needed. Votes shall be returned within 12 weeks[3].

Since a 2/3 majority is needed and countries need to commit to participate to the standards development, it is common to inform the TC and the mirror committees previous to the proposal of a NWIP about the intent by circulating a preliminary work item (PWI). A PWI enables feedback on the proposed idea to optimize the proposal to increase the probability of approving the proposal as a NWIP.

After the approval of the NWIP it will be registered as a new project, and the preparatory stage of the ISO standards starts. Within the responsible working group of the TC, the experts develop the first draft of the standard called "committee draft" (CD). The CD will be circulated among the members of the TC for voting and/or commenting. Any comments received need to be taken into consideration. A draft standard (ISO/DIS) is then made available to all ISO and IEC members, offering the possibility to comment on the draft for three months. The draft standard is then available by the national members, allowing the public to comment on the draft standard. Each comment received on national level is discussed within the national mirror committee of the responsible TC that established the standard. The mirror committee then submits the consolidated national viewpoint to the TC. If the criteria for approval are fulfilled, the draft document will be published as an international standard.

2.4.3 SIA as a PWI

The standardisation potential of the Societal Impact Assessment (SIA) Framework developed within DRIVER+ was already identified in September 2018 and favoured in January 2019 based on the RAF (see **D955.21** (2)). As the SIA was still under development, considering the deliverables to be due in July 2019, it was agreed on to not initiate the CWA until mid-2019. The CWA on the SIA was therefore initiated on end of July 2019.

When submitting a CWA proposal, a self-assessment sheet has to be filled in by the initiators, together with the supporting standardisation organization, to indicate whether the CWA is technically within the scope of an existing CEN/TC that is responsible for the standardisation activities in the related field on European level. DIN cited CEN/TC 391 with regard to the application of the SIA in the context of Crisis Management. When a CEN/TC is identified, it must be informed about the proposal of the CWA. Additionally, it has to vote on the acceptance of the CWA proposal. Therefore, the following questions are asked:

---

[2] More information can be found within ISO/IEC Directives, Part 1 Annex C (normative) Justification of proposals for the establishment of standards

[3] ISO Directives – Part 1, 2.3.5

- In your opinion, is the proposed topic included in the scope of CEN/TC 391?
- If so, do you agree with the creation of the proposed CEN Workshop when you consider the possible coexistence of workshops and technical committees in the same area as CEN/CENELEC Guidelines 29, 4.5 (TC Decision)?

These questions are forwarded to the corresponding national mirror committees of CEN/TC 391, and each committee gives one vote – yes, no or abstention. Regarding the SIA CWA proposal four countries voted yes, one no and 15 abstained on the first question. The second question was answered by one country with yes, two countries with no, and 17 countries with abstention. This means the proposal was rejected. If a CWA is rejected the initiators can contact the CEN Technical Board. The CEN Technical Board then votes within 6 weeks whether the decision of the TC was appropriate. Sweden, the country which holds the secretary of ISO/TC 292, the corresponding technical committee in the related field on international level, rejected the proposal with the comment that the ISO/TC 292 has recently established a working group on Crisis Management and any suggestion for standardisation should be submitted as a new work item proposal (NWIP) to avoid parallel work. Therefore, the initiators of the SIA CWA proposal have decided to not contact the CEN Technical Board and instead to work on a preliminary work item (PWI) for proposing the SIA as a NWIP to ISO/TC 292.

This PWI is based on **D913.31** *Societal impact assessment framework- version 2* (4) and **D913.41** *A guide on assessing unintended societal impacts of different crisis management functions –v2* (5) and the content of the PWI is explained in Section 2.4.4.

Aim of submitting the PWI is to identify among the members of ISO/TC 292 those who have an interest in developing a standard for SIA. As mentioned earlier, the members of ISO/TC 292 decide on the relevance of the topic and are ultimately the ones who will write the standardisation document. Above all, they need to recognize the need for the standard. The document is sent as a basis for discussion. DRIVER+ expresses its desire for a standard in this field, but does not demand a decision immediately and does not start the formal process with all its deadlines to develop this document as a standard.

The document describing the SIA – the preliminary work item proposal – is due to be completed by the end of February and sent to the relevant contacts. It is planned to contact the secretaries of the ISO/TC 292, its WG 3 *Emergency Management* and its WG 9 *Crisis management* directly with the request to distribute the document in the working groups. In addition, we aim to contact the national mirror committees of DRIVER+ partners who are interested in the SIA, such as Great Britain, Germany, Austria, Norway, Italy, Netherlands, or France. In addition, and due to the liaison, CEN/TC 391 will be informed about the PWI and asked for their support as ISO/TC 292 and CEN/TC 391 are thematically connected and both might be mirrored by the same TC on national level.

Another goal is to have the PWI on the SIA discussed during the next ISO/TC 292 meeting in June 2020 and, in the best-case scenario, an expert to introduce the SIA there. This is a big challenge as an ISO meeting is determined by stringent deadlines and rules e.g., the agenda is usually set long before which gives not much opportunity for the invitation of guests relatively spontaneous.

The results of these actions are not predictable at this stage, nevertheless the above-mentioned measures have been or/and will be undertaken to push further this standardisation item.

2.4.4   Content of the PWI on SIA

A more connected society, driven by rapid technological change and an increasingly complex operational field, has positioned crisis managers to think more holistically about the societal impact of their activities and operations. For example, the advances of globalization and improved technologies do not necessarily directly correlate with the improvement of all people's lives but must be managed properly. This acknowledgement is driving an increasing focus on societal impact—ensuring Crisis Management activities and solutions are being developed and deployed with the broader society in mind. Societal impact is

defined as a dimension of Crisis Management that refers to its unintended positive or negative impacts on different societal groups or society as a whole, as well as on its core values and societal principles as captured for example in fundamental rights, constitutional laws, but also in public debate. Crisis Management (CM) organizations are increasingly broadening their strategic focuses on financial and nonfinancial measures of success, including societal impact (**D913.31** (4)).

The objective of doing a SIA is to ensure that the implementation of CM solutions maximises its benefits and minimises its burdens, especially those burdens borne by people. Burdens and benefits may not be measurable or quantifiable and are often hard to consider exactly for this reason. Nonetheless, they are important, and by identifying societal impacts in advance, in particular, two advantages are evident:

1. Better decisions can be made about which solutions should be employed and how they should be employed.
2. Mitigating actions can be implemented to minimise the harm and maximise the benefits from a specific planned solution or related activity.

In the larger societal context, by achieving these advantages, other benefits include positive impacts such as accountability and acceptability.

- Accountability means that CM participants are in various ways responsible for what they do and should be able to give a satisfactory reason for it.
- Acceptability of solutions, since crisis managers depend on the society accepting the CM solutions, especially if the solutions are participatory in the sense that they require that the public actively engages in them.

This document on the SIA that will be provided to ISO/TC 292 will suggest a common guidance on how to carry out a Societal Impact Assessment on potential CM solutions. Potential CM solutions may be offered in terms of new technological tools or IT services, or non-technological processes or methods. The overall goal is to improve capability in the context of, and for any aspect of Crisis Management. Selecting a Crisis Management solution in a societal responsible way requires a systematic assessment approach that will allow an evaluation of the way the solution may impact the society. The SIA framework was initiated and developed within the DRIVER+ project for that purpose. The framework contains a structured methodology for assessing societal impact of CM solutions in order to avoid negative societal side effects.

The potential standard should raise awareness on the importance of societal impact assessment in CM.

The background for the initiation of the process with regards to the SIA Framework is to contribute to a more harmonised view on societal impact. Public procurements typically look primarily at economic sustainability. When expensive technologies are being procured, there are several considerations to make. The technology must be fit for purpose, sustainable, and importantly: accepted by practitioners and society. If the technology is not accepted, the investment will not be successful. To some extent, CM solution procurement primarily considers the crisis managers and responder practitioners, and not the society around them. Therefore, a harmonised approach to SIA seems important. In addition, a more structured approach to SIA in CM and research projects can lead to a cultural change, where social impact becomes a natural part of daily activities. To contribute to such a mind-set change, so to focus not only on the economic impact and practitioners' impact of new solutions but also on the societal impact, it was decided that the DRIVER+ SIA Framework should be further considered through the establishment of a PWI.

There is a broad market environment including the Civil protection authorities, Local Emergency Management Authorities (LEMA), Fire brigades, Police authorities, First responders (e.g. Red Cross, Johanniter), Cross-border operations, and Military forces involved in crisis and disaster management, Critical infrastructure operating forces, Companies involved in disaster management and civil protection, and R&D community.

The following regulations are relevant for the proposed NWIP:

- Decision No 1313/2013/EU of the European Parliament and of the Council on a Union Civil Protection Mechanism.
- Council Regulation (EU) 2016/369 on the provision of emergency support within the Union.
- Regulation No 375/2014 of the European Parliament and the Council on establishing the European Voluntary Humanitarian Aid Corps ('EU Aid Volunteers initiative').
- Regulation (EC) No 1257/96 concerning humanitarian aid.

On European level the Technical committee "CEN/TC 391 – Societal citizen security "is the most relevant one to be considered in context of crisis and disaster management. On an international level ISO/TC 292 – Security and resilience, is considered.

In parallel, there are 4 CWAs ongoing which should also be considered:

- prCWA 17513:2020 Crisis and disaster management — Semantic and syntactic interoperability.
- prCWA 17514:2020 Systematic assessment of innovative solutions for Crisis Management — Trial guidance methodology.
- prCWA 17515:2020 Building a common simulation space.
- CWA 17335:2018 Terminologies in crisis and disaster management.

The aim of the Framework is to bring a practical and exploitable tool for conducting SIA's to solution providers, practitioner organizations/end-users and researchers working in CM, but also to raise awareness on the importance of societal impact assessment in CM. Specifically, the target groups of the proposed standard are Civil protection authorities, Local Emergency Management Authorities (LEMA), Fire brigades, Police authorities, First responders (e.g. Red Cross, Knights of St. John), Cross-border operations, Military forces involved in crisis and disaster management, Critical infrastructure operating forces, companies involved in disaster management and civil protection, and R&D community.

3. Terminology

Mutual understanding of practitioners and other key actors involved in international crisis and disaster management turned to be a key challenge. Barriers to understanding due to different cultural, organisational and educational background were identified to be main challenges of communication and information exchange of several activities such as border crossing cooperation. In this light, DRIVER+ decided to establish an English project terminology of key terms and associated definitions in order to enhance a common understanding within the project team and to contribute to a shared understanding within Europe.

During the last months the terminology was further developed: 20 new terms were included following the approach described in **D955.11** (1). The terms are presented in Annex 3. Also terms and definition from the HEIMDALL project were discussed and included when possible in the DRIVER+ terminology. The DRIVER+ terminology aims to contribute to a shared understanding in Crisis Management and to be sustainable simultaneously. Therefore it is included in the PoS and also translated in seven languages in this context. The DRIVER+ terminology furthermore will be provided to the Interactive Terminology for Europe (IATE) platform to expand it on the area of disaster management. Additionally a CMINE group on terminology was developed and discussions started about definition of terms.

3.1 Integration of HEIMDALL terms into the DRIVER+ terminology

HEIMDALL has begun to set up a glossary of terms which are especially relevant for practitioners in the area of Crisis Management. DRIVER+ needs to apply a different set of terms to accommodate the needs and requirements of the involved practitioners. However, the TWG decided to screen the HEIMDALL glossary for applicable and relevant terms in the DRIVER+ context.

The identified terms from the HEIMDALL terminology are included into the DRIVER+ terminology and can be looked up in Annex 4.

3.2 Potential cooperation with IATE

Other existing terminologies were screened during the work of the TWG in order to find feasible anchors fostering sustainability for the identified and newly defined terms w.r.t Crisis Management. The group figured out that there is one central place where all kinds of European terminologies could be placed. This platform is maintained by the Translation Centre for the Bodies of the European Union in Luxembourg. IATE is the EU's terminology database. It has been used in the EU institutions and agencies since summer 2004 for the collection, dissemination and management of EU-specific terminology.

The project partners of IATE are:

- European Parliament (IATE data labelled as EP).
- Council of the European Union (IATE data labelled as Council).
- European Commission (IATE data labelled as COM).
- European Court of Justice (IATE data labelled as CJUE).
- European Central Bank (IATE data labelled as ECB).
- European Court of Auditors (IATE data labelled as ECA).
- European Economic and Social Committee (IATE data labelled as EESC/CoR).
- European Committee of the Regions (IATE data labelled as EESC/CoR).
- European Investment Bank (IATE data labelled as EIB).
- Translation Centre for the Bodies of the European Union (IATE data labelled as CdT).

The project was launched in 1999 with the objective of providing a web-based infrastructure for all EU terminology resources, enhancing the availability and standardisation of the information. The following legacy databases were imported into IATE:

- Eurodicautom (Commission).
- TIS (Council).
- Euterpe (EP).
- Euroterms (Translation Centre).
- CDCTERM (Court of Auditors).

The current version of IATE was released on 07/11/2018 following a full rebuild of the system with state-of-the-art technologies, the latest software development standards, best practices on usability and accessibility, and a new look and feel. Numerous improvements and new functionalities are available to internal and public users, and the EU interinstitutional terminology database continues to evolve to meet the needs and wishes of EU linguists and IATE users in general.

The DRIVER+ TWG contacted IATE in the beginning of 2020 having realised that IATE has shortcomings in the area of Crisis Management and civil protection sector. IATE currently covers terms and definitions from the following areas:

- Geography.
- International organisations.
- Energy.
- Industry.
- Production, technology and research.
- Agri-foodstuffs.
- Agriculture, forestry and fisheries.
- Environment.
- Transport.
- Employment and working conditions.
- Business and competition.
- Science.
- Education and communications.
- Social questions.
- Finance.
- Trade.
- Economics.
- Law.
- European Union.
- International relations.
- Politics.

The reply of IATE to collaborate with DRIVER+ was very positive and it was stated that the DRIVER+ terminology for the Crisis Management and civil protection sector could be a valuable resource for IATE users. The IATE Management Group will discuss if there is an interest in integrating the DRIVER+ terminology in IATE and completing it in other EU official languages.

3.3 Potential establishment of a digital thesaurus

The international and national disaster management experience clearly demonstrate that ambiguities and fuzziness in communication at both operational and staff level belong to the major challenges of crisis and disaster management. The main reason for this situation is the lack of mutual understanding of key terms among the different actors. There are multiple root causes for this situation, encompassing different

histories and mandates of organisations like fire brigades and police, as well as different legal frameworks. The complexity increases even further in case communication takes place across borders.

To overcome these challenges the DRIVER+ partners AIT and DIN together with multiple stakeholders such as the Austrian Ministry of Interior and Austrian Standards are currently preparing a concept for a digital thesaurus for crisis and disaster management. This concept includes the possibility to compare terms and definitions from different vocabularies and also encompasses the option for the analysis of semantic similarities of definitions. As a basis a system-internal database with the most important national and international terminologies is intended to be made available to national and international stakeholders. The concept includes interfaces to selected international thesauri from neighbouring domains. Moreover, the option to determine the relevance of certain terminologies for specific tasks is also included. It is intended that the thesaurus will be used by different stakeholders such as expert groups creating and maintaining national terminologies as well as staff and emergency services having a ubiquitous digital reference at hands. Such a thesaurus has also high potential to support training of future task forces and crisis managers.

4. Sustainability and cooperation

DRIVER+ defined "sustainability" as it "*encompasses that outcomes of projects or other initiatives are applied and maintained beyond their duration [...]* ". In this context CWAs are already sustainability tools because they have a lifetime of at least three years showing a CEN workshops' result. The CWA developed by DRIVER+ partner and others focus on DRIVER+ results and make them thereby sustainable. In case these CWAs will be used as input for standards developed by technical committees their lifetime and their influence on the marked would increase. Therefore DRIVER+ translated four of its results into CWAs:

- prCWA 17513:2020 Crisis and disaster management — Semantic and syntactic interoperability.
- prCWA 17514:2020 Systematic assessment of innovative solutions for crisis management — Trial guidance methodology.
- prCWA 17515:2020 Building a common simulation space.
- CWA 17335:2018 Terminologies in crisis and disaster management.

Additionally it prepares a suggestion for an ISO standard about the SIA. Aiming to make those outcomes sustainable also after the CWAs lifetime its ideas are presented and discussed in standardisation committees. They are presented in Section 4.1. To raise awareness of the standardisation activities and aiming to transform CWA in de-facto-standards, the documents were promoted via several conferences and discussed in different cooperation.

Standardisation itself can be seen as sustainable tool as long as the documents are used. DRIVER+ partner believe this will happen with the CWAs because they as end-user, scientist, industry – as experts in their field identified those topics as standardisation needs. Therefore documents were developed aiming to support the end-user. These CWAs will remain and will be used after the project duration and therefore contribute to the sustainability of the DRIVER+ outcomes. Different approaches to transform the CWAs into longer lasting documents, like full standards were initiated. They are described detailed in section 4.1. **WP955** built liaisons with CEN/TC 391 and ETSI Industry Specification Group 'Common information sharing environment service and Data Model' (ISG CDM). Additionally **WP955** members promoted the three CWAs developed in this phase of DRIVER+ during the German mirror committee of CEN/TC391 meeting and in several third party events.

4.1   Cooperation activities

There are two kinds of cooperation activities related to the CWAs: one aiming to transform DRIVER+ results into full standards – see Section 4.1.1. The second one aims to transfer CWAs into de-facto-standards. Activities following the latter approach are presented in Section 4.1.2 and 4.1.3. Each way is complex but first steps were made during the project duration. They are presented in this Section.

4.1.1   Liaison with CEN/TC 391

The DRIVER+ project will keep its liaison with the CEN/TC391 on 'Societal and Citizen Security' and the Working Group 3 on 'Crisis Management/Civil Protection' until the project ends. After the interaction with this Technical Committee during the DRIVER+ identification of standardisation potentials and the decision on which standards will be developed (see also **D955.21** (2)), the experts of the CEN/TC 391 were kindly invited to join the above listed CEN Workshops. Additionally, the three CEN Workshops were presented by the DRIVER+ partners AIT and DIN in June 2019 at their committee meeting in Vienna, Austria. Furthermore, representatives of the CEN/TC 391 and ISO/TC 292 will be invited to the 3rd PRDR and the DRIVER+ final conference. After the finalization of these CEN Workshops, the resulting CWAs will be actively promoted to the CEN/TC 391 as well as to ISO/TC 292 for consideration of uplifting to EN standards/respectively ISO standards.

The Liaison with CEN/TC 391 led to an invitation by the German mirroring committee *Firefighting and Fire Protection Standards Committee* (FNFW) to present the DRIVER+ related CWAs.

4.1.2   Involvement in 3GPP, ETSI, and Broadway

3GPP standardisation is important to DRIVER+, mainly considering the medium-term future of mobile communication systems that will be used by crisis managers and responder practitioners. Responders currently use 2G equivalent voice and short data mobile systems (TETRA, TetraPol, etc.). Citizens are currently being offered new 5G technologies allowing fast and rich media exchange. This presents a number of issues:

- Mobile technologies used by consumers are not secure or reliable enough for use in crisis response activities.
- Consumers can go almost anywhere in the world, turn on their mobile phone and use it just like at home, yet 2G equivalent technologies used by responders only work in their home country.

Crisis managers and responders are therefore disadvantaged by the technology that they are using today. Activities are ongoing globally with the aim to improve mobile phone standards to allow them to be used by crisis managers and responders, allowing international roaming and access to their services wherever they are, and driving towards more secure and reliable mobile environment where exchange of rich information is protected. The development of these mobile standards is handled by 3GPP. However, this only standardizes the mobile communication capability. It doesn't standardise the exchange of information, how it is exchanged over a mobile system, nor how the information is presented or interpreted. The following describes more about 3GPP, our need to understand the capabilities that these standards will provide and the need to make sure that the needs of DRIVER+ and Crisis Management community are known by the 3GPP standards makers.

3GPP

The 3rd Generation Partnership Project (3GPP) unites 7 telecommunications standard development organizations around the world (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, and TTC). The goal is to standardise mobile telephony addressing the global market scale of cellular communications. Current activity in 3GPP is dominated by the standardisation of 5G mobile technologies. Products and services are already being promoted and sold to citizens, addressing a growing mobile market that currently includes 385Million European customers.

In the past 5 years, 3GPP has been actively adding new capabilities to the 3GPP mobile standards to support mobile broadband communications by responder practitioners in the field of public protection and Disaster recovery (PPDR). PSCE became Market Representation Partner of 3GPP in 2016 to support this activity. PSCE is also a full member of European Telecommunication Standards Institute (ETSI) both to fulfil membership of 3GPP and to contribute to ETSI working groups.

Standardisation of a Mission Critical service layer has been in progress since 3GPP Release-12, which was finalised in 2015. Since then the standards have evolved to provide three key services to provide services to those used today, plus richer media and information exchange capabilities:

- Mission Critical Push to Talk (MC-PTT) – providing similar voice functionalities as used today.
- Mission Critical Video (MC-Video) – provide video exchange capabilities.
- Mission Critical Data (MC-Data) – allowing for data to be exchanged.

Applications to be used by crisis managers and responders on their mobile devices would be built upon these three service layer capabilities, opening new possibilities for information exchange capability development for crisis managers and responders. Related work in ETSI CDM and CWA INT are themselves, described below, provide complementary standardisation activities. These standardisation activities therefore complement the 3GPP MC-Data standards.

ETSI CDM

A new Industry Specification Group (ISG) of ETSI was formed with a similar purpose as prCWA 17513:2020 *Crisis and disaster* management — *Semantic and syntactic interoperability*. An ISG is not a formal standard-making working group, but provide similar pre-standard processes to CWA, allowing documents to be agreed using a formal process, that may then later be transferred to a normative process.

ETSI Industry Specification Group 'Common information sharing environment service and Data Model' (ISG CDM) seeks to prepare standards for information exchange based upon a distinct need to exchange information for the purpose of maritime security. PSCE joined as members of this group and attend regular meetings with the purpose to track the group's progress so as to avoid duplication with prCWA 17513:2020. ISG CDM will spend its first year solely focusing on the Maritime information exchange use case. Its second year will seek to broaden its scope to integrate other use cases. The timing of prCWA 17513:2020 runs in parallel with the first year of ISG CDM. prCWA 17513:2020 is therefore suitably timed to provide input to ISG CDM in its second year, to provide a specific context on the Crisis Management information exchange use case.

BroadWay

Whilst PSCE is active within DRIVER+ and this specific standardisation activity, PSCE also holds a specific role to coordinate the BroadWay Programme that carries out a Pre-Commercial Procurement to enable pan-European mobile broadband capability for public safety responders (www.broadway-info.eu).

PSCE has a specific motivation and interest with 2 of the DRIVER+ standardisation activities to support the BroadWay programme:

- prCWA 17513:2020 Crisis and disaster management — Semantic and syntactic interoperability.
- prCWA 17514:2020 Systematic assessment of innovative solutions for Crisis Management — Trial guidance methodology.

Three external liaisons are in place through PSCE with regard to the utility of these two key DRIVER+ standardisation activities:

- prCWA 17514:2020 and prCWA 17513:2020 are explicitly cited in the BroadWay request for tender. Innovative suppliers are guided to make use of the outcome of these CWA's in their commercial delivery towards the BroadWay.
- The work of prCWA 17513:2020 has been presented to 3GPP. 3GPP standardises the exchange of mission critical data (MC-Data). prCWA 17513:2020 considers the encapsulation and presentation of information that can be transferred using 3GPP standardised mobile communication MC-Data services. A high degree of complementarity exists so liaison between the two activities is necessary and will persist beyond the timeframe of Driver+. prCWA 17513:2020 will be presented to 3GPP once complete.

4.1.3   Promotion of CWAs

In order to promote the DRIVER+ standardisation activities and to possibly get further experts for joining the CEN Workshop activities, the project participated in several conferences in 2019.

DIN participated with a presentation in the thematic session 'Disaster Risk & Crisis Management' at the 2nd Conference on Urban Resilience, organized in Prague on 3-4 October 2019 by EFEED, the European Economic and Social Committee, the European Committee of the Regions and the CIIRC of the Czech Technical University. The presentation consisted of a description of the standardisation activities within DRIVER+, the methodology used to integrate standardisation in this project, the CEN Workshops and its related DRIVER+ results as well as the possibility to join the CEN Workshops via the CMINE. The audience was very interested on the work presented and asked several questions to the presented Test-bed technical infrastructure, the Trial Guidance Methodology, the Portfolio of Solutions and their related CEN Workshops. One success factor of participating at the conference was that conference participants from

SBA Research in Austria actively contacted us for participation in the CEN Workshop 99, and got involved in the development of CWA 17513:2020 Crisis and disaster management – Semantic and syntactic interoperability. Thus, the attendance to this conference supported the dissemination of the project results and the standardisation activities, as well as gathered interests to join the projects' activities.

PSCE participated at the conference on 13 November 2019 in Brussels organised by CEN-CENELEC on "Boosting Innovation through standards". The event aimed to accelerate the market uptake of research and innovation (R&I) outcomes by using standardisation as an enabler. PSCE hold a stand in the exhibitors' area in order to present and promote the results of DRIVER+ and its four CWA. Visitors were interested in the standardisation activities developed in the field of Crisis Management. Discussions with other represented projects were also a relevant opportunity.

During the DRIVER+ final conference 19-20 January 2020 in Brussels the four CWAs as well as the PWI and the standardisation potential paper were presented at a stand dedicated to the DRIVER+ standardisation outcomes. Additionally PSCE gave a presentation on the standardisation potential paper as well as the CWAs aiming to present possibilities for research projects to cooperate with standardisation.

4.1.4   Cooperation with STAIR4SECURITY

STAIR4SECURITY is an EU-funded project which runs from January 2019 to December 2020 and develops an expert platform for the coordination of research-related standardisation activities in the operational security sector. The main objective of the project is to create a collaborative platform as single entry point of information on the security sector coming mostly from research activities allowing a better governance of standardisation needs in the CBRN-E (Chemical, Biological, Radiological, Nuclear, and Explosives) sector. The platform will permit a better overview of current and new projects having a standardisation dimension on national, European, or international level; ensuring more coordination between all stakeholders and responding more efficiently and timely to the critical needs following an agreed strategic vision and identified priorities. DIN as partner in DRIVER+ is also participating in STAIR4SECURITY and ensures that the outcomes of the DRIVER+ standardisation activities (i.e. CWAs, standardisation potential paper) will be transferred to and further considered in STAIR4SECURITY.

4.2   Sustainability of Standardisation potentials

A 'standardisation potential' presents an initial 'idea' of a concept that should be standardised. This idea can then be developed to understand more of the motivation to standardise, target group interest and potential impact. In the context of DRIVER+ several standardisation potentials were identified aiming to select some of them to become CWAs, input for existing standards, or new work item proposals. Standardisation potentials were identified during a dedicated standardisation potentials workshop with the DRIVER+ partners (see MS41 report (6)), during the 3rd I4CM, and as part of the standardisation group by the three CMINE task groups. The latter is shown in Section 4.2.1. All standardisation potentials are presented in a standardisation potential paper (7) developed by the CMINE group on standardisation aiming to be used as input for the platform developed by STAIR4SECURITY project. The planned exchange of results is presented in Section 4.1.4.

4.2.1   Standardisation on CMINE

Raising awareness about the standardisation activities conducted within DRIVER+ and about the added value that standards can bring in the Crisis Management domain has been further enhanced via the DRIVER+ Crisis Management Innovation Network Europe (CMINE). Meant to facilitate exchanges, to foster innovation and to promote a shared understanding at all levels of the Crisis Management cycle, CMINE not only supports an umbrella network of stakeholders but also provides an enabling environment for experience sharing and idea generation.

On CMINE, DRIVER+ standardisation activities are the subject of a dedicated group open to all CMINE users and coordinated and moderated by PSCE. Entitled "Standardisation Group", it informs about the benefits of standards and their development processes. Adopting a cross-cutting approach, it also acts as a liaison point with the DRIVER+ Task Groups to collect potential standardisation needs in floods, wildfires and volunteer management. Further, it presents and provides updates on the CWAs being developed by DRIVER+ together with all standardisation activities conducted under **WP955**. Finally, the current CMINE Standardisation Group is expected to help assess the need and possibility to have a Standardisation Task Group which would persist after the termination of the project in April 2020 and therefore contribute to DRIVER+ legacy in standardisation.

Design-wise, the CMINE Standardisation Group has been thought through to include informative items together with a moderated space for discussion. It is still a work in progress but is meant to eventually encompass:

- Background information on standards.
- Presentation of the CWAs development and of their chair teams.
- Glimpses into the standardisation work conducted by projects of interest for the DRIVER+ agenda.
- Database with selected documents on a range of topics including European standardisation, innovation, standards development processes, CWA development process together with infographics and tools.
- Forum with new ideas for standards.
- Moderated space for questions, comments, topics for discussion.

In terms of outputs, the CMINE Standardisation Group has been tasked with producing a White Paper outlining the standardisation needs as identified by the three Task Groups as well as the standardisation potentials identified by DRIVER+ partners. This paper has been presented to standardisation bodies, the EC and policy makers at the DRIVER+ Final Conference on 19 and 20 February 2020 in Brussels. It is anticipated to provide a basis that a future Standardisation Task Group will be able to build upon.

A summary of all identified standardisation potentials is presented in Annex 5.

5. Lessons learned

This section focuses on the lessons learned regarding standardisation in the DRIVER+ project. As the 3rd Policy Research Dialogue Roundtable (PRDR) focussed on the cooperation between research projects and standardisation committees and this is one important lesson learned of **WP955**, its outcomes are presented in section 5.1. These outcomes will be developed in the form of recommendations to DG HOME in a corresponding document. Section 5.2 focusses on the lessons learned of the DRIVER+ project regarding standardisation as part of the project.

5.1 Third Policy-Research Dialogue Roundtable

The DRIVER+ project has been jointly organising with DG HOME a series of three Policy-Research Dialogue Roundtables (PRDR). Focusing on ways to support a pan-European approach to capability development and innovation management in the field of Disaster Risk Reduction and Crisis Management, these events look into issues around a common Trial and validation framework to ensure comparability of EU-funded research projects' results and solutions to improve the uptake of these results.

For its third edition and final event of the series, the PRDR-3 aimed to convene an opportunity to gain an overview of DRIVER+ standardisation activities and their contribution to European Crisis Management. On 18th February 2020, the 3rd PRDR took place with a focus on standardisation in research projects and its collaboration with standardisation committees. 25 people attended the event, including representatives of ISO/TC 292, CEN/TC 391, DG HOME, CEN workshops and the DRIVER+ consortium.

The half-day workshop was opened with an overview of the standardisation activities conducted in DRIVER+. This was followed by a presentation showing the main results of the BRIDGIT2 project, which focussed on the interaction between research and standardisation. A presentation of STAIR4SECURITY project, which developed an update of the CWA process and the SMR project, which successfully integrated outcomes of a CWA in an ISO standard followed. After setting this scene the participants were asked to share their views and feedback regarding standardisation work. This was done following a SWOT-analysis approach: the participants were divided in four groups and asked to identify strengths, weaknesses, opportunities and threats they foresee when research projects contribute to standardisation work in the domain of Crisis Management. The outcomes are presented in Annex 6. Both perspectives are taken into consideration: the one of the standardisation committee member and the one of research project member.

From the SWOT analysis the following recommendations can be made regarding the cooperation between research projects and standardisation committees:

- Standards are written for end-users. Standardisation work of research projects finances project partner. Often this does not include many end-users. Therefore end-user needs to work pro bono on standardisation documents. This limits their involvement. Therefore it is recommended to have flexible budget in research projects to invite end-user, in the best case end-user who are already member of standardisation committees, for collaboration on standards.
- Experts in standardisation committees have a good overview about work in different domains of crisis management. Often they have lot of experience in the domain as well. It is recommended for research projects to discuss research project outcomes with the standardisation committees. How such a process can be established in a realistic way needs to be specified.
- Standardisation committees in crisis management are interested in new experts to become part of their committees. Research projects have a limited duration which is compared to standardisation work a short period. However, it is recommended to involve experts of research projects in standardisation committees. One already existing way is the Liaison between research projects and technical committees but a more sustainable approach would be endorsed.
- To get a better understanding of each other's needs and requests research project partner should be better informed on advantages of standardisation and its strategic potential regarding the support of their outcomes. Standardisation committees therefore need to get resources to influence the

standardisation work (CWAs, standardisation potential paper, PWI) of research projects. The ideal result would then be relevant standards supporting the aims of the standardisation committees and make the project outcomes well understood and sustainable for end-users.

A more detailed description can be found in the findings document of the 3rd PRDR published in April 2020.

5.2   WP955 lessons learned

WP955 *Standardisation activities* dealt with all standardisation activities within the DRIVER+ project. It had the following goals:

- Increase DRIVER+ project partners' awareness of standards in Crisis Management.
- Identification of standardisation needs.
- Prioritization of identified standardisation needs.
- Analysis of the gaps in the standardisation landscape and compare them with the standardisation needs of the project.
- Support existing or future standardisation activities.
- Support the dissemination and use of the DRIVER+ results through the planned standardisation activities.
- Improvement of EU Crisis Management through the standardisation activities of DRIVER+.

How these goals were achieved has been reflected upon in the previous deliverables **D955.11** (1) and **D955.21** (2) and is elaborated on in this deliverable. This section focuses on what the achievement of the objectives depended on, what challenges arose in this context and what steps led to the achievement of the objectives.

5.2.1   Increase DRIVER+ project partners' awareness of existing standards in Crisis Management

In order to give the DRIVER+ project partners an overview of standards in the areas relevant to them, extensive research was carried out on existing standards. This was evaluated by the members of **WP955** for relevance to the individual subprojects and then made available to all partners as a searchable list on the internal DRIVER+ SharePoint.

The project partners were, therefore, well aware that there are many standards related to the DRIVER+ related topics. However, the use of this list by project partners was not tracked. The creation of a list of project-relevant standards strongly depended on the level of knowledge of the **WP955** members regarding the activities and goals in the other subprojects. In addition, only the title and scope of the standards to be assessed could be given free of charge. For example, it had to be known in the first year of DRIVER+ on which topics the Trials would take place, which solutions should be tested there, which methodology was planned.

A comprehensive overview of standards in Crisis Management, but also on thematic focal points such as volunteer management, floods or wild fires has emerged. This overview served as a comparison with new standardisation ideas on a later stage of the project.

Lesson: Attention to standards in Crisis Management among **WP955** members was increased by evaluating the list. The list of relevant standards was a result of what was needed in the further course of the project. However, it is unclear whether the standards research has actually increased the attention of project partners for existing standards in crisis management. Therefore, it is recommended to explicitly reach out to specific consortium partners for whom the standards research could be most relevant and interact in a more focused way with these partners.

5.2.2 Identification of standardisation needs

Standardisation needs were identified during a 'standardisation potential' workshop with the project partners. A questionnaire was sent in advance, asking for project results that could serve as a basis for standardisation. The results were introduced in the form of a word cloud as input into the brainstorming part of the workshop. Within three hours, the participants identified and specified standardisation potential in small groups.

It was important that the participants had a good knowledge of the DRIVER+ project results and also understood that new standards are only developed if these standards need to be used.

Ideas for new standards were quickly found, but specifying them, i.e. clarifying what should be standardized in a method or technique and what should not, required further agreements. It helped that the people who proposed the idea explained it to someone who was not involved in the development of the technology or methodology. In this way, seven ideas were successfully formulated in a generally understandable way and, based on this, additional people from outside the consortium were attracted to participate.

Lesson: It is easy to develop rough ideas for new standards, but it is difficult to specify them and thus clearly work out what is suitable for a product, a methodology or similar to a specific standard. This requires an additional effort and it has proven useful to involve additional knowledgeable persons without any previous involvement.

5.2.3 Prioritization of identified standardisation needs

Due to the available resources in **WP955**, only three CWAs could be initiated in DRIVER+. However, which of the seven standardisation ideas should be pursued had to be prioritized. The **WP955** team used the ResiStand Assessment Framework (8) for this. The ResiStand Assessment Framework (RAF) generates a calculated result based on information on the impact for end-users and industry, the feasibility and ethical and legal issues, which represent the feasibility, the impact and the urgency of the potential standard. The user of the RAF also receives a result when it was partially filled in. An automatic comparison of the results is not given by the tool.

The achievement of comparable RAF results is, therefore, dependent on the level of knowledge of the users and thus, their subjective answers to the questions of the RAF. In order to obtain a comparable level of knowledge, the persons who had identified the standardisation potential were asked to fill out the RAF. In order to reduce the subjectivity of the results, an online survey was also carried out. Unfortunately, participation in the survey was very low, so the subjectivity could not be reduced as a result. Nevertheless, the RAF offered the opportunity for a well-founded discussion based on specific questions and thus led to a better thought out result than a purely intuitive decision.

Lesson: The RAF offers good support to analyse standardisation potential and to the decision making process. However, no decisions are automatically made by the tool itself; this task always remains in the hands of the decision-makers. In order to reduce the subjectivity, a group of experts needs to be consulted either during a discussion or via a survey.

5.2.4 Analysis of the gaps in the standardisation landscape and compare them with the standardisation needs of the project

WP955 has not analysed gaps in the standardisation landscape. The standardisation requirements dealt with within DRIVER+ arose on request. So, if there was a desire to standardize something and this standard did not yet exist, there is a gap in the standardisation landscape. However, if there is no demand for a standard, there is no gap in the standardisation landscape. A gap in the standardisation landscape does not depend on the completeness of standards but on the need for new standards. An essential principle of standardisation is not to standardize as an end in itself.

By identifying standardisation requirements along the work conducted within DRIVER+, gaps in the standardisation landscape were identified. However, a comparison with supposedly existing gaps could not take place.

Lesson: A precise formulation of the goals of standardisation activities of any research project is very important to include in the DoW to avoid misleading expectations. The approach followed in DRIVER+, by identifying standardisation requirements during the project, was well perceived by the partners.

5.2.5 Support for existing or future standardisation activities

Existing or future standards can be influenced by commenting on their published drafts. Drafts of new and revised standards are published to allow all interested parties to influence the documents. Comments must be submitted through the national standardisation bodies, also for European or international standards. To do this, the national bodies related to the specific topic must exist and be known. In addition, it must be known in what period comments can be submitted and in what form this is to be done.

When submitting the comments on EN 17173, the challenge was to convince national standardisation bodies not to reject DRIVER+ comments at the national level but to take them into the discussion at the European level. Therefore, DRIVER+ planned to submit comments in Germany, Austria and the Netherlands: the countries where the members of the DRIVER+ Terminology Working Group come from. In the Netherlands, there was no national committee mirroring the European committee, and in Austria, the comments could not be submitted on time. In Germany the national committee was willing to include four comments in the discussion at European level. Unfortunately, the comments were refused there on the ground that EN 17173 includes already too many terms and therefore will become too difficult in usage for end-user. Nevertheless, it can be considered a success to have the DRIVER+ comments discussed at European level.

Lesson: The more national committees agree to take up the comments and discuss them on European level, the better influence a research project has to get some of their comments accepted and therefore influence the standard. However, this takes time, especially if national bodies not represented by MS partners in the consortium, have to be convinced of the arguments.

5.2.6 Support for the dissemination and use of the DRIVER+ results through the planned standardisation activities

DRIVER+ has incorporated the Test-bed Technical Infrastructure (TTI), Trial Guidance Methodology (TGM), Societal Impact Assessment Framework (SIA) and crisis management terminology as specific DRIVER+ results through standardisation activities. The TTI, TGM and SIA are about to become formal CWAs; the terminology should influence EN 17173 and ISO 22300. In general, standards verify the results in such a way that a committee confirms them: temporarily in the case of a CEN Workshop or permanently in the case of a Technical Committee. With the creation of CWAs for the TTI and the TGM, these results were successfully converted into pre-standards. If they find an application in the future and establish themselves as de facto standards, they have the opportunity to be converted into a full standard. However, this transfer depends on the acceptance of the documents in the corresponding Technical Committees because only the members of the Technical Committees decide on new standards.

Lesson: CWAs should be written by the user of the standards to make those pre-standards de facto standards and therefore show a strong need to become formal standards. The more users, the better it is in order to strengthen the value of the CWA. These users should not be restricted to the project consortium, but include additional participants as well.

In the case of the SIA, after the negative feedback from CEN/TC 391, a CWA was not created. Since the reason for the rejection went hand in hand with the references to the direct creation of an international standard on the subject, it was decided by the project team to submit the SIA as a PWI, under ISO. An ISO standard is developed in an ISO/TC, to which DRIVER+ has no official connection and in whose creation no

external experts are involved. However, this should not be a problem for developing a standard. Provided that this approach works successfully, a full standard on the topic is immediately developed.

Lesson: Develop standards in Crisis Management on an international level, can be achieved via results of a European research project. In addition, it is not per se needed to go via a CEN Technical Committee.

The terminology standard ISO 22300 is revised under certain conditions: This document is based on the terms and definitions of all ISO standards in Crisis Management. Comments cannot be submitted directly for revision. To influence ISO 22300, it is required to comment on the other ISO standards in the area. Unfortunately, this approach was discovered too late for DRIVER+ and at the remaining time of the **WP955** activities, no ISO documents were released for comment.

Lesson: A unified terminology is not easy to build and involves rather complicated processes. It is highly recommended to know these processes (even as a standardisation body) as soon as possible to learn how to use them.

The first CWA developed in DRIVER+, the CWA 17335:2018 - Terminologies in crisis and disaster management, is currently being converted into a the national Austrian standard S2304 "Integrated Disaster Management – Terms and Definitions". This process is facilitated since the chairman of the respective CWA is also member of the Austrian standardisation committee. In the end, this new standard will be formulated in such a way it will not be directly identified as an initial DRIVER+ result.

Lesson: Involve members of standardisation committees in the development of CWAs. They can bring the topic on the agenda of the standardisation committees and adopt and promote the CWA results in a way that they are accepted by the committee members.

Overall conclusion: Regardless of whether the CWAs are ultimately converted into full standards, whether they are "only" an inspiration for future standards or whether the standards committees reject them, the members of the committees have dealt with the results from DRIVER+. These committees include well-networked national experts from all interested groups in this field. In any case, contacting standards committees have led to an increase in awareness and thus to the dissemination of the project results.

6. Conclusion

Developing four CWAs, writing a Preliminary Work Item proposal for ISO, contributing to existing standards, and writing a paper summarising standardisation potentials all in one research project is outstanding outcome for a standardisation work package of a research project. This was possible thanks to the high interest and strong support of the project partners in DRIVER+ to contribute to these tasks, to develop the documents needed and specially to find the right persons outside of the project consortium to work with on the standardisation outcomes.

Standardisation is done by the experts, and it is always a group effort. Therefore DIN thanks all members of the CWAs, especially the chair persons and vice chair persons for great work in the CEN Workshops, all **WP955** members for constructive discussion, the initiators of the SIA standard for taking heart and follow the PWI approach and PSCE to develop the standardisation potential paper related to the CMINE group.

The standardisation outcomes will be promoted by DIN also beyond the project duration. Therefore it will be considered where the CWAs can be submitted as basis for new work item proposals. Additionally, ISO identified innovative topics relevant for several ISO/TCs aiming to focus on them. One of three topics is societal impact assessment. Therefore ISO and DIN plan a workshop with ISO/TC 292 to discuss the SIA developed in DRIVER+ for crisis management.

References

1. **DRIVER+.** *D955.11 Report on existing standards and standardisation activities in crisis management.* 2018.

2. —. *D955.21 Report on DRIVER+ standardisation potentials.* 2019.

3. **CEN-CENELEC.** *CEN-CENELEC GUIDE 29 - CEN/CENELEC Workshop Agreements.* 2014.

4. **DRIVER+.** *D913.31 Societal impact assessment framework- version 2.* 2019.

5. —. *D913.41 A guide on assessing unintended societal impacts of different crisis management functions – v2.* 2019.

6. —. *D951.18 - SP95 coordiantion report - 4.* 2019.

7. —. *White Paper - Standardisation Potentials Identified by DRIVER+.* 2020.

8. **ResiStand.** *D6.1 The ResiStand pre-standardisation process.*

9. **CEN-CENELEC.** *CEN-CENELEC GUIDE 25 - The concept of Partnership with.* 2017.

Annexes

Annex 1 – DRIVER+ Terminology

In order to have a common understanding within the DRIVER+ project and beyond and to ensure the use of a common language in all project deliverables and communications, a terminology is developed by making reference to main sources, such as ISO standards and UNISDR. This terminology is presented online as part of the Portfolio of Solutions and it will be continuously reviewed and updated[4]. The terminology is applied throughout the documents produced by DRIVER+. Each deliverable includes an annex as provided hereunder, which holds an extract from the comprehensive terminology containing the relevant DRIVER+ terms for this respective document.

Table A1: DRIVER+ Terminology

Terminology	Definition	Source
Preliminary work item proposal		Definition is still "under development" and can be found online in the near future.
Interoperability	The ability of diverse systems and organisations to work together, i.e. to interoperate.	ISO 22397:2014(en) Societal security — Guidelines for establishing partnering arrangements.
Lessons learned	Lessons learning: process of distributing the problem information to the whole project and organization as well as other related projects and organizations, warning if similar failure modes or mechanism issues exist and taking preventive actions.	ISO 18238:2015(en) Space systems — Closed loop problem solving management, 3.3.
Societal impact assessment	The process of identifying, analysing and managing intended and unintended (positive or negative) societal consequences.	Initial DRIVER+ definition.
Standardisation document	A standardisation document is a document published by an international, European or national standardisation body.	Initial DRIVER+ definition.
Terminology	Set of terms representing a system of concepts within a specified domain.	ISO/TS 17117:2002(en), 3.1.

---

[4] The Portfolio of Solutions and the terminology of the DRIVER+ project are accessible on the DRIVER+ public website (https://www.driver-project.eu/). Further information can be received by contacting coordination@projectdriver.eu.

Terminology	Definition	Source
Test-bed technical infrastructure (TTI)	The software tools and middleware to systematically create an appropriate (life and/or virtual) environment in which the trialling of solutions is carried out. The Test-bed infrastructure can enable existing facilities to connect and exchange data.	Initial DRIVER+ definition.
Trial Guidance Methodology (TGM)	A structured approach from designing a Trial to evaluating the outcomes and identifying lessons learnt.	Initial DRIVER+ definition.
CEN/CENELEC Workshop Agreement (CWA)	CEN/CENELEC agreement, developed by a Workshop, which reflects the agreement of identified individuals and organizations responsible for its contents. It is a document made available by CEN/CENELEC in at least one of the official languages.	CEN-CENELEC GUIDE 29.
International standard	An international standard is standard that is adopted by an international standardizing/standards organization and made available to the public.	SO/IEC Directives, Part 2.

Annex 2 – Participation in Standardisation Activities

There was an allocation of person month (PM) for DRIVER+ partner with an interest in contributing to the CWAs. However, only five partners asked for additional budget but in total 13 DRIVER+ partners contributed to standardisation activities:

- AIT (**chairperson** of one CEN workshop).
- ARC (member of one CEN workshop).
- ARTTIC (member of one CEN workshop).
- DLR (member of one CEN workshop).
- Frequentis (member of one CEN workshop).
- JRC (member of one CEN workshop).
- PRIO (contribution to PWI).
- PSCE (**vice-chairperson** of two CEN workshops).
- SGSP (member of three CEN workshop)
- Thales (member of one CEN workshop).
- TNO (**chairperson** of one CEN workshop).
- VALABRE (member of one CEN workshop).
- WWU (**chairperson** of one CEN workshop).
- XVR (**vice-chairperson** of one CEN workshop).

Five partners requested additional budget to support the development process of a CWA; being the chairperson or vice chairperson of the CEN workshop, provide technical input to the document, commenting draft documents, get informed about the current status of the CWA.

Based on the following criteria TNO as scientific coordinator, ARTTIC as **SP95** lead, and DIN as **WP955** lead decided on the distribution of PMs until mid-April 2019:

- Expertise (relevance for the CWA content development).
- Expected contribution (coverage of the scope) and complementarity (to balance stakeholder).
- Required resources and number of partners requesting resources per idea.

It was decided to distribute the resources as shown in Table A2.

Table A2: Distribution of resources for standardisation activities

Partner	CWA	Tasks	PM
AIT	Requirements on information exchange across borders and organisations.	Being the chair person or vice chair-person of the CEN workshop.	1.5
DLR	Requirements on information exchange across borders and organisations.	Commenting draft documents; Provide technical input to the document (from your WP-expertise).	0.75
XVR Simulation	Building a common simulation environment.	Being the chair person or vice chair-person of the CEN workshop.	1.5
Austrian Red Cross	Requirements on information exchange across borders and organisations.	Provide technical input to the document (from your WP-expertise); Commenting draft documents.	0.5
Thales	Building a common simulation environment.	Commenting draft documents; Get informed about the current status of the CWA.	0.5

Annex 3 – New Terms of DRIVER+ Terminology

The following 20 terms presented in Table A3Table A are the expansion of the DRIVER+ terminology.

Table A3: New terms of DRIVER+ terminology

Term	Definition	Source
Cascading effects	Cascading effects are the dynamics present in disasters, in which the impact of a physical event generates other physical events or a sequence of events in human subsystems that result in physical, social or economic disruption.	planet@risk
Civil society	Aspect of society concerned with and operating for the collective good, independent of state control or commercial influence. DRIVER+ Note1: Part of the population that is linked by common interests, but not part of the professional response and not professionally trained in crisis management.	OED, civil society, [10.3.2015]
Community of Practice	A platform and its members that facilitate and foster cooperation and synergies among Crisis Management professionals. A broad variety of stakeholders including practitioners, researchers, industry representatives and/or policy makers can exchange knowledge and best practices and initiate cooperation on Crisis Management topics. DRIVER+ note 1: Within DRIVER+ it is implemented as the CMINE consisting of its members, an online platform and face to face meetings.	Initial DRIVER+ definition.
Competence	Ability to apply knowledge and skills to achieve intended results.	ISO 22300:2018(en) Security and resilience — Vocabulary.
Consequences	Consequences are the negative effects of a disaster expressed in terms of human impacts, economic and environmental impacts, and political/social impacts.	ISO 31010
Crisis management culture	A set of formal and informal behavioural rules, values and beliefs within the Crisis Management domain transferred and adapted over time. DRIVER+ Note 1: The approach of an organisation or another entity on how to implement and execute crisis management.	Initial DRIVER+ definition.
Crisis management cycle	See Disaster Management Cycle.	

Term	Definition	Source
Data Harmonisation	Providing access to spatial data through network services in a representation that allows for combining it with other harmonised data in a coherent way by using a common set of data product specifications.	INSPIRE glossary.
Disaster Management Cycle	Complete set of phases related to disasters and their management (prevention, mitigation, preparedness, response, rehabilitation, reconstruction and recovery).	United Nations » Home » Glossary » Term » Disaster Management Cycle [17.12.2013].
Disaster risk	The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.	UNISDR: General Assembly Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction. December 2016.
First responder	A first responder is a certified member of an authority with responding first to the scene of an emergency. (Note 1 to entry: First responders are member of fire and rescue departments, police departments, other law enforcement agencies, hazardous materials response teams, emergency medical services, and other organizations that have public safety responsibilities and who would respond to rescue and treat victims, and who would protect the public during an incident.)	EN17173
Hazard	A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Annotations: Hazards may be natural, anthropogenic or socionatural in origin. Natural hazards are predominantly associated with natural processes and phenomena. Anthropogenic hazards, or human-induced hazards, are induced entirely or predominantly by human activities and choices. This term does not include the occurrence or risk of armed conflicts and other situations of social instability or tension which are subject to international humanitarian law and national legislation. Several hazards are socionatural, in that they are associated with a combination of natural and anthropogenic factors, including environmental degradation	Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction, UN 2016.

Term	Definition	Source
	and climate change.	
Incident	Situation that can be, or could lead to, a disruption, loss, emergency or crisis.	ISO22300:2018(en) 11.
Informed consent	informed consent is the process of providing information regarding the assessment itself, purpose and its possible consequences, and obtaining consent from the assessment participant to participate in the assessment process	ISO 10667-2:2011
Innovation ecosystem	Complex system of interdependent components from the public and private sectors that work together to enable innovation within a city or community. DRIVER+ Note 1: The components may also be entrepreneurs, investors, researchers, university faculty, venture capitalists as well as business development and other technical service providers such as accountants, designers, contract manufacturers and providers of skills training and professional development.	ISO 37106:2018(en) Sustainable cities and communities — Guidance on establishing smart city operating models for sustainable communities, 3.1.
Naturalistic decision making	The way people use their experience to make decisions in field settings.	Zsambok, C.E. (1997). Naturalistic Decision Making: Where are we now? In C.E. Zsambok and G. Klein (Eds.), Naturalistic Decision Making (pp. 3-16). Mahwah, NJ: Lawrence Erlbaum Associates.
Risk	Effect of uncertainty on objectives. DRIVER+ Note 1: The combination of the probability of a hazardous event and its consequences which result from interaction(s) between natural or man-made hazard(s), vulnerability, exposure and capacity (based on HEIMDALL terminology).	ISO 31000:2018(en) Risk management — Guidelines.
Standardisation document	A standardisation document is a document published by an international, European or national standardisation body.	Initial DRIVER+ definition.
Table top exercises	Round-table discussion during which participants test an emergency response plan and its standard operating procedures by informally walking through a hypothetical emergency situation. DRIVER+ Note 1: In the context of DRIVER+ solutions rather	US Environmental Protection Agency

Term	Definition	Source
	than instead of processes and predefined scenarios instead of response plans are trialled.	
Taxonomy	Taxonomy is a scheme of categories and subcategories that can be used to sort and otherwise organize itemized knowledge (e.g. single item of knowledge, maintained, processed, and interpreted information) or information (i.e. data that are processed, organized and correlated to produce meaning). DRIVER+ Note 1: Taken and adapted from ISO 5127:2017(en).	ISO 5127:2017(en) Information and documentation — Foundation and vocabulary.

Annex 4 – Integration of HEIMDALL terms in DRIVER+ terminology

The terms presented in Table A4 were provided by HEIMDALL project and seen as relevant for the DRIVER+ terminology.

Table A4: Terms of the HEIMDALL project terminology

Term	HEIMDALL Definition	Source	Comment
Cascading effects	Cascading effects are the dynamics present in disasters, in which the impact of a physical event generates other physical events or a sequence of events in human subsystems that result in physical, social or economic disruption.	https://planet-risk.org/index.php/pr/article/view/208/355	
Consequences	Consequences are the negative effects of a disaster expressed in terms of human impacts, economic and environmental impacts, and political/social impacts.	(ISO 31010) See FBBR proposal for definition of terms	
Data Harmonisation	Providing access to spatial data through network services in a representation that allows for combining it with other harmonised data in a coherent way by using a common set of data product specifications.	INSPIRE glossary: http://inspire.ec.europa.eu/glossary/DataHarmonisation	
Emergency Management Cycle	Sequence of four civil protection phases: preparedness, mitigation, response and recovery.		DRIVER+ will provide an adapted definition. Maybe changed to: Crisis Management Cycle
Event	An event is "something that takes place; an occurrence at an arbitrary point in time; something that happens at a given place and time".		DRIVER+ will provide an adapted definition.
Exposure	The presence of people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected.	http://www.ipcc.ch/pdf/special-reports/srex/SREX-Annex_FINAL.pdf	
Field Observation	An observation that is directly observed by the reporter (an emergency professional).	EDXL-SitRep: http://docs.oasis-open.org/emergency/edxl-sitrep/v1.0/cs01/edxl-sitrep-v1.0-cs01.html	

Term	HEIMDALL Definition	Source	Comment
First Responder	First responders include public and private safety professionals and trained volunteers who respond to and provide services at emergencies where additional skills and resources may be needed to bring the incident to a safe conclusion. First responders, often the first trained personnel to arrive on scene, usually arrive with standard issue protective and tactical equipment, which may not be adequate for intervention due to the level of complexity of the intervention (chemical accidents, etc.) that could require of especially trained units with specific protective equipment. First responders often provide first detailed scene information to managing authorities and other responding agencies. As the incident evolves, first responders may assist with establishment of structured incident command. They may continue to participate in incident stabilization and mitigation under the direction and supervision of highly trained specialists. Usually first-responders are: police, firefighters, medical services, civil protection authorities, paramedics, etc.	Adapted from NIMS: http://www.esri.com/news/arcuser/1104/definitions.html	DRIVER+ provides a different definition (thesaurus)
Hazard	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.	See FBBR proposal for definition of terms; See other hazard-related terms in FBBR Terminology: Biological hazard; Environmental hazard, Geological hazard; Hydro-meteorological hazard; Man-made hazard; Natural hazard; Socionatural hazard; Technological hazard.	
Impact Assessment	After Situation Assessment, the impact of the given situation must be assessed (Level 3 – Impact Assessment). Regarding impact of actions, the impact estimate can include likelihood estimates and cost/utility measures associated with the potential outcomes of a player's planned actions.	JDL model of Data Fusion	

Term	HEIMDALL Definition	Source	Comment
Incident	An occurrence or event, natural or human-caused, that requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response. Each incident may have its own command.	ICS Glossary: https://training.fema.gov/emiweb/is/icsresource/assets/icsglossary.pdf	DRIVER+ is talking more about crisis and disasters.
Interoperability	Ability of systems, personnel, and equipment to provide and receive functionality, data, information and/or services to and from other systems, personnel, and equipment, between both public and private agencies, departments, and other organizations, in a manner enabling them to operate effectively together. Allows emergency management/ response personnel and their affiliated organizations to communicate within and across agencies and jurisdictions via voice, data, or video-on-demand, in real time, when needed, and when authorized.		Not for the DRIVER+ terminology. Can be kept for the thesaurus approach.
Response Planning	A disaster response plan should outline roles and responsibilities and prescribe a command structure as decentralized as necessary and as centralized as possible. A good disaster response strategy should also include what-if thinking. Some conditions pose frequent problems for disaster response plans, in particular the collapse of telecommunication infrastructure, a shortage of skilled personnel and an unanticipated magnitude of the disaster event. Disaster response plans should allow for these contingencies.	See Steigenberger, N. (2016). Organizing for the Big One: A Review of Case Studies and a Research Agenda for Multi-Agency Disaster Response. Journal of Contingencies and Crisis Management. Early Online, doi:10.1111/1468-5973.12106.	Not for the DRIVER+ terminology. Can be kept for the thesaurus approach.

Term	HEIMDALL Definition	Source	Comment
Risk	"Risk is a combination of the consequences (impact) of an event (hazard) and the associated likelihood/ probability of its occurrence (ISO) Risk = ƒ(probability, exposure, vulnerability) "	(ISO)	
Risk	The combination of the probability of a hazardous event and its consequences which result from interaction(s) between natural or man-made hazard(s), vulnerability, exposure and capacity.	See FBBR proposal for definition of terms".	Could be taken as a DRIVER+ Note to the DRIVER+ definition?
Risk Assessment	Risk assessment is the overall process of risk identification, risk analysis, and risk evaluation.	(ISO 31010) See FBBR proposal for definition of terms.	Not for the DRIVER+ terminology. Can be kept for the thesaurus approach.
Risk Scenario	Risk scenario is a representation of one single-risk or multi-risk situation leading to significant impacts, selected for the purpose of assessing in more detail a particular type of risk for which it is representative, or constitutes an informative example or illustration.	See FBBR proposal for definition of terms.	Not for the DRIVER+ terminology. Can be kept for the thesaurus approach.
Risk Scenario	Hypothetical situation comprised of a hazard, an entity impacted by that hazard, and associated conditions including consequences when appropriate. A scenario can be created and used for the purposes of training, exercise, analysis, or modelling as well as for other purposes.	(DHS Risk Lexicon 2010; https://www.dhs.gov/xlibrary/assets/dhs-risk-lexicon-2010.pdf).	Not for the DRIVER+ terminology. Can be kept for the thesaurus approach.

Annex 5 − Summary of standardisation potentials

In Table A5 the standardization potentials identified by DRIVER+ project via a standardization potential workshop, the CMINE or the 3rd I4CM are presented.

Table A5: Overview of standardization potentials

Standardisation Potential	Title
CM_SP1	Societal Impact Assessment Framework (SIA).
CM_SP2	Scenarios Description.
CM_SP3	Situational Awareness via Social Media.
CM_SP4	Symbols for the Common Operational Picture (COP).
CM_SP5	Crisis Management Terminologies assisting Coherence.
CM_SP6	Taxonomy of Crisis Management.
CM_SP7	Taxonomy of Solutions.
CM_SP8	Common Information Sharing procedures and methodologies.
CM_SP9	Solution Testing and Generic Practitioner Evaluation KPIs.
CM_SP10	Solution Integration into existing systems.
WF_SP1	Wildfire field types and impact.
WF_SP2	Firefighter Personal Protective Equipment (PPE) − guidelines of PPE to use in different wildfire types.
WF_SP3	Wildfire specific risk management (extending the generic risk management standard ISO3100X).
WF_SP4	Standardised GIS presentation layers.
WF_SP5	Community Resilience and Agility.
WF_SP6	Harmonised Competence Levels for international cooperation.
FL_SP1	Floods-related terminology.
FL_SP2	Protective devices classification.
FL_SP3	Flood risk and damage assessment aiming to determine comparable situations.
SV_SP1	Common Guidance for managing spontaneous volunteers.
SV_SP2	Common Guidance for care and support mechanisms for spontaneous volunteers.

Annex 6 – SWOT analysis of 3rd PRDR

During the 3rd PRDR a SWOT analysis was conducted. Table A shows the strength and weaknesses collected during the workshop and Table A6 the opportunities and threats for the collaboration between standardization committees and research projects. The detailed analysis is presented in the resulting document of the 3rd PRDR.

Table A6: Strength and Weaknesses

For	Strengths	Weaknesses
Research projects getting involved in standardisation.	• Use to get feedback on projects outcomes. • End user oriented documentation. • Access to standardisation world for research projects. • Standards in projects can reduce time for market uptake. • Common base for sharing knowledge between different organisations. • Support from standardisation organisations. • Standardisation network. • Branding of standardisation. • Easy public integration possibility when developing a CWA. • Additional partner apart from the project partners involved in CWAs. • Access to the market for innovation. • CWAs make research project results sustainable and accessible.	• Weak involvement of end user. • No communication between policy makers, researchers, end-users, NCPs, … • Limits (blocks) innovations, out-of-the-box-thinking. • Benefits of developing a standard unclear. • Difficulty to identify relevant R&I results for standardisation.
Standardisation committees involving research projects in standardisation.	• State-of-art documentation. • Bringing experts on one table.	• Weak involvement of end user. • No communication between policy makers, researchers, end-users, NCPs, … • Not the right stakeholder (not enough) involved in research projects to have all interested parties represented to write a standard. • Benefits of involving research projects unclear.
Politics including standardisation in funding.	• Funding availability for standardisation and innovation.	• No communication between policy makers, researchers, end-users, NCPs, …

Table A7: Opportunities and Threats

For	Opportunities	Threats
Research projects getting involved in standardisation.	• Visible and usable R&I projects results. • Getting knowledge out of standards. • Establish common best practices. • Getting a common language from terminology standards. • Use standardisation outcomes as a KPI for the impact of the projects.	• Lack of knowledge how to use standardisation as a strategic tool. • Missing uptake on CWAs. • Consensus building process can take a long time (longer than project duration. • Produce standards/results that will not be used. • Understanding of standards/standardisation in R&I projects not clear.
Standardisation committees involving research projects in standardisation.	• Getting new experts in technical committees. • Getting new knowledge for standards from R&I projects.	• Affordability. • (Right) expert's involvement.
Politics including standardisation in funding.	• For Horizon Europe to increase the integration and uptake of standardisation in projects thereby increasing economic value.	• Lack of interest/awareness by the government.