D4.1 MANAGING CHEMICAL SPILL EMERGENCY AND MIS-/DIS-INFORMATION THROUGH SIMULATED RESPONSES

Project acronym: BuildERS

Project title: Building European Communities' Resilience and Social Capital

Call: H2020-SU-SEC-2018-2019-2020/H2020-SU-SEC-2018

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Disclaimer

The content of the publication herein is the sole responsibility of the publishers and it does not necessarily represent the views expressed by the European Commission or its services.

While the information contained in the documents is believed to be accurate, the authors(s) or any other participant in the BuildERS consortium make no warranty of any kind with regard to this material including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

Neither the BuildERS Consortium nor any of its members, their officers, employees, or agents shall be responsible or liable in negligence or otherwise howsoever in respect of any inaccuracy or omission herein.

Without derogating from the generality of the foregoing neither the BuildERS Consortium nor any of its members, their officers, employees or agents shall be liable for any direct or indirect or consequential loss or damage caused by or arising from any information advice or inaccuracy or omission herein.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Project no.	833496
Project acronym:	BuildERS
Project title:	Building European Communities' Resilience and Social Capital
Call:	H2020-SU-SEC-2018-2019-2020/H2020-SU-SEC-2018
Start date of project:	01.05.2019
Duration:	36 months
Deliverable title:	D4.1 Managing chemical spill emergency and mis-/disinformation through simulated responses
Due date of deliverable:	30.04.2021
Actual date of submission:	30.04.2021
Deliverable Lead Partner:	Police University College
Work Package:	WP4
No of Pages:	81
Keywords:	CBRNE incident, communication, interaction, man-made crisis, training, vulnerability

Name	Organization
Pirjo Jukarainen (PJ)	Police University College
Miia Myllylä (MM)	Police University College
Camilla Kattelus (CK)	Police University College
Roosa Mäkelä (RM)	Police University College
Suvi-Tuuli Ames (SA)	Police University College
Johanna Argillander (JA)	Police University College
Asta Bäck (AB)	VTT
Toni Lusikka (TL)	VTT
Lucia Savadori (LS), internal review	University of Trento
Friedrich Gabel (FG), internal review	University of Tubingen

Dissemination level

PU	Public

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

History

Version	Date	Reason	Revised by
01	22.03.2021	Establishment of deliverable structure	KAA & JKE
02	01.04.2021	First draft for internal review	MM, PJ, TL, JA, RM, SA
03	06.04.2021	Revision to align with case study subject	JLU, RK, AO
04	06.04.2021	Internal review feedback received	LS
05	15.04.2021	Second draft discussed and restructured	AB, MM, PJ
06	20.04.2021	Third draft sent for internal review	MM, PJ, CK, AB, RM
07	24.04.2021	Internal review feedback received	FG
08	26.04.2021	Internal review feedback received	LC
09	30.04.2021	Final version sent for submission	PJ, MM, CK, RM
Final	30.04.2021	Deliverable submitted	AMH

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Executive Summary

This report documents a co-creation process of innovating training for the first responders (especially the police and rescue services) to improve their risk and crisis communication. We have carried a case study in Finland with special emphasis on people with different types of difficulties in terms of communication and interaction: people with mental health conditions, neuropsychiatric disorders, and/or intellectual disabilities. Due to these difficulties, they have less capacities as the so-called neurotypical persons to express themselves, be understood, and act upon knowledge. Furthermore, they are more prone to believe misleading and/or false information, which may be intentionally harmful (disinformation) or unintentional (misinformation).

We have engaged a variety of stakeholders in the process: first responders, NGOs, persons with personal experience of communication-related challenges (including trained experts by experience), teachers, students, technology developers and CBRNE experts. We have learned together that first responders need to find ways to overcome the so-called digital divide; not all persons can enjoy the full potential of new communication technologies, and therefore there is a need for multichannel communication and creative multi-professional collaboration in order to meet the needs of people who are difficult to reach with digital media. Furthermore, first responders need to enhance their competencies in producing easy-to-read and plain language content, when communicating about (preparing to) risks and sharing information on acute crisis.

As an outcome we have identified learning objectives and outcomes for training. These are related to the external communication and interagency collaboration and face-to-face encountering and interaction with people who have a variety of special needs in terms of communication. Specific sub-themes of training contents are: communication-related vulnerabilities in crisis, accessibility of risk and crisis communication (web accessibility, easy-to-read and plain language), responding to mis- and disinformation, finding strategic partnerships and coordination of communication with other agencies, managing challenging communication and social interaction situations (good practises for external communication and learning of practical interaction skills).

Within the BuildERS project Work Packages 6 (co-creation of innovations), 5 (formulating recommendations) and 8 (dissemination of results), we will continue the work, with an aim of improving the accessibility of crisis-related information and lowering threshold for a truly inclusive crisis management in the spirit of Sendai Framework for Disaster Risk Reduction 2015-2030. Later in the project we will carry further “tests” for the training concept with the forthcoming trainers and learners and produce training content with the experts of communication-related challenges, web accessibility, easy-to-read and plain languages.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

Table of Contents

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

List of Acronyms

ASD	Autism spectrum disorder
BuildERS	Building European Communities Resilience and Social Capital project
CBRNE	Chemical, Biological, Radiological, Nuclear, and high yield Explosives
COVID-19	Coronavirus disease pandemic
D	BuildERS project deliverable (result/report)
DoA	Description of Action (BuildERS project work plan)
E2R	Easy-to-read language
EU	The European Union
EU-28	The member states of the European Union (prior the withdrawal of United Kingdom)
ICT	Information and Communication Technology
NGO	Non-governmental organisation
OECD	The Organization for Economic Co-operation and Development
PTSD	Post-traumatic stress disorder
PUC	Police University College of Finland
WHO	World Health Organization
WP	Work Package
T	BuildERS project task
UNISDR	The United Nations Office for Disaster Risk Reduction
VTT	Technical Research Centre of Finland Ltd.
Trasim	Simulation training platform by Insta Digital Ltd.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

List of Figures

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

List of Tables

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

MANAGING CHEMICAL SPILL EMERGENCY AND MIS-/DISINFORMATION THROUGH SIMULATED RESPONSES

1 Introduction

This report outlines the methods, materials, and results of BuildERS project task T4.1 Finnish Case Study "Dangerous Chemical Explosion in a City Centre, Finland". This study is a part of Work Package (WP) 4, "Case Studies: Practicalities and innovations reducing vulnerability". As stated in the WP4 description, our objectives have been to test the validity of BuildERS project research results and find out what works and what does not work in practice. Our process of exploration has been co-creative; we have engaged a variety of stakeholders: first responders[1], non-governmental organizations, informal carers[2], experts by experience[3], and individual persons with various challenges in everyday life (for example due to mental health conditions or intellectual disabilities).

Our focus has been on risk and crisis communication[4] with persons who have different types of difficulties in communication and/or social interaction. The reasons behind the communication and/or social interaction difficulties are various: injuries, illnesses, inherited disorders. For our case study we have selected the most common factors, where prevalence is increasing in Europe: *mental health conditions* (like anxiety disorders, depression, post-traumatic stress disorders), *brain disorders/neuropsychiatric disorders* [like attention deficit hyperactivity disorder (ADHD) Autism Spectrum, Alzheimer's dementia, Parkinson's disease], and *intellectual disabilities*. We have also

[1] First responders are trained professionals who are among the first to aid in emergencies: firefighters, law enforcement officers, paramedics, emergency medical technicians EMTs.

[2] According to the organization of Carers Network Finland an informal carer is a person who provides care for a family member or a loved one who is unable to cope with everyday activities independently because of an illness, disability, or some other special care need. Carers are often parents of children with disabilities or adults who take care of their spouses or parents. See more on their website

[3] Experts by experience have personal expertise of issues, like mental health conditions or neuropsychiatric disorders. In Finland, they undergo training to share their experiences with peers, who need psychological support and practical advice.

[4] In the BuildERS project glossary, risk communication is defined as "*the process of exchanging or sharing risk-related data, information and knowledge between and among different groups such as scientists, regulators, industry, consumers or the general public*". Crisis communication is "*collection and processing of information for crisis team decision making along with the creation and dissemination of crisis messages to people outside the team.*" Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 113.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

decided to focus on persons, who are able to live independently, though they might receive services. This way, we will highlight the importance of self-determination of people.

Some of the difficulties in communication and/or interaction derive from memory loss, language problems, reduced thinking, and reasoning skills. Therefore, persons may have less capacities as the so called neurotypical[5] persons to express themselves and are at risk of being either misunderstood or side-lined. Common for these individuals is that their challenges in terms of communication and/or interaction may remain unnoticed, as they are not always "visible". Furthermore, because of their difficulties in self-expression, they may be completely ignored as conversation partners.

This has both practical and ethical implications. First, if the interaction and communication fail, persons' needs in crisis may be "side-lined" and/or they may not be able to ask for help or tell that they have injured or are in pain. Second, according to research, individuals with mental health conditions and/or brain disorders are more prone to believe misleading and/or false information (misinformation)[6] than control groups. This is because certain cognitive functions such as verbal fluency[7], analytical thinking and numeracy skills[8] are related to the accuracy of judgement and decision-making, and our thinking styles: whether they are more intuitive than reflective[9] (Matei et al. 2020; De keersmecker and Roets 2017). It is also important to note that correspondingly, exposure to false information about the risk and/or crisis may worsen mental health and wellbeing; recent study found that false information about COVID-19 pandemic was associated with psychological distress including anxiety, depression, and post-traumatic stress disorder symptoms (Lee et al. 2020).

Third, we should follow the principles of accessible and inclusive crisis management, advocated in the Sendai Framework for Disaster Risk Reduction 2015-2030 (UNISDR 2015). Consultations to develop crisis preparedness plans need to ensure that the discussions and associated materials are accessible to people with various disabilities. In addition, communication with first responders needs to be accessible to persons with disabilities, and persons with disabilities need to have the devices they require to communicate with first responders. (GFDRR 2018.) Furthermore, many neurodivergent persons have exceptional skills like absorbing large amounts of information or excellent memory of details. In the chaotic and complex crisis situations, these types of skills can be potentially very beneficial for coping with crisis but also overwhelming for the individuals. For the first responders, however, detailed eyewitnesses' observations of incidents, and/or identified characteristics of suspected perpetrators (in man-made crisis), are very valuable information.

All the above-mentioned means that the first responders and other authorities responsible of risk and crisis communication need to give attention to the *various communication- and interaction-related needs* of these individuals. We should avoid simple categorizations of sub-groups with "special needs" like the "disabled" or "mentally ill" (Kailes and Alexandera 2007). Even if we encourage the first

---

[5] Neurotypical refers to a person who has a typical brain. They are, for instance, not suffering from neuropsychiatric disorders, mental or neurological illnesses, or intellectual disabilities. Its opposite is neurodivergent person. Neurodivergent as a group are called neurodiverse.

[6] In the BuildERS glossary, misinformation is defined as "*confusing, false or misleading information, without the intent to mislead*". Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 112.

[7] Verbal fluency refers to word fluency: ability to produce and understand letters, words, and their categories.

[8] Numeracy skills help us to understand numbers, their magnitude and relationships and various kinds of mathematical operations.

[9] Intuitive thinking means understanding something instinctively: having "a gut feeling", without cognitive reasoning and rational decision-making.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

responders to consult the care takers and service providers for advice of the different – and often person-specific – needs, our aim is to improve the first responders' competencies to communicate with the persons themselves. After all, first responders are, as already the term indicates, first to inform, and provide guidance for the citizens. They are also responsible for raising awareness of risks.

Within the task 4.1 we have innovated training for the first responders – especially for the police and the rescue services, to improve their risk and crisis communication competencies. The training is built on an idea of *competence-based learning*. This means that more important than formal certificates are the knowledge, skills, attitudes, and behaviour that have relevance in the first responders' everyday work. Although many associate competence as just practical skills, (truly) competent individuals can reflect upon their knowledge, their skills, and their functioning (Westera 2001). These competences are both generic (communication and interaction skills) and profession specific (collaboration skills, understanding accessibility requirements for crisis-related information).

The training is designed for practitioners at three levels:

1) for the communication specialists and duty commanding officers, responsible of communication
2) for the field operations officers, responding to emergencies and interacting with citizens
3) for students of basic vocational training.

The training comprises of two thematic modules, which teachers and trainers can integrate in their course contents. This adds flexibility in the implementation and lowers the threshold of including "externally designed" methods and materials in teaching. It will also support the idea of mainstreaming the principles of accessible and inclusive first responder services in other education. However, some of the training materials and methods are designed to be utilized specifically in the continuing education / in-service training and some as part of the basic vocational training.

Training aims at increasing students' knowledge of different types of difficulties in communication and/or social interaction and providing practical skills to be applied in challenging situations. As it is a proof-of-concept, it serves as a "starter kit" type of repository for teachers and trainers, who may find inspiration to design even more developed forms of training. We will continue the cocreation process together with the potential end users: first responder trainers and learners and the experts on the accessibility of communication, including easy-to-read (E2R) and plain languages[10]. We will also find synergies with an ongoing Erasmus+ project MEET – Inclusive Emergency, which develops open and multilingual e-learning platform for firefighters on emergency planning and response when involving individuals with disabilities; the e-learning platform of MEET -project will be published in May 2022 under a Creative Commons license.

Although most training materials and methods have been designed within the task 4.1, the co-creation of the training concept will continue throughout the BuildERS project. After the initial planning has been completed, we will engage our first responder project partners (Estonian Rescue Board and the Civil Protection Department of the Autonomous Province of Trento) in the final validation of our pedagogical choices: expected learning outcomes and methods. In late Autumn 2021 we will carry a

[10] Guidelines for clear language have been formulated by international organizations like Clarity International, Plain Language Association International, and Plain Language Europe. There are also national associations advocating for easy-to-read and plain languages.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

test of the concept in the e-learning platform (LEEd) of the European Union Agency for Law Enforcement Training (CEPOL).

1.1 Mental health conditions, brain disorders and intellectual disabilities as factors of vulnerability in crisis

Research carried within the BuildERS project WP1 has identified communication as one of the central factors that may create or increase vulnerabilities in crisis. As stated in the BuildERS report D1.2, communication about risks and/or crises is not simply informing the public but an activity, which should consider several factors that may hinder or even prevent receiving, understanding, and acting upon information. These factors can be related to individual person (like illiteracy or personal health conditions) or socio-structural context (like communication systems that are non-accessible: not tailored to people with disabilities). In addition, vulnerabilities may be deriving from the particular crisis situation: for instance, when there is a disruption of critical infrastructure services.[11] Furthermore, the BuildERS project report D1.4 reminds that certain communication methods and the ways information is presented may cause vulnerabilities. For instance, many people have difficulties in interpreting maps and statistics.[12] In addition, there is a need for clear and concise language (so called easy-to-read language and plain language), for which there are specific guidelines.

We have continued our exploration of vulnerabilities based on the research findings of BuildERS WP1. We have focused on such factors that can possibly severely hinder either accessing or understanding of first responders' information. These factors are, according to research, also related to proneness to believe misleading, false and/or harmful information. Mental health issues, neuropsychiatric disorders and cognitive impairments increase individuals' vulnerability in crisis. According to research, people with lower levels of cognitive ability are more susceptible to misinformation due to their weaker capability of analytical reasoning and numeracy. (Matei et al. 2020; De keersmecker and Roets 2017.)

Deliberately misleading information (disinformation)[13] is very prevalent during terrorist attacks and other man-made crises. Unfortunately, we have also witnessed hate-speech: communication that spreads or incites hatred against one person or population group – not only in speech but in writing, pictures, symbols etc. Social media apps, internet discussion forums and popular culture are the common platforms for hate-speech. The Criminal Code of Finland mentions disability as one personal characteristic that can be a target of criminalized hate-speech (Ministry of Justice 2021). Although in Finland most hate crime cases filed by the police have been racist, annually approximately 5% of the cases have been related to victim's disability (Rauta 2020).

All the above put people at increased risk during crises. As stated before, we have selected the most common factors, which prevalence is increasing in Europe: mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities. First responders are increasingly

[11] Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 56-57
[12] Hansson S. et al. (2019). *D1.4 report on communication behaviour and use of social media in Europe*, BuildERS project, p. 18-19
[13] BuildERS project glossary, Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 111

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

encountering individuals, who have difficulties in terms of communication and/or social interaction and may lack adequate knowledge and skills to start conversation. First responders are not always aware of these difficulties, when planning their risk and crisis communication strategies. With the proposed training we aim to fill these gaps.

The Sendai Framework for Disaster Risk Reduction calls for an all-of-society engagement and partnership in preventing new risks, reducing existing risks, and strengthening resilience in crisis. This requires that crisis management agencies are working in an inclusive, accessible, and non-discriminatory manner. Sendai Framework mentions especially people with disabilities and their organizations as critical in the assessment of disaster risk and in designing and implementing disaster risk reduction plans. (UNISDR 2015.)

However, it is important to notice that mental health conditions, brain disorders, or intellectual disabilities do not cause similar levels of disability to every individual. As stated in the BuildERS project theoretical framework and research findings of WP1, each person's vulnerability depends on the combination of individual, socio-structural, and situational factors. For instance, risks to mental health are besides genetic and biological, also related to access to basic amenities and services and the living, educational, and working conditions. (WHO 2019.) Similarly, intellectual disability is both a medical and social issue: a combination of health conditions and various socio-structural factors (like people's attitudes, physical infrastructures, legal structures, climate) as well as individual factors (gender, age, coping styles, social background, education, profession, past and current experiences). Disability also varies on a scale; it may be linked to the functioning of body or body part or the whole person in a social context. This dysfunction may occur due to physical impairments, activity limitations, or participation restrictions. (WHO 2002.) Even persons with severe challenges in communication and social skills can learn to prepare for crises/disasters. For example, Indriasari et al. (2018) made an interesting scientific experiment: they found out that a simulation-based risk awareness training together with parents did not only improve autistic children's preparedness to earthquakes in Indonesia but also their ability to communicate both verbally and non-verbally.

Furthermore, as noticed in earlier BuildERS project research, also the first responders themselves can be vulnerable due to the exposure to crises.[14] Fullerton et al. (2004) compared those disaster and rescue workers who had been helping the victims and survivors of terrorist attacks 11th of September 2001 and rescue workers who were similar in terms of socioeconomic background. Researchers found that the exposed disaster workers had significantly higher rates of acute stress disorder, post-traumatic stress disorder (PTSD) at 13 months, depression at 7 months, and depression at 13 months than comparison subjects. Especially the younger and non-married rescue and disaster workers were more likely to develop acute stress disorder. (Fullerton et al. 2004.) The police have developed ways to cope with stressful events; critical incident stress debriefing (CISD) is a popular method intended for emergency service personnel such as police, rescue services, and paramedics. It is especially popular among the police though there is evidence that it might not be as effective as believed (Mitchell 1983; Paterson, Whittle, & Kemp 2015).

[14] Morsut C. et al. (2020). *D1.3 report on segments of vulnerability country by country basis – inside and outside the official data*, BuildERS project

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

1.2 Prevalence of mental health conditions, brain disorders and intellectual disabilities in Europe

As the reasons behind communication- and/or interaction-related difficulties are various, it is difficult to provide exact estimates of the number of individuals suffering from difficulties in communication and/or interaction due to mental health conditions, brain disorders or intellectual disabilities. Therefore, we can only give some estimates per specific sub-groups.

Autism is a developmental disorder characterized by disturbance in language, perception, and socialization. In addition to autism, *Autism Spectrum Disorders* (ASD) include Asperger syndrome, Fragile X Syndrome, Landau-Kleffner Syndrome, Rett syndrome, childhood disintegrative disorder, and PDD-NOS (pervasive developmental disorder not otherwise specified). These disorders have their distinct hallmarks and cause diverse difficulties in everyday life. (EU 2005.) Due to national differences in patient registration and data collection methods, it is very challenging to provide exact numbers of ASD prevalence in European countries. However, according to an EU-funded research, prevalence rate of ASD among children ranged from 26,8 per 1000 in Iceland to 5,4 per 1000 in France. Finland had an overall ASD prevalence rate of 7.7 per 1,000. (ASDEU 2018.) National association for people on Autism spectrum in Finland estimates that it represents 55 000 persons with an autism spectrum disorder (Autism Finland 2021).

Dementia is a syndrome in which there is deterioration in memory, comprehension, language, and judgement. Alzheimer's disease is the most common form and contributes approximately to 60–70% of cases. Although dementia is not an inevitable part of aging, it is one of the major causes of disability and dependency among the elderly worldwide. Yet, as it is progressing gradually, it may be difficult to identify at the early stage. (WHO 2020.) In 2018, it was estimated that 1.9% of total EU population (EU-28) suffered from dementia, and this share is expected to grow to 3.28 by 2050. Table 1 shows that there is a steep growth in dementia in the ages 75 and more. (Alzheimer Europe, 2019.) According to the Finnish institute for health and welfare, in Finland, approximately 190 000 people have some form of memory disorder and there are about 14 500 new cases each year. Majority of persons with memory disorder are over 80-years old; yet, there are also 7000 persons of working age (between 35 and 65, who have been diagnosed of having a progressive memory disorder. (THL 2021.)

Age range	Prevalence
60 – 64	0.6
65 – 69	1.3
70 – 74	3.3
75 – 79	8.0
80 – 84	12.1
85 – 90	21.9
90+	40.8

Table 1. Prevalence rate of dementia in Europe in age groups 60 and older, Alzheimer Europe (2019).

According to OECD/EU (2018), there are gaps in information about the occurrence of mental health-related issues in European countries, but existing data shows clearly that *mental health conditions* are quite common: more than one in six people across EU countries or 17.3% or nearly 84 million people had some type of mental health condition in 2016 (Figure 1). The most common mental health

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

conditions in Europe are anxiety disorder (25 million people or 5.4% of the population) and depressive disorder (over 21 million people or 4.5%). Severe mental illnesses such as bipolar disorders affect 5 million people (or 1.0%) and schizophrenic disorders 1.5 million people (or 0.3%). (OECD/EU 2018.) Although crises have inevitably increased the prevalence of various mental health conditions, luckily, they have also boosted the capacity building of mental health services. As WHO states, when there is enough political will, disasters and humanitarian emergencies can be catalysts for building quality mental health services. (Ommeren 2019.)

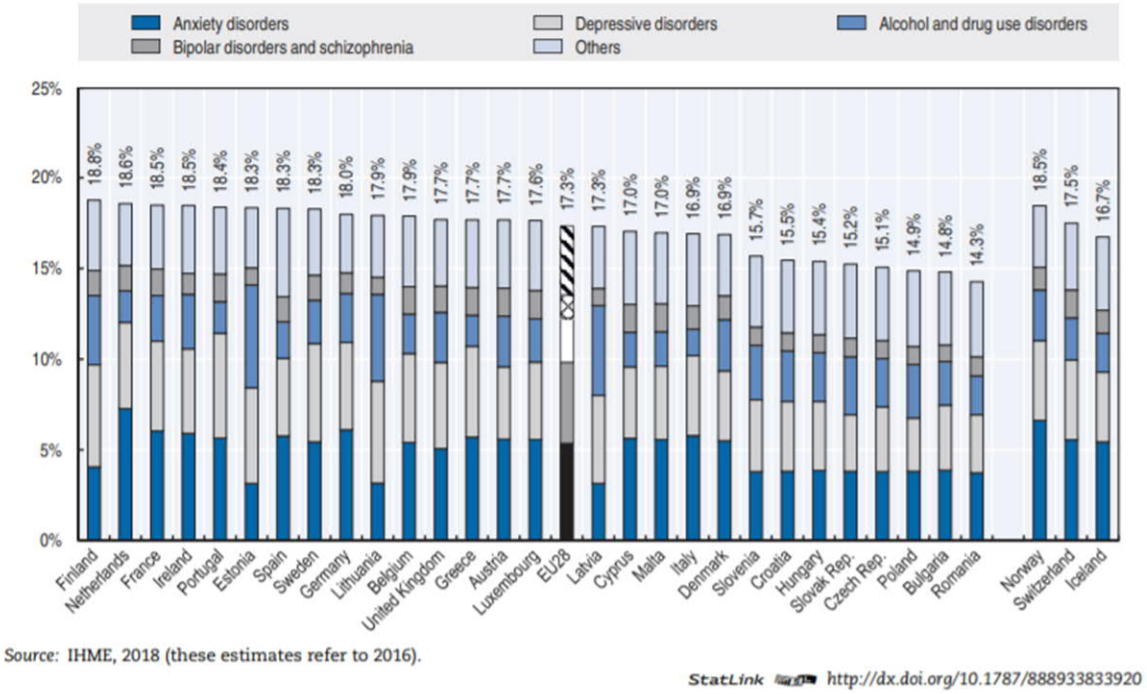


Figure 1. The prevalence of various mental health problems in EU countries (OECD/EU, 2018; IHME = Institute for Health Metrics and Evaluation).

The World Health Organization defines *intellectual disability* as "significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence)." According to WHO, this results in a reduced ability to cope independently (impaired social functioning) and begins before adulthood. (WHO 2021.) As with the ASD, also the prevalence of intellectual disability in Europe is difficult to measure; there is a lack of standardization of definitions and in recruiting and including cases, and thus the numbers from different countries are not fully comparable. However, the overall prevalence of intellectual disability is approximately 1% of the whole population in Europe, and the approximate prevalence rate of severe intellectual disability is 0.4%. (Bakel et al. 2013.) In Finland, about 50,000 people live with intellectual disability. The causes for it vary from genetic factors, problems or alcohol use during pregnancy, problems at childbirth such as lack of oxygen, childhood injury, and childhood illnesses. Intellectual disability means difficulties in learning and understanding new things, and its degree varies a lot. Some persons can cope relatively independently and need support only in certain spheres of life while others need continuous support. (Kehitysvammaliitto 2021.)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

When looking at the numbers of people with mental or cognitive problems, it is important to note that these people often live at home and are unable to manage their daily life independently and need help. This help is often provided by *informal carers*, family members or relatives. In Finland, a family member may make a contract about caring for a family member with the municipality making their status official (Laki omaishoidon tuesta 2005). There are approximately 350,000 carers in Finland and 60,000 of them are carers in binding and demanding situations. The most common reason for need of a carer are memory disorders and often the carer is him/herself an elderly person. (Omaishoitajat 2021.) Association for European carers estimate that in Europe, 80% of Long-Term Care (LTC) is provided by informal carers.[15] Yet, not all live with a carer. For instance, out of the 31,000 adults with intellectual disability; 12,000 of them live in supported housing services, while 9,000 live with a family member and 9000 live independently (Pitkänen, Huotari, Törmä 2018). In our case study we found out that the informal cares may be also vulnerable, as they are often elderly and over-burdened, but they may not understand their own situation.

1.3 First responders' knowledge, skills, and attitudes as a vulnerability factor

As stated before, there are several communication-related factors that either increase or decrease the degree people are disabled or become vulnerable in crises. According to research in BuildERS project WP1, these are linked to the accessibility and understandability of information, and factors that prevent acting upon information, like being dependent on assistance to react to warning messages.[16] In the Finnish case study, we identified even more factors that may increase people's vulnerabilities in crises. One of the vulnerability-increasing aspects is *the first responders' lack of knowledge and skills to meet the various individuals' needs in terms of communication and social interaction.*

In particular, we found the following areas that need improvement:

- *Digital divide*: During our case study, we learned that the Finnish police and the regional rescue services tend to release crisis-related information increasingly via digital channels: social media platforms and institutional websites. This means that the Finnish first responders should take into account the prevailing digital divide when communicating about crises; there are many who do not use digital devices or search for information from online sources (online newspapers, blogs, websites, social media etc.). The reasons behind the digital divide are not only socio-economic or educational. Therefore, providing access to digital services or tools will not alone solve the digital divide. According to research, there is growing evidence of technostress in current information age, which is preventing people from using digital information sources. Repetitive compulsion to check smartphone for new messages, growing bombardment of advertisements on various ICT platforms, continuous distractions from system notifications etc. have resulted in physical stress. Second aspect is related to markets: most of the current digital devices and services are geared towards younger generations and the elderly people are extensively ignored. Aging brings also

[15] See more on the website of Eurocarers, the European Association Working for Carers
[16] Hansson S. et al. (2019). *D1.4 Communication behaviour in Europe and vulnerabilities understanding communication-related vulnerability and resilience in crises*, BuildERS project

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

various difficulties that can hinder the usage of digital services: for example, weak eyesight, memory loss or cognitive dysfunction. (Mubarak 2018)

- *Collaboration with the journalists, service providers and intermediaries of persons with communication-related difficulties*: It is challenging that at the early stage of crises – especially after the man-made incidents – first responders are not always willing to respond to traditional media's requests for interviews, when the situation picture is vague and there is not much to tell. Due to this, those who mainly listen to radio or watch TV may feel unsafe, as they will primarily see/listen sensationalist news created by journalists. In the training, we emphasize the need to combine external communication with door-to-door interaction and train skills to encounter persons with different mental health conditions, brain disorders and intellectual disabilities. When the first responders do not have enough resources (field operations units), knowledge or skills, they should collaborate with other service providers (like the psycho-social support) and intermediaries of persons with difficulties in terms of communication and/or interaction.

- *Accessibility of information:* As both the first responders and journalists publish many sequential and partial pieces of information during the crises, the result is an "information overflow and puzzle". For instance, persons who have memory disorders like dementia should be able to receive the same key message repeatedly from different channels, as they may forget what they have heard or read and their skills to use devices may vary, even within the same day. Consequently, they may be able to turn on the radio or make a phone call in the morning but forget these skills later that day. Accessibility is also related to the content of information. Easy-to-read language[17] is easier to understand for the intellectually disabled, and persons who are not native speakers of foreign languages. Plain language[18] contains a bit more complicated sentences than easy-to-read but is still clear and comprehensible. Guidelines for clear language have been formulated jointly by international clear language organizations (like Clarity International, Plain Language Association International, and Plain Language Europe). These have also developed supportive tools and e-learning environments.[19] However, not only persons with difficulties in communication, but many segments of society benefit when officials use easy-to-read and plain language and provide their messages in various forms: shorter and longer texts, visual infographics, and podcasts to be listened.

[17] Intermediaries' network and association: Inclusion Europe defines easy-to-read as information that is written in a simple way so that people with intellectual disabilities can understand. It uses simple words and sentences and the difficult terms are explained. The text is also clear to see, for example, black writing on a white background. It is also well-spaced and uses often pictures to explain what the text talks about. (Inclusion Europe 2021.)

[18] According to the Institute for the Languages in Finland, in plain language the content is described in concrete terms, and new information ties in with what is already familiar to the readers. The text illustrates the background information and reasoning on which the facts in the text are based. Moreover,
readers are not expected to be familiar with the officials' procedures and practices. Instead, readers are explained how they can handle matters. (Institute for the languages in Finland 2019.)

[19] For more, see websites of Clarity International, Plain Language Association International, and Plain Language Europe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

- *Inter-agency and multi-professional collaboration with the intermediaries*: Especially persons with intellectual disabilities or on the autism spectrum need someone to interpret news and correct misunderstandings. Oftentimes persons take the messages posted on social media and internet literally; they might not understand sarcasm or be able to assess the reliability of information source. Therefore, first responders should seek for collaborative partnerships with the intermediaries: for example, the affiliated NGOs and their volunteers or the trained experts by experience who know best the needs of different individuals.

The learning outcomes (and respective learning contents) for the first responders' training are based on these areas of improvement mentioned above. After the training students have increased their competencies to interact and communicate. For instance, students will learn of web accessibility and what are easy-to-read language and plain language. They will also learn to build collaborative relationships with the individual's social networks including their connections to the different service providers. In theoretical terms, this would be a matter of combining people's horizontal and vertical social capital. Social capital is a kind of "safety net" for people in crisis situations: it provides access to various kinds of resources and enhance their mental health (Albrecht 2017, 21). Horizontal networks consist of relations that are emotionally close to people and of relations that allow individuals to connect across ethnic and racial groups. People's vertical networks connect them to those who have power and authority, and to the ones who can distribute (scarce) resources. (Aldrich 2011.)

BuildERS deliverable 1.2 continues by noting that in crisis, horizontal and vertical capital have different effects to individuals. Through horizontal ties, people get immediate support such as finding shelter or supplies, whereas through vertical ties, people can access long-term support (Aldrich & Meyer 2014; Falk 2015). Furthermore, all social networks are channels for exchanging crisis-related information. Social capital is also connected to preparedness. Martins et al. (2019) have noted in their study on Superstorm Sandy in New York in 2012 that the extent which households have social capital is linked to how well they are prepared to crises. Consequently, all types of social capital – horizontal and vertical – are needed to build resilience (Wood et al. 2013).[20]

By strengthening the inter-agency relationships between the crisis management organizations and other relevant service providers we also strengthen the ties between the vulnerable segments of society and crisis management institutions. According to the intermediaries and experts by experience who took part in our case study, people with difficulties in social interaction and/or communication need their social networks in understanding information. For example, someone with more severe autism and limited communicational capacity might not react to strangers at all (authorities or otherwise). They are more open to messages from people that they know such as family members or personnel at housing services or at a day centre. People with mental health conditions, brain disorders, or intellectual disabilities might not listen, respond, or act according to instructions due to various reasons.

Mental health conditions can cause delusions related to conspiracy theories and lack of trust towards people. Individuals with mental health conditions may also have low trust towards social and health care authorities; yet, we learned from our stakeholders that trust towards police can be high. Memory disorders, like dementia, in turn have anger and aggressive behaviour as a common symptom. Elderly

[20] For more of social capital and crisis, see: Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 40-47

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

people often trust known authorities such as doctors, lawyers, police, and the priest regardless of memory disorders. In crises, people with memory disorders often realize that they should contact the authorities yet fail to do so. Moreover, they may have strong relations to family and friends while being distrustful of strangers.

However, it is important to note that the social capital is not always improving people's safety and wellbeing. In our case study, we have also explored the negative, "dark" sides of social capital, mentioned in the BuildERS D1.2.[21] In particular we discussed with the intermediaries about the psychological, social, and economic dependencies of individuals. Persons with mental health conditions, brain disorders, and/or intellectual disabilities often lack powers to make decisions on their everyday life: where and how they live, who they interact with and what communication channels are available. In addition, their informal carers may be equally vulnerable, as they are tied to take care of their family members, even if they would be aggressive or resisting care.

Social capital can be harmful when it leads to exclusion of out-group members; forces individuals to support others against their own benefit or restricts individuals' freedoms (Portes 1998, 17). Similarly, MacGilliwray (2018) has listed the negative effects of strong social capital in the context of (climatic and geophysical) disaster management. He has identified four negative consequences of social capital that he calls as its "dark side". First, connections and interactions can be misused to deprive "out-groups" of their needs and rights. Second, in some cases social capital can advance corruption of the elites, for example through intentional misdirection of relief projects. Third, social capital can sustain irresponsible governance regimes that prepare for crisis or plan recovery schemes that are not considering the needs of communities. Finally, social capital can be conservative in nature: uphold existing norms and power structures and thus prevent social change. (MacGillivray 2018.)

Wolf et al. (2010) in turn have noted that strong bonding networks can exacerbate, instead of reducing, the vulnerability of people. They conducted a study in the UK focusing on how independently living elderly and their social contacts perceive the elderly's vulnerability in the context of heat waves. In their interviews, they found that most of the interviewed elderly did not perceive heat waves as a personal threat to them, even though they were a part of a risk group. Accordingly, they often did not ask help from their social contacts. The social contacts, in turn, perceived the elderly to be independent and capable of surviving on their own. Therefore, both the elderly and their social networks maintained a narrative of independency and ability to cope with crisis. (Wolf et al. 2010.)

Therefore, it is important that the first responders can build direct relationships and trust with the individuals who have communication- and interaction-related difficulties. Furthermore, they need to overcome their own prejudices and misunderstandings. Persons' difficulties in expressing themselves may be mistakenly interpreted as arrogance, indifference, or insubordination. First responders may also believe that a meaningful interaction and communication is impossible. Therefore, the targeted learning objectives of training need to build knowledge and skills and support the positive changes in the attitudes.

[21] Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 46

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

There is much research on police officers' attitudes toward people with mental health conditions. For example, Oxburgh et al. (2016) noticed that attitudes toward people with mental illnesses are generally more negative than toward people without illnesses (Oxburgh et al. 2016). Godfredson et al. (2010) found that officers face serious obstacles in their encounters with people experiencing mental illness concluding that these can be influenced by officers' attitudes. In another study by Godfredson et al. (2011) it was found that the police officers needed support from different mental health agencies such as hospital and emergency psychiatric teams. The officers considered it to be difficult to understand mental health conditions and to communicate with individuals. The authors state that police would benefit from formal cooperation with mental health agencies as well as from training on different mental health issues. Also, Mclean & Marshall (2010) conclude that the development of collaborative approaches between the police and mental health service providers would solve many perceived difficulties related to encountering people with mental health conditions.

Henshaw and Thomas (2012) in turn, studied police encounters with people who have an intellectual disability in Australia. The study found that police officers mainly based their knowledge on job-related experiences and commonly identified individuals based on physical and behavioural cues. Communication was considered a challenge as well as gaining access to assistance and co-operation from other service providers. Those officers who identified that they were most in need of training reported lower confidence in responding to these encounters. The writers conclude that future training should focus on differentiating between mental health conditions and intellectual disabilities, techniques for identifying various disabilities and communication skills. Training should also have scenario-based sessions of everyday encounters. (Henshaw and Thomas 2012.)

Crane et al. (2016) surveyed police officers in England and Wales and found out that only 42 % of officers were satisfied with how they had worked with individuals with autism. One of the reasons were time constraints. Even though the police were mainly satisfied with how they had interacted with people with autism, people themselves were generally dissatisfied with their interactions with police, and they reported discrimination, lack of clarity and explanation, and the feeling that their needs were not met. The authors conclude that there is an urgent need of national evidence-based guidelines and training on autism spectrum disorders (ASD) for police services, and that further research is needed for developing police strategies for effective engagement with the ASD community. (Crane et al. 2016.)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

2 Pedagogical approach behind the case study

The Police University College of Finland is one of the advanced higher education police institutions in Europe. Yet, currently very little training is provided on communication and person-to-person interaction with individuals who have mental health conditions, neuropsychiatric disorders, or intellectual disabilities. Furthermore, training has been rather teacher-centric and packaged in short and generalizing lectures. Due to this, students may have gained too simplistic and limited view of communication- and interaction-related difficulties.

Police education is historically closely tied to practice and often thought to be a profession where learning takes place on the field. The police often appreciate practical knowledge from the field over academic and scientific knowledge (see for example Aas 2016). Nonetheless, approaches such as "evidence-based policing" that guide operating models, have gained more prominence over traditional reactive policing practices over the last decades. Consequently, police "learn by doing" sometimes by applying such techniques as problem-based learning and often with the help of simulation exercises imitating real situations in the field.

In the case study, we have developed training which uses a fictional crisis/disaster scenario that simulates real-life working environments. The scenario is used to highlight the most essential decision-points and that there are no single right answers in situations. We have produced videos and photographs of first responder-citizen interactions, which are not undermining individual's mental health conditions, neuropsychiatric disorders, or intellectual disabilities. Students are shown more subtle signs of challenges in person's abilities to socially interact and communicate. We will encourage students to view people as a source of information, hence emphasizing their capacities and potential to support crisis management.

Training developed within the case study is *competence-based*. This means that the targeted learning outcomes are determined by the practical competencies needed in the working life. Competence-based learning most strongly applies to Polytechnics or Universities of Applied Sciences where the connection to work-life is strong. It is important to define the expected competence level for the training to make it suitable in the European context for as many police and rescue service organizations and educational systems as possible. In this we have applied the revised Bloom's taxonomy[22], which classifies educational objectives on a hierarchical scale. The original taxonomy has since been modified by cognitive psychologists (Anderson et al. 2001). The current, universally applied hierarchical categories of cognitive skills are remembering, understanding, applying, analysing, evaluating, and creating. At the lowest level, students only memorize and recall what they have previously learnt. Second level, understanding refers to the ability to explain, summarize, and compare facts and ideas. At the third level, students can apply the knowledge and the learnt techniques in practice. This is followed by the ability to break the information into parts, restructure, assess, test, and even measure and criticize it. At the highest level of thinking, students innovate something new based on their learning: solutions, plans, or theories.

[22] In 1956, Benjamin Bloom with collaborators Max Englehart, Edward Furst, Walter Hill, and David Krathwohl published a framework for categorizing educational goals: Taxonomy of Educational Objectives. Familiarly known as Bloom's Taxonomy.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The BuildERS training concept includes multimedia learning content and simulation exercises that aim at:

- Providing factual knowledge of vulnerabilities in terms of communication and interaction (at the 1st level of revised Bloom's taxonomy).
- Helping students to understand, why some individuals are more vulnerable than others (2nd level of taxonomy).
- Building students' capacity to apply the knowledge in practice, and to solve communicational challenges in their external communication and daily field operations as police officers and fire officers (3rd level of taxonomy).
- Helping students explore relationships between communication related vulnerabilities and draw connections among ideas to build resilience in communication (4th level of taxonomy).
- Helping students to critically evaluate their own communication capacity, rate it and judge need for future action (5th level of taxonomy).

To create a training concept, several different factors need considering. *A pedagogical approach* offers the overall structure: here the central principles are competence-based learning, work-life connection, and student centricity. *A pedagogical script* on the other hand, helps to phase learning into smaller parts. The chosen pedagogical approach guides the script writing process. Finally, the student follows the pre-set *learning path* determined by the script, and the objective is to reach the *targeted learning outcomes*.

A coherent pedagogical script or storyboard helps set coherent guidelines for a (digital) course. It can be a visual presentation or interpretation for how to organize course content and activities and how they relate to each other (Hirtz 2011). Our pedagogical script consists of following elements:

- target group description (who are the learners),
- objectives (what should the students learn),
- content (what kind of learning content allows to achieve the objectives),
- materials (what kind of learning materials are building up the content),
- modes of operation (what are the roles of students and teachers during the training),
- assessment (how to measure that the learning objectives have been achieved).

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The student is at the heart of the circle also exemplified by the following image:

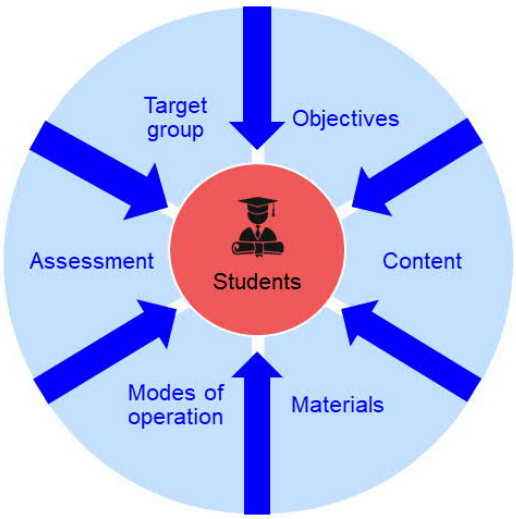


Figure 2. The pedagogic script 1/2 (Lehto n.d.)

To set the goals, the teacher can plan further and, in more detail, (figure 3):

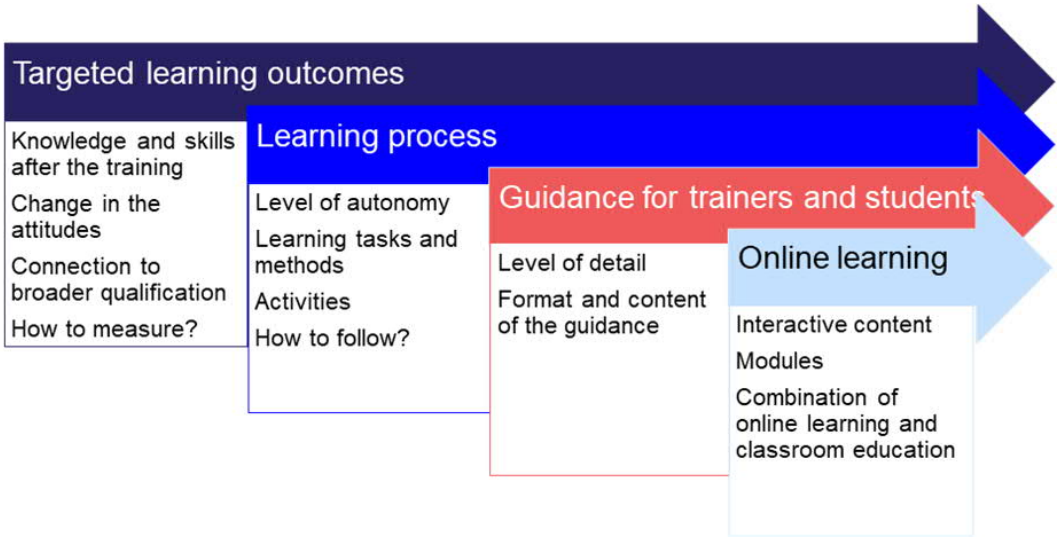


Figure 3. The pedagogic script 2/2 (Based on Jussila & Kupila 2012)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

When defining the *targeted learning outcomes,* we have asked the following questions:

- What should the student know after the training?
- What skills should the student achieve during the training?
- What kind of change in the attitudes should the training promote?
- How can we measure that the learning outcomes have been achieved?
- How does the training complement the broader qualification?

What content is needed to achieve the learning outcomes?

When designing *the learning process,* we have determined:

- What level of autonomy is afforded to the student in going through the training content?
- What are the learning tasks and the methods used? How do they support learning?
- What activities are required of the student: individual (reading, writing, reflection) and/or group tasks (discussion, case work, conference calls etc.)?
- How can the trainer follow the learning progress?

Which content is suitable for self-learning? Which content for group tasks?

When *planning the guidance for the trainers and students*, we have asked the following:

- How detailed guidance is required?
- How to offer guidance? Should we have a separate booklet and if yes, how detailed?
- What kind of guidance is needed along with the interactive videos and photographs?
- To note: on an e-learning platform the need for guidance is usually the greatest at the beginning of the process.

Which type of guidance is needed for the trainers? Which type for the students?

When *adjusting the training for e-learning*, we have decided the following:

- We will create learning materials for the Moodle platforms with a H5P-add on tool; it enables to make videos enriched with interactions, branching scenarios with dilemmas to solve, and gamification of learning to make it more interesting.
- Not all learning takes place online. Trainers are provided examples of exercises that can be organized in a classroom.
- Training content will be organized in small modules, so that the trainers can integrate e-learning more easily in their education.

What are the best ways to combine individual e-learning with classroom education?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The co-creation process within 4.1 (chapter 3) helped the Police University College team determine the learning objectives and the targeted learning outcomes. We will introduce the objectives and targeted learning outcomes in the results section along with responses to other relevant questions presented here. It is important to make a distinction between learning objectives and the more detailed targeted learning outcomes. Learning objectives refer to the purpose of the learning material, it determines why the module or course was created i.e. what one intends to teach (see the above Bloom's taxonomy). Objectives are useful when formulating the more specific learning outcomes. They do not have to be measurable and are commonly more instructor centred. Learning outcomes on the other hand are student-centric, they explain what is expected of them, help plan teaching strategies, materials and assessment and assess how the outcomes of the course or module align with the outcomes of the qualification or program. (DePaul University 2021.)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

3 Co-creation of training within the case study

The concept development has been co-creative and comprised of several sequential and iterative stages of both innovation and validation/quality assurance/testing (see Figures 4 and 8). The whole co-creation process is illustrated in the following figure 4. This is followed by a table 2, which shows the engaged external stakeholders and internal partners who took part in the process. Finally, the several steps of validation and quality assurance and their outputs for the training are presented in figure 8.

Together with a variety of stakeholders we started by creating a *fictional narrative (scenario)* of chemical explosion that would serve as a background storyline for the piloted training environment. To make the fictional incident as realistic as possible, we consulted with the CBRNE expert and first responders on processes and practices of crisis management, including risk and crisis communication. They added informative details for the fictional crisis scenario. How the incident (chemical explosion) could potentially escalate. What would be the human resources and equipment available for the regional rescue services and local police departments? What would be the main processes related to the field operations and external communication? In what ways would the regional rescue services and police departments collaborate when communicating to the public?

Furthermore, we *added fictional characters* in the narrative to represent persons with various kinds of difficulties in communication and interaction. We did not try to create conformity, but we felt that the urban location of the scenario might contain businesses and organizations that might group certain types of individuals together. For this, we contacted relevant stakeholders and begun the brainstorming with them with the help of a structured template. This template acted as a starting point to the script writing process and the overall scenario, which writing began during the same time. The template was sent to intermediaries and representatives of people with mental health conditions, brain disorders, and/or intellectual disabilities. We engaged both the affiliated NGOs who do advocacy work and experts by experience who had personal experience of the above-mentioned health conditions. Based on their experiences, experts were invited to create a fictional person, who would have common symptoms related to a particular health issue or disorder. The template included questions related to following issues:

- Use of traditional and social media and internet
- Media literacy: ability to understand written text and to assess its accuracy
- Main sources of information (authorities, social networks): level of trust towards authorities
- Trust network (organizations, family, other community e.g. through hobbies): Whom the individual would rely on in a crisis? Does the person easily trust strangers?
- Supportive services: Does the person live alone, in supported housing, does he/she have an assistant or caregiver? What support services do they use (daily, weekly, less frequently)?
- Communicational needs: easy-to-read messages, audio recordings etc.
- Risk awareness: ability to understand risks and take them into account

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

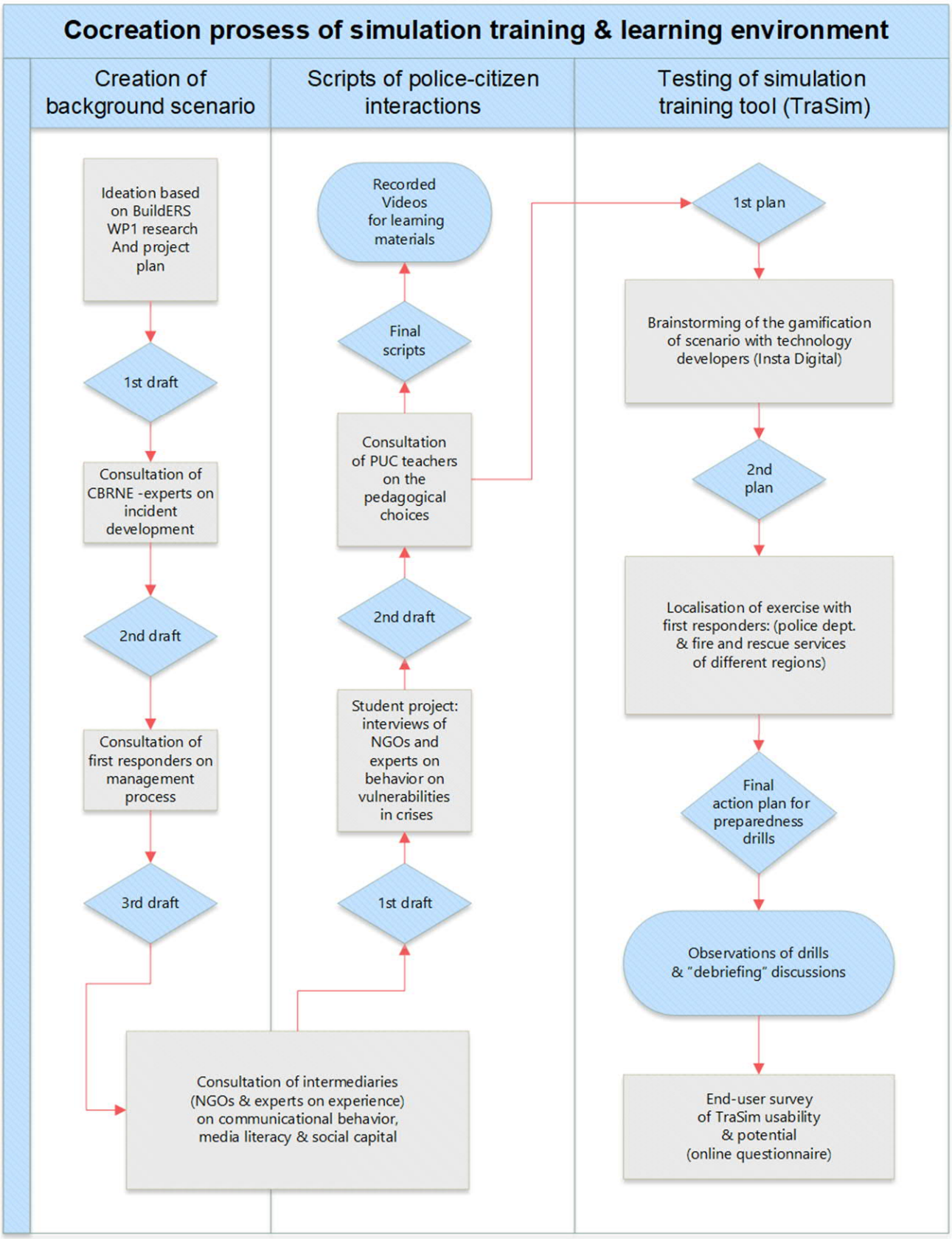


Figure 4. The co-creation process of simulation training & learning environment

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Co-creation participants and stakeholders					
Participant/Stakeholder	**Scenario creation**	**Script writing**	**Tool testing**	**Content design**	**Validation of concept**
Autonomous Province of Trento - Civil Protection Department					■
CEPOL LEEd participants					■
Estonian Rescue Board					■
Insta Digital			■		
Tampere Settlement Association		■		■	■
Autism Foundation Finland		■		■	■
Pirkanmaa Association of Alzheimer Society of Finland		■		■	■
MIELI Mental Health Finland		■		■	■
Kiipula Foundation		■		■	■
Tampere Region Association of Carers Finland				■	■
Finnish Institute for Health and Welfare				■	■
Individual experts by experience and representatives of focus group		■		■	■
National operative communication preparedness team of the police			■		
Police Board			■		
Police Departments/crisis communication teams: Central Finland, Eastern Finland, Eastern Uusimaa, Häme, Lapland, Oulu			■		
Police University College students		■			
Police University College teachers	■	■	■	■	■
Rescue Services: Helsinki, Lapland, North Karelia and Oulu-Koillismaa regions			■		
Rescue Services of Pirkanmaa region	■		■		
VTT project partners & CBRNE experts	■		■	■	■

Table 2. Presentation of the participants and stakeholders who took or will took part in the co-creation process. The participants and stakeholders are described in more detail in the Annex 2.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Based on the scenario, we produced several training *videos of police-citizen interactions*; all of these have a dialogue in Finnish language, but there are also versions with subtitles in four different languages: Finnish, Swedish, English and French. Subtitles in Finnish and Swedish serve the training of Police University College, as these are the two official languages of Finland. Videos with English and French subtitles are aimed at European level training provided on the CEPOL e-learning platform LEEd. Later in 2020, we will carry a pilot test with the European police officers and evaluate the training content and methods from a learner's perspective. We will, for instance, assess whether the videos with Finnish "police officers in their uniforms and ways of (inter)acting" are relatable enough for their European colleagues. This assessment could be done by inviting both native Finns and officers from other European countries to participate in the pilot training course and compare their views.

The writing of scripts (dialogues and storylines) for the videos was partly carried out as student project at the Police University College of Finland. Students carried interviews and studied the awareness raising information materials provided by the stakeholders and found online. It was great that the team of four students had already some professional knowledge of dealing with communicational challenges. One of the students was a former nurse, who had taken care of persons with memory disorders. Another student had organized activities for the youth, who had various neuropsychiatric disorders. Third student had a professional background in the rescue services. The police students worked together with representatives and intermediaries; the stakeholders were both affiliated NGOs and individual experts by experience.

In general, we found the engagement of experts by experience extremely useful in script writing. First, they are educated to create meaningful narratives of their own and their peers' life experiences. Second, they have been able to discuss with persons that most likely avoid answering public surveys and sharing their thoughts with authorities.

The student project started when the scenario writing was still an on-going process, so the students began their work by carefully studying the existing materials. As the scenario was finished, the students were asked to familiarize themselves with it, so that they could start planning and drafting the scripts. At the beginning of this work, the students were given instructions on what was expected from them and which tasks they should complete and by which deadline. In total, there were six tasks and a final report required from the students to receive credits from the student project. The tasks were:

1) Familiarizing themselves with the scenario
2) Creating and writing the scripts for four fictional persons
3) Describing the fictional persons
4) Describing the communicational needs of these fictional persons
5) Planning the sets for the recordings
6) Acting as police officers in the videos

The tasks three and four worked as a basis for the main task of creating and writing the scripts. The main task was divided into different versions after which the scripts were discussed with Police University College teachers to meet the expected learning objectives and with the stakeholders who had provided information to ensure that the presented communication behaviours are in line with

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

reality. This co-creation process was iterative, and the received feedback was considered in the following versions. For task five, the stakeholders also elaborated which disability equipment (if any) would be suitable for the fictional persons, e.g. a walking stick or a phone with an emergency button.

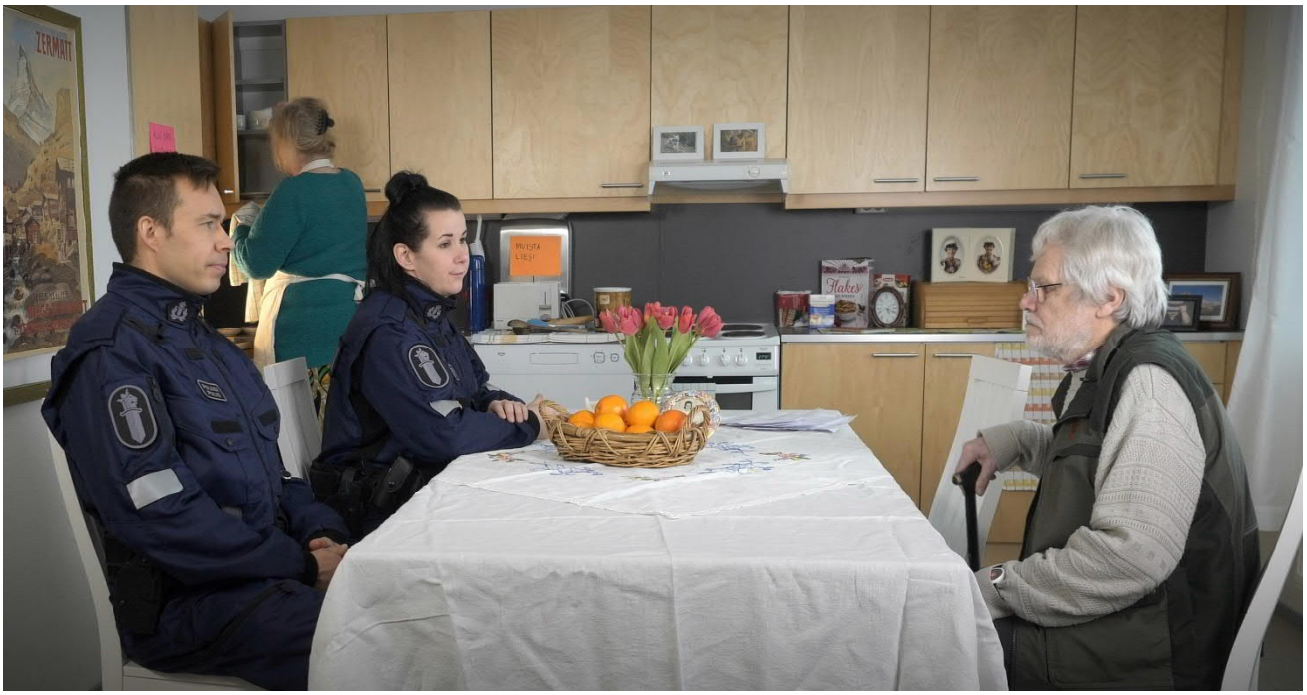


Figure 5. The importance of paying attention to the surroundings: The post-it notes on the walls stating e.g. “REMEMBER THE STOVE” may be signs of a person with memory disorder living in the house. Image: Olli Perttula, © Police University College of Finland

The scripts comprised of dialogues with following fictional persons:

1) An elderly male with a progressive memory disorder living with his full-time carer (wife), who suffers from mental health problems due to her living situation (experiencing psychological intimate partner violence by her husband).

2) A young schoolboy with a neuropsychiatric disorder (of autism spectrum) with extraordinary skill of visual memory.

3) A young woman with intellectual disability, who lives independently in her own apartment and is socially very active.

4) A middle-aged entrepreneur, who has a personal history of using narcotics, is economically and psychologically dependent on her ex-husband and suffers from severe depression; explosion has been a final trigger for her to consider a suicide.

Some of the filmed interactions between the police and the citizen were divided into two: the same scene was filmed twice as “better” and “not so good” versions. The so-called better version presents the interaction as optimal, while the "not so good” version contains dialogue and/or behaviour that is not optimal in the situation; it could be improved in order to take the communicational needs of the persons properly into account. In real life, for instance due to time pressure, it may not always be possible for the police to act according to the “better”, optimal version. Understanding this and finding

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

ways to cope in these kinds of situations is an important part of the training. All the scenes are presented in the Annex 3.

Figure 6. Example of a “not so good” version: The police officer touches the boy with a neuropsychiatric disorder. Image: Olli Perttula, © Police University College of Finland

The scripted videos were filmed in the Police University College simulation training area (simulation city). Three of the interaction situations were in an “apartment building” and one in a “clubhouse”. The students played the role of police patrols and amateur actors acted as their customers. We were careful with the casting and were able to have experienced and skilled amateur actors. We were especially delighted to work with a person with intellectual disability, who taught us how she had prepared for crisis situations and acted in an exemplary manner in a real-life fire situation. Therefore, we were all learning by doing while making the training materials.

After the training videos were ready, we organized *a workshop with the intermediaries* and discussed the final contents. The objective of the workshop was threefold. First, we wanted to have a quality check and assess that the videos are realistic enough and represent vulnerabilities in an ethical and responsible manner. We wanted to avoid overacting and exaggeration of communication and interaction related challenges. Our aim was to provide subtle hints of the special communicational needs of individuals and train the students’ sensitivity and responsivity to meet these needs. Second, we wanted to collect experiences of different kinds of crisis situations (What worked well? What were the lessons learned? What could have been done better?). Third objective was to explore the accessibility of risk and crisis communication and the role of social capital in preparing for and/or coping with crises.

Because of the social distancing regulations due to the COVID-19 pandemic, the workshop was organized online. The workshop consisted of a structured (focus) group discussion. Focus group discussion as a research method has both advantages and disadvantages. The most important

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

advantage is that attitudes and opinions are socially formed, and focus groups provide a social environment in which to articulate them leading to deeper understanding and insights (Breen 2006). The disadvantages relate to getting good combinations of representative participants to gather for the discussion, to carry out the discussion without anyone dominating it, and the analysis of the results.

The workshop participants were experts on mental health conditions, memory disorders, neuropsychiatric disorders, intellectual and developmental impairments, and informal carers' everyday life circumstances. We discussed the first responders' challenges and identified good practices in terms of risk and crisis communication.

The group discussion was organized into the following thematic sections:

- Workshop participants' experiences of situations of disaster or danger
- Risk and crisis communication by the police to general populations including persons with communication and interaction related challenges (1st videoclip as an inspiration)
- Use and reach of various communication channels
- Communication to the police as a witness or victim of crime (2nd videoclip)
- Getting help in a crisis (3rd videoclip).

An example dialogue ("better" version) of a situation where a witness (a boy with a neuropsychiatric disorder) communicates to the police officer what he has seen:

Police officer: *Did you see anything outside that caught your attention today?*

Boy: *Fire trucks… T30, K105, K234 and a Mercedes ambulance.*

Boy: *This time the Nissan Transit with the custom rims wasn't there.*

Police officer: *Okay. Has the Nissan been there when you've watched the street?*

Boy: *Yes… It's always there on Tuesdays and on Fridays.*

Boy: *This time it wasn't.*

Police officer: *Okay. Can you remember the Nissan's registration number?*

Boy: *Yeah… AAA-111.*

Police officer: *Good. Can you remember anything else related to the Nissan?*

Police officer: *It's okay if you don't.*

Boy: *The backdoors were open… There were, there were barrels.*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

We had very lively and fruitful discussions, which were inspired by following questions:

- Via which channels would persons (in focus) receive information and guidance related to crises?
- Would they use social media tools or read news on digital platforms?
- What is the role of families, friends, associations, and service providers in providing information? Would they be harmful in any way?
- What could affect persons' ability to assess the reliability of information?
- Any practical ideas for improving access to information?
- How could persons contact authorities in crisis situations?
- How would they act if they were victims of accident or crime? Would they receive correct advice and help?
- Any practical ideas for improving access for receiving help?

Figure 7 shows how the questions presented to the focus group related to the heuristic framework presented in the BuildERS deliverable 1.4.[23] The blue oval indicates the starting point: individuals with communication/interaction difficulties. The circles with numbers refer to the discussed themes. Themes 4 and 5 bring a new viewpoint to the communication: The framework of BuildERS WP1 assumes an emergency incident/crisis where authorities inform people and give them instructions as to how to protect themselves. The themes 4 and 5 of the focus group deal with situations where the person acts as an information provider in the role of a victim or witness. This leads us to identify new factors that may either increase or decrease vulnerability in crisis. In our case study we have aimed at literally improving the interaction and two-way communication by removing the obstacles that prevent making it possible. In the very early stage of our case study, we found out that one of the reasons is first responders' lack of awareness of various difficulties in terms of communication and lack of skills (and perhaps courage) to handle difficult situations. Consequently, we began to co-create such training for the first responders that would help to overcome these shortcomings.

The focus group session was recorded, and two researchers wrote notes during the discussion. The notes were combined and refined the day after the session. The written notes were used for the thematic analysis. The analysis consisted of two steps. First, issues and suggestions brought up in the discussion were identified and a short paragraph was written to describe the issue, possibly with examples of real-life cases. Then, the issues were grouped based on the themes.

[23] Hansson S. et al. (2019). *D1.4 Communication behaviour in Europe and vulnerabilities understanding communication-related vulnerability and resilience in crises*, BuildERS project

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

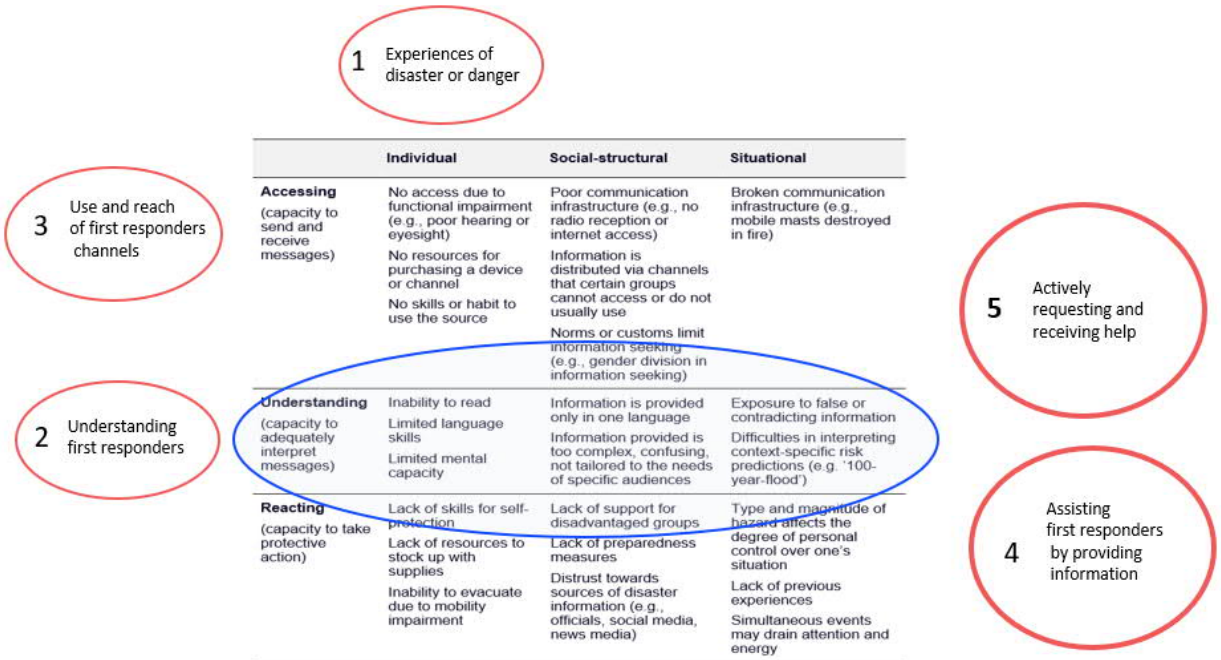


Figure 7. The position of the focus group discussion topics in relation to the BuildERS WP1 research.[24]

Besides person-to-person interaction, we created learning materials and methods that is related to external communication via traditional and social media. Based on the same CBRNE incident scenario that we used in the design of police-citizen interactions, we planned *a series of half-day preparedness drills* for the local police departments and regional rescue services. These were tabletop exercises with a technological simulation tool for crisis communication. Insta Digital's Trasim was used in the drills as a close to reality traditional, digital, and social media environment. Trasim is a platform, which facilitates external communication via (fictional) social media channels, official websites, and TV broadcasts. In addition, we used conventional phone connections to simulate journalists' and other stakeholders', like NGOs' and citizens' enquiries. Altogether six drills were organized with six police departments of northern, central, eastern, and southern Finland. All of them had real-life regional rescue services as their counterparts. Therefore, the drills were also true tests of their communicational collaboration skills and capacities.

During the preparedness drills, we explored the good practices in communicating risk and safety instructions to different segments of societies (including minorities) and to protect them from harm, like hate speech. In addition, we tested the Trasim simulation tool for its suitability to assist in the training of communication and interaction with the citizens in various kinds of vulnerable situations. As we engaged police departments and regional rescue services from different parts of country, we got very interesting comparative material of the competencies and capacities in the densely and sparsely populated regions. We focus mainly on people with cognitive and mental challenges that may impact understanding of messages, trust, and overall risk awareness.

[24] Hansson S. et al. (2019). *D1.4 Communication behaviour in Europe and vulnerabilities understanding communication-related vulnerability and resilience in crises*, BuildERS project

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

For co-creation, we collected the following data from the preparedness drills:

1) Structured self-assessment templates for the drill observers with questions related to
   - tackling rumours, false and harmful information and information influencing
   - accessibility and outreach of information (were persons with communicational challenges considered)
   - protection from hate speech and/or targeted bullying and similar kind of criminal behaviour
2) Notes of "debriefing" discussions right after the drill:
   - what works/what does not work in practice?
   - what were the lessons learned from participant's perspective?
3) Online survey for the drill participants with questions[25] related to
   - usability of Trasim simulation tool
   - how close to reality were the communication events during the drill?
   - how close to reality was the interagency collaboration during the drill
   - learning to protect individuals and groups from targeted bullying and/or hate speech
   - learning of skills to interact with vulnerable individuals and groups
   - learning to meet the needs of media and public in terms of information sharing

For each drill, an evaluator documenting the drill on an observation and assessment form was named from a police department. The evaluator did not take part in the drill but took part in the feedback discussion afterwards, where they also shared their observations. The content of the self-evaluation form, event log of Trasim simulation tool, and the post-exercise notes are considered classified content as the work (and detailed description) of communication preparedness teams contain police tactical and operational information. Police University College team wrote a summary of the results which was assessed by a police officer with relevant expertise and deemed to contain only public information. Those results will be discussed in chapter 5.

[25] The questionnaire comprised also of questions that were related to the risks and future opportunities of simulation technology as an emerging field of technology. The responses to these questions will be reported in the forthcoming BuildERS project deliverable D6.4 *End-user assessment of the new tools and technologies for disaster management*.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

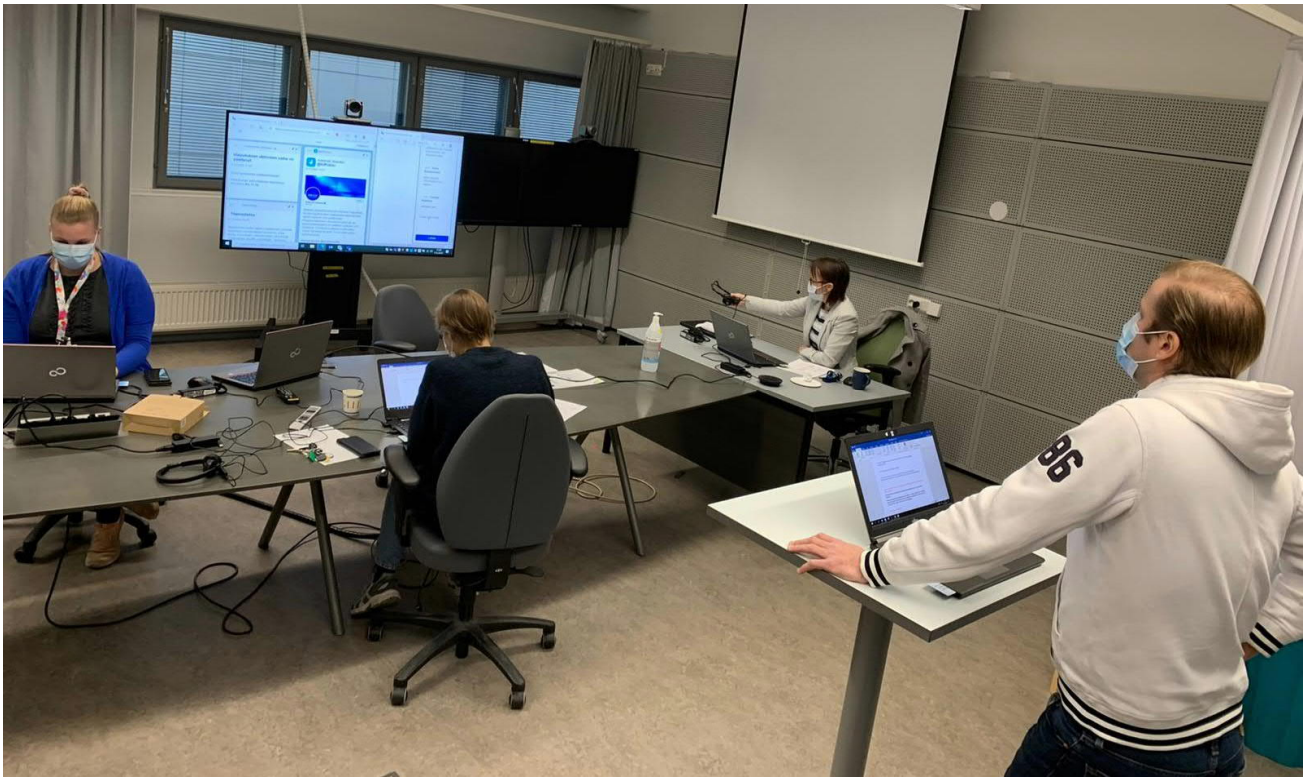


Figure 8. Preparedness drill Polamk game centre in action. Image: © Tuire Salmi-Hiltunen

The quantitative evaluation on the Trasim tool was done using a questionnaire targeted for end-users i.e. those who participated in the exercise. The questionnaire consisted of 8 sections:

1) Background information
2) Trasim-specific questions
3) Usability of the tool
4) Perceived risks or challenges of the tool
5) Ethical acceptability of the tool
6) BuildERS model
7) Technical readiness of the tool
8) Free word

In total there were 13 questions that had different statements. Likert-scale 1-5 was used in all questions that were applicable (i.e. other than multiple choice questions in Background information section). Depending on the question, in the scale 1 stands for strongly disagree, very unlikely or very minor, while 5 stands for strongly agree, certain or very serious. Due to the nature of the questions and the target group, respondents were also given “I do not know” option. In the spirit and guidelines of BuildERS project, questionnaire was translated to Finnish and respondents answered the survey in their native language.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

In this preliminary evaluation of the tool, sections *Background information*, *Trasim-specific questions* and *Free word* are pre-analysed, and the results will be presented in chapter 4. Final evaluation of the Trasim tool will be done in WP 6 and results will be reported in deliverable 6.4 *End-user assessment of the new tools and technologies for disaster management*.

The training concept itself, in its different iterations, has undergone and will continue to undergo assessment and validation activities. In the spring of 2021, we introduced the concept and some of the training materials to the Police University College teachers (from different disciplines). In this validation round, we asked how the material could best be integrated into the existing curriculum. The feedback was very positive, and the teachers saw many possible applications to their courses. They also helped to develop the concept further by suggesting ways to organize group work and learning tasks. Furthermore, in the workshop with intermediaries, we were able to verify some of the learning outcomes with the stakeholders who were involved in the creation of the learning material. The Trasim tool was validated with the end-user survey described above. We will continue validation activities in the future by involving some European partners.

The completed concept will be tested on the CEPOL e-learning platform LEEd with international law enforcement organizations. We will also present the concept to BuildERS partners for a proof-of-concept, namely: the Estonian Rescue Board and the Autonomous Province of Trento - Civil Protection Department. Moreover, we intend to collaborate with the “MEET - Inclusive Emergency” project co-funded by the Erasmus + Programme of the European Union[26]. The project develops training for firefighters in emergency planning and response when involving individuals with disabilities in English, Danish, Finnish, Slovenian, and Spanish.

[26] See the project website

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

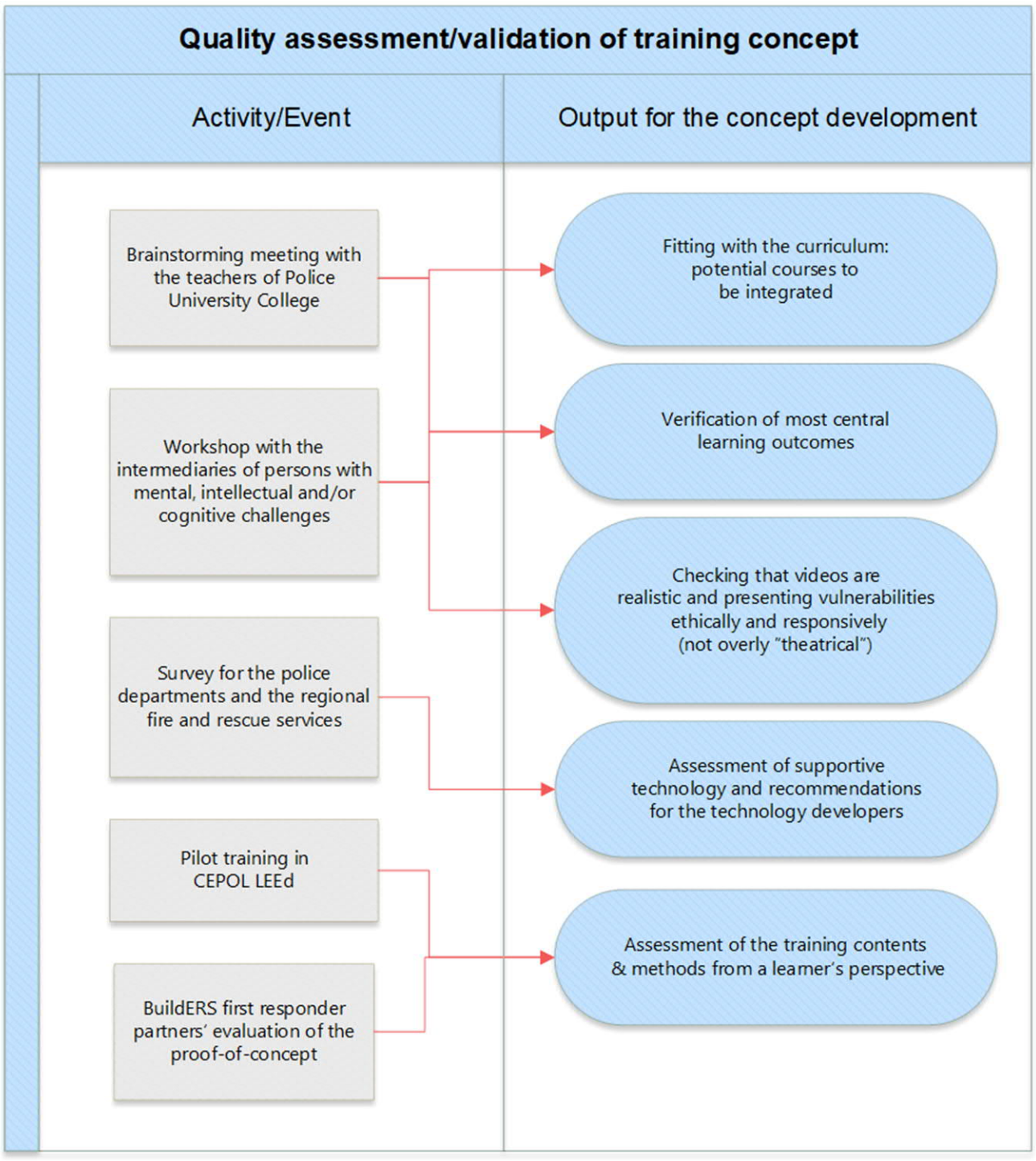


Figure 9. Quality assessment and validation of case study results

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

4 Results

4.1 Crises as a specific communication and interaction environments

As explained earlier, we began our case study by co-creating a fictional scenario based on several real-life CBRNE incidents and crime investigations of illicit drug laboratories. Based on the discussions with first responders (teachers and practitioners), we identified the central and most common tasks related to police-citizen interaction and communication (see figures 9 and 10). At first, police would support the rescue services under its command of field operations: restrict dangerous areas from traffic, advice of alternative routes, prevent spectators from entering the scene, search and give first-aid for victims, and deliver information on safety measures for the citizens. Later, when it would be safe, police would launch the fire investigation to determine the origin and cause of the explosion. In our scenario, the explosion was human induced, the reason was an incorrect storage of dangerous, flammable chemicals (like acetone), which were used for criminal purposes (in making of narcotics). In the "field" among citizens police patrols would go door to door collecting and sharing information, giving advice, instructions, and orders.

However, police patrols must not limit their attention to their main duties. Police should have a broad focus and take notice of a variety of indicators of vulnerabilities, while collecting information on the event. Furthermore, they should share the information with service providers and/or other first responders in a way that secures the help or other support for the persons in vulnerable situations. This could for instance mean making a call instead of providing phone number for psychosocial support or staying with the person (if possible) until the other agency arrives on site. Although the latter may not be always possible in practice due to limited human resources, it is important that the officers understand the significance of responsible behaviour.

An example dialogue ("better" version) of a situation where the police officer calls the social services for a young woman with intellectual disability and waits until the social worker arrives on site:

Police officer: *Would it be okay if our colleague Kayla [from social services] came here and you could call your parents?*

Young woman: *Yes, that's fine.*

Police officer: *It is safe to be here. Wait until the work is finished on the street. Is it okay if we wait here until Kayla comes?*

Young woman: *Yes, that's fine.*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

In terms of external communication, we identified the following actions as central in the crisis management of acute situations:

- presence in the social media to monitor sentiments and prevalence of false and/or harmful information, collect situation picture and share trustworthy information
- collaboration with the journalists and with their help, have a more humane dialogue with citizens and calm them down
- publishing official information, instructions, and guidance in the website

Bunking and correcting misinformation (like misunderstandings and rumours) is inevitably one of the most important duties of officers before, during, and after crisis situations; effectiveness of tackling false and/or harmful information has a large impact on individual and societal vulnerabilities. Especially the man-made crisis may trigger spreading of hate speech targeted towards suspected perpetrators, and false or misleading information on actual danger. One tragic example of this is the public panic caused by rumours of “armed men” spread in the social media in the aftermath of the mass-shooting in Munich, in July 2016; independent of the shooting over 30 persons were injured because of the mass anxiety in social media. (Kersten et al. 2019.) Online hate speech, in turn, may be triggered by a crisis incident, and later evolve as a wider process of harm that begins on social media and continues as a physical violence (Williams et al. 2020).

Second negative phenomena related to the new digital technologies and social media is the publicity-oriented behaviour: sensationalist smartphone owners take photos and video from accident and/or crime scenes and post these on social media. This has both direct and indirect impacts on vulnerability. Non-helping bystanders have blocked access of rescuers and/or assisted the perpetrators, as they have become aware of the location, movement, and equipment of law enforcement. Furthermore, there is evidence of copycat behaviour: new offenders use the content posted on social media and internet to plan their actions. (Kersten et al. 2019.)

Yet, although the above actions are related to the response stage of crisis management cycle, they are common also before and after the acute crisis. Officials need to be present in the social media platforms and build competencies related to the new technologies before situations escalate. Training of personnel of the use of the social media and internet platforms has been found as one of the crucial issues in crisis management. (Waddington 2019.)

Another aspect is attitude towards new technologies and willingness to use their multiple opportunities. Research has indicated that law enforcement agencies use social media tools dominantly for one-direction communication: make requests for assistance, circulate police-relevant crime and incident information, and give crime prevention tips. Law enforcement agencies are much less active in facilitating discussion, debate, and collaborative problem-solving. Bullock (2017) estimates that the managers of law enforcement agencies still often consider (preventive) presence in the social media as time-consuming distraction from the “real” police work. This is reflected by using short messaging tools like Twitter, as these are quick and easy to use. However, tools like Twitter suit better to share information than enable interaction between police and citizens. According to Bullock, officials should understand that each social media tool has its own reach and demographic profile of users and consider this in their communication strategies. For instance, Twitter users have been dominantly better educated, better off, younger adult males. (Bullock 2017.)

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

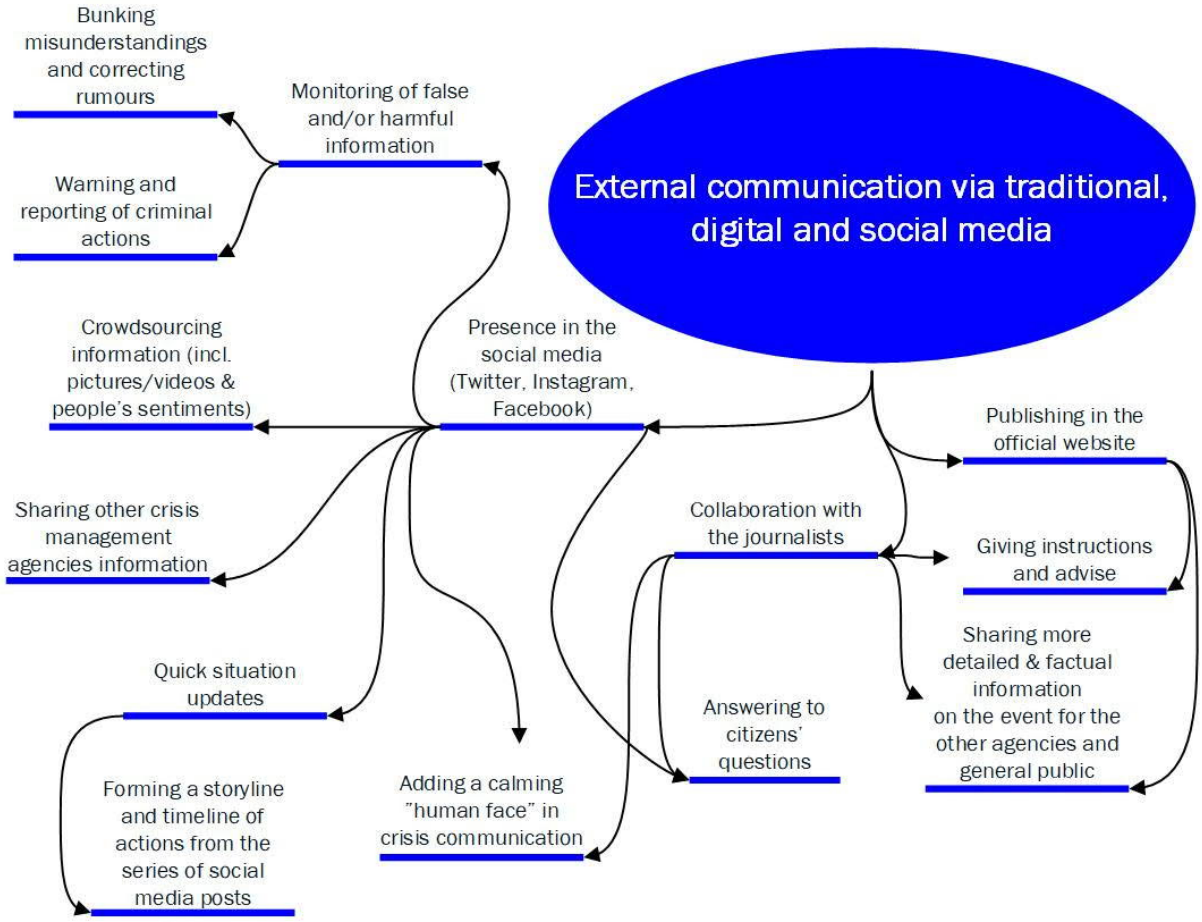


Figure 10. Tasks related to external communication of police before, during and after an acute incident

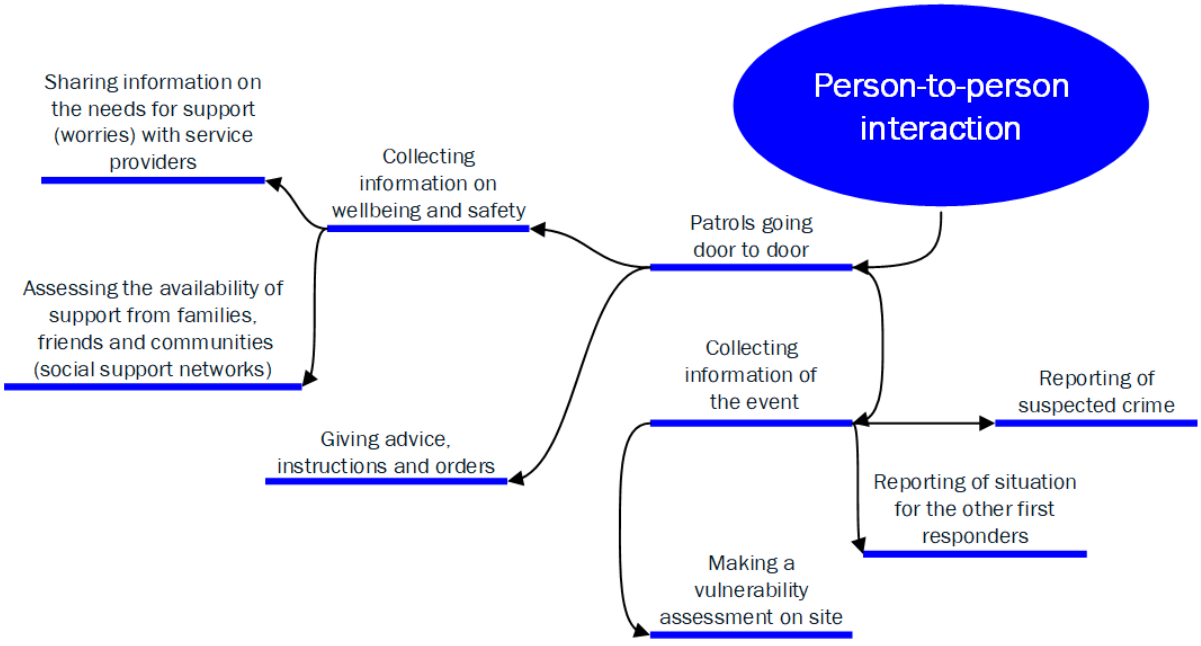


Figure 11. Tasks related to police-citizen interactions in a crisis

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The official guidelines for the policing in the social media for the Finnish police emphasize that the communication via social media must be strategic, well managed, and support the police's institutional values: customer service, fairness, professionalism, and staff welfare. Furthermore, individual officers' behaviour in the social media platforms must be always such that it does not undermine trust towards police as an institution; this requirement extends to their presence in their private social media accounts. Furthermore, officers are obliged to report of potential (planning) of crimes or threat to public order and security that they notice – on or off duty – on the social media platforms. Although the primary function of social media tools is preventive policing (proactive prevention of crimes and disorder in collaboration with communities and citizens), opportunities of the social media should be used in all police work, including license services, surveillance and emergency services, and traffic control.[27]

4.2 Stakeholders views on vulnerabilities related to communication

The PUC team started conversations with the stakeholders (intermediaries and representatives of the vulnerable groups in question) by asking them to contribute to the overall case study scenario and to start planning the police–citizen interactions. We sent them a template (see chapter 3) to gather information on a possible fictional character for the scenario's urban setting. The intermediaries were requested to use their expertise and knowledge to formulate portrayals of "individuals with vulnerabilities in terms of social interaction and/or communication". Some gave an example of individual character while others described the group in more general terms.

Some of the fictional character representations changed during the co-creation process. Despite that, we have used these first drafts of portrayals in the design of learning outcomes. Our stakeholders have always emphasized that there is great variation within the communication-related difficulties. Simulation training and further materials should reflect that. This observation is also in line with the BuildERS theoretical framework which states that BuildERS explores the diversity within the traditionally categorized vulnerable groups to find out which situations make individuals vulnerable[28]. The responses below do indeed exemplify the situational nature of vulnerability (see e.g. risk awareness for the character with autism spectrum disorder, ASD).

[27] Police Board (2017). Guideline in Finnish for the policing in the social media: *Ohje, Poliisin toiminta sosiaalisessa mediassa*, POL-2017-8358 (public)
[28] Morsut C. et al. (2020). *D1.2 Final report of the unified theoretical framework on the concepts of risk awareness, social capital, vulnerability, resilience and their interdependencies*, BuildERS project, p. 32

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

	Character description	Support services
Memory disorder (Alzheimer's disease)	Alzheimer's disease is the most common memory disorder, prevalence is roughly 70 % of all memory disorders. Alzheimer's disease can cause data processing problems, short-term memory loss, perception problems and challenges with speech production and speech comprehension. The diagnosis is not outwardly observable. Functionality, memory, and alertness may vary throughout the day.	Our character lives alone and does not yet have any support services. He copes with daily activities independently. He visits the Alzheimer's society (NGO) groups twice a month.
Mental health condition	This person has a severe mental health problem that causes the patient to have delusions related to conspiracy theories that interfere with everyday life. Because of them the person is afraid to use electronic means of communication (internet, mobile devices). Rarely watches TV or listens to the radio. Does not subscribe newspapers or magazines.	Lives alone and attends a weekly social rehabilitation. In addition, has a care contact in specialist health care at a psychiatric outpatient clinic, which is infrequent (about once a month). Uses continuous medication with varying degrees of success, which quickly affect well-being.
Autism spectrum	A person on the autism spectrum who needs much support. Routines and stability are important. In familiar situations, understands simple speech. More abstract, unfamiliar, or unrelated issues remain incomprehensible. Produces self-initiated speech sparsely. Answers simple questions by making a sound, nodding, turning away, or pressing his/her head down.	Lives in a group home. On weekdays attends a day centre. Moves independently in familiar environments.
Intellectual disability	Developmental/intellectual disability creates a variety of communication and comprehension challenges. There are people who do not use speech, those who communicate with pictures and sign language, individuals who have neuropsychiatric disorders such as autism. Such individuals may be easily "triggered", especially in new situations.	Situations vary greatly. There are individuals who live alone with support, housing facilities, group homes or they live with family.

Table 3. Initial characterisation (general description and support services)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

	Risk awareness	Main sources of information (authorities, social networks)
Memory disorder	Depends very much on the person. Our character is aware of the illness but may not always think realistically about its effects of the on the ability to function; this can sometimes lead to risky situations for self and others, for example when driving.	Older people often rely on "old-school" authorities such as doctors, lawyers, police, and the priest. When an emergency occurs, a person with a memory disorder often realizes that an authority should be contacted but may not be able to make it. The trusted close circle includes family and friends. May not trust people outside the circle.
Mental health condition	Understands risks to some extent. Due to illness, consideration of risks in everyday life is lowered. Anxious in anxiety inducing conditions: may act irrationally.	Trust in social and health care authorities is weak. Trust in the police is high. The person's elderly parents and social rehabilitation instructor are closest to him/her. Does not trust strangers very well.
Autism spectrum	Does not identify risks by own initiative. Can identify risks or dangerous situations when preventive action has been taught to them. If, for example, they have been taught that when a fire breaks out, you leave through the door and go to the assembly point, they act in accordance with the instructions. However, in a different environment, the rules do not apply.	May not react in any way to strangers (authorities or others). Does not respond, does not listen, does not follow instructions. May only be open to messages from familiar people (family and group home/day centre staff).
Intellectual disability	Varies greatly. Some are very self-aware while others need constant support.	Personnel at day centres, family, personnel at housing facilities, personnel in hobbies, therapists.

Table 4. Initial characterisation (risk awareness and main sources of information)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

	Use of tools for communication (technology and social media)	Media literacy
Memory disorder	They can use technology and other communication tools, though learning new skills can be challenging. There may be variation in skills within the day, for example, they may be able to use the telephone in the morning but not in the evening. People with Alzheimer's are individuals, and everyone has their own knowledge and skills just like anyone else. Some are more familiar with social media and the Internet than others. This person uses Internet, e-mail, and Facebook.	Media literacy is not necessarily easy for a healthy person either, so it depends more on the person than on the stage of the illness. Our role person can read and internalize the things they read. At times, he may forget the details and he will have to repeat what he reads.
Mental health condition	Cannot use electronic devices. Avoids the use of electronic communication means.	His/her media literacy is impaired, and he/she needs clear guidelines. Due to the illness, news may not be considered true and reaction may not match the severity of information.
Autism spectrum	Watches things that interest him/her on YouTube. If he/she happens to see TV news (someone else initiates and puts the TV on and has chosen a channel) will watch if the topic is of interest. Usually only answers his/her phone when it rings. Gives one-word answers on the phone if questions are simple, clear, and unambiguous enough. Does not otherwise engage in dialogue.	Understands things literally. Cannot estimate accuracy of information. Does not actively search for information. Watches and reads when guided to do so. Focuses only if instructed to do so if the topic is not of personal interest.
Intellectual disability	Varying skills: some do not use at all, some use e.g. Facebook fluently. Some do not have their own tools such as a smartphone while other can organize an online meeting for several people.	See previous response. Most young people need someone to interpret e.g. news to them. Opinions and interpretations may be very black and white. Misunderstandings and mishearing may easily happen. Terminology can also be too difficult.

Table 5. Initial characterisation (Communication tools and media literacy)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

	Special needs in terms of risk and crisis communication	Special needs in terms of crisis management
Memory disorder	There are no special needs in the early stages of Alzheimer's disease. It would be important for the authorities to treat the patient like anyone else. Our character might be offended if they are treated with contempt or emphasis on illness.	In the early stages of Alzheimer's disease, people may have difficulty moving and operating even in a familiar environment. They may easily get lost, especially in a foreign environment. When anxious, the character finds it difficult to act consistently and needs reinforcement in decision-making.
Mental health condition	Easy-to-read or plain language	Needs special support, for example in evacuation situations (for example, insurance that the responders have the skills to encounter a person with mental health issues which requires multiagency cooperation).
Autism spectrum	Speech must be simple and clear. Do not use figures of speech or proverbs (misunderstands them). Written instructions broken down into clear parts (e.g. by using numbering). Word-of-mouth instructions are often supported with the use of pictures (drawings can also be helpful).	Only one person gives instructions and focuses on the person. The questions are preferably such that one can give yes/no answers. Only one instruction is given at a time.
Intellectual disability	Easy-to-read and plain language messages, eye contact, baby sign language, pictures for some. Too much support may also be detrimental and hinder communication.	

Table 6. Initial characterisation (needs for risk and crisis communication and crisis management)

We continued the discussion on vulnerabilities in a workshop with the intermediaries and representatives of persons with (former) mental health conditions, neuropsychiatric disorders and/or intellectual disabilities. Based on their rich experiences they shared us stories of everyday interactions and encounters between first responders and persons who have difficulties in receiving, understanding, and acting upon information. Furthermore, we discussed of the potential of helping the first responders and providing them information. Thus, we did not see people as just recipients but also as providers of crisis-related information.

We learned that the first encounter with an authority is often critical in how things progress. Should it fail, it may reflect on how the person relates to other authorities in other situations, particularly when young people are concerned. Feelings of being misunderstood or even totally neglected are not only

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

psychologically harmful but may potentially increase individuals' degree of vulnerability. We heard of stories, where the persons have lost trust towards all authorities just because they have not been listened to or asked of information. Building (back) a trusting relationship with them may require a lot of work. Especially individuals with mental health conditions may have deep distrust with the authorities because of their behaviour and attitude. It was very sad to hear from one expert that people have often negative experiences with social and healthcare workers and the Social Insurance Institution of Finland (Kela). Especially if their mental health conditions are related to the use of narcotics their needs and requests of help have been denigrated. They may carry the negative experiences with them and expect the same treatment from other authorities.

> *He escaped from a local psychiatric hospital and went home and intended to commit suicide. He was able to call the emergency number, but it was a short call because they saw from some register that he had guns, and they started to question him about them. He felt that they didn't care about his distress, so he hung up the call and went to do as he had planned. The police ended up showing up anyway and they did their job well, they stopped him from leaving with his motorcycle. The situation after it could have gone better because when they started to look for his guns he started to run away as soon as he could. His escape was short lived though. They put him in handcuffs and took him to a hospital where he was guarded, that was good. At that point their communication made him feel safe and calm. He thought that they could have put him in handcuffs sooner because often these situations escalate quick, and it is a matter of work safety and usually the best option in terms of the person.*

Quotation 1. Workshop with the stakeholders.

Individuals with intellectual and/or physical disabilities are, in principle, trusting the authorities and interested in their operative actions. However, it is common that they lack accessible channels and means to reach authorities. Usually, it is a third party (social service provider, NGO representative, teacher, family member etc.) who advocates for them. Equally many elderly with memory disorders (in Finland) have learnt to respect and obey authority figures, particularly the police officers and fire fighters. Orders that are too strongly phrased may cause the person to freeze up. The contact must be respectful and empowering rather than patronizing. It is important to temporarily let go of the role of the authority and approach them on an eye-to-eye level. The behaviour should be good and compassionate.

An example dialogue ("better" version) of a situation where the police officer shows compassionate behaviour toward a man with a progressive memory disorder:

Man: *And then we have grandchildren.*

Police officer: *It could be good if you called your children so that they don't get worried.*

Man: *I do have to call my son. Thank you for reminding me.*

With neurodivergent people it is often beneficial to avoid aggressive manners and loaded questions. It is good to say your own name and explain in detail the situation or context: which specific details the interest lies in. Otherwise the person may not know where the authority is going with the questions. It is beneficial to progress slowly with the questions and wait for the response for the prior question before moving on, even if it leads to uncomfortable pauses from the authority's point of view. Topics

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

that induce anxiety and add pressure should be warned about beforehand: this is how the situation becomes more predictable (for example asking in advance if it is okay to sit next to the person). It is essential to tolerate the silent moments and to minimize outside distractions.

Exceptional situations may get unexpected reactions from persons with communication- and/or interaction-related difficulties. During the workshop, we heard of a case, when a person with intellectual disability resisted the evacuation effort. The rescue workers had to estimate whether the person can be transferred with the available resources while maintaining work safety regulations. In worst case scenario the person may end up staying in the unsafe space. Furthermore, workshop participants said that it is always a serious concern that one person's resistance, fear and anxiety may spread to others as well, endangering their safety as well. In other words, failed communications may end up endangering several people's health and safety, including those in the rescue services.

It is also challenging that individuals with mental, intellectual, and/or cognitive problems may not possess the ability to estimate the true seriousness of their situation. The threshold to seek help may be high. For example, caregivers may be burdened and in need of help, but they may not have enough strength to ask for it. Victims of sexual assault, for example, may not be able to understand the full criminal process or their place in it. Especially the neurodiverse people (e.g. with neuropsychiatric disorders like Asperger) have a lot of experience from being misunderstood.

During the workshop, we heard of tragic examples of failed attempts to receive help, for instance failed emergency calls. If a person is expressing him/herself very little vocally or by gestures, his/her worries and suffering can be overlooked. It may for instance happen that their experience of pain is not believed because it doesn't show outwards. This is often the case with persons with autism spectrum disorder. Also, persons with Parkinson's disease may have trouble speaking; the person may appear drunk even though the illness concerns speaking. When encountering a situation, they have not faced before, persons may not have a modus operandi to work through the situation. This is where an assistant can be helpful in speaking for the person by putting it into words what they are experiencing in said situation.

> *We have worked with many people on the autism spectrum and associations, and the persons belonging to this group have told us about their experiences that when they have had to call an ambulance they have not been taken seriously, which might be to do with their lack of expressions and gestures, so they (the rescue service people) have thought that they are able to get to the hospital on their own and that they don't look at all like their leg is hurting so much that they can't walk, for example. They have had to face that their distress is not taken seriously and in that in situations like this their distress or experience of pain is not visible to outsiders the way they are used to, so they have had to experience that authorities don't take them seriously or believe them.*

Quotation 2. Workshop with the stakeholders.

One of the key learning outcomes identified has been a need to learn to consider the individuals' whole situation in a crisis, including the social capital: social relationships and networks. This means, that the vulnerabilities may be partly linked to these relationships, like dependencies on care. In practise this means that there should also be an opportunity to provide the caregiver with a moment to speak alone. Their view or experience of the situation may be different. Usually, attention is on the person who is being assisted. The caregivers in their role often speak for another person but may "forget" themselves and do not express their own needs (for help and/or advice). The caregivers have

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

great responsibility and the fear of failure as a nurse and guardian may also be great. The bonding relationship may be so close that they do not comprehend their own vulnerability.

An example dialogue ("better" version) of a situation where the police officer sees that the caregiver may need support:

Police officer: *Madam, how are you? How are things here at home?*

Caregiver: *I don't dare to speak.*

Police officer: *You obviously have some concerns. Could we talk, just the two of us?*

Caregiver: *Yes…*

Caregiver: *It can be tough when your husband is in that condition. (Cries.) He constantly gets mad at me. It is hard for me to understand it. So hard.*

Police officer: *We can contact the social services. They could check up on you later.*

Caregiver: *But what if he gets mad about that, too. (Cries.) He's so angry sometimes. It scares me. (Cries.)*

Caregiver: *Thank you for understanding.*

We discussed with the stakeholders about the first responders' challenges of identifying a risk of suicidal behaviour. Persons with mental problems found it especially difficult to be taken seriously, and their potential suicide risk may not be appropriately measured. Those who had attempted suicide found their treatment to be poor in healthcare and with the emergency response centre (ERC). In one of the cases an ERC operator had focused on the guns the caller owned instead of trying to further investigate the risk of suicide. In another case, the emergency room staff had insisted that there was no risk of suicide. When help arrives to the suicidal person, problems with the interaction may escalate the situation. However, even one compassionate interaction may help the person survive and give them the experience of being accepted. Asking of suicidal intentions is often very difficult. First responders may fear that by directly asking of plans they would act as "trigger" for finally committing a suicide. It was found very important to train first responders that this is a misconception, and the case is opposite: showing one's worry and care is important, and without directly asking the risk remains unnoticed.

An example dialogue ("better" version) of a situation where the police officer understands that a woman suffering from severe depression may consider suicide:

Woman: *I can't do this anymore. There's only so much a person can take.*

Police officer: *It's very understandable that you are tired.*

Police officer: *I'm going to ask you directly. Have you had any suicidal thoughts?*

Woman: *I haven't. Even though no one would miss me.*

Police officer: *Do you have anyone close to you who could come here and talk?*

Woman: *I have no one.*

Police officer: *It could be good to talk. There are nice people in crisis emergency services.*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Finally, we discussed with the stakeholders of various potential communication channels with persons who have mental health conditions, neuropsychiatric disorders, or intellectual disabilities. Following suggestions in relation to communication channels were given:

- One of the potential social networks are the (online) gaming communities. There are many people, who do not have many (or have hardly at all) face-to-face social relationships due to their difficulties in social interaction but spend a lot of time in the gaming forums. During the long-term crisis like COVID-19 pandemic, people may spend even more time playing online games. During the COVID-19 pandemic, World Health Organization (WHO) has supported for the gaming industry's online social media campaign (#Play-ApartTogether) that incorporates WHO messaging about coronavirus prevention guidelines in conjunction with online gaming. (King et al. 2020.) There should be a direct call line to the police/specific authority. This would lower the threshold in seeking help for not-so-acute crisis situations and advice for preparedness measures, as there may be a high threshold to call the emergency response centre (112).

- Social media can work as a channel of communication if the official information stands out clearly enough. Perhaps in contrast to general expectations, neurodivergent people are often active on social media. The challenge is, however, that they do not always fully understand false news, sarcastic comments, memes, or other types of symbolic messages. An NGO representative said that their mornings often begin with clearing up misunderstandings raised by the social media contents. People thus may need outsiders' help in interpreting the messages. There is also a risk on social media that people encounter scary posts or comments that they may not be equipped to deal with in an appropriate way. Also, news media channels may cause ungrounded anxiety or fear as their story titles are often formulated to surprise and draw attention. A risk of being led to a scam site is present as well (comments with links to third party phishing websites etc.).

- First responders could have chat services available to lower the threshold to contact. For instance, the current chat service of Finnish police is only serving customers with permit/licence issues. Another potential communication channel/method mentioned was text messaging; our stakeholders estimated that text messages would perhaps reach even those who otherwise do not respond to any contact attempts.

- An emergency notification could be available in plain language and/or as a voice message to those who subscribe to such service. This way no sensitive health-related personal data would have to be collected, and instead the service would be available to anyone who wishes to subscribe. Plain language instructions would be useful to help persons to identify crimes they may have fallen victim to.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

4.3 Results related to the testing of simulation training tool (Trasim)

As explained earlier, we organized a series of preparedness drills for the crisis communication teams of local police departments and regional rescue services. During the drills we tested the usability and applicability of a simulation tool called Trasim, developed by Insta Digital ltd. These results presented here are based on the drill observers' evaluations, Trasim tool event log, minutes of the reflective discussions after the exercise and small end-user survey for the drill participants.

Each drill design was reviewed beforehand together with the representative of the police department, and the simulation game feeds were customized to the local context. This "localization" off exercise meant that the participants were able to simulate:

- publishing on those "social media channels "and "official websites" that they would normally use in external communication
- collaboration with the national and local media (like local newspapers, TV broadcasters)
- collaboration with the authorities responsible of crisis management
- field operations in the familiar working environment (like familiar landmarks, street names)
- use of those human and material resources that they would normally have in crisis response and crisis communication

At the beginning of the exercise, crisis communication teams organized themselves: defined roles (like answering to enquiries of journalists, social media monitoring, drafting public releases, translating messages into foreign languages). This was an important step; it was found useful to identify and document in advance different kinds of competencies, like ability speak foreign languages. from a BuildERS project perspective, it would be useful to have persons with a knowledge of easy-to-read and/or plain languages in the crisis communication team.

The necessity of close cooperation between first responders on communication issues was also highlighted. In practice this would be joint collection and sharing of situation awareness, monitoring, and sharing of both own and other agencies' social media messages, arranging joint public briefings and press conferences etc. It was found as especially important to share information about the available crisis helplines (providing psychosocial support in crisis) as widely as possible.

The exercise was beneficial by the participants, and it allowed to identify several areas of improvement in terms of preparedness and crisis communication. It was noted that Twitter is an established and feasible channel, although there is a need for longer briefings that Twitter does not allow. Presence on TV and on radio was considered particularly important for reaching the elderly. Repeating the content of the message via different channels was determined to be an important factor in enhancing accessibility. Furthermore, in a crisis, appearance of the communicator affects how the message is received: it is important to appear calm, give clear and concise instructions and if needed, explain that the situation is under investigation.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The national operative communication preparedness team of the police should be utilized as a supportive resource, for example, in producing different language versions of the content and in social media monitoring. Communicating in smaller, minority languages (such as the Sami, Arabic or Russian languages) considered to be very challenging. Thus, persons who have difficulties in communication and interaction, and are speakers of minority languages, are very vulnerable, as the first responders have quite limited capacity to meet their needs in terms of communication.

Trasim simulation tool is designed for both professionals (like crisis communications units/teams) and crisis managers (like command centres). The platform can be used to support single exercises or exercise programmes. The exercise type for which Trasim is most suitable is a simulated crisis management and communications exercise. The tool can be used independently or to support facilitation of tabletop exercises as was the case in our preparedness drills. It has also been used amply to support cyber security related functional exercises and major incident management, including testing of operating models between top management, communications units, service business management and Security Operations Centres (SOC)[29].

Figure 12. Trasim simulation tool. Image: © Insta Digital Ltd

[29] Teams within an organization responsible for detecting, preventing, investigating, and responding to cyber threats.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Trasim is offered as on premises software[30] or as software as a service (SaaS); therefore, in principle the platform can be accessed from any device with an internet connection and a web browser. The platform's idea is that the customer creates its own exercise objectives, shares users' instructions, manages its own user accounts and access, and creates exercise specific workbook contents. For BuildERS testing Trasim was finetuned to support better user experience (easier navigation). The languages used are Finnish or English. However, the platform's user interphase language can be translated to other languages (now exists in Finnish, Swedish and English).

Customers can request and fund development of new functions and features: basically, all aspects of the platform can be modified and tailored. The version of Trasim with basic features has been on the market for over a decade. Trasim is not has been used in preparedness drills and other exercises by public authorities (especially for crisis management and communications units), critical infrastructure service providers and IT-service providers with their stakeholders.

Costs comprise of the platform's installation project, a monthly license fee, tailored software development project fees (optional) and an exercise expert service fees (optional). The cost of use per single exercise ranges from a few thousand euros to several tens of thousands of euros. The costs can vary greatly depending on how well the contents and the operating concept allows for scalability, and how many workdays of consulting support is ordered. The price per exercise participant depends on whether the customer only uses the platform, or if they lean heavily on external consultant help for exercise planning and management. However, the estimated cost per participant ranges from 100-1000 euros. The monthly license fee starts from little over 1000 euros and depending on the scale of use and data security arrangements, the fee can be up to several thousand euros per month.

The end-user survey results show that the tested Insta Digital's simulation platform Trasim is well suited for communications training. In total, 18 responses to the survey were received. Roughly about 30 % of the exercise participants answered to the survey. 78 % of the respondents represent police or border control and 22 % rescue services. 94 % of the respondents indicate that they used the Trasim tool during the exercise. Most of the respondents strongly agree (56 %) that Trasim operated in reliable manner. Respondents also agree that communicational situation was presented in real-like way.

It also seems that Trasim-training was found to be useful in developing communication skills in regards of media and the public. However, regarding protection of and interaction with vulnerable groups and people there was little more fluctuation, and most of the responds were in the middle of the scale (3-4) and none was strongly agreeing with the statements. The distribution of responds to the Trasim-specific statements is presented in Table 7.

[30] On-premises software is installed and runs on computers on the end users' premises, not via remote facility such as an external server or cloud computing services

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Question	1 Strongly disagree	2	3	4	5 Strongly agree	I do not know
Trasim operated in a reliable manner during the exercise.	0 %	0 %	0 %	44 %	56 %	0 %
Trasim presented the communication scenarios in a realistic way.	0 %	0 %	17 %	56 %	28 %	0 %
Collaboration with other public authorities worked in a realistic way in the exercise carried out with Trasim.	6 %	6 %	39 %	39 %	6 %	6 %
The exercise carried out with Trasim improved my skills to protect vulnerable groups against hate speech and online shaming.	0 %	6 %	28 %	50 %	0 %	17 %
The exercise carried out with Trasim improved my skills to interact with vulnerable groups.	0 %	6 %	39 %	39 %	0 %	17 %
The exercise carried out with Trasim improved my abilities to answer needs for information by media and the public.	6 %	0 %	0 %	67 %	22 %	6 %

Table 7. The end-user survey results of the Trasim platform.

In the *Free word* section respondents could answer openly e.g. how they would develop or improve Trasim tool. The answers to this question mainly contribute to the technical development of the tool to make the use of it more realistic. Regarding the future developments, the developer of tool (Insta Digital Ltd.) responded in email that Trasim tool will be upkept and developed in the future. Tool will get improvements to e.g. functionalities, usability, and reporting.

From the view of preliminary evaluation, it could be said that Trasim or similar tool would be beneficial for communication training exercises targeting professionals who are responsible for communications in crisis or other exceptional situations. Further and detailed analysis regarding the simulation technology in general will be reported in the forthcoming BuildERS Deliverable 6.4 *End-user assessment of the new tools and technologies for disaster management.*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

5 Proof of concept for training to address the special needs related to interaction and communication

As described before, we have co-created a concept for training for the first responders to improve their knowledge of mental health conditions, neuropsychiatric disorders, and intellectual disabilities, and increase understanding of their impact on communication and social interaction. The development of training has been based on the following key findings:

1) First responders need to address the *digital divide in their risk and crisis communication*. Publishing crisis-related information in social media and internet platforms serves nowadays a large majority of individuals and communities. However, social media messages and online releases may not reach those who have difficulties in understanding and/or acting upon information due to a variety of mental health conditions, neuropsychiatric disorders, and/or intellectual disabilities.

   - First responders need to combine external communication with door-to-door interaction, text messages, and broadcasting in radio and TV
   - To gain additional resources for better outreach, first responders should collaborate with other service providers (like the psycho-social support services) and intermediaries of persons with difficulties in terms of communication and/or interaction.

2) First responders need to increase *accessibility of information.* To address information overflow and to ensure that those with communicational vulnerabilities have access to and can understand crisis information messages have to be formulated in such a way that they are understandable to all.

   - First responders need to increase their knowledge and capacity on alternative and additional communication means and methods such as plain language and easy-to-read language.
   - First responders should increase their knowledge on the communicational complexities by increasing their understanding of them.

3) First responders need to increase inter-agency and multi-professional collaboration with intermediaries. People who have varying communicational needs often have service providers in their lives that understand their communicational (and other) needs. The first responders would be able to better accommodate the needs through better preparedness and cooperation.

   - First responders should formulate collaborative partnerships with service providers and other relevant instances who commonly belong to the social networks of individuals with communicational requirements.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

- Special attention should be paid to individual's and intermediaries experiences of situations where misunderstandings have previously happened and to situations where they have experienced that they have not been heard or given information in the right format.

We have designed the learning outcomes (and respective learning contents) for the first responders' training based on the abovementioned areas of improvement. First, students will learn how to interact and have face-to-face encounters with persons, who have various kinds of difficulties in social interaction and/or communication. Second, students will gain knowledge of accessibility requirements for web contents and what are easy-to-read language and plain language. Third, they will learn to use the potential of an individuals' social network including their connections to the different service providers. In practice this would mean that first responders (like police or rescue services) engage in multiagency and multi-professional work to reduce individuals' vulnerabilities.

Training comprises of two thematic modules, which teachers and trainers can integrate in their course content and to suit specific qualifications. This way the training concept will serve many different instances across Europe and be easily modified for the use of other first responder organizations.

The training comprises of two modules:

Module 1. External communication and interagency collaboration

Module 2. Interaction and communication with people who have special needs in terms of communication

Target group description

The training is designed for practitioners at two levels:

Module 1 is designed for the communication specialists and duty commanding officers, who are responsible of communication

Module 2 is targeted at for the field operations officers, who respond to emergency situations and interact with citizens, and students of basic vocational training

The learning objectives and targeted learning outcomes

The learning objectives and the learning outcomes are based on the Bloom's taxonomy (page 23). Learning outcomes focus on the student and contain measurable evaluation criteria so that the students know how and what is assessed. The tables below contain both learning objectives and the targeted learning outcomes for each level in Bloom's taxonomy divided to two modules. For the first module (table 8), the learning outcomes are mainly module specific, not student specific as some of the activities are intended for groups.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Module 1. External communication and interagency collaboration	
Taxonomy level 4. learning objective	We will cover relevant knowledge on communicational vulnerabilities related to mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities. The knowledge is based on real insights from people who share these vulnerabilities and stakeholders who work with them. Students will learn the general characteristics and comorbid symptoms[31] related to mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities.
Targeted learning outcome	Students categorize and compare different comorbid symptoms and symptoms related to common mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities.
	Assessment: E-learning environment: Categorization of comorbid symptoms that may create communicational vulnerabilities
Taxonomy level 4. learning objective	Students will have knowledge on web accessibility requirements for public sector bodies, easy-to-read language (E2R) and plain language and their differences.
Targeted learning outcome	By the end of the module, students can differentiate between easy-to-read language and plain language
	Assessment: E-learning environment: exercises of writing in easy-to-read and plain language

Table 8a. Module 1. External communication and interagency collaboration: objectives, outcomes, and assessment

[31] Comorbid symptoms refer to symptoms that may accompany mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities such as aggressive behaviour, depression, anxiety, apathy, insomnia etc.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Taxonomy level 5. learning objective	The simulation exercise will contain mis-, dis- and malinformation in different forms. Students will understand the cause and effect of mis-, dis- and malinformation.
Targeted learning outcome	By the end of the module, students will be able to estimate their ability to respond to mis-, dis, and malinformation with their current communication capacity.
	Assessment: Structured self-assessment template Debriefing discussions: what works, what does not work in practice; what were the lessons learned
Taxonomy level 5. learning objective	The simulation exercise will enable the students to practice the use of both traditional and social media channels Students will practice producing accessible web content and texts in easy-to-read and plain language Students will learn to understand the importance of using all means of communication: traditional media, social media, and face-to-face interaction.
Targeted learning outcome	By the end of the module, students will be able to estimate the accessibility of their communication and where they need to improve.
	Assessment: Structured self-assessment template Debriefing discussions: what works, what does not work in practice; what were the lessons learned
Taxonomy level 5. learning objective	The simulation exercise requires coordination with relevant service providers and other first responders. Students will coordinate communication and find solutions together with other relevant actors in the exercise.
Targeted learning outcome	By the end of the module, students will be able to estimate coordination needs for future.
	Assessment: Structured self-assessment template Debriefing discussions: what works, what does not work in practice; what were the lessons learned

Table 8b. Module 1. External communication and interagency collaboration: objectives, outcomes, and assessment

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Module 2. Interaction and communication with people who have special needs in terms of communication	
Taxonomy level 1. learning objective	We will cover relevant knowledge on communicational vulnerabilities related to mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities. The knowledge is based on real insights from people who share these vulnerabilities and stakeholders who work with them. Students will have knowledge on characteristics and comorbid symptoms related to mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities.
Targeted learning outcome	Students can identify and name different comorbid symptoms and symptoms related to common mental health conditions, brain disorders/neuropsychiatric disorders and intellectual disabilities.
	Assessment: E-learning environment: multiple choice test in connection with the interactive videos, Face-to-face learning: discussion with teacher on difficult communication situations; good practices to ensure continuity of interaction and to avoid conflict.
Taxonomy level 2. learning objective	We will cover what makes individuals vulnerable in certain communication and interaction situations. Students will understand the dynamic and intersectional nature of vulnerability.
Targeted learning outcome	Students can summarize the characteristics in successful and failed communication and interaction situations. Students can predict how communication situations develop due to actions and communication choices made by the first responder.
	Assessment: E−learning environment: students guide the branching scenario to achieve the best outcome for successful interaction (students make choices while watching a series of video clips that guide interaction to a certain outcome). Face-to-face learning: group discussion on cause and effect of certain actions in first responder – citizen interaction (what went wrong and what went right: why)

Table 9a. Module 2. Interaction and communication with people who have special needs in terms of communication: objectives, outcomes, and assessment

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Taxonomy level 3. learning objective	We will teach practical capacities to use in challenging communication situations in the field. Students will learn practical skills to interact with the people who have special needs in terms of communication and interaction. Students will learn practical skills they can apply in the field while encountering the variety of society. The emphasis is on generalizable communication and interaction skills that can be used in most situations and do not require diagnostic skills.
Targeted learning outcome	Students can demonstrate how they would solve different kinds of difficult interaction situations; what kind of speech is suitable to avoid guiding responses and how to give information in an accessible way.
	Assessment: E−learning environment: The students get acquainted with various fictional cases/scenarios and apply what they have learnt in writing. Face-to-face learning: small group discussions based on different fictional cases/scenarios where they apply what they have learnt using the principles of problem-based learning.

Table 9b. Module 2. Interaction and communication with people who have special needs in terms of communication: objectives, outcomes, and assessment

Learning content and materials

In module 1, the training content will comprise of the scenario and steps for organizing a similar exercise elsewhere. In module 2, the training content will comprise of the training videos in four different languages (English, French, Finnish and Swedish) as well as additional material provided by the stakeholders such as written cases for challenging communication situations. We will also provide information on communication related vulnerabilities. We will have both interactive video content and content in text format.

Guidance for training

Module 1 requires guidance before the exercise takes place on practicalities of organizing a similar tabletop exercise. The trainer will also be able to guide assessment by leading the debriefing discussions. Module 2 makes different levels of guidance possible. The material is suitable for self-learning but can also be modified for classroom use. Learning materials are created for the Moodle platform with the H5P-add on tool. This allows for gamification of the learning content and makes the learning path interesting for the learner.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

6 Discussion and conclusions

The project task T4.1 Finnish Case Study" Dangerous Chemical Explosion in a City Centre, Finland" set out to *test the validity of BuildERS research results* and explore their applicability in practice. Concurrently, we discovered product and process innovation potential within the case, related to improving capacities and competencies in risk and crisis communication. As per the Description of Action, we have engaged in *tool and guideline development* with end-users in a challenging communication situation (a man-made disaster involving a poisonous chemical spill accident) where there is much mis- and disinformation. We have demonstrated how a simulation training tool (Trasim by Insta Digital) can be applied and utilized as part of a larger training concept to address special needs related to interaction and communication. We have also drafted learning objectives and outcomes for this concept and will later test it in its entirety with the European law enforcement and BuildERS project first responder partners, representing rescue services and civil protection.

Our fictional scenario took account an intersectional understanding of vulnerability, along the lines of the BuildERS theoretical framework. This means that we approached the communication-related vulnerability in crisis as proportional and contextual. Even persons with severe difficulties in social interaction and/or communication may not be the most vulnerable, if the risk- or crisis-related information is accessible and easy to understand, and person's ability to act upon information is supported. This requires that we build the capacities and competencies of first responders to make their external communications more accessible and handling challenging social interactions. Both accessible risk and crisis communication and successful everyday encounters are requirements for inclusive crisis management and disaster risk reduction. First responders should be aware and understand the reasons behind the difficulties in self-expression and/or social participation and have skills to keep the conversation going. This does not mean that they should be able to make a medical diagnosis, but they should rather be open-minded with neurodiversity.

T4.1 has been a co-creative process where we have tested a simulation training tool, validated learning objectives, and produced learning contents with relevant stakeholders in a truly iterative manner. We were fortunate to have extremely committed stakeholders who engaged in several rounds of validation and co-creation and continue to support our efforts in the future. Within the iterative process, we have developed novel training for law enforcement and rescue services. The iterative process helped us define the target groups for training and produce concrete learning outcomes that suit their needs and skill-level. It also helped us to discover the main themes for training in line with the BuildERS research and objectives:

1) Multi-channel communication and proliferation of risk and crisis information in different channels (how to take various vulnerability factors into account that are related to access to information),

2) Accessibility of information (how to take various vulnerability factors into account that are related to understanding of information), and

3) Inter-agency and multi-professional collaboration with the intermediaries (interlinkages of the horizontal and vertical aspects of social capital).

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Furthermore, we were able to identify and consequently incorporate in to the training some important related factors: the training concept will increase first responders' knowledge on alternative communication means (plain language and easy-to-read language) and different types of vulnerability factors related to communication (such as comorbid symptoms related to mental health conditions, brain disorders/neuropsychiatric disorders, and intellectual disabilities). Overall, the training concept will increase the resilience of vulnerable individuals in crises and increase their linking social capital. This is achieved by increasing the knowledge of first responders so that they are better able to meet the communicational needs of all individuals and support their individual capacities to cope with crisis.

We recommend that:

- First responders build their competencies in making risk and crisis communication accessible to persons with difficulties in communication and social interaction.
- First responders train their staff to handle challenging social interactions (like communicating with people with mental health conditions, neuropsychiatric disorders and/or intellectual disabilities).
- First responders build (in advance, as part of their preparedness) cooperative relationships with the intermediaries of persons who have it difficult to communicate and/or interact, so that the understanding of risk and crisis related information is better reached, understood and acted upon.
- Technology developers create supportive tools that enable learning of communication-related challenges and how to handle them.
- Technology developers assist in making first responders external communication more accessible: like creating contents in easy-to-read and/or plain languages.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

7 References

Aas, G. (2016). Theory or practice? Perspectives on police education and police work. *European journal of policing studies.*

Albrecht, F. (2017). The Social and Political Impact of Natural Disasters. Investigating Attitudes and Media Coverage in the Wake of Disasters. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Social Sciences* 143. Uppsala.

Aldrich, D.P. (2011). The Externalities of Strong Social Capital: Post-Tsunami Recovery in Southeast India. *Journal of Civil Society,* 7(1), 81-99.

Aldrich, D. P. & Meyer, M. A. (2014). Social capital and community resilience, *American Behavioral Scientist,* 59(2), 254-269.

Alzheimer Europe. (2019). Dementia in Europe Yearbook 2019. Dementia in Europe Yearbooks

Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives (Complete edition). New York: Longman.

ASDEU. (2018). Prevalence of ASDs and related social and economic costs, Autism Spectrum Disorders in the European Union (ASDEU) -project, Work Package 1, Task 1.1: Prevalence of individuals with an ASD by age and gender in the European Union. Final Report, 29.6.2018, Autism Spectrum Disorders in the European Union – ASDEU: Work Package 1. Prevalence of ASDs and related social and economic costs - PDF

Autism Finland. (2021). The autism spectrum – what is it about? Autism Finland website

Bakel van M. van, Einarsson I., Arnaud C., Craig S., Michelsen S., Pildava S., Uldall P. & Cans C. (2013). Monitoring the prevalence of severe intellectual disability in children across Europe: feasibility of a common database, *Developmental Medicine & Child Neurology*, 56(4), 361-369 Online version of the article

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H. & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. *Handbook I: Cognitive domain.* New York: David McKay Company.

Breen, R.L. (2006). A Practical Guide to Focus-Group Research, *Journal of Geography in Higher Education*, 30(3), 463-475. Online version of the article

Bullock, K. (2017). The police use of social media: transformation or normalisation?, *Social Policy and Society*, 17(2), 245-258. Online version of the article

Crane, L., Maras, K., Hawken, T., Mulcahy, S., & Memon, A. (2016). Experiences of Autism Spectrum Disorder and Policing in England and Wales: Surveying Police and the Autism Community, *Journal of Autism and Developmental Disorde*rs, 46(6), 2028–2041. Online version of the article

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

De Keersmaecker & Roets. (2017). 'Fake news': Incorrect, but hard to correct. The role of cognitive ability on the impact of false information on social impressions, *Intelligence,* 65, 107-110. Online version of the article

DePaul University (2021). Teaching guides. Course Objectives & Learning Outcomes. Available at: DePaul Course Objectives & Learning Outcomes

EU. (2005). Some elements about the prevalence of Autism Spectrum Disorders (ASD) in the European. Union. Directorate C - Public Health and Risk Assessment C2 - Health information. Some elements about the prevalence of Autism Spectrum Disorders (ASD) in the European Union - PDF

Falk, M.L. (2015). Post-Tsunami Recovery in Thailand: Socio-Cultural Responses. London: Routledge.

Fullerton C. S., Ursano R. J. & Wang L. (2004). Acute Stress Disorder, Posttraumatic Stress Disorder, and Depression in Disaster or Rescue Workers, *American Journal of Psychiatry,* 161, 1370–1376. Online version of the article

GFDRR. (2018). Five actions for disability-inclusive disaster risk management, Global Facility for Disaster Risk Reduction: Washington. Five actions for disability-inclusive risk management - PDF

Godfredson, J., Ogloff, J., Thomas, S., & Luebbers, S. (2010). Police Discretion and Encounters With People Experiencing Mental Illness: The Significant Factors, *Criminal Justice and Behavior,* 37(12), 1392–1405. Online version of the article

Godfredson, J., Thomas, S., Ogloff, J., & Luebbers, S. (2011). Police perceptions of their encounters with individuals experiencing mental illness: A Victorian survey, *Australian & New Zealand Journal of Criminology,* 44(2), 180–195. Online version of the article

Henshaw, M., & Thomas, S. (2012). Police encounters with people with intellectual disability: prevalence, characteristics and challenges, *Journal of Intellectual Disability Research*, 56(6), 620–631. Online version of the article

Hirtz, S. (2011). Storyboarding your Online Course. Available at: Slideshare.net

Inclusion Europe (2021) Dictionary: Easy-to-read explanations. Available at: Inclusion Europe website

Indriasari F. N., Daniyati K P., Widyaran L. (2018). Disaster Risk Reduction and Emergency Preparedness for Children with Autism in Facing Earthquake Disaster in Yogyakarta, J*MMR (Jurnal Medicoeticolegal dan Manajemen Rumah Sakit)*, 7(1), 52-59. Disaster Risk Reduction and Emergency Preparedness for Children with Autism in Facing Earthquake Disaster in Yogyakarta - PDF

Institute for the languages in Finland. (2019). Plain language is inclusive and prevents exclusion. Policy Brief 1/2019, Ministry of Finance. Clear language is inclusive and prevents exclusion Clear language is inclusive and prevents exclusion - PDF

Jussila, Mari & Kupila, Pauliina. (2012). Ajatuksesta toteutukseen – pedagoginen käsikirjoitus. Ajatuksesta toteutukseen – pedagoginen käsikirjoitus - PDF

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Kailes, J. I. and Alexandera E. (2007). Moving Beyond 'Special Needs'. A Function-Based Framework for Emergency Management and Planning, *Journal of Disability Policy Studies,* 17, 230-237. Online version of the article

Kehitysvammaliitto. (2021). The Finnish Association on Intellectual and Developmental Disabilities. Available at: Kehitysvammaliitto website

Kersten J., Leonardmaier N. & Kreisl R. (2019). Brave New Apps: An Essay on Community Policing and Social Media, in: Akhgar B., Bayerl P.S. and Leventakis G. (eds.) *Social Media Strategy in Policing*, Springer: Cham, Switzerland, 23-36.

King D., Delfabbro P., Billieux J. & Potenza M. N. (2020). Problematic online gaming and the COVID-19 pandemic, *Journal of Behavioral Addictions,* 9(2), 184-186. Online version of the article

Laki omaishoidon tuesta. (2005). (Law about support for family caring). Available at Finlex

Lee JJ, Kang K, Wang M.P., Zhao S.Z., Wong J.Y.H., O'Connor S., Yang S.C., Shin S. (2020). Associations Between COVID-19 Misinformation Exposure and Belief With COVID-19 Knowledge and Preventive Behaviors: Cross-Sectional Online Study, *Journal of Medical Internet Research,* 22(11). JMIR Publications

Lehto, S. N.d. Verkkokurssi - elämänmakuinen oppimisseikkailu? ChyNetti: Chydenius-Instituutin verkkojulkaisuja. Julkaisija Jyväskylän yliopisto, Chydenius-Instituutti. Kokkola. Online version of the article

MacGillivray, B. H. (2018). Beyond social capital: The norms, belief systems, and agency embedded in social networks shape resilience to climatic and geophysical hazards, *Environmental Science & Policy*, *89*, 116–125. Online version of the article

Martins, V. N., Nigg, J., Louis-Charles, H. M., Kendra, J. (2019). Household preparedness in an imminent disaster threat scenario: The case of superstorm sandy in New York City, *International Journal of Disaster Risk Reduction,* 34, 316-325.

Matei V., Pavel A., Giurgiuca A., Rosca A. Sofia A., Dutu I. Tudose C. (2020). Knowledge of prevention measures and information about coronavirus in Romanian male patients with severe mental illness and severe alcohol use disorder, *Neuropsychiatric Disease and Treatment,* 16, 2857-2864. Online version of the article

Mclean, N., & Marshall, L. (2010). A front line police perspective of mental health issues and services, *Criminal Behaviour and Mental Health,* 20(1), 62–71. Online version of the article

Ministry of Justice. (2021). What constitutes punishable hate-speech online? Department for Democracy and Public Law/ Unit for Autonomy and Equality, Yhdevertaisuus website

Mitchell, J.T. (1983). When disaster strikes: The critical incident stress debriefing process, *Journal of Emergency Medical Services*, 8, 36–39.

Mubarak, F. (2018) Rethinking the digital divide: emerging challenges in the new global economy, Doctoral dissertation, University of Turku, Turku School of Economics, Department of Management and Entrepreneurship. Annales Universitatis Turkuensis, series E, 28. Doctoral dissertation published online

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

OECD/EU. (2018). Health at a Glance: Europe 2018: State of Health in the EU Cycle, OECD Publishing, Paris. Online version of the article

Omaishoitajat. (2021). Carers Finland. Omaishoitajat website

Ommeren M. (2019). Mental health conditions in conflict situations are much more widespread than we thought, World Health Organization, Newsroom, Commentaries 11 June 2019, World Health Organization website

Oxburgh, L., Gabbert, F., Milne, R., & Cherryman, J. (2016). Police officers' perceptions and experiences with mentally disordered suspects. *International Journal of Law and Psychiatry*, 49(Pt A), 138–146. Online version of the article

Paterson, H., Whittle, K., & Kemp, R. (2015). Detrimental Effects of Post-Incident Debriefing on Memory and Psychological Responses. *Journal of Police and Criminal Psychology*, *30*(1), 27–37. Online version of the article

Pitkänen, S., Huotari, K. & Törmä, S. (2018). Lisää asumisvaihtoehtoja ja valinnanvapautta. Kehitysvammaisten ihmisten yhdenvertaisuus valtion tukemassa asumisessa, Ympäristöministeriön raportteja 12/2018.

Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology, *Annual Review of Sociology*, 24(1), 1–24. Online version of the article

Rauta J. (2020). Poliisin tietoon tullut viharikollisuus Suomessa 2019 (suspected hate crimes reported to the police in Finland in 2019), with English summary, Poliisiammattikorkeakoulun katsauksia 16/2020. Poliisin tietoon tullut viharikollisuus Suomessa 2019 - PDF

THL (2021) Topics, Chronic diseases, Memory disorders, Finnish institute for health and welfare, Finnish institute for health and welfare website

UNISDR. (2015). The Sendai Framework for Disaster Risk Reduction 2015-2030, Third UN World Conference in Sendai, Japan, March 18, 2015, The United Nations Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015 - 2030 - PDF

Waddington D. (2019). Introduction: The Police and Social Media, in: Akhgar B., Bayerl P.S. and Leventakis G. (eds.) *Social Media Strategy in Policing,* Springer: Cham, Switzerland, 3-21.

Westera W. (2001). Competences in Education: A Confusion of Tongues. *Journal of Curriculum Studies,* 33(1), 75-88. Online version of the article

WHO. (2002). Towards a Common Language for Functioning, Disability and Health, ICF. *The International Classification of Functioning, Disability and Health.* WHO/EIP/GPE/CAS/01.3. Towards a Common Language for Functioning, Disability and Health - PDF

WHO. (2019). Mental health – Fact sheet. World Health Organization, Regional Office for Europe. Mental health: Fact sheet - PDF

WHO. (2020). Dementia, World Health Organization, Newsroom, Fact sheets, Dementia: Fact sheet - PDF

WHO. (2021). Definition: Intellectual disability, World Health Organization website

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Williams M. L., Burnap P., Javed A., Liu H. & Ozalp S. (2020). Hate in the Machine: Anti-Black and Anti-Muslim Social Media Posts as Predictors of Offline Racially and Religiously Aggravated Crime, *The British Journal of Criminology,* 60(1), 93–117. Online version of the article

Wolf, J., Adger, W., Lorenzoni, I., Abrahamson, V., & Raine, R. (2010). Social capital, individual responses to heat waves and climate change adaptation: An empirical study of two UK cities. *Global Environmental Change*, 20(1), 44–52. Online version of the article

Wood L., Boruff B. & Smith H. (2013). When disaster strikes…how communities cope and adapt: a social capital perspective. In Johnson C.D (ed.) Social Capital: Theory, measurement and outcomes, *Nova Science publishers*, 143-169.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

8 Annexes

Annex 1. Scenario

BuildERS case study 4.1 scenario description

An explosion takes place on Monday (at 12.02) in a six-story apartment building near the central train station. Just before the explosion, an automatic alarm has gone off in the building and reached the Emergency Response Centre. After the explosion, several residents call the centre. The explosion is felt especially in the downstairs business premises, which include an organization for young adults with neuropsychiatric disorders, a nail salon, and a clothing store among others. The organization's youth instructor also calls the emergency centre. In addition, a few emergency centre calls come from adjacent houses and passers-by. Some callers mention that in addition to a loud bang, it smells like nail polish in the premises.

The rescue services and the police arrive to the location. The rescue services locate the fire and start extinguishing it. The police restrict the area and guide traffic. The police inform the public about these actions. The rescue mission (extinguishing the fire) takes roughly 3 hours. Meanwhile, the police instruct the residents to stay in their apartments. The police start the investigation of the fire/explosion while the rescue mission is still ongoing.

There is a strong smell of acetone in the air. Three people on the first floor of the building are injured in the explosion. The rescue services can restrict the fire to the basement of the building, which is used as a shared storage space. Meanwhile, the rescue services find a badly damaged container in one of the storages. They find additional containers and bags with unidentified substances in the same storage unit. The authorities suspect some sort of chemical explosion.

Social workers arrive to the location to evaluate the need for psychosocial support. While the police talk to the residents, the Youth Instructor informs the police that one of the boys in his group has paid attention to a certain van that has been spotted in front of the building. The police talk to the young man (19) and he tells them that he has seen the white van in front of the building several times. He has paid attention to the content of the van: containers in the back. He remembers the registration number. He can also remember some of the hazard symbols on the containers. He has good visual memory and can draw the symbols for the police. The police make the connection between this information and the smell of acetone.

The passers-by first pay attention to the explosion (the windows in the basement shatter and there is a loud bang). Later they pay attention to the presence of rescue services and the police in front of the building. The unusual event in the city centre receives much attention and people send messages on their social media channels where they speculate about the event (channels: Facebook, Twitter, Instagram, Snapchat, Jodel).

Media updates their news stories online constantly with new information. The reporters on the scene interview people who saw the incident; they also take photos of the building and the rescue operation. Several reporters call the police to enquire about the incident.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The apartment building has a Facebook-group where one of the neighbours posts a message that the basement has smelled of acetone for quite some time now. She suspects the young people with neuropsychiatric disorders; the girls use the basement to smoke and polish their nails. Now they have caused an explosion! Several residents in the building have made complaints about the organization to the city. The resident starts to speculate on the cause of the explosion. Many agree that the young people are somehow responsible and that the police should investigate. One of the people commenting states that he will call the police.

In social media, several photos and videos that have been shot from near-by buildings start to circulate. The photos indicate that the building is near the railway station. The photos show that there are many First Responder vehicles at the site as well as spectators taking photos. Someone flies a drone above the building.

The incident inspires a “social media challenge” on TikTok where teenagers microwave a ball of foil. This causes several new fire related calls to the Emergency Response centre.

Coincidentally, the explosion happens almost concurrently with the testing of the general alarm signal. The general alarm starts a “fictional war event” in Jodel once a month. While the users post comments about the fictional event, someone posts about the real event. Another states that he knows that the incident is related to organized crime. These posts are mostly lost in the conversation. Someone does however send a screen shot to the police.

The struggling local media has decided to share (online) news on the incident with subscribers only. Non-subscribers can only see the first few lines of the news story. They can read that there has been a chemical explosion in the city centre and that the rescue services are present. The actions of the newspaper cause irritation and confusion.

The local AirBnB superhosts that have several apartments near the site send messages to the police in social media stating that they can offer accommodation for the residents of the building if necessary.

Some of the residents receive more detailed information about the incident on the building’s Facebook page and on local media. They stay put and observe the situation waiting for further guidance by the authorities. A couple in their 80s does not receive information about the incident; they see the rescue vehicles and the police cars outside in front of the building. The husband has a memory disorder, the wife acts as his carer. They hear sounds in the corridor but are hesitant to open the door or leave the apartment. The wife tries to keep the husband calm. The couple relies on the services of the local Alzheimer society, so the wife calls the local service number. The employee of the organization promises the help. The expert then informs the police about the couple and their situation.

The couple’s son lives in Sweden and finds out about the incident from a local newspaper. He recognizes the building from the picture. The newspaper speculates that organized crime is involved and that the incident might be gang related. The son calls his parents. They tell him that they do not know what has happened but that there are a lot of first responders in front of the building. The son sends angry tweets to the local police stating that they do not care about sick elderly veterans and that the incident is related to terrorism. He sends the tweets both in Finnish and Swedish and thus reaches a wider audience. The responding tweets are mixed containing racism, hate speech and civilized discussion on people with memory disorder and war veterans.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

The police inform the residents that they are not to leave their apartments. The police instruct that the residents are to wait for a permission to leave and asks them to follow all further instructions. There are several individuals with intellectual disability living in the house.

The police talk to the people who own or run businesses in the building. In the nail salon they spot a sign stating that the business is closed on Mondays. Nonetheless, the police spot movement inside and a woman opens the door. The police talk to the woman.

A man living in the sixth floor posts a message on Facebook (closed group) stating that the owner of the nail salon is responsible. He presents some “evidence” and attaches a compromising photo. The photo spreads online like wildfire. She starts to receive angry messages on her business channels where her life is threatened. The police receive a screenshot.

Police investigates the fire and it is revealed that the fire happened due to the wrongful storage of chemicals and unlucky circumstances, which caused a gas explosion. The container of acetone has slowly leaked in the basement and vaporized. A faulty electric device then started the fire. The fire has spread as liquefied compressed gas containers also stored in the basement exploded.

Later, the police search the home of the man living in the sixth floor and finds materials used in the production of drugs. The suspect is arrested. The incident garners much attention in social and in national media. It is later revealed that organized crime was not involved, and the man acted alone.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

Annex 2. Stakeholders

Tampere Settlement Association (Setlementti Tampere ry) is a religiously and politically unaffiliated non-profit organization focusing on social work. They coordinate activities in several different areas e.g. crime victim support services, support for people who live with honour-based violence, support for people living with intimate partner violence, civic services for people of immigrant background as well as for those in the autism spectrum and with intellectual disabilities. NEO - OmaPolku is one of the activities offered by the Tampere Settlement Association, it supports the life management and inclusion of young people with intellectual disabilities and other groups with specific needs. They also offer support for the families. Specifically, they offer individual guidance, culture- and art-focused workshops and group work that aims to increase civic skills. They also develop earning and employment opportunities for their target groups. Services and activities are planned in co-operation with the individuals and their social networks (see more: Setlementti Tampere ry website).

Autism Foundation Finland (Autismisäätiö) offers a counselling services, training, and advice for persons with autism spectrum disorder (ASD) and their families. Everyone is met with a personal touch and the professional expertise is focused on finding the optimal service required in each situation. Foundation coordinates a network of professionals (Autism Networks), who have expertise in ASD, and trains experts by experience to speak at events, training sessions or schools. (See more: Autismisäätiö website)

Pirkanmaa Association of Alzheimer Society of Finland (Pirkanmaan muistiyhdistys ry) is an association for individuals with a memory disorder, their relatives, professional staff, and anyone interested in memory-related issues. It is one of the 43 local associations of the umbrella organization: The Alzheimer Society of Finland. It offers legal, medical, and psychological counselling, training, peer support and short-time care for the persons with memory disorders. (See more: The Alzheimer Society of Finland website)

MIELI Mental Health Finland (est. 1897) is the oldest non-profit organization doing advocacy of mental health issues. It offers 24/7 psychological support on phone, online and face-to-face. MIELI has both professional counselling and group discussions with peers. MIELI trains and organizes volunteer activities, proposes initiatives, and publishes reports, guidebooks, and journals. (See more: The Finnish Association for Mental Health website)

Kiipula Foundation offers a wide selection of upper secondary vocational special education (EQF4) and rehabilitation services in an empowering environment. Foundation is a pioneer in supporting working life through individual and work-oriented education and rehabilitation. (See more: Kiipula website)

Tampere Region Association of Carers Finland (Tampereen Seudun Omaishoitajat ry) belongs to the national umbrella organization of Carers Finland, doing advocacy of informal carers. Their mission is to improve the social status of families in informal care situations by e.g. influencing legislation and the public opinion. Association offers training, counselling by phone and online, organizes events and provides peer support. (See more: Omaishoitajaliitto website)

Finnish Institute for Health and Welfare studies, monitors, and develops measures to promote the well-being and health of the population in Finland. They gather and produce information based on

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

research and register data and provide expertise and solutions to support decision-making. They serve various parties: the government, municipal and provincial decision-makers, actors in the social welfare and health sector, organizations, the research community, and the public. (See more: THL website)

Experts by experience are usually individuals who have personal experience of a mental or physical illness, disability or other difficult life situation and have undergone experiential expert training. Experts by experience share real stories about the symptoms and feelings caused by illness or life crisis, treatment, and things that have contributed to rehabilitation. They help develop services to meet customer needs, raise awareness, change attitudes, and give hope to others who have similar experiences. (See e.g.: Autismiliitto website)

The Estonian Rescue Board (ERB) is a government institution under the jurisdiction of the Ministry of the Interior. It develops and maintains a safe living environment in Estonia, prevents accidents and hazards and provides quick and professional assistance to population in case of emergencies. Five main areas of the Estonian Rescue Board's responsibilities are: rescue works, accident prevention, fire safety supervision, crisis management, explosive ordnance disposal. The Estonian Rescue Board has the central function of developing, planning, and managing rescue and civil protection activities. (See more: Estonian Rescue Board website)

The Autonomous Province of Trento (PAT) is a public authority located in the north-east of Italy. Within the PAT, the Civil Protection Department ensures all operations to ensure the effectiveness of measures to protect people affected by disasters, in the Autonomous Province of Trento, in Italy and abroad. The Department is made up of professional units: Risk Prevention Service; Geological Service; Fire Brigades Service with a special HEMS Helicopter unit; Emergency Service Centre (112 p.n.). (See more: The Autonomous Province of Trento website)

Technical Research Centre of Finland Ltd (VTT) is a state-owned and state-governed non-profit limited liability company established by law. As an impartial and neutral Research and Technology Organisation (RTO) and with the national mandate and mission to support economic competitiveness, societal development, and innovation, VTT carries out research and innovation activities for the needs of industry and knowledge-based, resilient society. (See more: VTT website)

The Police University College is the only institute offering police education in Finland. It also offers further and continuing education for the police and education to other groups, such as stakeholders and the private security sector. Education is organized both in Finnish and Swedish; some courses are thought in English. There are approximately 200 employees at the Police University College half of whom occupy teaching positions. 40 percent of staff are police officers. (See more: The Police University College website)

CEPOL and CEPOL LEEd. CEPOL is an agency of the European Union dedicated to developing, implement and coordinate training for law enforcement officials. LEEd is CEPOL's e-learning platform for law enforcement education. (See more: CEPOL website)

Insta Digital is one of the six segments of the Insta Group Oy, an expert in industrial automation, industrial digitalisation, cyber security, and defence technologies. Insta Digital is an expert in data analytics and secure digitalization of mobile devices and machinery. (See more: Insta website)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

The National Police Board of Finland is the central administrative authority of the police force. Its tasks include planning, directing, developing, and supervising police operations and the related support functions. In addition, it is responsible for the equal availability of police services nationwide, decides on cooperation between police units and oversees their performance management. (See more: The Finnish police website)

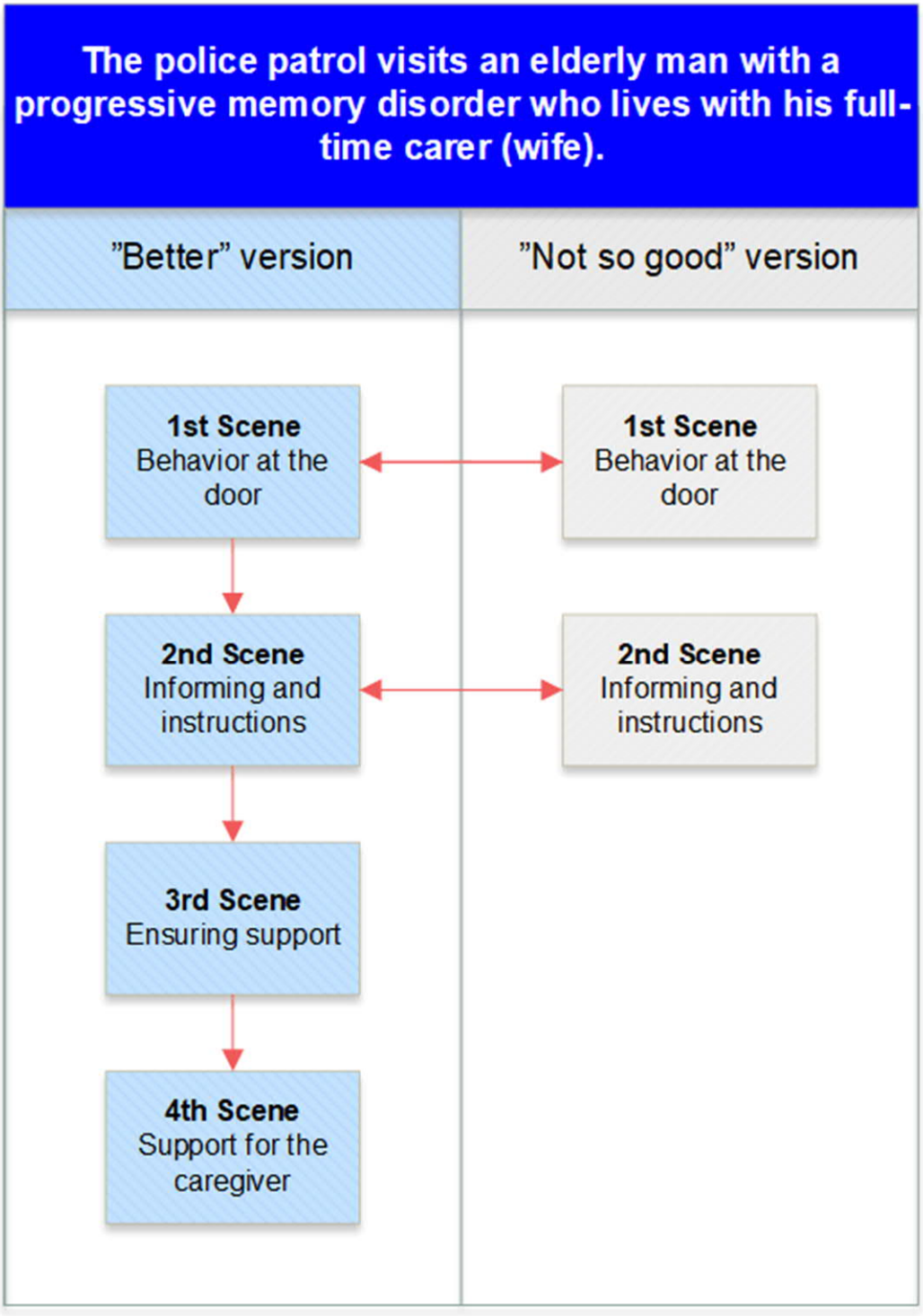
The Finnish police is made up of 11 police departments. The service network of the local police includes a main police station, police stations and other service points. (See more: The Finnish police website)

Finnish rescue services. There are 22 rescue departments in Finland, which are managed by municipalities and which carry out rescue service duties in their regions. Rescue departments cooperate with other authorities and with residents and communities in the prevention of accidents and maintenance of security. (See more: Finnish rescue services website)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

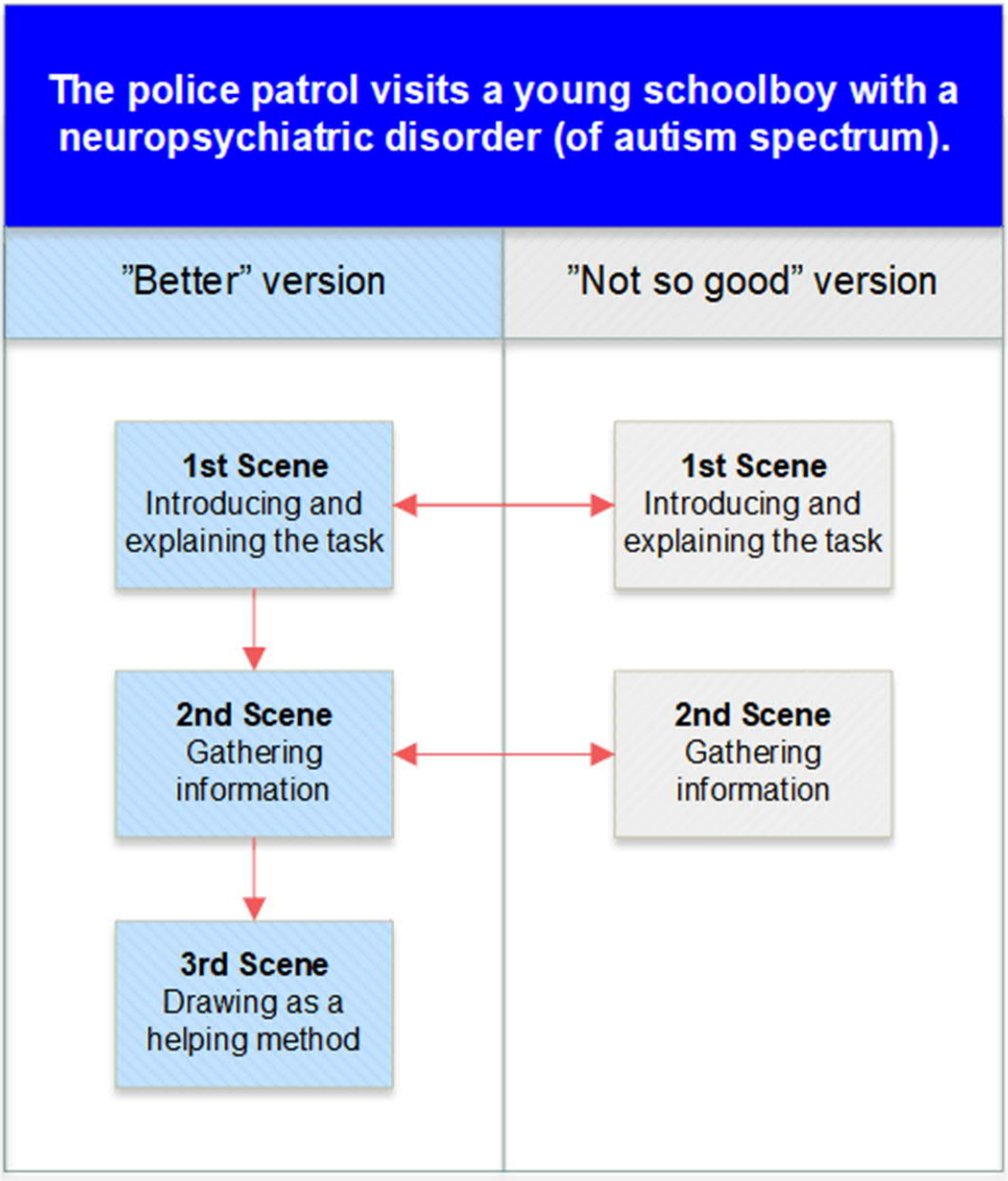
Annex 3. Filmed police-citizen interactions

Memory disorder



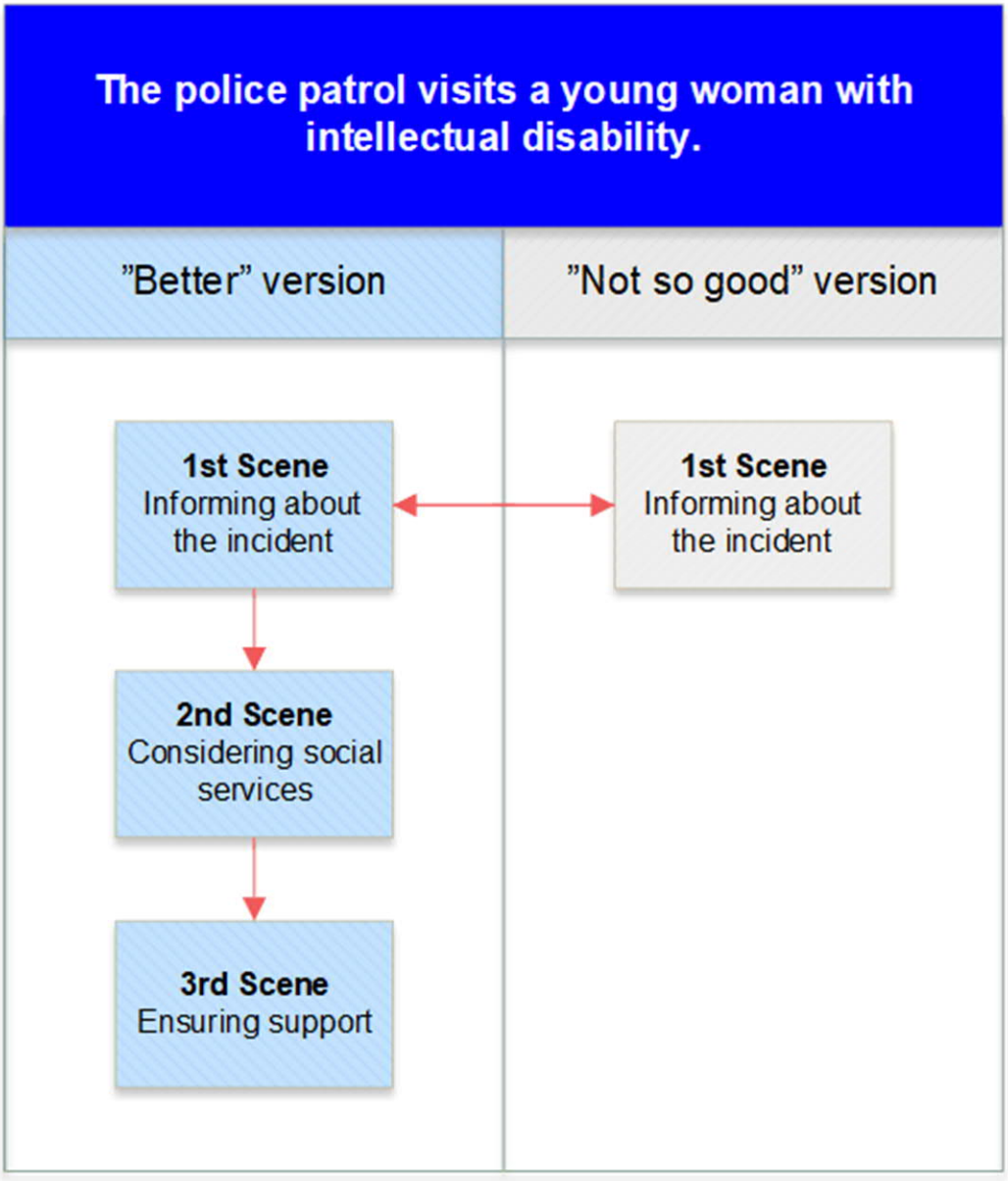
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Neuropsychiatric disorder



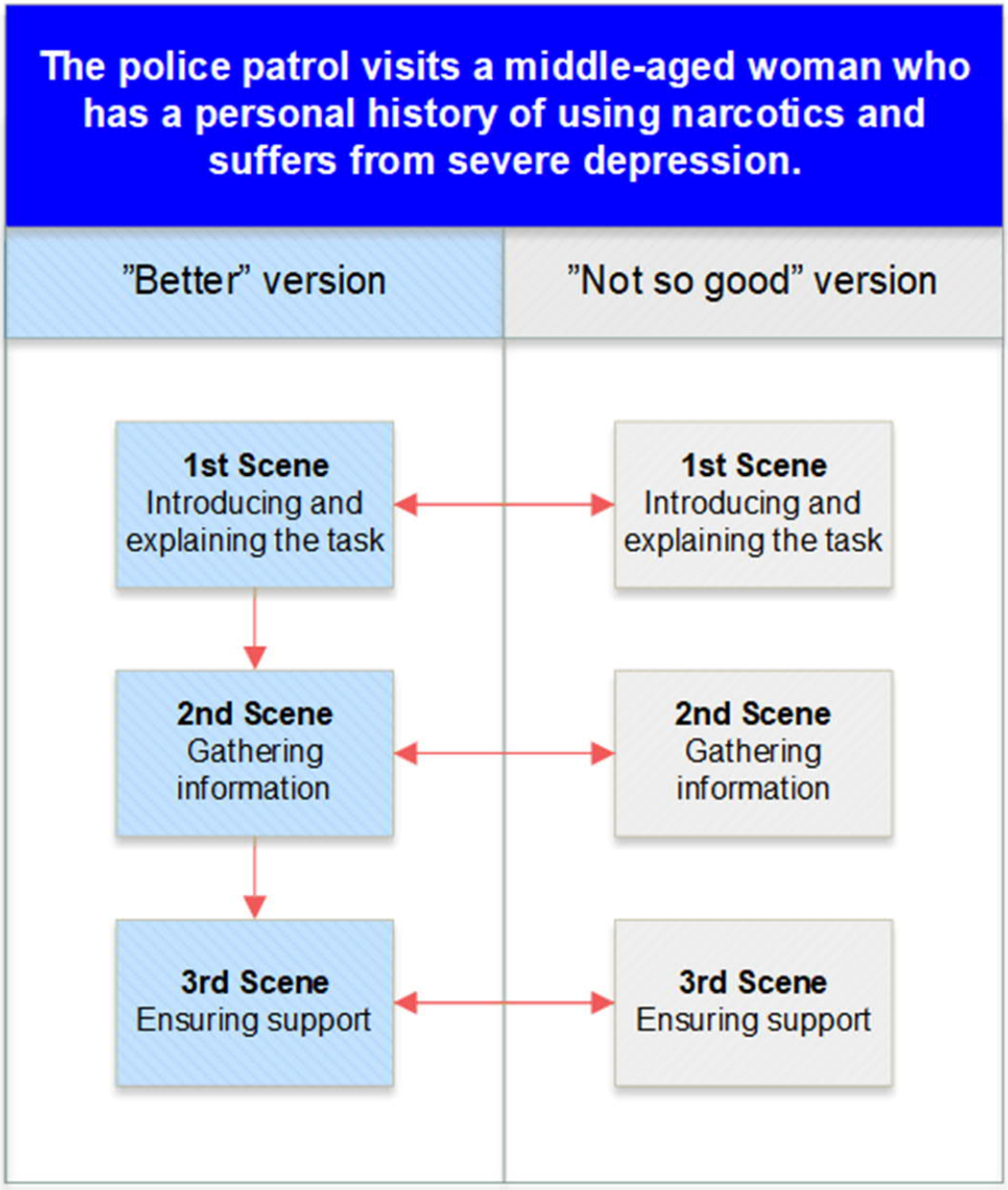
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Intellectual disability



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Mental health condition



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

Annex 4. Self-evaluation template

BuildERS – Observation and assessment form

Communication preparedness drill (Police Department X, x.12.2020)

THEMES

A. Testing communication preparedness

1. Organization and cooperation of the communication preparedness team
2. Coordination and harmonization of communication with the emergency authorities
3. Utilizing additional resources
4. Complying with the instructions of the preparedness drill

B. Responding to the goals of the BuildERS project

5. Responding to rumours, false and misleading information and influencing through false information
6. Responding to the need of information, accessibility of information
7. Protecting demographic groups from hate speech and targeting
8. Other observations

INSTRUCTIONS

- Familiarize yourself with the observation and assessment form before the day of the drill.
- During the drill, focus on answering the themes on the *Observations* -field with the help of the support questions.
- If your observations do not go under any theme, document them in the *Other observations* -field. Here, you can also document any other observations you consider important.
- After the drill, assess the themes based on the observations you made in the *Assessment of observations* - field. Conduct the assessment during the next weekday the latest.
- Return the form to the Police University College project manager Pirjo Jukarainen as well as to the researcher Miia Myllylä
- Notice the classification note: “RESTRICTED”! The filled form will be only handled by the Police University College BuildERS team along with the National Police Board representatives in charge of developing communication preparedness. Public observations will be distributed with the BuildERS project and they are part of the project’s public report.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 833496

1. Organization and cooperation of the communication preparedness team *Division of work? Smoothness of activities? Internal cooperation of the team? Supporting others' activities? Mutual communication?*
Observations
Assessment of observations

2. Coordination and harmonization of communication with the emergency authorities *Cooperation with the rescue department? Other cooperation? Contacting National Police Board?*
Observations
Assessment of observations

3. Utilizing additional resources *The National Operative Communication Preparedness Team? Associations? Businesses (for example accommodation)?*
Observations
Assessment of observations

4. Complying with the instructions of the preparedness drills *Channels of communication? Processes? Responsibilities?*
Observations
Assessment of observations

5. Responding to rumours, false and misleading information and influencing through false information *Were the messages that require reacting to recognized? Was the reaction sufficient?*
Observations
Assessment of observations

6. Responding to the need of information, accessibility of information *Informing of crisis help and danger? The accessibility of communication channels? Were persons with cognitive or psychological challenges considered?*
Observations
Assessment of observations

7. Protecting demographic groups from hate speech and targeting *Were demographic groups who are targets of inappropriate or criminal actions recognized? Were means to protect these groups discovered?*
Observations
Assessment of observations

8. Other observations *Did you observe anything else?*
Observations
Assessment of observations

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496

CONTACT US


www.buildersproject.eu


@BuildERS_EU


https://www.facebook.com/Builders-2762442730463980/


https://www.linkedin.com/company/builders-h2020

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 833496