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Deliverable D6.4

Report on the second field exercise and evaluation workshop

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Tony Godwin[1], Nigel Hale[1], Dominic Kelly[1], Irina Marsh[1], Danielle Carbon[2], Andreas Arnold[2], Laura Petersen[3], Grigore Havarneanu[3], Dale Weston[4], Habiba Abbasi[4], Richard Amlot[4], Amelia Dennis[4], Louise Davidson[4], Charlotte Hall[4], Charles Symons[4], Garik Markarian[5], Mariano Zamorano[6], Virginia Bertelli[6,] Åsa Burlin[7]

1: CBRNE, 2: DHPol, 3: UIC, 4: UKHSA, 5: RINISOFT, 6: ETICAS, 7: UMU

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Consortium – List of partners

Partner no.	Short name	Name	Country
1	UIC	UNION INTERNATIONALE DES CHEMINS DE FER (COORDINATOR)	France
2	CBRNE	CBRNE LTD	UK
3	PPI	POPULATION PROTECTION INSTITUTE (MINISTRY OF THE INTERIOR OF THE CZECH REPUBLIC)	Czech Republic
4	DB	DEUTSCHE BAHN AG	Germany
6	UMU	UMEA UNIVERSITET	Sweden
7	DHPOL	DEUTSCHE HOCHSCHULE DER POLIZEI	Germany
8	RINISOFT	RINISOFT LTD	Bulgaria
9	WMP	WEST MIDLANDS POLICE AND CRIME COMMISSIONER	UK
10	ETICAS	ETICAS RESEARCH AND CONSULTING SL	Spain
11	SESU	STATE EMERGENCY SERVICE OF UKRAINE	Ukraine
12	UKHSA	UK HEALTH SECURITY AGENCY (DEPARTMENT OF HEALTH – PUBLIC HEALTH ENGLAND)	UK
13	SPL	STATE POLICE OF LATVIA	Latvia
14	AGS	AN GARDA SÍOCHÁNA – NATIONAL POLICE FORCE IRELAND	Ireland
15	FFI	FORSVARETS FORSKNINGSINSTITUTT	Norway
16	NPH	KOMENDA GŁÓWNA POLICJI	Poland

Supporting organisations

Affiliation	Short name	Name	Country
eNOTICE	NBC School	Scuola Interforze per la Difesa NBC	Italy
eNOTICE	UNITOV	University of Rome Tor Vergata	Italy
CSO	CSV	Centro di Servizio per il Volontariato	Italy
CSO	StC	Save the Children	Italy
CSO	Caritas	Caritas Rieti	Italy
Other	STO	Servizio Tour Operator - A.S.M. Rieti	Italy

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One of the key issues, and indeed lesson learnt, was that the project found it challenging coordinating activities from a different country due to the language issue, lack of contacts but also accommodating different national modus operandi. Project PROACTIVE therefore would like to express special thanks to Grace Xerri from University of Rome Tor Vergata (UNITOV) supported by Dr Daniele Di Giovanni. Grace was our key "Point of Contact" with project eNOTICE and took on roles that were not expected of her. These roles included recording and managing the names of civilian volunteers as they were recruited. Grace also had an important role in coordination the liaison with Major Giampaolo Santini of the NBC School vis a vis the important issue of security vetting. This was not an issue we had in Dortmund, nor do we expect to have it in Ranst for the 3rd field exercise but as the NBC School was a military establishment this was a critical issue. Grace was also an important friendly face and voice when liaising with Save the Children (Italy) (StC) and subcontractors especially within the realm of logistics. Grace also participated on the day of the field exercise acting as an interpreter and she persuaded her husband to lead one of the focus groups as well as acting as an interpreter during the exercise. Her enthusiasm and sense of humour was very much appreciated by all within project PROACTIVE.

StC (Italy)'s representative Francesco Graziani was another key individual who helped to liaise with the different stakeholders project PROACTIVE was working with. Francesco visited a local school to try to enlist its participation in the field exercise and although not successful useful lessons were learnt. Francesco also helped to enlist civilian volunteers and enabled their transportation from Rome. He also supported us on the day of the exercise in multiple roles; translator, Child Welfare Officer and Civil Society Advisory Board (CSAB) observer. He further recruited and managed the focus group leaders that at the same time provided support as translators. We hope to continue to work together in the field of working with children for our 3rd field exercise or indeed any new opportunity afforded by Horizon Europe.

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Finally we would like to thank especially all volunteers of the exercise, who despite the bad weather on the day of the exercise came in large numbers. Without them, the successful exercise would not have been possible.

List of Acronyms

Acronym	Definition
CBRNe	Chemical, Biological, Radiological, Nuclear, and explosive
CDP	Communication and Dissemination Plan
CSAB	Civil Society Advisory Board
CSO	Civil society organisation
DIM	Detection Identification Monitoring
DoA	Description of Actions
EDPS	Ethics and Data Protection Supervisor
EEAB	External Ethics Advisory Board
GDPR	General Data Protection Regulation
GUI	Graphic User Interface
IIMARCH	Information, Intention, Method, Administration, Risk assessment, Communication, Human rights, legal and ethical
IOR	Initial Operational Response
iOS	Operating System for Apple
KPI	Key Performance Indicator
LEA	Law Enforcement Agency/Agent
PEO	Project Ethics Officer
PPE	Personal Protective Equipment
PSAB	Practitioner Stakeholder Advisory Board
SAB	Security Advisory Board
SOP	Standard Operating Procedure
WP	Work Package

Executive summary

This deliverable reports on the findings and lessons learnt from the second PROACTIVE field exercise and its evaluation workshop. It applies the Work Package (WP) 1 recommendations and the learning from the first field exercise specifically to the Italian context referring where possible to organisational aspects (e.g. skills, technological capabilities, SOPs, interagency information sharing routines), as well as the regulatory frameworks, and the institutional mandates (e.g. command and control lines).

On Wednesday 16th November 2022, the second PROACTIVE field exercise took place at the NBC School training centre in Rieti, Italy. The planning and preparation for this field exercise was severely disrupted by the Covid-19 pandemic. The Rieti field exercise was originally scheduled to be the first field exercise and was due to take place in October 2020.

The field exercise was a joint activity with another Horizon 2020 project, eNOTICE, which has within its membership a number of CBRNe[1] training centres situated across Europe. The host for the field exercise was the NBC School whose training centre is a member of eNOTICE.

Goals and Method

The methodology for planning and delivering the field exercise was established in the previous deliverable D6.1 (Godwin and Hale 2021), which adopted the IIMARCH (Information, Intention, Method, Administration, Risk assessment, Communication, Human Rights, legal and ethical) principles (see Chapter 2) to fit the requirements of the project.

Strategic and Tactical Objectives for the exercise evolved from those developed for the first field exercise, finalised through consultation with the wider PROACTIVE consortium and were based upon the requirements set out in the Description of Actions (DoA). These objectives were shared with eNOTICE and NBC School.

The focus of the PROACTIVE project centres on the involvement of civil society volunteers, and in particular vulnerable persons, in the training of CBRNe practitioners. Consequently D6.4 details the planning, engagement, recruitment, management, inclusion, protection and feedback of those civil society members who volunteered to be “victims” in the exercise. It then identifies the learning from the first exercise with a view to incorporating that into the third field exercise.

A management structure was established within the PROACTIVE consortium to plan and deliver the exercise. This was led by CBRNE, and supported by DHPol, ETICAS, UKHSA and RINISOFT. The strategic overview and management were provided by UIC. Exercise management was split into three distinct sections to cover Pre-exercise, Exercise and Post-exercise. In line with the good practice developed in the first field exercise, timelines, roles and responsibilities, process maps and risk assessments were developed to support the delivery at each stage. Significant time was dedicated to the recruitment process, ethical standards, and the evaluation strategy. Joint planning meetings with the NBC School and internal planning meetings were held to develop the exercise plan in a collaborative way. Whilst many of these meetings were held online, reducing Covid-19

[1] Chemical, Biological, Radiological, Nuclear, and explosive (CBRNe)

restrictions allowed for more face-to-face contact which helped to build close working relationships and familiarisation with the exercise venue.

Exercise scenario and participants

The scenario for the exercise was developed in collaboration with the NBC School and incorporated both Initial and Specialist Operational Response to a chemical indent requiring evacuation and decontamination. It was a multi-agency exercise with representation from Trenitalia, Carabinieri, firefighters, military doctors, and an army CBRN unit. The Military Red Cross had also been scheduled to attend to perform a triage function but were mobilised during the exercise day to a real emergency elsewhere so could not attend the exercise.

Extremely wet weather on the day of the exercise meant the adverse weather contingency plan was activated. This decision was made in advance of the exercise based upon the weather forecast.

The exercise scenario consisted of an urban train station, with passengers already on a train awaiting departure and others still on the platform, when suddenly an explosion occurred.

As in the first field exercise, PROACTIVE identified areas where the Standard Operating Procedures (SOPs) may conflict with the welfare of the volunteers and instigated measures to mitigate the impact; for example, the decontamination procedures required the volunteers' clothing to be removed so to preserve their dignity all volunteers wore swimming costumes under their clothing. PROACTIVE took responsibility for the transportation, registration, welfare, and the management of property and valuables of the volunteers. Throughout the exercise PROACTIVE monitored Health and Safety and ethical matters. PROACTIVE and eNOTICE also worked together to support the inclusion of one severely disabled volunteer.

The recruitment process for the volunteers was coordinated by CBRNE. In total, PROACTIVE and the respective eNOTICE partners recruited and managed 32 volunteers (14 more compared to the exercise in Dortmund). It was possible to include 13 men and 19 women between 14 and 85 years of age. Compared to Dortmund, a wider age range could be realised in Rieti. Considerable effort was put into recruiting from a local school and StC Italy worked closely with CBRNE to try and achieve this; unfortunately, due to the fact that the exercise was run midweek during school hours this was not achievable. Recruitment in general was challenging in Rieti, partly due to the distance and language barriers and partly due to the fact that the exercise was running on a weekday when people were at work. As in Dortmund, local organisations in Rieti helped recruit a significant number of the volunteers.

A comprehensive administrative plan was established in line with the IIMARCH methodology; this was supported by a checklist incorporating all aspects of the administrative requirements to ensure all elements were considered and that appropriate actions were identified and scheduled into the exercise timeline. As part of the administrative plan, security checks of all exercise participants were conducted to gain access to the exercise area (military security area).

Risk management

In line with what was effectively put in place in Dortmund, the consideration of risk was an integral part of the planning process. This was done in two parts; the first one focussed on things which could

cause the exercise to fail or fail to reach its objectives and the second part focussed on things which could cause injury to those involved in the exercise. These risk assessments were maintained as living documents during the planning and right up to the start of the exercise. NBC School and civil society volunteer group input was included during the planning process.

Communications

PROACTIVE put in place dedicated communication strategies for internal communication, such as contact lists, safety code words, translations, and interpretation as well as for external communication and media, such as having a professional photographer and videographer team present and the development of a dissemination video. The exercise was also used as an opportunity to communicate about the project to those attending the exercise by e.g. prominently displaying the project roll-up, providing promotional materials with the project logo.

Human Rights, legal and ethical aspects

Involvement of civil society, especially of vulnerable groups in CBRNe field exercises, create the need for human rights, legal and ethical issues to be identified and addressed. Protection of human rights and promoting the inherent dignity of all humankind, including the right to integrity of the person (Art. 3 of the EU Charter of Fundamental Rights)[2] are core aspects to be considered in managing volunteers during fieldwork research. Along these lines, protected groups involved in PROACTIVE, including persons with additional functional needs, were considered in designing and implementing ethics protocols. International standards and requirements for research with human subjects have been followed during the preparation and implementation phase. In particular, ethical principles detailed in the Helsinki Declaration[3] and the Belmont Report[4] have been observed when carrying out research activities. Comprehensive strategies had to be put in place to manage issues such as consent, General Data Protection Regulation (GDPR), dignity, wellbeing, and insurance. Furthermore, the specific requirements and regulations in place for Covid-19 had to be factored in. This process included five different action domains as follows:

1. The gathering and analysis of all ethical requirements applicable to the exercise in Rieti, addressing principles, human participants, and protocols.

2. The development of execution tools, the recruitment protocol, information sheet, consent and assent forms for the civil society volunteers, consent and information sheet for our VIP and CSAB/PSAB/EEAB members who participated during the exercise, an ethics protocol (detailing measures for information provision, data management, Covid-19, etc.), documentation and instructions ready for the ethics supervisor during the exercise, recruitment announcement and recruitment dataset.

3. The collection of dataset templates from partners involved in data processing during the exercise, the identification of the data life cycle and establishment of a data management plan.

[2] Full text at: https://fra.europa.eu/en/eu-charter/article/3-right-integrity-person

[3] Full text at: https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/

[4] Full text at https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html

4. Conducting a 29-variables ethics risk assessment for the exercise, based on the human rights framework.

5. The design and implementation of on-site protocols: Briefing (safety, data protection rights, etc.), safety on-site monitoring, on-site guidance to the video team.

6. The design and the implementation of the ethics framework for the evaluation of the exercise.

7. Collaboration with the ethics experts of EEAB and CSAB for ethics evaluation.

Evaluation

A range of data sources were collated by the PROACTIVE evaluation team in order to examine the exercise against the strategic and tactical objectives of the project. This included self-report questionnaire data collected pre- and post-exercise, observational analysis conducted by trained evaluators, and focus groups held in the volunteers' native language. Considered together, an analysis of these datasets enabled the evaluators to identify some clear strengths related to the way in which the exercise was both administered (in terms of providing excellent opportunities for evaluation) and received by volunteers. Furthermore, the evaluators were able to observe spontaneous volunteer-to-volunteer helping behaviour and an instance of best practice in terms of deploying a volunteer to support communications between responders and volunteers. However, there were also lessons to be learned around best practice for engaging with both members of vulnerable groups and ensuring high quality communication with casualties – specifically, throughout the exercise there was limited identification and triage of volunteers with vulnerabilities, and some limitations around communication during the exercise may have led to some confusion and issues identified throughout and detailed within this report. There were also inconsistencies in the analyses examining the effects of psychosocial variables on compliance that need to be investigated more fully. Finally, this exercise provided the opportunity to fine-tune the evaluation methodology first employed during the Dortmund exercise, ahead of a larger scale deployment, likely involving some experimental components in the final exercise in Ranst.

Key Takeaways and learning for the future

In total, 23 good practices could be applied during the exercise in Rieti. These good practice examples were partly adopted from the exercise in Dortmund (clearly define roles and responsibilities, development of contingency plans that include a detailed risk assessment, build a strong collaboration network with civil society organisations (CSOs) to facilitate the volunteer handling, etc.) and partly developed in the framework of the exercise in Rieti due to the specifics of the exercise (broader exercise scope adds complexity to the exercise, etc.). In addition, 9 key challenges and corresponding takeaways were drawn. The final PROACTIVE / eNOTICE exercise in Ranst, Belgium, will take into account these good practices and key takeaways with regard to the specificities in Ranst. Furthermore, limitations of the exercise in Rieti (no triage, etc.) as well as challenges in the framework of the exercise (location of exercise site in relation to travel requirements, registration process involves too many documents, observers interfered with volunteers and first responders during the exercise, etc.) will be considered to ensure maximum benefit of the final exercise.

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1. INTRODUCTION

As part of the report on the first PROACTIVE / eNOTICE CBRNe operational exercise in Dortmund in May 2022, it was elaborated (see Carbon et al. 2022) that CBRNe first responders rarely include civilians in CBRNe exercises. Very infrequently are groups that are classified as particularly vulnerable (such as children, persons with mobility impairments, etc.) included in such exercises. Such inclusion is important, however, as emergency responders should be familiar with the special needs of vulnerable groups in an emergency to ensure effective incident management.

In order to familiarise emergency forces with the special needs of vulnerable groups, the PROACTIVE project, together with the eNOTICE project, is conducting three operational exercises across Europe. The aim of the exercises is to formulate recommendations on how emergency forces can make their operational management even more effective.

After the first exercise in Dortmund, Germany, the second PROACTIVE / eNOTICE exercise was conducted in Rieti, Italy, in November 2022. Compared to the exercise in Dortmund, significantly more people were involved in the exercise, with 32 volunteers (18 volunteers in Dortmund). In addition, more vulnerable groups were able to be included.

The results of the exercise are presented in detail in this deliverable. The description of the results follows the IIMARCH process, which is presented in the next chapter. In addition to the results of the exercise in Rieti, comparisons are also drawn with the exercise in Dortmund.

2. THE IIMARCH FRAMEWORK

The structure of the exercise planning followed the IIMARCH framework presented in the preceding Deliverable D6.1 (Godwin and Hale 2021) “The PROACTIVE Methodology for the Field Exercises”. It comprises the planning areas **I**nformation, **I**ntention, **M**ethod, **A**dministration, **R**isk assessment, **C**ommunication, **H**uman rights, legal and ethical aspects. Accordingly, the following chapters of this Deliverable will each cover relevant aspects of the framework.

3. INFORMATION

The following chapter outlines the exercise and introduces the main parties involved, the date and location of the exercise.

3.1. Field exercise

For the field exercise in Rieti, the work of several deliverables of the PROACTIVE project was used.

As with the Dortmund exercise, key results from Deliverable D 1.3 (Hall et al. 2021b) were used for the observation and evaluation strategy (see Chapter 4.4.)

Furthermore, the CSAB, which was established within the framework of WP 3 of the PROACTIVE project, was helpful during the exercise in Rieti. Thus, observers could be recruited for the exercise in Rieti via the CSAB. The same applies to the Practitioner Stakeholder Advisory Board (PSAB), which was created in the context of WP 2[5].

Regarding WP 4 and 5, it can be summarised that important basics of the PROACTIVE App were presented in Deliverable D4.1 (Kolev, Markarian and Polushkina 2021) and D5.3 (Kolev, Markarian and Polushkina 2020). As presented in the original PROACTIVE proposal and follow up deliverables, the main goal for the PROACTIVE App is to provide a reliable, secure, and multi-purpose communication tool for all stakeholders during a CBRNe event. The App is specifically designed to be simple and intuitive that could be used by various groups of stakeholders in different European countries. Special emphases are made to ensure that the App could be commercialised after the completion of the project. For the development of the latest version of the PROACTIVE App to be used in Rieti, these basics as well as experiences with the PROACTIVE App during the exercise in Dortmund were used (for this, see Carbon et al. 2022). Furthermore, the basis for the CBRNe pre-incident information developed by UKHSA was described in Deliverable D 5.1 (Nicholson et al. 2021). To develop the pre-incident information for the exercise in Rieti, these baselines were combined with the experience gained from the exercise in Dortmund (see Carbon et al. 2022). For a description of the CBRNe pre-incident information for the exercise in Rieti, see Chapter 4.3.1.

As with the exercise in Dortmund, the Rieti exercise builds on the methodological framework for PROACTIVE exercises developed in Deliverable D 6.1 (Godwin and Hale 2021) and the scenario development and evaluation methodology of D 6.2 (Hall et al. 2021c).

For the development of the information sheets and informed consent forms (see Chapter 9), reference was made to the information sheets and consent forms of the exercise in Dortmund. Furthermore, Deliverable D8.1 (Clavell et al. 2021), D8.2 (Zamorano, Gonzalo and Clavell 2021), and D8.3 (Marsh et al. 2021) laid important foundations for the described documents.

Based on the consideration of previous PROACTIVE deliverables presented in this chapter, it was possible to ensure that in the development and evaluation of the exercise in Rieti, the knowledge already accumulated by the project was effectively used for the exercise.

[5] For a description of the PROACTIVE CSAB / PSAB and the PROACTIVE WPs see https://proactive-h2020.eu/

3.2. PROACTIVE / eNOTICE joint activity

The exercise was organised as a joint activity between two Horizon2020 projects; PROACTIVE and eNOTICE[6]. The eNOTICE partner in charge of the joint exercise was the NBC School in Rieti as the additional partner in the tripartite arrangement (see Figure 1). PROACTIVE and the NBC School were responsible for the active planning process of the exercise.

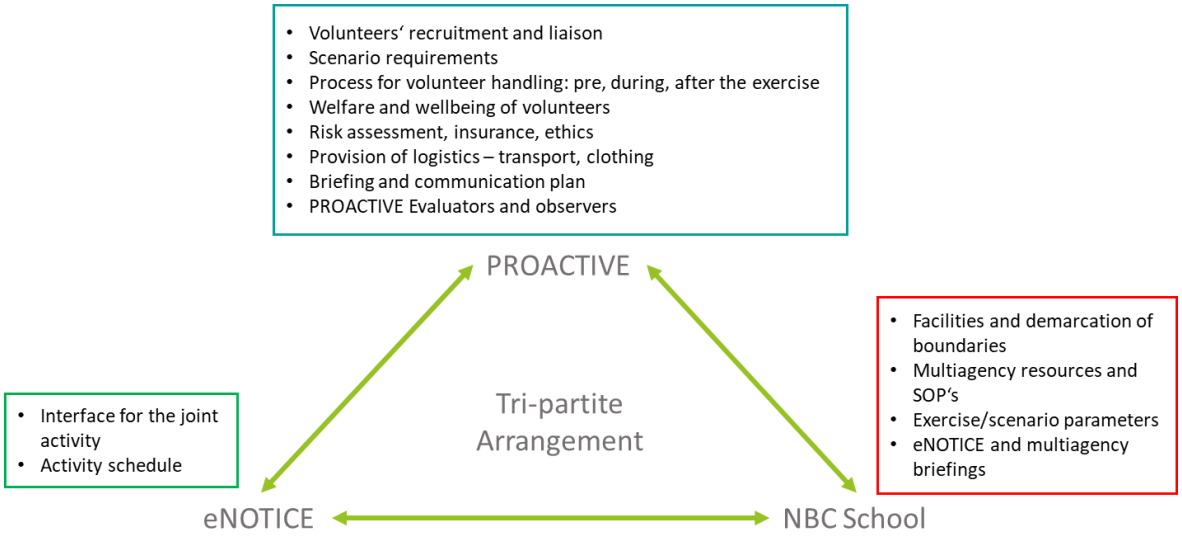


Figure 1: Clarification of responsibilities and objectives at the joint exercise of PROACTIVE, eNOTICE and the NBC School

Since all three stakeholders are situated in the field of CBRNe management, the overall scenario was based on a CBRNe response situation that involved different first responder units invited by NBC School and a certain number of civil volunteers recruited by PROACTIVE. PROACTIVE managed the observation and evaluation of the engagement between the first responders and volunteers throughout the exercise to identify valuable lessons learned.

The role of PROACTIVE was to recruit civil volunteers (older than 13), including members that are considered especially vulnerable (e.g. older persons 65+) in the framework of the project[7]. As there is no Italian partner in the PROACTIVE consortium, the two Italian eNOTICE partners (NBC School and UNITOV) were strongly involved in the recruitment process and volunteer handling. PROACTIVE and the two eNOTICE partners were responsible for their handling pre, during and after the exercise. As part of this, PROACTIVE undertook the risk assessment of the exercise as well as the insurance, human rights, ethics, and data protection aspects. The briefing of all participants was jointly arranged between PROACTIVE and the two eNOTICE partners. The scientific evaluation of the exercise presented in this deliverable was another key responsibility of PROACTIVE, including the development of the evaluation methodology and its performance, which

6 https://www.h2020-enotice.eu/

7 The term Vulnerable Citizens in the framework of the project refers to members of the public who show a particular level of vulnerability to threats from CBRNe incidents This may include children, pregnant women, persons with physical or psychological impairments, chronic or acute medical health conditions or addictions, older persons with functional limitations and health restrictions. Vulnerable citizens also include persons with limited proficiency of the respective national languages or with restrictions regarding use of transportation, as well as individuals who are not willing to disrobe for decontamination due to religious reasons.
Of the above groups, the group of persons with mental health conditions were excluded from the recruitment process for the exercise for ethical reasons. All other groups were included in the recruitment process.

included the use of observations as well as social science and humanities methodologies of data collection. The NBC School was responsible for providing the location and demarcating the identified areas of risk. Furthermore, the NBC School managed the involvement of the first responders.

3.3. Involving civil society

A key responsibility of PROACTIVE was the involvement of civilian volunteers thereby including vulnerable groups. PROACTIVE research has shown that if vulnerabilities are addressed in CBRNe exercises at all, vulnerable individuals are mainly portrayed by actors (see Deliverable D2.5.; Arnold et al. 2021). However, to capture the true needs of vulnerable groups towards challenges arising in the event of a CBRNe situation, actual vulnerable civilians should be included in CBRNe exercises. Following this approach, PROACTIVE aimed to significantly update the profile of involved civilians compared to Dortmund (18 volunteers).

3.4. Vulnerable groups

Based on the recent joint exercise in Dortmund in May 2022, the Rieti exercise aimed to involve a greater number of civilians in general and additional vulnerable groups in particular. Thereby the project envisaged a greater range of vulnerabilities within the volunteer sample and at the same time addressed recent political themes. Children proved to be one of the major affected groups by the Covid-19 pandemic (UNICEF 2021). Since their involvement was impossible in the first exercise due to legal and organisational restrictions set by the German government and FDDO, in close cooperation with the exercise host in Rieti, NBC School, and StC Italy, a member of the PROACTIVE CSAB, the project included children between the legal ages of 14 and 18 into the ideal sample of volunteers. In addition, considering the migration wave in 2015, the recent refugee crisis caused by the war in the Ukraine territory, and the prospective increase of climate migration, PROACTIVE wanted to ensure the representation of people with language barriers and asylum seekers in the exercise. Table 1 below illustrates this representation.

Table 1: Ideal distribution of volunteer sample according to age, gender, and vulnerabilities

Vulnerability	Age group	Gender	
		Men	Women
None	18-30	3	3
None	31-50	3	3
None	51-65	3	3
Age	<18	1	1
Age	65+	1	1
Language barrier / Asylum seeker	<18 - 65+	1	1
Visual impairment		1	1
Hearing impairment		1	1
Wheelchair user		1	1
TOTAL		15	15
		30	

3.5. Date and place

Early joint planning with the NBC School started in 2019. Due to Covid-19, the exercise in Rieti had to be postponed. After the end of the lockdowns, it was decided that the exercise in Dortmund would be conducted first due to time constraints. Following the exercise in Dortmund in May 2022, the exercise in Rieti was scheduled for October 2022. After final discussions between PROACTIVE and the NBC School, November 16 was set as the exercise day. As initially planned, the exercise was held at the NBC School training grounds. For a description of the site, see Chapter 6.5.

4. INTENTION

This chapter describes the PROACTIVE objectives (including KPIs), introduces the scenario, the evaluation strategies and involved tools of the exercise. All PROACTIVE objectives and Key Performance Indicators (KPIs) were exchanged with the NBC School.

4.1. Strategic Objectives

The Strategic Objectives were reviewed after the first field exercise and it was agreed that they were still fit for purpose.

PROACTIVE / eNOTICE joint activity Strategic Objective

In partnership with eNOTICE, evaluate the effectiveness of responses to a CBRNe incident focusing on harmonisation of procedures and tools that support the needs of civil society, including those citizens that are vulnerable.

Field exercise PROACTIVE Overarching Aim

The overarching aim of the exercise was to test combinations of selected tools and evolving procedures in response to a CBRNe incident incorporating the direct participation of members of civil society that includes vulnerable citizens and non-trained staff. This included the following aspects:

- Understand citizen perceptions of the processes and procedures used by practitioners.
- Evaluate the usefulness of tools used by practitioners for managing people, both non-vulnerable and vulnerable citizens.
- Evaluate the effectiveness of tools developed within the project.
- Examine the ethical issues and dilemmas associated with responding to CBRNe incidents.
- Introduce lessons learned to and new ideas for the 3rd field exercise.

4.2. Tactical Objectives and KPIs

To meet those Strategic Objectives, Tactical Objectives were formulated. These evolved from the Tactical Objectives developed for the first field exercise and reflected the learning from it and the feedback received; in particular greater emphasis was given to the App following an extensive period of development, and a specific objective was added in relation to first responder ethical considerations. The Tactical Objectives for the Rieti exercise are set out in Table 2 below, and in turn the KPIs to measure the extent to which the Tactical Objectives were achieved are set out in Table 3.

Table 2: Tactical Objectives for the Rieti exercise

No	Objective
1	To involve and engage with civil society (members of the public as volunteers) in CBRNe exercises with at least 15% of these representing vulnerable groups.
2	To evaluate the effectiveness of first responders to recognise vulnerable people during a CBRNe incident.
3	To evaluate the effectiveness of first responders in supporting and assisting vulnerable people during the CBRNe incident phases, through response measures (e.g. tools, equipment, procedures) which are adapted to the needs of vulnerable people.
4	To evaluate the effectiveness of PROACTIVE pre-incident information and awareness during emergency communication with the public.
5	To evaluate if communication with the public during the incident is pitched at an appropriate level in terms of language, complexity, and channels.
6	To test the technical aspects of the PROACTIVE App in a live exercise environment.
7	To evaluate how usable the PROACTIVE App is for civil society in a live exercise environment.
8	To evaluate the effectiveness of the PROACTIVE App in supporting the needs of Civil Society (e.g. communication needs, better information exchange).
9	To develop the understanding of factors that may increase public compliance during CBRNe incidents.
10	To evaluate the extent to which ethical principles, dilemmas, operational factors, and assessment as well as societal dimensions are considered by first responders and researchers in dealing with CBRNe incidents.

Table 3: Tactical Objectives and Key Performance Indicators for PROACFTIVE field exercises

No	Objective	Key Performance Indicator
1	To involve and engage with civil society (members of the public as volunteers) in CBRNe exercises with at least 15% of these representing vulnerable groups.	This was assessed by evaluating the number of individuals with vulnerabilities in the final volunteer sample.
2	To evaluate the effectiveness of first responders to recognise vulnerable people during a CBRNe incident.	This was evaluated through: 1) focus group questions and prompts concerning volunteers' perceptions of responder effectiveness in recognising vulnerabilities, and 2) through the evaluators' observations focused on identification, prioritisation, and triage of individuals with vulnerabilities during the exercise.
3	To evaluate the effectiveness of first responders in supporting and assisting vulnerable people during the CBRNe incident phases, through response measures (e.g. tools, equipment, procedures) which are adapted to the needs of vulnerable people.	The objective was evaluated using a multi-method approach. First, questions in the post-exercise questionnaire on the potential impact of accessibility on interactions with responders and on undergoing the decontamination shower were included. In the focus groups, the perception of the volunteers on how they felt their vulnerability needs were, or were not, met was explored. Furthermore, observational data were collected on interactions between the responders and volunteers, particularly revolving around the assistance and support provided to volunteers.
4	To evaluate the effectiveness of PROACTIVE pre-incident information and awareness during emergency communication with the public.	This was assessed mainly through measures included in the pre- and post-exercise questionnaire. Six questions were included in both the pre- and post-exercise questionnaire assessing perceptions of the pre-incident information. In addition, the observations undertaken by the PROACTIVE evaluators focused on volunteer behaviour during the containment phase (immediately post-evacuation and pre-triage), a period of time that is covered by the pre-incident information, in order to determine whether the pre-incident information was used during the exercise.
5	To evaluate if communication with the public during the incident is pitched at an appropriate level in terms of language, complexity, and channels.	This was assessed through multiple approaches. Firstly, through the post-exercise questionnaire in which two measures were included on responder communication. In addition, the focus groups included questions around volunteers' perceptions of responder communication. Furthermore, the observational data collection conducted by the PROACTIVE evaluators involved a focus on interactions between responders and volunteers.
6	To test the technical aspects of the PROACTIVE App in a live exercise environment.	This was assessed through monitoring of App performance during the exercise and recording key performance parameters, such as number of active users, App crashes, performance of iOS (Operating System for Apple) vs ANDROID, latency with reporting events, number of notification clocks, performance of App depending on the version of iOS or ANDROID.
7	To evaluate how usable the PROACTIVE App is for civil society in a live exercise environment.	The PROACTIVE App is intended to be used by witnesses of a CBRNe incident and not by victims. As such, this KPI was evaluated via the inputs from observers. App usability for observers was assessed using the App usability recommendation provided in the observer guide. While it was not expected that volunteers would use the App, those who would choose to do so were also given the opportunity to evaluate the usability of the App through volunteer questionnaires collected post exercise. Detailed statistics and observations of these assessments are presented in Chapter 10.5.3.
8	To evaluate the effectiveness of the PROACTIVE App in supporting the needs of Civil Society (e.g. communication needs, better information exchange).	The PROACTIVE App is intended to be used by witnesses of a CBRNe incident and not by victims. As such, this KPI was evaluated via the inputs from observers. App effectiveness for observers was assessed using the App features section of the observer guide. While it was not expected that volunteers would use the App, those who would choose to do so were also given the opportunity to evaluate the usability of the App through volunteer questionnaires collected post exercise. Detailed statistics and observations of these assessments are presented in Chapter 10.5.3.
9	To develop the understanding of factors that may increase public compliance during CBRNe incidents.	This was assessed through several measures in the questionnaires,, including: confidence and knowledge of actions, expectancy of receiving help from other volunteers, helping other volunteers, perceived responder legitimacy, identification with volunteers, and identification with responders, perceptions of responder communication, perceptions of practical information, perceptions of privacy, collective action (the belief other members of a group will support the pursuit of a shared goal, which in the instance of the exercise may be decontamination), levels of anxiety during the exercise, perceived responder competence, and expect compliance during a real incident. Operational factors concerning the nature of decontamination and the exercise play were also considered as part of the PROACTIVE evaluator observations and are included as subsections within the results section of the report.
10	To evaluate the extent to which ethical principles, dilemmas, operational factors, and assessment as well as societal dimensions are considered by first responders and researchers in dealing with CBRNe incidents.	Ethical issues and dilemmas were addressed by employing a combined strategy. On the one hand, the strategy consisted of ensuring responsible research and respect for participants, including a Data Management Plan, informed consent, ethics risk assessment, preventative measures and briefing. On the other hand, following the European Commission reviewers' recommendations included collecting specific information on first responders' performance regarding specific and predefined ethical concerns, variables and tensions between principles. The latest analysis is based on three main data collection tools. Firstly, fieldwork was conducted by ETICAS (two focus groups and observations). Secondly, ethical questions were included in the observer's guide. Finally, the reporting of the External Ethics Advisory Board (EEAB) which is also fed by the theoretical-methodological approach built by ETICAS and CBRNE through the provision of an evaluation guideline. This combination of sources provides comprehensive data on the relative alignment of management of humans in the Rieti scenario, including its initial response, triage and decontamination procedures.

4.3. PROACTIVE tools

4.3.1. Development of the PROACTIVE pre-incident information material

The full development process of the PROACTIVE pre-incident information material is presented in D5.1 (Nicholson et al. 2021) and the forthcoming D5.2. In short, the PROACTIVE pre-incident information material is a brief (5 pages) document which outlines the steps that individuals can take to protect themselves in the initial stages of an incident involving a hazardous chemical release. The materials provide a scenario that may occur (a loud noise and cloud of gas occurring while waiting to board a train at a railway station), and then gives brief instructions for what to do next, along with a pictogram developed to facilitate understanding among vulnerable groups. For example Figure 2:

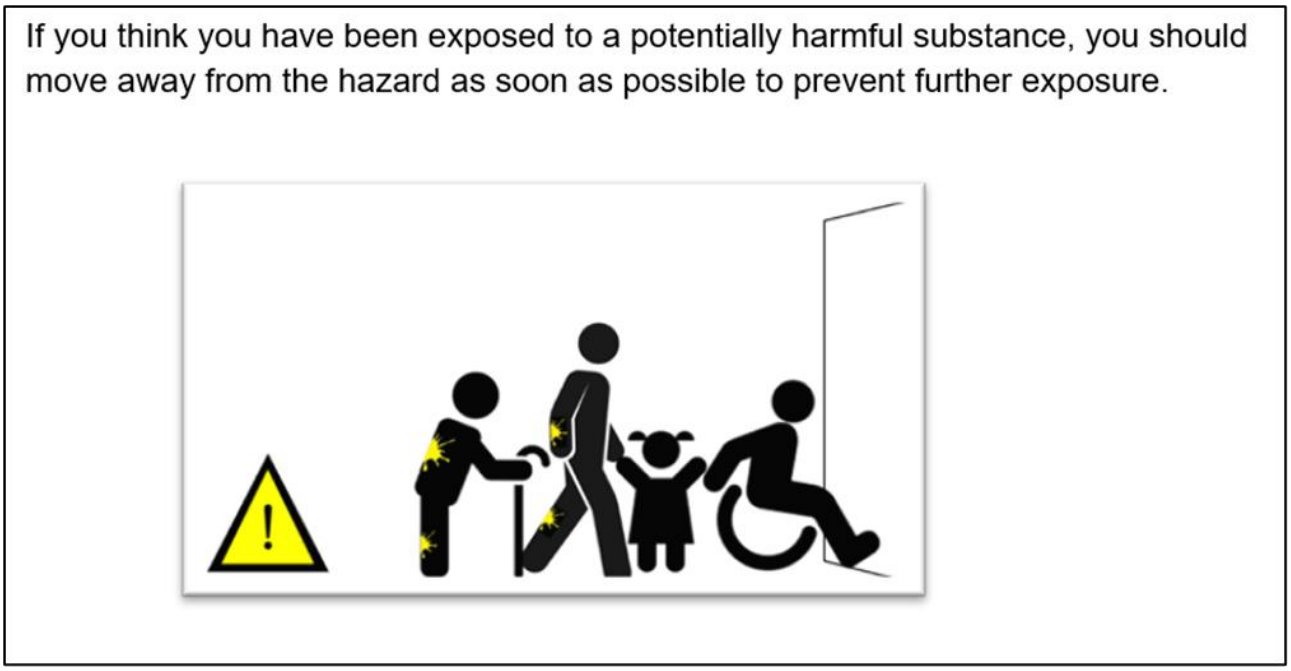


Figure 2: PROACTIVE pre-incident information

This material was developed based on recommendations arising from WP 1 (Davidson et al. 2021, Hall et al. 2021a, Hall et al. 2021b) and has been developed iteratively across the course of the PROACTIVE project, involving input from members of the civil society, practitioner stakeholders, and PROACTIVE consortium members. The pre-incident information has been focus-grouped in countries across the European Union and tested previously at the Dortmund exercise. As noted above, the full development of the pre-incident information materials is included in D5.1 (Nicholson et al. 2021) and the forthcoming D5.2.

4.3.2. PROACTIVE web platform and mobile App development for the Rieti exercise

In the process of creating the PROACTIVE web platform and mobile App, RINISOFT followed well established procedures, ensuring future proof and the possibility of further commercialisation of the developed App. As a result, the developed software package is developed as future proved tool which allows modifications to adapt to different operational scenarios as well as simple integration with other tools which are used by first responders during CBRNe events. By adapting this approach,

PROACTIVE ensured that the PROACTIVE App is independent of external resources and does not rely on the existence of any software packages from third parties. In addition, the PROACTIVE App is not exposed to other operating systems and databases so that it can function regardless of the status of other programs. As it was set in the project requirements, the PROACTIVE App supports both ANDROID and iOS environments. Hence, two different mobile architectures were implemented ensuring optimal performance of both ANDROID and iOS devices.

The PROACTIVE App consists of three fundamental layers:

- Data layer — the data-related platform within a mobile App
- Business logic layer — the place for all the domain processes and operations
- Presentation layer — all the technical details connected with the user interface

Figure 3 below explains the purpose of each of these layers:

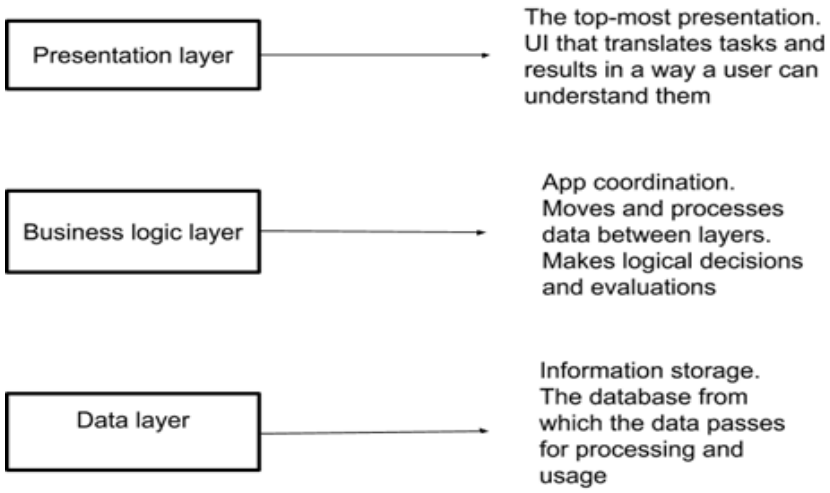


Figure 3: Layered Structure of PROACTIVE App

For ANDROID devices, the selected Clean Architecture allows the PROACTIVE App to be easily modified for adapting to different operational requirements. In addition, it allows seamless integration with other tools used by first responders.

The developed iOS PROACTIVE mobile App architecture consists of:

- Kernel level (Core OS) — works with the file system, controls the validity of various certificates belonging to the applications. Also responsible for the security of the entire system. Contains low-level access to the elements of the device.
- Core Services (Core Service) — provides access to databases and file controls.
- Media level (Media) — contains tools that allow for processing most media data formats.
- Interface level (Cocoa Touch) — has many elements for creating mobile interfaces, and also provides the remaining layers with information coming from the user.

To ensure full compliance with the best practices, RINISOFT applied its internal quality monitoring when developing the PROACTIVE App and implemented the mobile App architecture shown below in Figure 4:

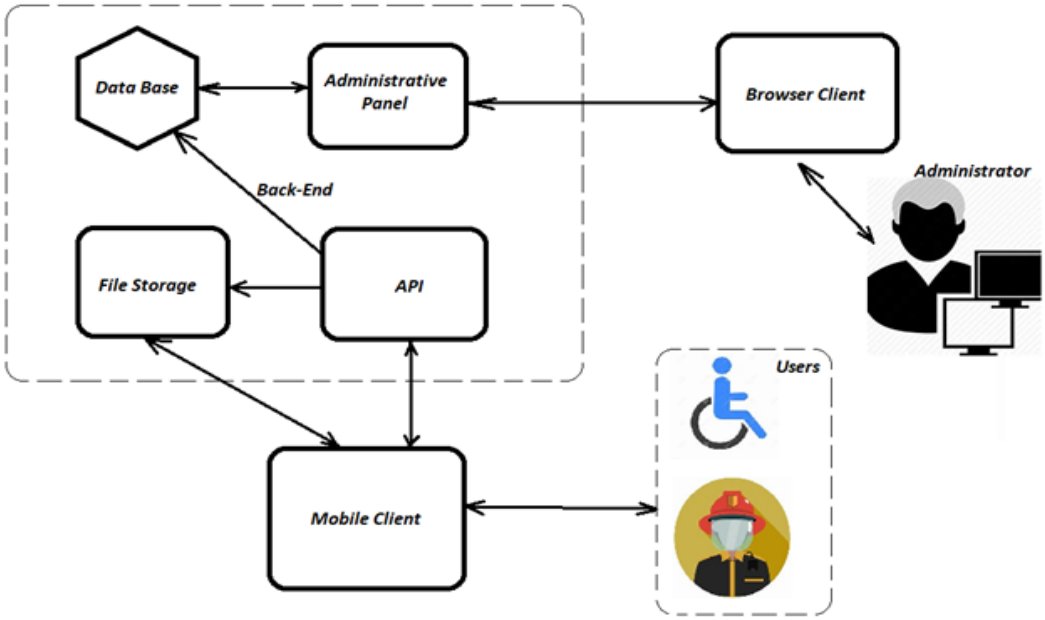


Figure 4: PROACTIVE App Architecture

To ensure usability of the developed App by various groups of stakeholders, special emphases were taken to guarantee operation in challenging scenarios:

- The parameters of smartphones as the proper attention to these hardware and software details will make the PROACTIVE App more stable and reliable.
- The compatibility of the PROACTIVE App with different types of Internet connection.
- Intuitive User Interface (UI), ensuring that it is both simple and creative.
- Efficient navigation ensuring good compromise between user expectations and App restrictions. To ensure good usability of the PROACTIVE App, numerous consultations and trials were conducted with potential users representing different stakeholders.

4.4. Evaluation methodology

The exercise evaluation assessed volunteers' experiences during the exercise through a mixed-method design with three methods: pre- and post-exercise questionnaires, observational data, and focus groups. The questionnaires were completed on the day of the exercise, one before the exercise and one after the exercise. Observational data were gathered during the exercise. Then focus groups were conducted immediately after the volunteers had finished the exercise. The evaluation for this exercise was approved by UK Health Security Agency Research Ethics and Governance Group (R&D 523) and the PROACTIVE Project Ethics Officer (PROACTIVE/PEO/18/14.10.22) (Appendix 1). The following sub-chapters provide detail on each of the three evaluation methodologies used.

4.4.1. Pre-exercise and post-exercise questionnaires for volunteers

Adult's Questionnaires

Questionnaires were completed by adult volunteers using pen and paper both before and after the exercise. The adults' pre-exercise questionnaire (Appendix 2) contained the following measures: confidence and knowledge, perceived responder legitimacy, expectancy of help, expectancy of helping others, identification with participants, identification with responders, levels of anxiety, and perceptions of pre-incident information. All items were rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree). One yes or no question concerned whether participants had read the pre-incident information, and two open-ended questions regarding participants' expectations of the exercise were asked.

The post-exercise questionnaire (Appendix 3) contained measures in the following order: confidence and knowledge, impact of vulnerabilities on interactions and decontamination, perceived responder legitimacy, expectancy of help, expectancy of helping others, willingness to help others, levels of anxiety, levels of anxiety during the exercise, identification with participants, identification with responders, perceptions of the pre-incident information, collective agency, perception of responder communication, perception of communication messages, perceptions of practical information, perceived responder competence, perceptions of privacy, co-operation among participants, engagement in the exercise, expectations of compliance, perceptions of the ethics of the exercise, and perceptions about the PROACTIVE App. All items were rated on a scale from 1 (Strongly disagree) to 7 (Strongly agree). We included three yes or no questions in the post-exercise questionnaire: "I went through decontamination in the exercise"; "Did you use the pre-incident information during the exercise?", and "Did you discuss the pre-incident information with other volunteers during the exercise?". We also included a series of open-ended questions covering accessibility, levels of anxiety, perceptions of the pre-incident information, perceptions of responder communication, perceptions of responder competence, compliance, perceptions of ethical response, and perceptions of the PROACTIVE App.

Children's Questionnaires

As with the adults, questionnaires should be completed by children volunteers using pen and paper both before and after the exercise. In the children's pre-exercise questionnaire, children were asked measures of perceived responder legitimacy and positive and negative affect. All items were measured on a two-point scale ("Yes ☺"/ "No ☹"), the smiley face was on the Yes when "yes" was positive (e.g. positive emotion) but was switched when negative. A two-point scale was used in order to maximise understanding among children.

In the post-exercise questionnaire, children should complete measures on perceived responder legitimacy, responder communication, trust in the responders, understanding decontamination and emotions. All items were measures on the same "Yes ☺" or "No ☹" scale.

However, as will be described throughout the report, the questionnaire for children was not used. Only one person under the age of 18 participated in the exercise, and due to a miscommunication at the time this individual was believed to be an adult and so completed the adult questionnaire. Nevertheless, the developed questionnaire will be further iterated for use in the Ranst exercise.

4.4.2. Observation guide of evaluators

Six evaluators collected observational data on behaviour during the exercise, all were members of the UKHSA Behavioural Science and Insights Unit with experience in conducting observational data collection. As per the recommendations in D6.2 (Hall et al. 2021c), the observational evaluation involved a mixed coding framework - structured elements to observe were identified for each element of the exercise as far as possible in advance. However, free-text writing of observational notes for each of the evaluators was conducted in order to ensure that both: a) any late changes to exercise conduct, and; b) any unexpected behaviours or occurrences could be observed. At all stages, a minimum of two individuals were evaluating each aspect of the exercise: initial removal of individuals from the train platform, interactions while awaiting triage, triage, and undergoing the decontamination process.

The specific behaviours targeted for observation were based on data collected during the Dortmund exercise (see Carbon et al. 2022). The a-priori identified behaviours for observation are presented in Appendix 4.

4.4.3. Focus group guide of focus group leaders

Focus groups with the volunteers were carried out immediately after they completed the post-exercise questionnaire. The focus groups leaders were given focus group leader training prior to the exercise. Focus groups were carried out in Italian, to ensure all volunteers could share their experiences, and were then transcribed and translated. Separate focus group materials were developed for adults and children.

Adults focus groups

The adult focus group guide (Appendix 5) contained questions relating to participants' experiences and perceptions during the exercise, including: the impact of vulnerabilities, perceptions of the pre-incident information; perceptions of responders' ability to understand and respond to vulnerabilities; perceptions of responders' ability to manage the decontamination process; perceptions of responders' interactions with participants; and experiences of the decontamination process in general.

Children focus groups

A dedicated children's focus group guide focused on themes relating to their experience of the exercise: general experience, responder communication, decontamination, and drying process. As with the survey for children, no children's focus group was held. The guide will be iterated and used in Ranst.

4.4.4. Observer guides

For invited PSAB, CSAB and eNOTICE observers

In order to gain a further level of understanding of the exercise, invited observers from the PROACTIVE PSAB, CSAB, consortium members as well as eNOTICE observers were asked to also self-report their observations. As such, an observer guide with 50 questions (Appendix 6) was developed that covered 5 sections to fill in:

- Information about the observer
- Questions about the exercise
- Questions about the App
- Questions on ethics
- Questions on the organisation of the event

Each section was composed of closed and open questions. The answers to the closed questions were provided on Likert-type scales and were accompanied by open questions which gave the observers the possibility to explain their answers and to give examples.

The observer guide, which was developed by UIC, was updated based on feedback from the Dortmund exercise to clarify certain questions which were perceived as confusing by respondents and also by adding a new section to address the ethical dimension of CBRNe response.

For EEAB observers

A specific EEAB observer guide was created to support the external ethics evaluation of the exercise. The guide was based on the PROACTIVE Ethics Framework (observation and evaluation plan) for Exercise Rieti (Appendix 7) and consisted of 21 questions that covered 3 sections:

- General ethical principles and dilemmas during the exercise
- Consideration of Societal Dimensions
- Operational and assessment ethics

For internal ethics observers

To support the Task 8.4 Ethical and Societal Impact assessment of the project, an ethical evaluation guide for internal ethics experts has been created. The focus of the internal ethics evaluators was to identify the ethics issues in CBRNe response in relation to vulnerable groups, specifically during triage and decontamination operation.

With the purpose of properly addressing the ethical implications of preparedness and response protocols through PROACTIVE fieldwork, ETICAS developed an ethics conceptual framework. It followed the "*modified consequentialist approach*" proposed by Rebera and Rafalowski (2014). It is an on-the-spot ethical decision-making perspective which works by setting a central value or

principle (i.e. saving lives) and using it as the basis of a "goal-oriented heuristic" (Rebera 2019: 42). Additional core rights and values are factored-in as side-constraints (cf. Nozick 1974, Kinslaw et al. 2009), i.e. "minimum standards beyond which any violation is unacceptable" (Rebera 2019: 42). This represents a flexible basic framework, but it should also be noted that:

- An ethos must recognise that priorities may change in the event of, or during, an incident (ACP 2012: 37).
- Significant and ongoing effort is required to ensure that the values given by an ethos can be readily operationalised, i.e. translated into actions and decisions in the field.

Taking the above into account, the methodology, of which the theoretical basis will be fully reflected in D8.4, considers the following type of ethical dilemmas and categories in Table 4:

Table 4: Type of ethical dilemmas and categories

Task	Overriding goal of the task and main principle	Side ethical constraints and principles	Choices and constraints (standard for violation of main principle)
1. Conducting disaster triage	I.e. mitigate impact on health	Vs relative impact on privacy	Water-curtains in public view
	I.e. avoid negative consequences and preserve equity	Vs decide the order of treatment of (patients or casualties)	Prioritise vulnerable groups (properly pre-established)
2. Conducting decontamination	I.e. save lives	Vs impact on respect for autonomy	Balance individual rights with social good
	I.e. follow consent	Vs when the patient is unconscious	Prioritise health and safety
	I.e. respect privacy	Vs rapid management and physical protection of individuals	To determine the use of water-curtains in public view
3. Evacuations, dealing with the public	I.e. save lives	Vs physical and psychological impact	Help and information points outside targeted area
4. Effective communication while in PPE and at a general level	I.e. prevent risks and complications and to increase public compliance	Vs physical and psychological impact	Factual, trustworthy and timely information to the public
5. Management of volunteers and healthcare workers	I.e. reduce harm	Vs restriction of individual liberty, proportionality, reciprocity, clarity, transparency and trust, solidarity, and respect for human dignity, non-discrimination and equity	Provide timely and comprehensive information on side effects of policy action

The above elements were translated into a set of variables and indicators for data collection, which worked as a guideline for adequately spotting key ethical dilemmas and issues in the behaviour of first responders. Data on these dimensions were collected on-site by two researchers from ETICAS through participant observation and the intervention in two focus groups. Moreover, to ensure coherence in data collection and properly triangulate information sources, questions concerning the above issues and ethical dilemmas were included in the observer's and EEAB guides.

4.5. Scenario overview

The following chapter describes the scenario for the exercise in Rieti as well as the development of the scenario.

4.5.1. Scenario discussions

Initial scenario discussion commenced in 2019 prior to the disruptions caused by the Covid-19 pandemic. These resumed in 2022 after the first field exercise concluded. The scenarios were built around a non-terrorist incident at a railway station. The facilities on the exercise site allowed for the use of both outdoor and indoor options dependent upon weather conditions. It was also agreed that there would be a multi-agency response that required an evacuation and a mass decontamination of up to 35 members of civil society.

4.5.2. Final scenario

Extremely wet weather on the day of the exercise meant the adverse weather contingency plan was activated. This decision was made in advance of the exercise based upon the weather forecast. The exercise scenario consisted of an urban train station, with passengers already on a train awaiting departure and others still on the platform, when suddenly an explosion was heard. This was followed by intense and dense smoke, which was simulated with artificial fog. Passengers were aided by the local train staff, evacuated from the train and guided out of the station. The train staff placed an emergency call to the Carabinieri, who dispatched a local patrol to assist. The Carabinieri were equipped with respirators but had no other specialist uniform; this was in line with their SOPs. The Carabinieri assisted with the evacuation and containment of the train passengers. Due to the nearby location of a 10,000 litre chlorine container, the event is suspected to be a chemical incident. As such, the specialised CBRN fire brigade was called in. They deployed to the incident with CBRN protective equipment and conducted a search of the affected station and Metro train. They evacuated the non-ambulatory persons (of which there were a few, simulated by the use of mannequins). They were supported by a fire brigade decontamination unit set up to decontaminate the firefighters. CBRN Defence Specialist Units from the Army were called in to decontaminate the affected civilians as well as perform identification and sampling activities. The volunteers were required to undergo evacuation, where they were asked to wait in the warm zone until the decontamination tents were set up. Whilst decontamination was being set up a Triage system was put in place; it had been intended to use the Military Red Cross[8] for this, but they were called away to a real earthquake emergency so were unable to attend. Consequently, a basic Triage was conducted by military doctors attached to the Army CBRN Unit. Following this, the volunteer citizens underwent decontamination which required disrobing, showering and re-robing. Thanks to the analysis of the CBRN experts, it was discovered that the element was not chlorine but rather nontoxic refrigerant gas, and the remaining civilians did not need to undergo further decontamination or require additional medical support.

[8] Medical units are often assigned to the task of triage. For a comprehensive description of triage methods in Europe, see Gavel et al. 2022: 57 ff.

5. METHOD

The focus in this chapter is on the exercise management as well as on the timelines for the exercise. Furthermore, different roles and responsibilities for the exercise are described. This also includes the volunteer recruitment process. The last part of the chapter addresses the method for PROACTIVE tools (pre-incident information and PROACTIVE App) that were tested in the framework of the exercise.

5.1. Exercise management

This chapter describes the Rieti exercise management in three phases (pre-exercise, exercise, post-exercise).

5.1.1. Pre-exercise

A PROACTIVE exercise planning team was established consisting of members from CBRNE, DHPol, UIC, RINISOFT and UKHSA. CBRNE, DHPol and UIC attended all meetings, and RINISOFT and UKHSA attended as required. This team was responsible for the coordination and planning of all aspects of the exercise. Internal meetings were arranged at regular intervals, increasing in frequency in the lead up to the exercise. These internal meetings were interspersed with joint planning meetings with the host organisation of the joint activity - the NBC School at their training ground in Rieti. The planning meetings were a combination of virtual and face to face as travel and meeting restrictions had been lifted. These meetings were attended by CBRNE, DHPol, UKHSA, StC Italy, and UNITOV. These visits provided the opportunity to visit the exercise site, discuss and walk through potential scenarios, apportion tasks and responsibilities between organisations, and plan the logistical arrangements. The visits to Rieti also allowed for the establishment of local networks to recruit volunteers from the local community. As identified through best practice, and to ensure effective communication and dissemination of information within the PROACTIVE consortium, quarterly progress meetings were used to update and consult with respect to the Rieti field exercise planning; these meetings were also used to apportion exercise roles and responsibilities to consortium partners; the details of these are covered in Chapter 5.3.1.

As per the first field exercise, the IIMARCH methodology was utilised to conduct internal planning meetings, with an IIMARCH checklist adopted to ensure all aspects of exercise planning were considered. Notes and action points were recorded at planning meetings with responsible members providing updates. Notes and actions were recorded by CBRNE and DHPol. An “action log” and “to do list” was created on Google Drive so that all members of the planning team were able to appraise themselves of outstanding actions and provide updates in a timely manner.

Building on the success from the first field exercise, the process maps were further developed to incorporate all aspects of volunteer management including registration, briefing, property management, disrobing and re-robing, transportation, catering, and the PROACTIVE App. Furthermore, the spreadsheets outlining roles and responsibilities, and detailed timelines were further refined to facilitate pre-exercise management. Additional details relating to these are covered in more detail later within this report. To ensure easier use of the developed App during the exercise, the PROACTIVE exercise planning team decided to establish an App support desk during the

exercise, where every user of the App could get full support ranging from help with the installation of the App to help with troubleshooting due to older versions of the installed operating systems.

The close working relationship developed with the eNOTICE partners during the pre-exercise phase enabled the process of decision making on exercise requirements, delineating the areas and buildings available for use, and developing the various processes and procedures in advance. Contingency plans were developed in a collaborative way; these covered such areas as adverse weather, Covid-19, volunteer no shows, and real emergency callouts. These are addressed in more detail later in this report.

To support the final planning and preparations, office space was rented in a Rieti hotel in the week before to provide an exercise planning office where all the equipment could be stored, forms and promotional material put together and exercise run throughs could be conducted to test procedures and processes, and briefings to PROACTIVE staff delivered. The activity was coordinated by the exercise director and supported by the rest of the planning team from DHPol and CBRNE.

5.1.2. Exercise

As was established in the first field exercise, a clearly defined command structure was established within the PROACTIVE team, ensuring there was an exercise director (CBRNE) and a deputy (UMU). These were supported by task leaders assigned to identified exercise functions which are set out below (see Chapter 5.3.1.). The exercise director took overall command and coordination of the PROACTIVE staff and tasks whilst the deputy coordinated the transition of resources and volunteers between areas and ensured resilience of staffing in the various functions. The exercise director provided the exercise briefing for observers in tandem with the exercise director from eNOTICE, Maggiore Santini from the NBC School. This ensured that spontaneous changes to exercise parameters could be factored in, and the exercise plan amended accordingly, e.g. there was a minor delay to facilitate the transportation of one severely disabled volunteer. Early identification of this meant that the volunteer processes were adapted to ensure their welfare was supported.

All task leaders were supported by Italian speakers from either UNITOV or StC to facilitate communication with volunteers and first responders and prevent ambiguity in communications.

Building on what worked well in the first field exercise, all PROACTIVE partners with active roles were provided with orange tabards so that those with responsibilities could be easily identified (see Chapter 6.3.3.). The App support desk was clearly marked and visible in the exercise area. The tabards also allowed wearers unfettered access to the exercise site to support the management of volunteers and their journey around the exercise site through the decontamination process. It also ensured that all the volunteer property could be recovered and returned to them in a timely manner so they could get dry and warm quickly after the decontamination process was complete.

5.1.3. Post-exercise

As was established in the first field exercise, and identified as good practice, the command structure remained in place post exercise whilst the site activities were scaled down. The exercise director was responsible for ensuring the arrangements for the focus groups were in place and that the volunteers were able to attend having had any welfare needs to be met. This required considerable

coordination as the focus groups were held in Italian; with limited numbers of Italian speakers available for the exercise they had to adopt multiple roles so those who supported task leaders during the exercise had to transition to focus groups in a timely manner. The deputies were responsible for ensuring food and refreshments were in place, and for supervising the dismantling of the physical assets in the exercise area; this meant all property and equipment was accounted for. Once all the activities were completed the exercise director liaised with eNOTICE exercise director to coordinate a joint clear up. The PROACTIVE and eNOTICE exercise directors coordinated a formal "End Exercise" and official thanks, conclusions, and farewell messages were delivered by both exercise directors. The volunteers were escorted to their transport and delivered back to their respective destinations. No PROACTIVE staff were permitted to stand down from their role until authorised by the exercise director. The exercise directors finished with a site inspection before formally handing it back to the NBC School.

Exercise management responsibilities continued after the exercise incorporating both logistics and wellbeing. There was ongoing engagement with the videographer to create the dissemination videos, and follow-up with the civil society volunteers and organisations to check on their welfare and wellbeing and establish if there were any ongoing issues that needed to be addressed. The exercise management team also coordinated the gathering of material for the D6.4 report and was responsible for contributing to and overseeing the production of the report.

5.2. Exercise timeline and processes

The initial exercise planning for the Rieti exercise commenced in 2020. The joint framework of the exercise was established among PROACTIVE, NBC School and eNOTICE including the allocation of main responsibilities and the location of the joint event. Following the numerous re-starts and rescheduling due to Covid-19 restrictions, the intense planning process was postponed until after the first exercise in Dortmund took place in May 2022.

In June 2022, a PROACTIVE delegation met with NBC School on site to agree on specifics such as the day of the exercise, important scenario details, and deadlines for activities such as the identification and registration of volunteers. Over the month leading to the exercise day, the core planning team involved numerous partners of the tripartite party and Italian stakeholders near the exercise location, to manage the various processes. The final joint exercise timescale for the exercise day can be seen in Figure 5.

To facilitate the planning process and coordinate the individual activities, PROACTIVE followed the same approach as in Dortmund, developing a detailed exercise timeline based on the six key tasks and their subtasks (see Chapter 5.3.1.). The comprehensive version presented all tasks that had to be completed by the time of the exercise, during the exercise and following the exercise (Appendix 8). References between different sub-activities were drawn if they were linked. A simplified version of the timeline presenting the day of the exercise was forwarded to all PROACTIVE partners in active roles during the registration process as well as to all observers in the observation room. Due to last minute changes following the weather forecast, the time schedule was slightly updated. The same update was made for all individual process maps.

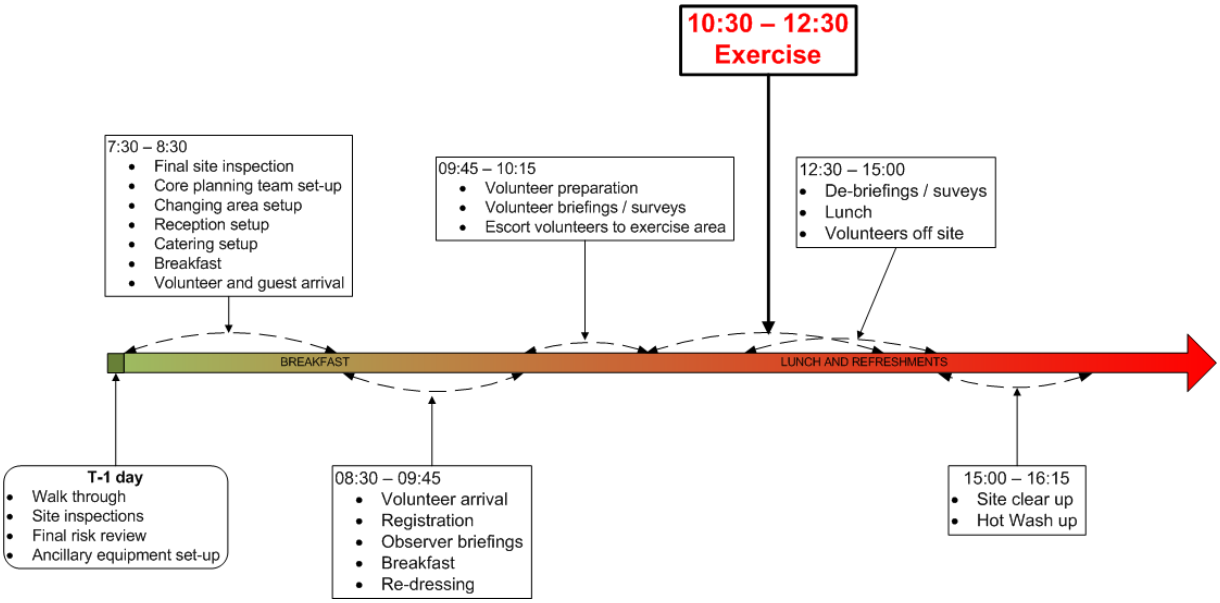


Figure 5: Joint exercise framework with milestones of the day

Following the positive feedback in Dortmund, PROACTIVE again created individual process maps to provide the responsible partners with a clear overview of individual processes. They served as information aids both during joint meetings with NBC School and during the subsequent briefing of all partners (example of process map Appendix 9). The following process maps were developed:

- A PROACTIVE check list for registration included all steps of the registration.
- A PROACTIVE process map for briefing of partners, observers, volunteers and first responders presented the communication of briefing information on the days prior to the exercise, as well as on the day of the exercise itself.
- A PROACTIVE process map for transportation covered the logistic details for all PROACTIVE participants prior to and throughout the day, as well as after the joint workshop the following day. It included all pick-up locations, relevant mobile numbers of the bus drivers and all vehicle details. As an attachment, the partners in charge of the transportation process received check lists of all expected participants per bus.
- A PROACTIVE process map for catering covered all related processes starting with the final check up with the catering company the day prior to the event until its departure. It additionally showed the individual time slots foreseen for all joint exercise participants for breakfast, refreshments, and lunch.
- A PROACTIVE process map for the Handling of Personal Property defined the steps of the changing process into spare clothing, the undressing process during the exercise, the securing of personal property and the match-up process during the day and described the criteria to be achieved with each single step. In addition, a big print-out was developed that illustrated the main elements of the process map.
- A PROACTIVE process map for the management of the App addressed all related activities including the briefings and the times of push-notifications.

The timelines, process maps and checklists ensured that all PROACTIVE partners in an active role, all observers and all volunteers were informed about the processes they were involved with and that these could be coordinated accordingly.

5.3. Exercise contributors and their roles and responsibilities

The exercise involved many participants with different roles and responsibilities. The following subchapters describe these roles and responsibilities in more detail.

5.3.1. Exercise planning, management, and support team roles

The tasks described in this chapter were performed by members of PROACTIVE in some cases and by external partners in others.

Planners/Organisers

For the planning of the exercise in Rieti, different roles were defined (Appendix 9). As in Dortmund, a distinction was made between commanders, task leaders and task leader assistants. The exercise director from CBRNE was supported by two additional commanders (assistant exercise directors). The assistant exercise directors consisted of one person from DHPol (responsible for the first PROACTIVE / eNOTICE exercise in Dortmund, Germany) and one person from UMU (responsible for the third PROACTIVE / eNOTICE exercise in Ranst, Belgium). Negotiations with NBC School were conducted at the commander level.

At commander level, the tasks for the exercise in Rieti were defined and in consultation with all PROACTIVE members it was decided who would be responsible for which task.

A responsible PROACTIVE or third-party ally partner was appointed for each of the six key tasks of the exercise. As in Dortmund, the key tasks were differentiated into 24 subtask areas, each of which was performed by a task leader and task leader assistants (Appendix 10). This structure was established for the day of the exercise as well as for the phase before and after the exercise. For the Rieti exercise, additional tasks were introduced:

- A dedicated task “Registration” to enhance the coordination of all related tasks following the experiences of Dortmund.
- The new tasks “App Direction” and “App Technical Support” to address the stronger focus on the PROACTIVE App within the exercise as per Tactical Objectives 6-8 and to manage all technical activities taking place during the observer briefings and on site.
- The additional task “Observer Liaison EEAB” in response to the Tactical Objective 10 that aims to increase the ethical observation of the exercise.
- The new task “Child Welfare” to manage all upcoming issues surrounding the inclusion of minors in the exercise.

Where appropriate, Italian internal and external partners were appointed to certain tasks to enhance the planning and execution. In total, 7 additional subtasks were allocated to external facilitators. In

doing so, the organigram of the Rieti exercise included non-PROACTIVE partners unlike in Dortmund.

Support functions

In contrast to Dortmund, no PROACTIVE partners were located in Italy. Thus, in contrast to the first exercise, only a few partners in the PROACTIVE consortium were able to support the project with knowledge of the Italian language. This knowledge was indispensable for the recruitment of volunteers. In order to overcome these problems, PROACTIVE was supported by eNOTICE partners on site (NBC School and UNITOV) during the volunteer recruitment and the volunteer supply on the day of the exercise. In addition, these tasks were performed by the CSAB member StC Italy. PROACTIVE was also supported by the Centro di Servizio per il Volontariato (CSV) in the volunteer recruitment.

As previously described, UNITOV and StC supported PROACTIVE on the day of the exercise. This included, among other things, conducting the volunteers briefing and the focus groups with the volunteers following the exercise. In addition, both partners supported PROACTIVE before and during the exercise in other tasks where translations into Italian were necessary.

In order to provide catering during the exercise, a catering company was selected (see Chapter 6.6.5. for more details). In addition, a video company was used to shoot a professional video of the exercise (see Chapter 8.2.1.). The involved bus company not only supported the recruitment of volunteers but arranged all necessary transportation activities (see Chapter 6.6.2.).

Overall, an important lesson learned is the need to relinquish control over management and communication processes in exercises where no project partner is located in the country. Nevertheless, PROACTIVE was able to implement all exercise objectives in cooperation with the described reliable external partners.

5.3.2. Exercise players

The exercise players included the volunteers that represented those affected by the CBRNe incident and the first responders that managed the incident. PROACTIVE was in charge of the volunteers while NBC School provided the first responders.

Volunteers

The volunteer sample consisted of members of the local community in Rieti that were largely unfamiliar with emergency management in general and CBRNe and decontamination in particular. People from Rome were also included in the exercise. The volunteers were asked to behave as naturally as possible.

To recruit participants representing the agreed sample (see Chapter 3.4.) for the exercise in Rieti, the project team applied multiple approaches.

In contrast to the exercise in Dortmund, the eNOTICE partners on site (NBC School and UNITOV) were much more involved in the recruitment. This approach was chosen because there is no partner in Italy in the PROACTIVE consortium. With the help of the local eNOTICE partners, sufficient

participants could be found. As a result, eight individuals (five of whom were categorised as vulnerable by definition) were recruited through the eNOTICE partners and ultimately participated in the exercise.

Through the NBC School, efforts were also made to include persons under 18 in the exercise. Thus, it was requested that underage cadets from the cadet school be included. However, in the end, the request could not be realised due to scheduling. It was also not possible to include family members of staff of the NBC School.

Similar to Dortmund, contact was also sought with CSOs to recruit volunteers for the exercise. StC Italy, which supports the project within the framework of the CSAB, was involved to a large extent. Through StC, an attempt was made to recruit a sufficient number of minors for the exercise. However, the difficulty here was that school was compulsory on the day of the exercise. To address this issue, contact was sought with schools in Rieti to involve students or a single school class (e.g. as part of project work) in the exercise. In the end, however, the schools decided not to participate in the exercise. Nevertheless, through the efforts of StC, minors could be recruited for the exercise. Due to unforeseen cancellations shortly before the exercise however, unfortunately only one underage person was able to participate in the exercise. However, in addition to underage persons, adults could also be recruited for the exercise through StC.

The Caritas in Rieti was also involved in the exercise. The contact was established during a pre-exercise meeting of PROACTIVE and eNOTICE partners in Rieti in October 2022. Through Caritas, persons with language barriers could be included in the exercise among others. The people are asylum seekers in Italy. In an improvement of the Dortmund exercise, the goal of including people with language barriers in the exercise could thus be achieved. This is of great importance because in multi-ethnic societies, language barriers can be of great significance during a real CBRNe incident.

In addition, contact was made with local companies with whom contracts were made as part of the exercise. CBRNE contacted the catering company for the exercise, as well as a bus company in Rieti, which was used for transportation during the exercise. Both companies were asked to assist with recruitment for the exercise. In this way, almost 20 people were recruited for the exercise through the bus company.

Furthermore, the responsible PROACTIVE partner for communication and dissemination, UIC, promoted the exercise via the project's social media channels (website, LinkedIn, Twitter) and via the PSAB / CSAB. Through this approach, one person was recruited for the exercise.

Ultimately, PROACTIVE was successful in recruiting the number of volunteers agreed upon with the NBC School. The target sample of 15% vulnerable volunteers was greatly surpassed as the final sample included close to 50% vulnerable volunteers (for final sample see Chapter 6.2.2.)

Additional "volunteers"

Unlike the Dortmund exercise, PROACTIVE and NBC School decided not to include actors that would display a certain envisaged behaviour (screaming, etc.). Instead, mannequins were used to challenge the first responders of the fire brigade with non-ambulatory victims inside the indoor train station.

Responders

The selection of the responders was the responsibility of the NBC School. Besides planners and participants of the NBC School, four first responder units were deployed:

- The train staff of the Italian Railway were responsible for the initial evacuation procedures.
- The Carabinieri managed the security measures.
- The specialised CBRN unit of the fire brigade managed the evacuation and decontamination of non-ambulatory civilians simulated by mannequins.
- The CBRN Defence Specialist Unit of the Italian Army Forces performed identification and sampling activities of the unknown chemical substance and decontaminated affected ambulatory civilians.

Since the CBRN specialised units are usually not trained to deal with civilians, the NBC School initially planned to include the Italian Red Cross to perform triage. However, due to an earthquake in Italy shortly before the exercise, the designated unit had to cancel its participation.

5.3.3. Evaluators and observers

To scientifically evaluate the engagement between volunteers and first responders, PROACTIVE involved evaluators from UKHSA. To collect additional observational data based on the experience of European practitioner stakeholders, civil society agents and ethical experts, PROACTIVE further invited PSAB, CSAB and EEAB members of their advisory boards alongside partners and guests of eNOTICE to participate in the exercise as observers.

Evaluators

Six PROACTIVE evaluators from UKHSA collected observational data of the exercise (for the evaluation methodology see Chapter 4.4.). The evaluators did not speak Italian and thus observations are based on what evaluators could see. All six evaluators have previous experience in collecting observational data during field exercises. The UKHSA team subsequently analysed all of the data collected during the evaluation and prepared the results reported herein,

In addition to the evaluators, six Italian speakers (3 from StC and 3 from UNITOV) conducted the focus groups as focus group leaders. Before the exercise, they were trained by UKHSA.

Observers

Observers were expected to self-report based on what they were able to observe (see Chapter 10.5.). Furthermore, they were asked to role play a witness to the CBRNe incident and use the PROACTIVE App during the exercise as such. In this regard the observers fulfilled the following tasks:

1. To fill out the observer guide (Appendix 6)
2. To follow the App notifications and use the App at least to report an incident as if they were a witness (see Chapter 4.2.; Tactical Objectives 6-8)

The full description of the role of an observer can be found in the introduction to the observer guide. In total 19 observers filled in the observer guide.

The observers covered a wide area of expertise in line with the overall structure of the PROACTIVE advisory boards. The Rieti observer sample included a variety of practitioner categories as well as CSO representatives and niche experts in ethics and standardisation (Figure 6).

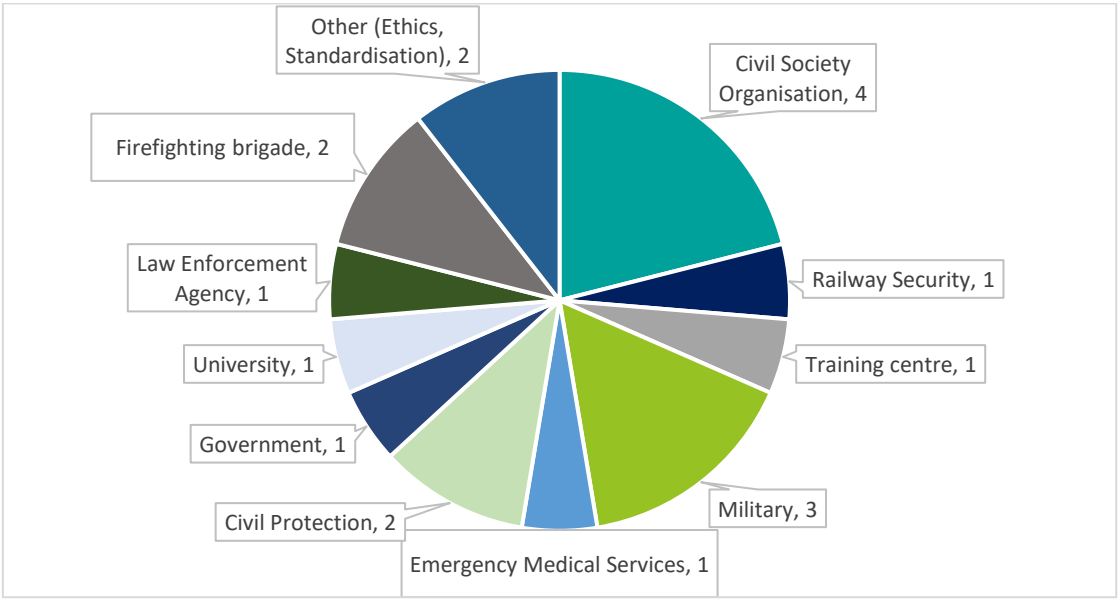


Figure 6: The type of observers at the Rieti field exercise that completed the observer guide

Most observers declared they were very familiar with the CBRNe topic (Figure 7). Seven of them reported a vast experience in the CBRNe domain with several years of solid experience and 14 of them had attended CBRNe exercises before.

Sixteen out of 19 observers had read the PROACTIVE pre-incident information materials before the exercise and were therefore familiar with these. However, as shown in Figure 7, slightly fewer observers were very familiar with the PROACTIVE App.

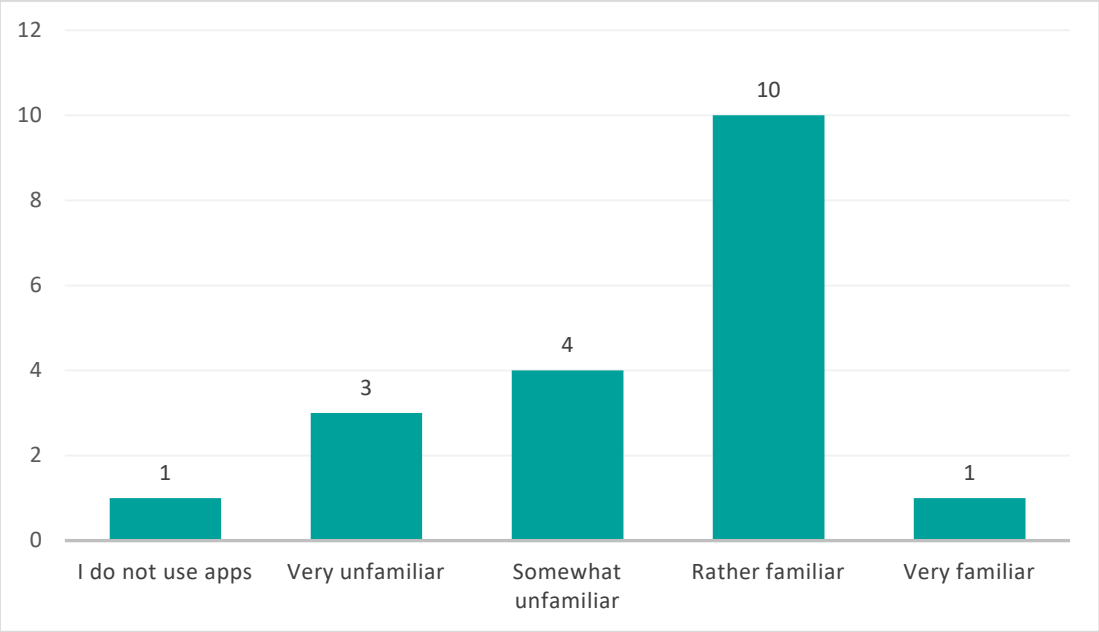


Figure 7: Reported observers' familiarity level with the PROACTIVE App prior to the exercise

5.4. Role of PSAB, CSAB, EEAB and SAB members

The PSAB, CSAB, EEAB and SAB members contributed to the success of the exercise through different activities:

- Observers were drawn from the pool of **PSAB/CSAB** members and invited within the seat limits indicated by the NBC School. Invitations were sent out based on the priorities of the project which included inviting local stakeholders, Italian speakers in general (see PSAB Engagement Strategy), representatives of children's organisations for the CSAB and military representatives for the PSAB.

- The PROACTIVE PEO invited all 4 members of the **EEAB** to participate in the exercise, but only one confirmed the participation; in order to supplement the number of ethics experts participating in the exercise, PROACTIVE invited one member of the CSAB - with special knowledge in ethics - which confirmed the participation. Both ethics experts supported the ethics evaluation of the exercise: they were asked to observe and evaluate the exercise from an ethics point of view and to fill in the Ethics observation and evaluation sheet.

- The five members of the Security Advisory Board (**SAB**) were asked to review the exercise report and provide feedback on the overall security management.

Following the exercise, the data from the observer guides will be used to improve the organisation of the third PROACTIVE exercise as well as the PROACTIVE App. The advisory board members will support the project in disseminating the first lessons learned within their networks to inspire similar exercises, if applicable.

Apart from the PROACTIVE advisory boards, eNOTICE partners were also asked to fill in the observer guide.

5.5. Use of PROACTIVE tools and SOPs

This chapter describes the use of the PROACTIVE pre-incident information as well as the PROACTIVE App during the exercise in Rieti.

5.5.1. PROACTIVE pre-incident information material during the Rieti exercise

The pre-incident information material was translated into Italian and was circulated to all casualty volunteers one week prior to the Rieti exercise. No instructions were given to read the document. Rather it was presented to people as additional information about the exercise that they may want to look at. This was done in order to try and preserve ecological validity and replicate the natural circumstances under which this information would normally be received. Questions concerning the pre-incident information were asked as part of the evaluation process.

5.5.2. PROACTIVE web platform and mobile App during the Rieti exercise

As part of their observer role, members of the advisory boards were asked to download, register and use the PROACTIVE App during the exercise, to follow the notifications and to use the “report an incident” feature at least once, role playing a witness. An IT support desk was in place to assist with technical issues during the day and to promote the App to all participants of the exercise.

Following the Dortmund exercise, the PROACTIVE App underwent significant changes to ensure that all the comments and lessons learned from the exercise were properly analysed and implemented. Once the development of the App was completed and the release of the App passed internal testing, preparation started for the exercise. While working closely with the PROACTIVE exercise team, the challenging environment for the App was assumed and modelled, focusing on achieving good usability of the App during the exercise for all stakeholders. The following assumptions were made:

- It is likely that not all App users will have smartphones with the required version of software;
- It is likely that some App users will have difficulties with downloading and installing the App on their smartphones;
- It is likely that connectivity on the site will be varying and in some area there will be poor cellular or WiFi coverage;
- It is likely that some users will have their preferences for the design of the App Graphic User interface (GUI) and their suggestions for navigation within the App;
- It is likely that additional changes will be requested during the exercise.

To address all these challenges, it was decided that a dedicated IT help desk manned by RINISOFT will be set up during the exercise offering help and support to everyone who has any questions concerning the App.

As shown on the above photo, the App IT support desk had QR-codes for each of the ANDROID and iOS users, enabling simple and fast download and installation of the App for stakeholders who

didn’t do it prior the exercise. In addition, the App IT support desk (see Picture 1) prepared a few spare smartphones for participants whose smartphone didn’t have the required version of the software. And finally, the App support desk had a permanently run server with the App backend being monitored for operational and post-exercise forensic purposes. This allowed the generation of the App technical report which is summarised in later sections.

Picture 1: App IT support desk

PROACTIVE developed 9 push/in-App notifications to be sent out during the exercise, to enable the observers to better play their role of witness and to ensure these features were tested. The notifications were drafted based on the scenario given by eNOTICE. The draft notifications were reviewed by the PROACTIVE in-consortium law enforcement agency (LEA) partners, who confirmed that these types of crisis communication messages would be sent out during such an incident. The final notifications can be seen in Appendix 11.

6. ADMINISTRATION

The following chapter describes the administrative aspects of the exercise. This includes among others the final number of volunteers as well as the handling of volunteers during the exercise. Furthermore, the registration process (sign-up for the exercise, volunteer dress code check, etc.) and the briefing of all involved participants in the exercise (briefing of the volunteers, briefing of the observers, etc.) will be described. In order to guarantee a smooth running of the exercise, some procurements for the exercise had to be made in advance and the arrival and departure of all parties involved had to be organised. These processes are described in more detail below. Moreover, the following chapter gives an overview of the exercise area.

6.1. Command and control

The command team was established at the beginning of the exercise planning process and was represented at all internal and external planning meetings. Roles and responsibilities of the command team are shown in Appendix 9.

6.2. Administration of volunteers

The following section shows the ultimate number of exercise volunteers (age group, gender, vulnerability status, etc.).

6.2.1. Civil society volunteers

In total, PROACTIVE and the respective eNOTICE partners recruited and managed 32 volunteers (14 more compared to the exercise in Dortmund) (see Table 5). It was possible to include 13 men and 19 women between 14 and 85 years old. Compared to Dortmund, a wider age range could be realised in Rieti. In Dortmund, participants between 21 and 66 years old were included.

Table 5: Distribution of volunteer sample according to age and gender

Age group	Gender	
	Men	Women
<18		1
18-30	3	4
31-50	1	8
51-65	5	3
65+	4	3
TOTAL	13	19
	32	

People between 31-50 years (31.3%) represented the largest age group, followed by people over 65 (25%). Persons between 18-30 years (21.9%) and 51-65 years (18.9%) of age were also strongly represented in the sample. Furthermore, one person under the age of 18 was included in the sample. With the exception of this age group, both men and women were included in each of the age groups mentioned. Compared to the exercise in Dortmund, persons in the 65+ age category were included with a high proportion in the sample. This is important insofar as the trend in the age pyramids of European countries over the last few decades has shown that this group is taking up an ever-higher proportion.

The majority of volunteers (24) were recruited from the local community in Rieti (Table 6). Additionally, 8 volunteers from Rome were involved in the exercise.

Table 6: Volunteers of Rieti exercise by volunteer number, gender, age, category, recruitment, and participation in decontamination

Category	Age	Title	No	Residence	Recruitment	No Decon
No vulnerability	46	Ms	P26	Rieti	PROACTIVE	
No vulnerability	47	Ms	P27	Rieti	Bus Company in Rieti / PROACTIVE	
No vulnerability	25	Mr	P10	Rieti	Caritas	
No vulnerability	58	Ms	P19	Rome	eNOTICE	
No vulnerability	21	Ms	P14	Rome	eNOTICE	
No vulnerability	32	Ms	P7	Rome	eNOTICE	
No vulnerability	47	Mr	P1	Rieti	Bus Company in Rieti / PROACTIVE	
No vulnerability	54	Mr	P28	Rieti	Bus Company in Rieti / PROACTIVE	
No vulnerability	26	Ms	P17	Rieti	Bus Company in Rieti / PROACTIVE	
No vulnerability	51	Mr	P29	Rieti	Save the Children	X
No vulnerability	57	Ms	P18	Rieti	Bus Company in Rieti / PROACTIVE	
No vulnerability	55	Mr	P8	Rieti	Save the Children	
No vulnerability	27	Ms	P4	Rieti	Caritas	
No vulnerability	35	Ms	P5	Rome	eNOTICE	
No vulnerability	38	Ms	P12	Rieti	Bus Company in Rieti / PROACTIVE	
No vulnerability	53	Ms	P25	Rieti	Bus Company in Rieti / PROACTIVE	X
No vulnerability	49	Ms	P6	Rieti	Bus Company in Rieti / PROACTIVE	
Age <18	14	Ms	P22	Rome	eNOTICE	
Age 65+	76	Ms	P24	Rieti	Bus Company in Rieti / PROACTIVE	X
Age 65+	73	Ms	P20	Rieti	Caritas	
Age 65+	85	Mr	P23	Rieti	Bus Company in Rieti / PROACTIVE	
Age 65+	69	Mr	P31	Rieti	Bus Company in Rieti / PROACTIVE	X
Age 65+	71	Mr	P16	Rome	eNOTICE	
Age 65+	68	Mr	P13	Rieti	Caritas	
Age 65+	70	Ms	P15	Rieti	Bus Company in Rieti / PROACTIVE	
Age 65+	70	Mr	P11	Rieti	Bus Company in Rieti / PROACTIVE	
Language barrier / Asylum seeker	20	Mr	P32	Rome	eNOTICE	
Language barrier / Asylum seeker	26	Ms	P30	Rieti	Save the Children	
Vision impaired	46	Ms	P3	Rieti	Bus Company in Rieti / PROACTIVE	
Vision impaired	52	Mr	P2	Rome	eNOTICE	
Hearing impairement	49	Ms	P9	Rieti	Caritas	
Wheelchair user	22	Mr	P21	Rieti	Bus Company in Rieti / PROACTIVE	X

Of the 32 volunteers, 5 people had decided not to participate in the decontamination (see Table 6). One person stated that he did not want to participate in the decontamination due to a cold. In addition, the person in the wheelchair and their caregiver were unable to participate in the decontamination. However, the individuals who chose not to participate in the decontamination participated in all other processes of the exercise.

6.2.2. Vulnerable groups and supporting parties

Of the 32 volunteers, almost half (15 volunteers) were categorised as especially vulnerable. 7 older persons (65+) and one person under 18 (accompanied by her mother during the exercise) were included. Furthermore, a stuffed animal in a stroller simulated a young child, and one volunteer in the exercise played its mother. In addition, as in Dortmund, persons with a visual impairment (2 persons) and a hearing impairment (1 person) were involved in the exercise. One of the visually impaired persons was accompanied by an eNOTICE observer before and after the incident. Furthermore, as in Dortmund, one person in a wheelchair participated in the exercise. This person has a severe impairment and has therefore been accompanied by caregivers (in this case the parents) before, during and after the exercise. In addition to the parents, the grandfather of the wheelchair user also participated in the exercise. In this respect, compared to Dortmund, a family was involved in the exercise.

As in Dortmund, there were people in the exercise who knew each other as well as people who did not know each other before the exercise. In a real situation, it is to be expected that this would also be the case. By including family structures in the CBRNe incident, another element could be added compared to the exercise in Dortmund, with which emergency forces can be confronted in a real case. As has already been described, it was also possible to involve people (2 persons) who had applied for asylum in Italy and who have problems with the national language. This includes one person from Nigeria and one person from Bangladesh. Compared to Dortmund, another important element was included. In the event of a CBRNe incident, emergency forces must expect to encounter people who do not understand the language of the respective country, or do not understand it well enough.

6.2.3. Success of recruitment strategies

As can be seen in Table 6, almost the majority of the volunteers (15 people in total) were recruited through a bus company in Rieti, which was contacted by PROACTIVE to provide transport during the exercise. Furthermore, five people were recruited through a PROACTIVE contact with the Caritas in Rieti. Another three participants were recruited via the CSAB member StC. As in Dortmund, it has been shown that especially the contact to local organisations / CSOs is promising in the recruitment of volunteers. In Dortmund, it became apparent that only a few people could be recruited through newspaper advertisements. After weighing up the costs and benefits for the exercise in Rieti, it was therefore decided not to place any newspaper advertisements.

The remaining participants were recruited via eNOTICE partners. This approach (which could not be implemented in Dortmund due to limitations of the eNOTICE partner on site) proved to be very successful. For the next PROACTIVE / eNOTICE exercise in Belgium, this approach should be further pursued, if possible.

6.2.4. Volunteer withdrawal

Five volunteers from Rieti cancelled their participation shortly before the exercise (see Table 7). Three of these individuals were classified as belonging to a vulnerable group. Thus, two people under 18 years of age and one asylum-seeking person cancelled the exercise. Furthermore, one accompanying person (brother) of a minor cancelled their participation in the exercise. No persons gave reasons for their withdrawal. It might be assumed that these persons cancelled their participation shortly before the exercise due to the bad weather (heavy rainfall) on the day of the exercise. Four of the mentioned persons were recruited through a bus company in Rieti. Another person was recruited through the Caritas in Rieti.

Table 7: Registered volunteers that cancelled their participation in the exercise

No	Title	Age	Category	Residence	Recruitment via	Reason
1	Mr	23	No known vulnerability	Rieti	Bus Company in Rieti / PROACTIVE	no explanation
2	Mr	62	No known vulnerability	Rieti	Bus Company in Rieti / PROACTIVE	no explanation
3	Mr	15	Age < 18	Rieti	Bus Company in Rieti / PROACTIVE	no explanation
4	Ms	15	Age < 18	Rieti	Bus Company in Rieti / PROACTIVE	no explanation
5	Mr	20	Language barrier / Asylum seeker	Rieti	Caritas	no explanation

6.3. Registration process

The registration process for the exercise participants contained different phases (Attendance registration, Dress code check, etc.). The phases are described in more detail in the following subchapters.

6.3.1. Covid-19 testing

In close consultation with the host NBC School, and with respect to national and local Covid-19 regulations in place at that time, it was decided not to organise any tests on the morning of the exercise for all participants of the training site.

6.3.2. Attendance registration

As a first step, all participants in the exercise were controlled by NBC School staff upon arrival. The control included a check of the identification document. Before the exercise, all participants had to send a copy of their passport or ID card to dedicated persons of PROACTIVE / eNOTICE. Furthermore, participants in the exercise had to register via a form provided by eNOTICE. The passport / ID card copies were forwarded to the NBC School. The latter forwarded the copies to the Italian Ministry of Interior for security clearance. A security check of all participants was necessary

because the training site is a military security area. All persons involved in the exercise (including catering company, etc.) received a positive security clearance.

After the control through the NBC School staff, all participants of the exercise were welcomed in a registration tent. The tents were erected to protect the people involved from heavy rain on the day of the exercise. First, an attendance check was performed by a PROACTIVE staff member. After the check-in, the name of the corresponding person was checked off on an attendance list. PROACTIVE employees as well as PROACTIVE observers were also given a lanyard with a name card (see Chapter 6.3.3.). The eNOTICE participants had already received this the day before during an eNOTICE workshop. The arrival of the participants (observers, volunteers, etc.) was scheduled at different times to avoid too many people wanting to register at the same time.

After this step, PROACTIVE and eNOTICE staff, as well as observers and third parties (video team and focus group leaders) of the exercise, were given tabards for identification at additional stations in the registration tent (see Chapter 6.3.3.). PROACTIVE employees also received a folder in the registration tent that was specifically created for them, with information about their respective tasks. They were then able to perform their tasks. Observers of the exercise (including eNOTICE staff who had agreed to analyse the exercise via the designated observer guide) were also asked to sign a consent form for the exercise in the registration tent. After consenting, they received a textile bag with the PROACTIVE logo that contained the observer guide for the exercise. In addition, the bag contained various items with the PROACTIVE logo (disinfectant, pen, mask, etc.). After registration, the observers, eNOTICE staff, etc. were taken to breakfast. Finally, in the same area, the exercise briefing for the mentioned parties took place (see Chapter 6.4.3.). In addition to the observers, the third parties also signed the consent form for the exercise.

This was not necessary for the volunteers, as they had already signed the consent form in advance of the exercise. On the day of the exercise, they were only asked to sign a consent form specifically prepared for the focus groups (including the pre- and post-exercise questionnaire) in the registration tent. This consent form was created and managed by the PROACTIVE member responsible for the evaluation of the exercise, UKHSA. After signing the consent form, the volunteers were taken to a separate building where further steps for the exercise were carried out (handing out wristbands, handing out spare clothes for the exercise, etc.).

Compared to the exercise in Dortmund, the big advantage of the exercise in Rieti was that observers of the exercise and volunteers did not meet each other due to the different arrival times before the exercise. Breakfast was also held separately from each other. This prevented observers and volunteers from influencing each other before the exercise. In addition, compared to Dortmund, registration was carried out in several places. This helped to streamline and speed up the registration process.

6.3.3. General dress code

The dress code followed the positive experience of the Dortmund exercise:

ID badges

All PROACTIVE and eNOTICE partners, observers and VIPs received the same uniform and double-sided ID badges printed out in different colours to allow easy distinguishment. DHPol and UNITOV prepared the badges for their respective projects which were handed out as part of the attendance registration.

Tabards

As in Dortmund, all PROACTIVE and eNOTICE partners in active roles that required their free movement within the exercise area received tabards with the PROACTIVE logo on the back. To ensure the health and safety of the wheelchair user at all times, the carer also received an orange tabard.

For observers, yellow tabards were handed out which as well as the logo also displayed the word “observer”.

During the exercise, an additional description was written on those orange tabards of Italian speaking partners. This allowed for quick identification of the translators/focus group leaders if needed.

Wristbands

Volunteers received the same numbered wristbands as in Dortmund that offered storage capacity for numbered cable ties that were used to secure the bags containing their personal belongings during the day (see Chapter 6.6.4.).

Uniform

First responders followed the dress code of their respective unit. The uniforms not only marked them as first responders, but also allowed for differentiation between units.

Personal Protective Equipment (PPE)

As with the uniforms, the first responders followed the PPE rules of their unit. These included CBRNe hazmat suits in different designs as appropriate to their duties.

6.3.4. Volunteer dress-code check

Once again, all volunteers were informed in advance that they had to change out of their clothes and replace them with spare clothing. Wearing swimming clothes was also communicated as a prerequisite of participation. On the day of the exercise, the volunteers were briefed again by the PROACTIVE dressing team. They made sure to register and seal all volunteer bags and check their final exercise outfit before escorting the volunteers to the briefing room.

6.4. Briefing

To prepare the different parties for the exercise, several briefings were conducted on the day of the exercise and beforehand. PROACTIVE was the main responsible partner for the majority of briefings. The eNOTICE partner UNITOV as Italian speakers supported PROACTIVE in the briefing of the volunteers. The briefings will be described in detail below:

6.4.1. Briefing of exercise planning, management, and support team roles

In addition to several general planning meetings over more than a year, two final joint briefing meetings on site took place the days prior to the exercise among the core planning team of PROACTIVE and NBC School. At the final joint meeting on the day before the exercise, partners from all planning organisations were involved, including UIC as coordinator and communication leader, CBRNE as exercise direction and risk manager, DHPol and UMU as codirection partners, UKHSA as evaluator, RINISOFT as App coordinator, and the Ethics and Data Protection Supervisor (EDPS) from CBRNE. Outstanding agreement gaps were closed, and the planning phase was declared complete. By then, all joint tripartite planning and management parties were briefed on their responsibilities within the exercise.

Half a year prior to the exercise, PROACTIVE had sent all consortium partners a list of roles and responsibilities as well as a detailed overview of the role definitions to make sure all partners in active roles were acquainted with the respective tasks. The main leaders of each task were constantly updated on the relevant decisions made on the command level. A month prior to the joint activity, DHPol shared a logistical briefing pack providing information on travel arrangements, the exercise and workshop and all social events surrounding the event. Two weeks prior to the exercise the core planning team shared all final process maps, the detailed exercise time schedule and additional information material. DHPol further offered an online session for those who wished to discuss some aspects in more detail. The day before the exercise, all partners in supportive roles who had already arrived were briefed by the task leaders on site, especially with regard to the handling of personal property. The general briefing of all partners took place in the afternoon in the established command centre. After their registration in the morning, all task leaders also received briefing folders with all relevant documents for the day.

6.4.2. Briefing of volunteers

Unlike in Dortmund, it was necessary to involve Italian partners at all stages as the briefing was solely performed in Italian. Briefing material prepared by PROACTIVE was shared with the Italian partner that forwarded the information to the volunteers. Prior to the exercise, all volunteers were briefed on what was expected of them, including changing into spare clothes and wearing swimwear. They were briefed on the outline only of the exercise; specific details were not shared lest their disclosure influenced behaviour during the exercise. A final forwarded briefing mail the day before the exercise reminded all volunteers of the transportation details.

PROACTIVE prepared the briefings of volunteers. After all volunteers changed into spare clothes, they were officially welcomed by the exercise director and UKHSA followed by the briefing on site which comprised the following:

- Courtesy and behaviour on site (e.g. follow instructions)
- Safety (e.g. introduce taped-off areas, codewords, handling of real-life emergencies)
- Welfare (e.g. present the use of locations on site)
- Ethics (e.g. participation framework)
- Data protection (e.g. handling of personal information)
- Description of survey (e.g. introduce questionnaire)

This briefing was supported by StC Italy. The partners of StC and UNITOV further facilitated the volunteer engagement throughout the day and stepped in if volunteers required further information.

6.4.3. Briefing of PROACTIVE / eNOTICE observers and guests

A month prior to the event, UIC shared a comprehensive Logistic Pack with all observers to support their travel arrangements and present the framework of the event. PROACTIVE furthermore organised a virtual briefing of observers two weeks prior to the exercise. It repeated travel arrangements made by PROACTIVE to facilitate their stay (pick-up location of the bus from the airport, etc.) and included relevant information concerning their observation tasks during the exercise (e.g. observer guide). As part of the briefing, RINISOFT once again introduced the PROACTIVE App, its features and what observers were asked to do, and provided technical support for the download.

All documents were also sent to eNOTICE via their project coordinator in advance, and eNOTICE participants were invited to attend the PROACTIVE online briefing. The day before the exercise, PROACTIVE provided an additional briefing on the observer guide and App to eNOTICE partners absent during the online briefing session during their consortium meeting.

At the day of the exercise, all PROACTIVE and eNOTICE observers received a final on-site briefing in the Transit Hangar on the following aspects:

- Courtesy and behaviour on site (e.g. to prohibit the interfering with volunteers and first responders during the exercise and the use of cameras for ethical reasons)
- Safety (e.g. introduce taped-off areas and the tabard system)
- Welfare (e.g. present the use of locations on site)
- Observer tasks (e.g. once again remind observers of their tasks)

The briefing was held in English by the exercise direction of PROACTIVE and NBC School. Alongside the observers, all additional guests of the training facility participated in the briefing. After the briefing, all observers in yellow tabards were escorted to the main observation areas.

6.4.4. Briefing of first responders

NBC School introduced PROACTIVE to its first response units on an internal basis. On the morning of the exercise, the core planning team alongside NBC School arranged a brief meeting on site with the chief officer of each specialised CBRN unit to raise awareness for the various PROACTIVE activities taking place within the exercise area.

6.4.5. Briefing of third parties

The videographer team was briefed by the UIC planning team during several online meetings/calls prior to the exercise. Particular emphasis was placed on how to deal with the volunteers in terms of ethical standards, dignity and data protection. The video team also had a phone interview with the NBC School to understand the limits of filming and photographing on a military site. On the morning of the exercise, the videographer team was further briefed to provide them with the last details for the day including a time schedule for the interviews to take place and introduced the team to the responsible contact of NBC School.

The transport company, being local to Rieti and well used to travel to and from FCO (Rome Airport) did not require special briefing. Access to the military barracks was administered by UNITOV in direct liaison with the NBC School both being partners of project eNOTICE. Practical issues are referred to in Chapter 6.6.2.

The catering company did not need briefing specific to working on the military site as it is an approved contractor. Practical issues relating to services provided are referred to in Chapter 6.6.5.

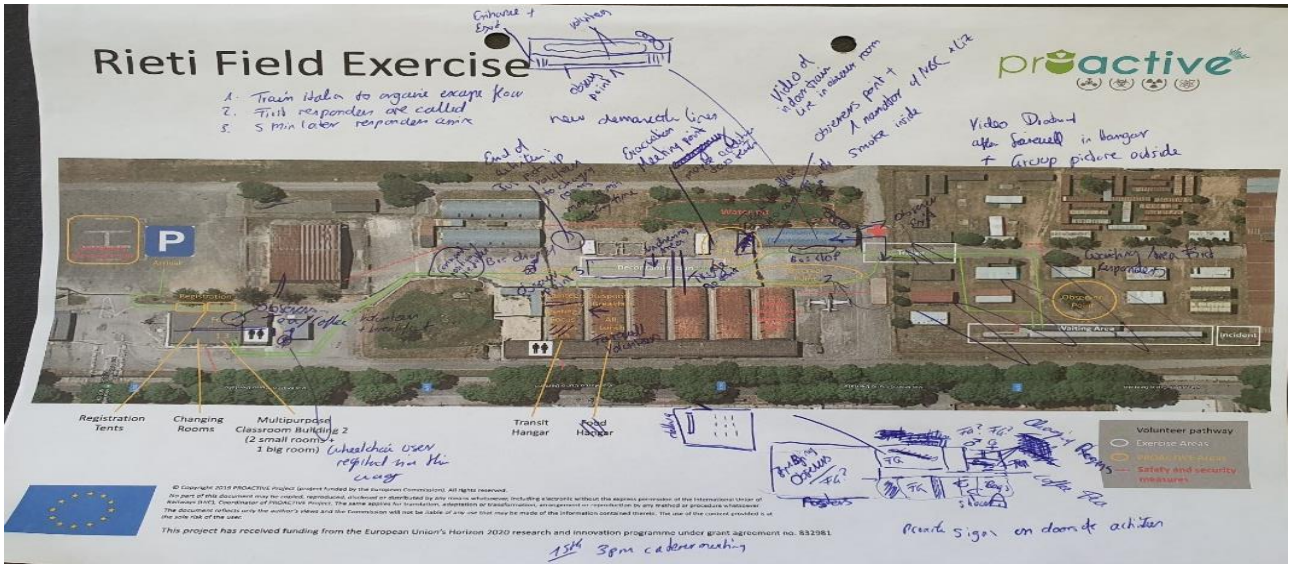
6.5. Exercise area

The exercise area was divided to meet the versatile needs of the exercise. NBC School presented the respective facilities of each building. It was important that the buildings provided the necessary infrastructure (changing rooms for the volunteers, sufficient rooms for the focus groups, etc.) and a physical separation between volunteers and observers until after the exercise. It was decided that all participants should be welcomed in tents after arriving at the car park. While the observers had breakfast and were briefed in a large hangar next to the exercise area, the volunteers went through all the relevant processes (changing, breakfast, briefing, etc.) in a multi-purpose classroom building next to the car park. They were thus isolated from the exercise area until the start of the exercise.

In addition to the use of the buildings, the allocation of space for the exercise itself was defined in order to identify the route of the volunteers and observers in advance, thereby minimising risks and organising individual processes. In addition to the originally planned outdoor train, the possible use of an indoor train hangar was planned from the beginning as a contingency plan. In the week before the exercise, the use of the rear area with the outdoor train was eventually discarded and the exercise was moved to the area around the indoor train hangar. Adjacent to this hangar, the areas for the emergency meeting point, triage and decontamination were planned, as well as the areas relevant for PROACTIVE including the handling of personal property and observation points for evaluators and observers. The route between the exercise area and the multi-purpose classroom of the volunteers was also shortened in the planning by means of a bus route. While the debriefing was kept separate again, the observers' hangar was used for a big meet and greet with all participants after the exercise, including closing words.

6.5.1. Maps

To facilitate the planning process, PROACTIVE created a detailed map of the training centre that reflected the discussions with NBC School and allowed the organisation of all joint activities on site (Appendix 12). As part of the further development of those activities, the map had to be continuously updated, eventually reflecting the contingency plan made in regard to bad weather conditions (e.g. use of indoor train station instead of outdoor train station) (see Picture 2).



Picture 2: Final joint update of the map the day before the exercise as a result of the implementation of the contingency plan for bad weather (based on google earth as of 29th June 2020)

6.5.2. Restricted areas and demarcation protocol

The NBC School identified restricted areas as part of the risk assessment planning process. This included areas of danger such as the water pit near the exercise area, and areas in which visitors of the training centre were not given permission to enter due to security issues. The NBC School's demarcation protocol provided information on the routes that led to such restricted areas. In addition, the demarcation lines guided participants specifically to the locations of the exercise activities, thereby providing clearly identifiable escort routes.

Despite clear demarcation lines between volunteers and observers, the bad weather conditions resulted in both parties being next to each other under the tents and thus having contact with each other in the confined space. Observers (due to the heavy rainfall) also stayed in the exit area of the indoor train station despite the cordoned-off area, which interfered with the emergency services. Appropriate countermeasures were implemented as quickly as possible (e.g. changing the demarcation lines). A greater observation distance will be considered for the third exercise.

6.5.3. Signage

PROACTIVE created laminated signs for visitors of the exercise site to mark key areas (restrooms, briefing rooms, focus group rooms, etc.). The signs were in written and pictorial language to guarantee the best possible orientation of all participants.

6.6. Logistics

As with the exercise in Dortmund, a key element of the exercise in Rieti was various logistical aspects. These are described in more detail below.

6.6.1. Site management

The site management was the main responsibility of the NBC School.

6.6.2. Transport

PROACTIVE was responsible for the transportation of different exercise participants.

Firstly, PROACTIVE took care of the travel of the observers from Rome Fiumicino Airport to Rieti. For this purpose, PROACTIVE hired a bus company in Rieti, which provided a minibus to pick up observers at a specific time from Rome Fiumicino airport. At the Rome airport, a PROACTIVE member with a PROACTIVE sign was waiting for the observers at a pre-determined location. Observers who did not want to take up this offer were informed, like all observers, in an information sheet on how to get to Rieti by public transport from the airports in Rome.

In addition, on the day of the exercise, PROACTIVE provided transportation from the city centre of Rieti to the exercise site. This included the transport of PROACTIVE and eNOTICE members as well as the transport of observers and volunteers from Rieti. For this purpose, a larger bus was used by the described bus company. The volunteers from Rieti were brought to the exercise area at a later time than the observers, etc., in order to prevent contact between the observers and volunteers before the exercise. During the bus trips, there was always a PROACTIVE contact person on the bus. After the exercise, the bus company ensured the return transport of the exercise participants to the city centre of Rieti.

As has already been described, volunteers from Rome participated in the exercise in addition to volunteers from Rieti. On the day of the exercise, PROACTIVE organised the transport of these volunteers from a central meeting point in Rome to the exercise site in Rieti and back via the bus company in Rieti.

During the exercise, PROACTIVE staff ensured that the observers and volunteers were accompanied to the central areas of the exercise (Catering area, briefing rooms, exercise area, focus group rooms, etc.).

Finally, the day after the exercise, a PROACTIVE / eNOTICE workshop was held in the premises of the NBC School in the city centre of Rieti between the members of both projects and the exercise observers to debrief. After the workshop, PROACTIVE provided the return transport of all workshop participants to the airports in Rome through the bus company in Rieti.

6.6.3. Changing areas

In the same building where the volunteers received the spare clothes for the exercise, there are two smaller rooms where the volunteers could put on the spare clothes. After the exercise, the volunteers used these rooms to put on their old clothes. The heated rooms were equipped with seating options for the volunteers.

6.6.4. Personal property management

PROACTIVE was responsible for the clothing and personal belongings of the volunteers on the day of the exercise. Since during the decontamination process it could not be guaranteed that clothing of the volunteers would not be damaged (e.g. cutting of clothing for decontamination), PROACTIVE decided, as in Dortmund, to provide spare clothing for the volunteers. The clothing was provided through Caritas in Rieti. As already described, the volunteers could change their clothes in two heated rooms. To store their clothes during the exercise, they were given a large bin bag. Furthermore, a smaller bag was given to them to store their underwear. The smaller bag was deposited in the large bag and then sealed with a cable tie by a PROACTIVE staff member. The cable ties were appropriately labelled with the volunteers' numbers on the volunteers' wristbands. After dropping off the bag, the volunteers signed a designated document stating that their clothing had been sealed. Throughout the exercise, the bags were supervised by PROACTIVE staff.

Directly in front of the decontamination tent the volunteers needed to hand in their shoes in a second step. For this purpose, PROACTIVE employees provided large bin bags in front of the decontamination tent. In addition, smaller bags were used to collect the volunteers' personal belongings (watches, mobile phones, etc.) before decontamination. The smaller bags were stored in the large bags and then sealed by PROACTIVE staff as in the first step. In both steps, PROACTIVE staff were assisted by Italian-speaking external partners in communicating with the volunteers. Another PROACTIVE staff member took the big bags to the end of the decontamination tent. There the volunteers could take back their items. With the bags they were taken to the building where they could change their clothes. There they also received the bag with their clothes. After receiving all items, the volunteers signed at the end of the process that they had received all belongings back.

The process used worked well, no items were lost and the processes went quickly and smoothly. For future CBRNe exercises involving civilians, this model can serve as a good practice example.

6.6.5. Catering and welfare

As part of the exercise, PROACTIVE covered the costs of the catering for all parties involved in the exercise (including eNOTICE). Due to issues relating to security at a military establishment the project was limited to using the approved catering contractor of NBC School: GE.DA Impianti S.r.i.

There were two main serving points: (i) for the civilian volunteers and (ii) for the practitioners, observers and PROACTIVE / eNOTICE consortia. A light breakfast (croissants, sandwiches, coffee, tea, water, etc.) was provided to all participants. In addition, drinks were available throughout the exercise day. After the simulated CBRNe incident, volunteers, observers, etc. were offered a buffet lunch with snacks (small pizzas, desserts, etc.). Before the exercise, intolerances / allergies / special food requests (e.g., vegan) could be indicated. These were taken into account by the catering company.

Besides the catering, one main consideration was to ensure the well-being of all exercise participants, with particular focus on the volunteers. Before the exercise a detailed risk assessment as well as appropriate mitigation measures were conducted (see Chapter 7). Tents were set up outdoors for the volunteers and observers to ensure that participants could participate in outdoor activities (waiting for decontamination, etc.) without getting wet. To protect the dignity of the

volunteers during the decontamination process, all volunteers were asked in advance of the exercise to wear swimsuits under their clothing on the day of the exercise, as was mentioned earlier. In order to protect the volunteers from cooling down after the decontamination, PROACTIVE employees gave them a towel to dry off and a blanket to keep them warm. In addition, the volunteers received disposable shoes to protect them from the cold ground. The NBC School ensured that the volunteers were taken to the building with the changing rooms immediately after decontamination. Due to the rain on the day of the exercise and the long distance, this was organised by minibuses of the NBC School. In the said building, the volunteers were able to change their clothes and, if necessary, to take a hot shower / use a hair dryer.

Furthermore, the NBC School ensured that a first aid team was immediately available in the event of a medical emergency.

6.7. Procurements

To guarantee the exercise in Rieti, PROACTIVE made several procurements as for the exercise in Dortmund. Like in Dortmund, PROACTIVE had a budget of 25,000€ for this purpose.

The main budget was used for the catering on the day of the exercise, the exercise insurance, the video team for the exercise and for transporting exercise participants to the exercise site.

The remaining budget was used for smaller procurements such as:

- Spare clothes / swimming costumes for the volunteers
- Blankets, towels, disposable slippers and clothing bags for the volunteers
- Tabards, lanyards and ID badges
- Office items (printer, ink cartridges, paper, scissors, multiple sockets, mini-projector, etc.)

Most of the procurements were made by the PROACTIVE member DHPol and were then shipped by parcel to Italy. The NBC School stored the items until the day of the exercise.

In order to save costs and minimise environmental impact, it was tried as much as possible to use items that were procured for the exercise in Dortmund. Thus, leftover wristbands and cable ties (to seal the bags with the volunteers' personal items) were used. In addition, lanyards with the PROACTIVE logo and card holders from the Dortmund exercise were used. Moreover, about 100 textile bags (with disinfection gel, PROACTIVE pens, PROACTIVE masks, etc.) with the PROACTIVE logo were left over from the Dortmund exercise.

The bags left over from Rieti will be used during the next exercise in Ranst, Belgium. In addition, the tabards provided for Rieti will be used in Ranst.

7. RISK

The following chapter describes the Risk assessment for the Rieti exercise as well as Mitigation measures and Contingency plans.

7.1. Risk assessment

The approach taken to the management of “risk to” or “arising from” the exercise was set out initially during the early planning for the Rieti exercise (Hale, Godwin and Kelly 2020), which as described earlier was subsequently scheduled as the second exercise. This approach was subsequently developed into a plan for all of the PROACTIVE exercises (Hale, Godwin and Kelly 2021). The plan set out the requirement to consider risks in two parts (Table 8):

Table 8: Risks to and from the Rieti field exercises identified during the PROACTIVE risk assessment

Risk to What?	Risks from Where?	Comment
Risk to exercises	**From internal hazards / events or external hazards /events**	For the purpose of this exercise, risks to exercises are those events (potential or actual) which could result in complete or partial failure of the exercise – i.e. cancellation or only partial fulfilment of its goals. Internal hazards are things that are largely under the direct control of the project (arising from the site or the activities undertaken in the exercise) while external hazards are things like extreme weather and natural disasters which are largely outside of the control of the project.
Risk to Others / Participants	**From exercises**	Risks may arise as a result of the exercise itself – i.e. adverse events or potentials for adverse events which would not exist in the absence of the exercise, or which could be exacerbated by the exercise (for example, the additional traffic associated with people travelling to the exercise site), or Slips/Trips/Falls during the exercise. These will largely be under control of the exercise.

Risks were identified through several processes including brainstorming at planning meetings, walk-throughs and review of previous experiences, but most of all through consultation and discussion.

7.2. Risk registers

Two formal Registers of the risk assessments were produced, an Exercise Risk Register (which covered "Risk to Exercises' as described in Table 8) and a Health and Safety Risk Register to cover "Risks to Others and Participants" as described in the same table[9]. For the purposes of screening and prioritisation in the planning process, risks were categorised using a simple semi-quantitative process that assigned them as "High", "Medium" or "Low" priority using the risk matrix shown in Table 9: Extracts from each of the assessments are presented in Appendix 13.

Table 9: PROACTIVE Risk Matrix of the joint Rieti exercise

		Impact		
		High	Medium	Low
Probability	High	High	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Low

7.3. Mitigation

For each identified risk, the possibility of removing that risk completely was first considered (e.g. by change of approach or method) and then residual risks were addressed by appropriate mitigation measures. Example mitigation measures included provision of translators, provision of transport from Rieti Station to the site, provision of ID badges linked to property storage, escorting of volunteers, provision of rest and recovery areas and catering, site inspections and the provision of barriers.

7.4. Emergency procedures

An Exercise Day Contingency and Response Plan (see Chapter 7.5.) was developed that addressed potential emergencies and criminal activities on-site.

7.4.1. Evacuation plan

It was the NBC School's responsibility to take care of the evacuation arrangements. As well as the structural labelling of escape routes within the closed parts of the building, the NBC School also specified the emergency assembly point. In the event of an emergency, the NBC School would have carried out the evacuation with the support of the PROACTIVE partners.

[9] Ethical risks were also covered by a similar set of assessments as described in Appendix 13.

7.4.2. Fire

The same procedure as for an evacuation also applied in the event of a fire outbreak at the NBC School.

7.4.3. First aid

In case of any personal injury that required first aid or emergency support, PROACTIVE would contact NBC School staff for support and follow their guidance (Table 10). The firefighter units are all first aid trained as a minimum. Additional emergency support was available at the site including an equipped ambulance car. If a volunteer required first aid, he or she was briefed to refer to the code words “THIS IS A REAL INCIDENT” and/or use hand signals. While the NBC School would take care of the injured, PROACTIVE's responsibility was to document the incident using the developed Accident Book (see D6.3). For further details on live incidents see Chapter 7.5.2.

7.4.4. Criminal activity

Great importance was given to the safety of all participants (see Chapter 9). One item dealt specifically with the possibility of theft or other serious ethical issues (see Table 10). Potential situations to be avoided included theft of belongings, physical and/or sexual abuse as well as unauthorised photography, data breach and the like.

Any such instances were to be investigated fully and recorded. In the event of any actual or suspected criminal incidents, the police were to be contacted immediately.

The following procedure should be applied if necessary: Aggrieved parties should be interviewed about the situation by an assigned PROACTIVE partner with a police background. This interview should always be conducted in cooperation with a member of the NBC School, and if appropriate, with the involvement of the PROACTIVE project's data and ethics officers. A full written record should be produced, and evidence secured where necessary. In case of a serious criminal matter, the local police should be contacted.

7.4.5. Damage of personal property

In the case of damage to personal property, a report including records of proof should be produced for the PROACTIVE insurance company that was involved for the exercise. In this case, the PROACTIVE partner CBRNE would be the intermediary party between the injured party and the insurance company (see Chapter 9.10.).

7.5. Contingencies

An Exercise Day Contingency and Response Plan (see Table 10) was developed that covered the different kinds of extreme weather, eventual live incidents, Covid-19, the absence of participants and communications failures.

Table 10: Exercise Day Contingency and Response Plan

Item	Potential Issue	Response / Action
Extreme weather (wind, rain, cold, sunshine)	Volunteers may be outside in their normal clothing for a while – damage to clothing, property and personal injury	**Use bus transport to/from site and from decontamination area to changing rooms.**
Live incidents	Need to curtail or modify exercise	**Use code words. Follow SDNBC guidance.** *Note: There are no provisions in the event that the exercise cannot be held at all***.**
Covid-19	Positive test results	**Ask volunteers to follow existing German Covid regulations**
Participant absence	Poor exercise result	**No further action needed.** *Note: No back-ups are in place for severe non attendance on the exercise day, but there is a reasonable number of volunteers.*
Communications failures	Difficulty obtaining and giving advise / support *Note: Exercise is not critically dependent on use of radios or other electronic devices.*	**Use direct verbal communication and human relays / use mobile phones / hand signals / code words / raising hands.**
Public Transport or infrastructure failure	Difficulty getting volunteers to site.	**Use PROACTIVE buses** **Use SDNBC and PROACTIVE vehicles**
Personal Injury	First aid / emergency support required. *Note: SDNBC responders are all first aid trained as a minimum, additional emergency support is available at site.*	**Volunteers use code words "REAL REAL REAL" and/or hand signals. Follow SDNBC guidance.** **PROACTIVE contact SDNBC for support and follow their guidance.** **Complete the Accident Book**
Theft or **Serious Ethical Issue**	Theft of belongings Physical / Sexual Abuse Unauthorised photography, data breach etc	**Interview by T Godwin (+ FDDO + Translator + I Marsh if appropriate). Full written record to be produced.** **Police to be contacted in case of a serious criminal matter.** **Written record to be sent to DK for insurer's.**

7.5.1. Weather contingency plan

The disruption to the exercise timetable caused by the Covid-19 pandemic meant that the exercise would run later in the year than initially planned. November is historically the wettest month of the year in Rieti, and because of its geographical location in the foothills of the mountains it can also be

cold and windy. With this in mind, an adverse weather contingency plan was considered from the outset and the weather forecast regularly checked in the two weeks running up to the exercise.

It transpired that the weather forecast for the exercise day was for heavy rain and cool temperatures. Therefore, the adverse weather plan was initiated on the day and the plans to provide additional shelter, warm and dry changing facilities, additional hot drinks, and vehicular transport for volunteers was activated. Additional temporary structures were built and secured to offer additional protection.

To address the issue of cold weather, spare coats from Caritas were provided for volunteers prior to decontamination and thermal foil blankets were provided after decontamination. The decontamination shower used warm water. The changing areas were all indoors and heated, and hot showers and hair dryers were available. The rooms identified for focus groups were also heated.

7.5.2. Live incidents contingency plan (includes within the exercise and real-world emergencies)

The field exercise involved the inclusion of a significant number of CBRNe first responders, starting with the Trenitalia staff, through Carabinieri, firefighters, Military Red Cross, and Military CBRNe specialists. It was recognised that there was good resilience among most of the organisations but there was a risk that some units may not be able to attend.

For any live incident taking place during the exercise, NBC School defined the codeword “THIS IS A REAL INCIDENT” in English and repeated in Italian’. In this case, the exercise would be stopped before a decision on management level would determine whether to continue or stop the exercise.

For any physical injury, a paramedic unit consisting of an ambulance team located on the exercise site would be deployed.

PROACTIVE would document the incident in an accident book for recording and insurance purposes.

7.5.3. Covid-19 contingency plan

Whilst the threat from Covid-19 was diminishing, the exercise planners were aware that several factors needed to be considered. Winter was fast approaching so the potential for increased levels of Covid-19 infections was a probability, the exercise brought together a significant number of people from diverse areas of the population into proximity with each other, vulnerable people were being brought to the exercise who were potentially at greater risk, there was a risk of infecting key emergency workers, and there was a potential for significant numbers of people not to attend the exercise due to illness.

7.5.4. Participant absence contingency plan

Consideration was given to participant absence as it became apparent during the planning stage that recruitment of civil society volunteers was proving to be a significant challenge. This, combined with the potential for increasing Covid-19 infections as winter arrived, meant that options needed to be considered. A further factor was the requirement for all attendees at the exercise site to be security vetted at least two weeks before the exercise. Consequently, contingency options were considered that would allow for short notice additions to civilian volunteers using support staff from

NBC School, or members of the PROACTIVE and eNOTICE consortium who were attending in support or observer roles. Whilst it was accepted that this would reduce the element of realism, it would provide the requisite number of volunteers including a small number of vulnerable people, meaning that the exercise could still go ahead (see Project Risk Register).

7.5.5. Communication failure

Communication failures among the NBC School and the PROACTIVE management team were discussed as part of the planning process. A potential issue was seen in difficulties obtaining and giving advice and support during the exercise day over a relatively large exercise site. However, it was decided, as in the first field exercise, that the exercise is not critically dependent on the use of radios or other electronic devices. Instead, the use of direct verbal communication and human relays as well as the use of mobile phones, hand signals, code words and hand raising was considered sufficient as staff from both partners were in abundance on the ground and messages could easily and quickly be relayed.

8. COMMUNICATION

The following section describes all aspects of communication related to the exercise including internal and external communication prior, during and after the exercise.

8.1. Communication strategy

PROACTIVE put in place dedicated communication strategies for internal communication, external communication and media, protocols with exercise participants and communication about the project during the exercise.

8.1.1. Protocols with exercise participants

Contact list

To always be able to contact the responsible organiser in charge of a certain activity, a detailed contact list was provided for all PROACTIVE partners beforehand and to all activity leaders in print form as part of the organiser folders. The contact list was shared with NBC School and UNITOV beforehand. In addition, UNITOV used a contact list of all volunteers for any inquiry, especially in regards to registration forms, liability disclaimers, ID card collection and transportation issues on the morning of the exercise. A similar list existed for the observers of the exercise (including the eNOTICE consortium) as well as for the third parties (video team, catering company, etc.).

Safety code word

The NBC School used the safety code words “THIS IS A REAL INCIDENT” to indicate real-life incidents (see Chapter 7.5.2.). The code words were communicated as part of the briefings.

Translation

The communication with volunteers took place in Italian prior, during and after the exercise. All documents were provided in Italian for the volunteers. Some translation services were provided by an Italian ETICAS partner, which was most helpful especially as the exercise date approached.

At the day of the exercise, PROACTIVE guaranteed that an Italian speaking contact was always available during communication processes with volunteers. The focus groups and surveys were conducted in Italian to guarantee a robust data collection without losing information due to language barriers. After the exercise the focus groups were translated into English for the further analysis through the PROACTIVE team of UKHSA.

Interpretation

Interpretation services were provided free of charge by the Italian focus group leaders kindly provided by UNITOV and StC. This worked very well as the translators were able to witness the activities of the field exercise which meant they could relate to the conversations and discussions during the focus group sessions.

8.1.2. Communication about the project during the exercise

Apart from members of the PROACTIVE consortium and its advisory board members, the project engaged with participants of the exercise that were unfamiliar with the project or only to a limited extent aware of its aims and objectives. Therefore, PROACTIVE aimed to communicate about the project prior and during the exercise as part of its communication activity in WP7.

To communicate the PROACTIVE project, the PROACTIVE roll-up was prominently displayed at the entrance to the exercise site. The tabards also had the PROACTIVE logo on them. PROACTIVE dissemination material was put into the PROACTIVE observer tote bags (which have the project logo printed on them). In all bags, further items with the PROACTIVE logo could be found including a FFP2 mask, hand sanitizer and pens. The PROACTIVE pin was handed out to participants at the end of the exercise. Furthermore, the PROACTIVE planning team ensured that on all used documents and presentations the PROACTIVE logo would be placed and the dedicated design of the project properly represented to increase the brand recognition.

The toolkit “PROACTIVE App” was communicated through the creation of new QR codes. There was also a dedicated session for the App during the online, pre-exercise observer briefing.

The toolkit “Pre-incident information material” was introduced to volunteers in an email that was sent approximately a week before the exercise. The material was also available for download on the PROACTIVE App so that the observers also had access to it.

8.1.3. External communication and media

PROACTIVE drafted a “PROACTIVE and eNOTICE Joint Activity Communication and Dissemination Plan for Rieti Exercise 2022” (CDP) which was shared with eNOTICE partners for review. The CDP received no objections. The CDP was composed of established ethical and legal obligations, relevant audiences, types of messages, tools for communication and types of communication channels used. The full CDP can be seen in Appendix 14.

This resulted in an agreement to avoid any “live” social media posting, blogging, etc. and also to wait until after the exercise occurred to send out the Press Release (which traditionally is sent out the morning of an event). It was agreed that PROACTIVE could communicate about the upcoming exercise at conferences and events but without divulging any specifics such as location or time of the exercise. As such, all PROACTIVE communication about the exercise took place post-exercise. The use of images (photographs, videos) was dependent on final approval from the NBC School, due to the classified nature of the training site. A Press Release was drafted by PROACTIVE and sent to NBC School and UNITOV for approval, which was obtained. The Press Release[10] was sent out on 05/12/2022 by UIC, as well as shared on PROACTIVE digital media channels. The Press Release was sent out post-exercise as per the request of the NBC School. No communication about the exercise happened to external media on the day.

[10] Full text at: https://mailchi.mp/uic/proactive-eu-project-held-its-second-field-exercise-in-conjunction-with-project-enotice-and-the-joint-nbc-defence-school

8.2. Dissemination strategy

Beyond what is laid out in the CDP, here we describe the process of developing the video. PROACTIVE referred to StC for a reference due to their previous experience in video and photography during exercises (earthquakes) with vulnerable people at a cost of €2,300 which was less than what was paid in Dortmund. On the day of the exercise, film/photographic recordings were made of:

- Arrival and registration process of the volunteers
- Preparation process of the practitioners and the volunteers for the exercise
- Unfolding of the exercise
- Filming of at least one volunteer undergoing the decontamination process
- The observers' room where observers will be watching the exercise
- The debriefing rooms where focus groups will be conducted
- Short interviews with participants of the exercise (participants of the decontamination, project managers, etc.) (Time: before and after the exercise)

It was agreed the footage would be used as follows:

- The raw (unedited) film and photo recordings will be used for research purposes
- Furthermore, a maximum length of 1-minute video and maximum length of 4-minute video about the exercise are to be created for the public from the film recordings (with narrator and subtitles in Italian and English) with cinematic editing

In the public edited photos and videos, the following element should NOT appear:

- The participants' faces
- The participants' naked bodies during sensitive processes as part of the exercise (undressing process, decontamination process, etc.).

UIC was the film crew's point of contact being in charge of Dissemination.

The two promotional videos are to be published on the PROACTIVE website and social media accounts. As part of the promotional videos, PROACTIVE had planned the interviews according to an Interview plan for the exercise in Rieti (Appendix 15).

9. HUMAN RIGHTS, ETHICAL AND LEGAL ASPECTS

This section describes in detail all key elements considering the human rights, legal and ethical aspects of the exercise. The exercise was organised and executed in line with the principles set out in the European Convention on Human Rights and the Universal Declaration on Human Rights[11], embedding values such as the right to integrity, liberty and no discrimination. In particular, the following principles in the Belmont Report[12] have been observed when carrying out research activities:

- **Respect for people:** research subjects must be treated to protect their safety, respect their autonomy, and ensure their consent on an informed basis
- **Beneficence:** possible benefits for the participants will be maximised while possible harm or risk will be minimised
- **Justice:** any benefits and burdens derived from research must be balanced
- **Competence:** the limitations and boundaries of the researchers' competence must be recognised and made explicit

Such principles were operationalised in several protocols and activities aimed at protecting human participants in the Rieti fieldwork and their personal information, detailed below.

9.1. Information sheet

All participants in the Rieti field exercises were given information sheets attached to their consent forms, setting out clearly what was expected of them as part of the exercise instruction package. Following D8.3 (Marsh et al. 2021), the PROACTIVE consortium drew up comprehensive information sheets that include the information required by the GDPR, conveying it in a way that was clear and comprehensible for the kind of participants to be involved in the field exercises, allowing them to give consent in a form compliant with the GDPR. According to Article 13 of GDPR, the information sheet includes a thorough description of the Rieti exercise goals and site, the implications of participation in it, and the risk and benefits derived from the process. The documents, attached to this report, included the following elements:

- A statement that the exercise involves research participants, an explanation of the purposes of the research and the expected duration of the subject's participation, and a description of the procedures to be followed
- A short explanation of the recruitment method and participants' selection rationale
- A description of any reasonably foreseeable risks or discomfort to the subject

[11] Full text at: https://www.un.org/en/about-us/universal-declaration-of-human-rights

[12] Full text at: https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html

- A description of any benefits to the subject or others which may reasonably be expected from the research
- Insurance guarantees provided to participants
- For research involving more than minimal risk, an explanation as to whether there are any treatments or compensation if injury occurs and, if so, what they consist of, or where further information may be obtained
- A statement describing the extent, if any, to which confidentiality of records identifying the subject will be maintained
- An explanation of whom to contact at any time for answers to pertinent questions about the research and research subjects' rights, and whom to contact in the event of a research related injury to the subject
- A statement that participation is voluntary, that refusal to participate will involve no penalty or loss of benefits to which the subject is otherwise entitled, and the subject may discontinue participation. In case that the volunteer decides to withdraw from the activity, they can request to have the personal data relating to them removed, and the request will be granted by the data controller

This information was provided to data subjects when their personal data was collected directly from them in compliance with Article 13 of GDPR.

9.2. Briefing on human rights, ethical and legal aspects

Following the project Ethics Briefing Pack requirements, the Exercise Action Plan included a procedure for participants to be briefed in person immediately (e.g. one hour) prior to the commencement of a field exercise to allow the opportunity for final questions to be asked and to ensure participants are fully aware of their roles. It was PROACTIVE's responsibility to ensure that all their participants were briefed sufficiently on human rights, ethical and legal aspects. Prior and during the exercise day, different briefings were held for everyone involved in the exercise (see Chapter Briefing). In this context, human rights, ethics and data protection were stressed in several stages of the invitation and registration progress. During the briefing prior to the start of the exercise, the volunteers were reminded again about their rights as volunteers and about the ethical and personal data related aspects of the exercise. The main focus was on the aspect of safety (do not walk around the site unaccompanied, what to do in case of an emergency situation, safety word to end the exercise immediately, etc.), ethics (participation is voluntary / can be terminated at any time) as well as data protection (data use, data protection rights, etc.). Everyone was given the opportunity to ask questions before the start of the exercise. The same recap approach was followed for the briefing of observers.

The third parties were briefed as well. A special focus was paid to the briefing of the videographer team as they were expected to film the volunteers during sensitive processes (e.g. undressing, showering). PROACTIVE additionally briefed the team on what shots should be taken and other considerations. The videographer team was well aware of what types of footage could be used only

for dissemination and which could be used exclusively for research purposes (e.g. decontamination shower).

In addition, all PROACTIVE partners were briefed in advance on the sensitive handling of the volunteers and of the data collected. In the course of this, the data flow was also presented several times to ensure that everyone knows what data they are allowed to collect, process and disseminate.

9.3. Informed consent

Consent and assent forms were drafted in Italian language for signature by volunteers prior to and on the day of the respective field exercise. The documents comply with requirements established in D10.6[13] (EC Requirement on informed consent) and were adapted to meet the objectives of the exercise itself. According to the GDPR (Recital 40), personal data should be processed based on the consent of the data subject concerned or some other legitimate basis. PROACTIVE also complied with the informed consent principles detailed in this Regulation, including:

- Consent must be freely given
- Consent must be specific
- Consent must be informed
- Consent must be unambiguous
- Consent can be revoked

To record the consent of all PROACTIVE participants, different informed consents were designed addressing different data subjects and data processing purposes. In total, three different consent forms had to be obtained:

- For all recruited volunteers (including the assent forms for children)
- For all observers that were not members of the PROACTIVE consortium but part of the CSAB / PSAB / EEAB or eNOTICE plus the VIPs
- For the invited third parties of PROACTIVE

Separately, and following its own institutional requirements, UKHSA asked for consent from fieldwork participants. Documents used to ensure more specific consent to these research activities were shared with the PROACTIVE team beforehand and reviewed by the ethics partners (ETICAS and CBRNE).

In conjunction with the information sheets mentioned earlier, several online sessions (9th of September, 25th of October) were held to develop the comprehensive consent forms for the first two groups (see Appendix 16).

[13] Requirement no 6 informed consent procedures and templates.

The consent forms for volunteers recapped the most important aspects already explained in detail within the information sheet (see Briefing) and stressed the voluntary nature of participation as well as the possibility to withdraw participation at any time. In addition, the consent forms again referred to the data processing. With their confirmation, the consent to collect and use audio recordings, photo recordings and video recordings was obtained. A distinction was made between recordings for dissemination purposes and recordings for research purposes. Further consent was obtained to use anonymised quotes from the focus groups conducted after the decontamination. Volunteers had the option to indicate that quotes should not be used.

The CSAB / PSAB / EEAB observers and VIPs received their consent forms prior to the exercise, and the forms were also sent ahead of time to eNOTICE. All observers were asked to sign the consent form on the morning of the exercise (see Registration process).

The third parties signed a confidentiality agreement as part of their contract with UIC that covered all relevant aspects of the consent forms.

In all cases, and following the GDPR, consent was broken down into all relevant data processing purposes (legitimate interest, research, communication and dissemination, training). This approach ensured that it was a specific, informed and unambiguous indication of the data subject's wishes. Following the feedback of the ethics experts and the lessons learned during Dortmund exercise, such a level of detail fostered an explicit affirmative action and agreement to the processing of personal data.

Additionally, all interviewees which were not members of one of the above groups had to verbally consent to their participation in the interview in the beginning of the recording session.

9.4. Dignity and respect

A core aspect of PROACTIVEs responsibility was to ensure the dignity and respect of the volunteers at all times. In a joint agreement with NBC School, it was decided that the volunteers had to wear swimming costumes underneath for the decontamination process. Only volunteers passing this dress-code check were allowed to participate in the decontamination (see Chapter Registration). Only in individual cases exceptions were made, where volunteers did not want to undress. These volunteers waited with everyone else in front of the decontamination area, but were then escorted past the tent back to the volunteer rooms.

In order to ensure the volunteers' independence throughout the day, they were asked whether they would like any assistance and to what extent during the registration process. The assisting PROACTIVE organisers were instructed accordingly. Designated roles were allocated to certain partners to ensure the wellbeing of all volunteers (‘Volunteer engagement’) and especially minors (‘Childwelfare Officer’) throughout the day. If possible, present carers were involved to adequately address the respective needs of those they accompanied.

Designated changing rooms were assigned where volunteers could change into spare clothes during the morning and later change into their personal clean clothes immediately after decontamination. The changing rooms ensured that no volunteers had to change together and guaranteed a secure private space. Only upon request, the PROACTIVE dressing team assisted with the dressing.

Immediately after the decontamination, participants were given towels to dry off and feel covered until they were able to use one of the heated changing rooms.

To further protect the dignity of the participants, PROACTIVE instructed the videographer team not to take pictures of naked body parts that were traceable to an individual volunteer. Observers of the exercise were instructed to not take pictures or recordings of the exercise at all.

These comprehensive measures helped to protect the dignity of participants during the exercise and put the main focus on human dignity while allowing a certain level of autonomy for first responders to manage the group of participants during the decontamination process. In this way, researchers were able to collect relevant behavioural data.

9.5. Use of force

PROACTIVE was responsible for the handling of all volunteers outside the exercise area. During the exercise, the first responders were in charge of the undressing process and the subsequent handling of volunteers within the decontamination tents. Although they were briefed by NBC School following the joint planning process (see Chapter Briefing), PROACTIVE had only a limited chance to interfere if the first responders behaved unethically based on the perception of PROACTIVE or even used force to instruct volunteers.

For this purpose, all volunteers were briefed beforehand to express their concerns and set limits if necessary if they did not agree with any actions of the first responders involving their direct treatment (see Chapter Briefing).

Additionally, the evaluators were briefed to step in if necessary, alongside the ethics and data protection officer of PROACTIVE that accompanied the observers within the exercise area (see Chapter Briefing).

9.6. Security

NBC School was responsible for the overall security of their training centre. To prevent uninvited guests from becoming aware of the exercise and entering the premises, NBC School requested that during the recruitment process, the location should not be announced before registration. Furthermore, it was important that the exercise should not be announced through their official communication channels, for, among other reasons, preventing the creation of unnecessary external awareness of the exercise in advance. The grounds of the NBC School, including the exercise area itself, were fenced off and thus closed to unwanted visitors. Furthermore, all visitors to the School had to pass through a control check at the main gate in order to gain entry to the premises.

With regard to internal security, the PROACTIVE planning team, observers and guests were all issued with PROACTIVE identity badges and high visibility tabards to distinguish them.

For the security of volunteers' personal belongings, see Chapter 6.6.4.

9.7. Data protection and GDPR

A specific Data Management Plan (DMP) was established for managing personal data related to the Rieti exercise, addressing pre and post event processes. The document reflected the identification of data collection purposes, actors involved, types of data and associated data security protocols, allowing also to properly design informed consent tools. Another purpose was to ensure that this information is protected by following proportionate security standards and to determine how data will be curated and preserved during and after the end of the project. The following image (Figure 8) illustrates the PROACTIVE data processors, the different datasets involved and the main goals of data processing:

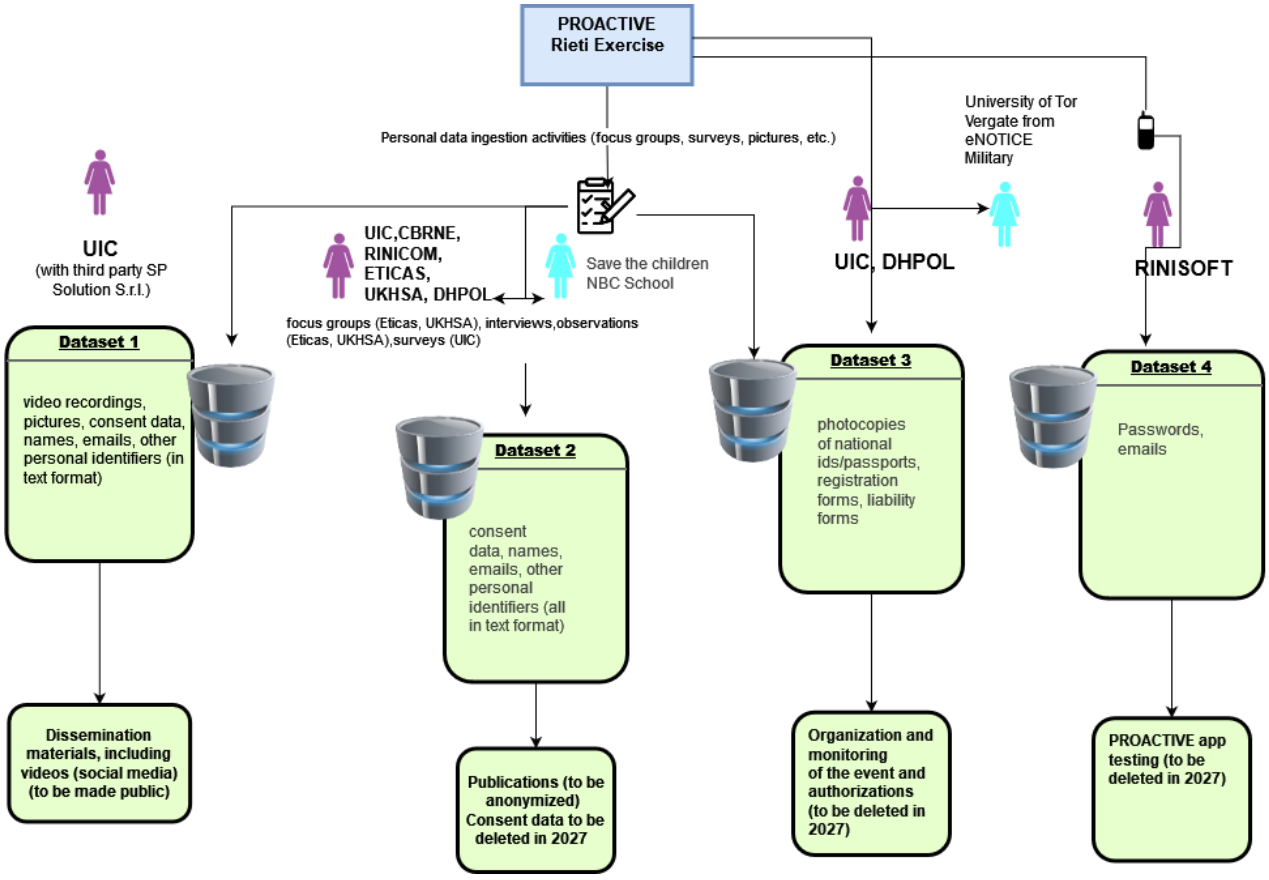


Figure 8: PROACTIVE Datasets Rieti exercise as included in the internal DMP

As outlined in Figure 8, four datasets were established:

Datasets 1- DISSEMINATION:

1. Type of data: photo, video, audio and observational data

2. Related activities: participants were planned to be photographed and videotaped during the exercise for research, dissemination, and training purposes under their informed consent. After the exercise, participants were interviewed about their exercise experiences.

3. Partners/party in charge: UIC was in charge of collecting the data for dissemination with the assistance of Solution SRL, a third-party company processing visuals

4. Legal basis and tools: Legal basis is informed consent. Moreover, it follows conditions stated in a Data Processing Agreement signed by the external data processor (Lorenzo Castell) with the controller (UIC), establishing requirements concerning the GDPR and the PROACTIVE project.

5. Additional protocols: As for the Dortmund exercise, data included in videos to be disseminated has been filtered by UIC together with ETICAS before publication. Selection criteria focused on children's protection and respect for the dignity of all participants.

Dataset 2 - RESEARCH AND RECRUITMENT:

1. Type of data: Recruitment, consent and research data. The list of participants (volunteers, observers, VIPs) contained personal data of the participants (name, age, gender, place of residence, e-mail address, vulnerabilities, food preferences, allergies if applicable) for recruitment and research purposes.

2. Related activities: Recruitment process and research activities conducted on site

3. Partner/ party in charge: The PROACTIVE members involved in recruiting participants (including StC Italy and NBC School) and fieldwork (UIC, CBRNE, ETICAS and DHPol) will collect and have access to the data. Evaluators from the PROACTIVE project (UKHSA) will collect observational data during the exercise.

4. Legal basis and tools: The legal basis is the participants informed consent for research personal data and legitimate interest in the case of recruitment information

5. Additional protocols: data will be securely stored by each partner according to the data retention period reflected in the consent form (2027). All data will be anonymised before sharing with third parties or being included in any publication.

Dataset 3 on ORGANISATION AND NATIONAL AUTHORISATIONS:

1. Type of data: Authorisations and logistic data, including IDs, liability forms and passports data

2. Related activities: Collecting personal identifiers aimed at granting authorisations for accessing the exercise site

3. Partner/party in charge: UIC and DHPol have collaborated in this task. This information has been collected together with UNITOV from the project eNOTICE and transferred to corresponding national authorities.

4. Legal basis and tools: The legal basis for this is the controller's legitimate interest

5. Additional protocols: PROACTIVE data was planned to be securely stored by each partner according to the data retention period reflected in the consent form (2027). Following this protocol, data must also be managed by public authorities according to the GDPR and applicable Italian regulation. Data will be kept within the project and not shared with other third parties.

Datasets 4 on App TESTING:

1. Type of data: PROACTIVE App usage data was planned to be collected during the exercise. Registration details for the PROACTIVE App (optional) – email address and password / IP Address collected through the use of cookies

2. Related activities: This information is collected to test and validate the PROACTIVE App

3. Partner/party in charge: RINISOFT

4. Legal basis and tools: The legal basis is informed consent

5. Additional protocols: Data was planned to be securely stored by RINISOFT following the data retention period reflected in the consent form (2027) and not shared with third parties. To save the password, RINISOFT uses ASP.NET Identity, which hashes the passwords using PBKDF2. This allows the processor to check that a password is an exact match while making it very difficult to recover the actual password.

By following the above protocols, compliance with the GDPR and PROACTIVE project requirements reflected in its Data Management Plan (Clavell et al. 2019) have been guaranteed. Furthermore, as reflected in this document as well as these elements, the briefing to participants and to the recording company responsible, and exchanges with all parties involved on the above details supported the data management strategy.

9.8. Ethics risk assessment

An ethical risk assessment template was created to support the planning process with an adequate ethical approach, allowing the organising team to identify potential ethical issues associated with CBRNe response tools and procedures and implement the control measures to minimise the risk. This is important because CBRNe responses have traditionally been treated as primarily a technical and/or organisational challenge where technological advances were either generally understood as something positive or seen through a purely consequentialist ethical lens (that is: means and rights are secondary as long as the outcome is positive). However, CBRN response raises a wide range of issues touching upon the fields of disaster management ethics (e.g. individual liberty versus collective protection from cross-contamination), technology-related ethics (e.g. track and trace and privacy/data protection), research ethics (e.g. how to organise realistic exercises without violating rights of physical integrity), and others. The template consisted of a matrix: In the rows of the matrix, a catalogue of rights/norms is identified and categorised into five generic sections: fundamental rights, procedural rights, distributive rights, intergenerational issues, and informational rights. In the columns, questions of potentially arising/observed/undertaken ethical issues and their management in relation to the development of the exercise were listed (see Appendix X). The results of this ethics risk assessment fed the strategy for ethics supervision and handling.

9.9. Ethics supervision

To provide ethical oversight during the PROACTIVE 2nd Field exercise, the EDPS was appointed. The role was fulfilled by the PROACTIVE WP8 leader. The role of EDPS was to ensure the Rieti field exercise was carried out in a manner that was ethically compliant with the relevant legislation set out in D8.1 and D8.3 (Clavell et al. 2021, Marsh et al. 2021). The EDPS also carried out an on-site evaluation of ethical aspects of the exercise seeking to ensure, in particular, that:

- The exercise was being carried out with respect for human dignity at all times;
- All proper authorisations had been obtained;
- The exercise briefings had been carried out in accordance with recommendations;
- Volunteers had completed the consent form(s) as recommended;
- Relevant legislation had been complied with.

The EDPS was supported by the PEO, one EEAB member, and a CSAB member with ethics background. The EEAB and CSAB members provided a consultative role for the planning team.

During the day of the exercise, the EDPS was supervising and evaluating the Rieti field exercise as part of the Task 8.4 Ethical and Societal assessment of PROACTIVE outputs. The supervising and the evaluation process followed the Ethical impact assessment framework established in D8.1 (Clavell et al. 2021) (sections 3.4 and 3.5) and the associated ethical documents:

- PROACTIVE Ethics Framework Observation and evaluation plan (Appendix 17);
- PROACTIVE Ethics Observation and evaluation sheet (Appendix 18).

9.10. Insurance

The insurance for the PROACTIVE field exercise was organised by CBRNE via its insurance broker Aston Lark Limited. The company investigated the market availability and costs and advised that the best insurer was still Hiscox Underwriting Ltd, the firm of underwriters authorised and regulated by the Financial Conduct Authority and who insured the field exercise in Dortmund, Germany.

The cover was limited to:

- **Public Liability** with a sum insured of €10,000,000 with an excess of €500 (€250 in Dortmund)
    - Criminal Defence Costs of €100,000
    - Pollution and Contamination Costs of €100,000
- **Property Damage** at the venue to the limit of €20,000 which was split up as follows:
    - General volunteer possessions excluding jewellery (Transit not insured) €15,000 (excess of €250)
    - Vulnerable volunteers mobility aids and assets (Transit not insured) €5,000 (excess of €250)

Policy Number: HU EVT 7458262

CBRNE negotiated that the cover should be for the period from 27 October 2022 to 17 November 2022 both days inclusive to cover any claim that might arise during the preparation and clear up phases.

At the time of writing no insurance claim has been submitted or requested
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10. EXERCISE OUTCOMES

10.1. Data analysis of the technical data of the PROACTIVE App

As mentioned in Chapter 5.5.2., a dedicated App IT support desk was established during the exercise and all activities on the PROACTIVE App were monitored on a dedicated server run by the desk. The results of this monitoring are summarised in this section.

10.1.1. Basic statistics

During the exercise, the PROACTIVE App registered an influx of new users and 28 users (logged-in users) used the application during the exercise. From basic information about the application usage, it can be concluded that most users (92%) made a submission (see Figure 9).

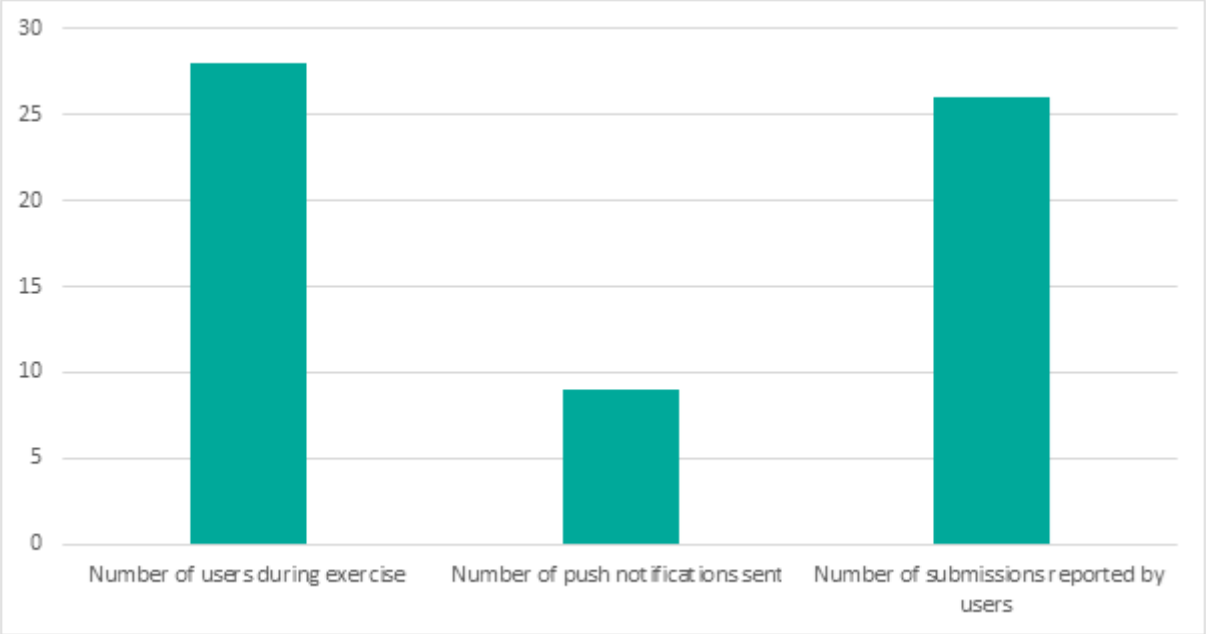

Figure 9: User Activity Histogram

It can be summarised that the server coped well with this number of users and there was significant spare bandwidth left to accommodate at least double this number.

10.1.2. Notifications

During the exercise, the PROACTIVE App team monitored the activity of users and registered all push notification clicks. The monitoring was done both for iOS and ANDROID.

ANDROID users

Total number of users on ANDROID (On exercise day): 20

The total push notification clicks activity of Android users is presented in Figure 10:

Figure 10: Total push notification clicks for ANDROID

iOs users

Total number of users on iOS (on exercise day): 8

The total push notification clicks activity of iOS users is presented in Figure 11:

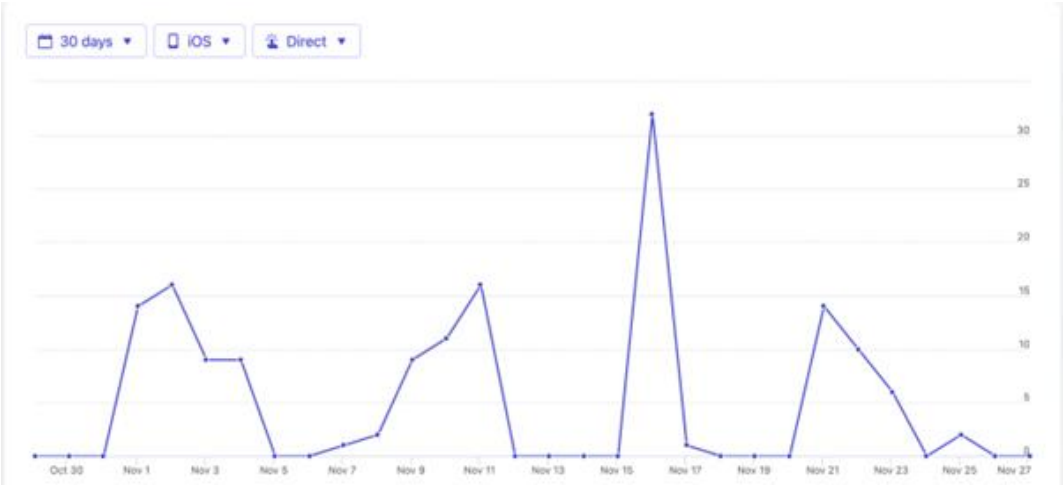

Figure 11: Total push notification clicks for iOS

10.1.3. Public Information Materials

During the exercise the following public information materials were accessed by the App users:

Table 11: Access of public information during the exercise via the PROACTIVE App

Accessed material	English	German
CBRN Response UK Aide Memoire	6	1
General Algorithm	6	1
CBRN Algorithm	12	1
Decontamination	20	3

This statistic will be utilised when developing recommendations for preparation for future incidents.

10.1.4. Use of PROACTIVE App

In a pre-exercise briefing all participants were encouraged to use the App. The below statistics show this activity:

- Total Number Of User Submissions (number of users that reported the incident): 26
- Total Number Of Incidents With Files: 5
- Photo: 4
- Audio: 1

The first incident submission was reported at 10:40, but the first submission with some real information about the incident was reported at 10:56 (see Table 11).

Table 12: User submissions

Description	Date created
Proactive exercise	10:40:10
Test	10:40:14
Nothing so far	10:47:22
Interesting setting	10:49:18
Nothing.	10:51:58
Tourist boarding the train	10:56:37
Stoke visible	11:02:03
Explosion at station. Smoke. Electricity is not working.	11:02:10
At Ciuffelli train station an explosion and smoke is coming, A regional train is at place with passengers. No fire.	11:02:19
No lights	11:02:30
Smoke cloud in train station	11:02:30
Explosion into train station	11:02:31
Train explosion	11:03:08
Suspicious smokes in the train station! Please come to help! people are in danger!	11:03:57
A lot of smoke at Ciuffelli station.	11:04:08
Looks like gas attack	11:05:47
Train had been evacuated	11:06:35
Explosion, smoke	11:09:01
Help required	11:09:02
Explosion	11:11:21
White smoke at train station	11:14:52
A lot of smoke	11:18:37
People awaiting decontamination following incident at train station	11:24:17
People with Gas masks in Rieti station. Gas? Terrorists?	11:24:33
Explosion ciufelli stazione	11:25:12
Electricity is down at incident site - inside train station	11:52:45

10.1.5. Usability of PROACTIVE App

During the exercise the App support desk also monitored the usability of the App. This is summarised below providing a clear distinction between the ANDROID and iOS users.

ANDROID users

It was noticed that during the exercise, the ANDROID application crashed six times on four different users. The quick on-spot analysis showed that two of those users didn't have the latest versions of the application, but an older version of the application (V1.4.3), while other two users didn't have the required ANDROID version. These problems were resolved quickly, once the right software was installed. The Figures 12 & 13 below illustrate this statistic for ANDROID users.

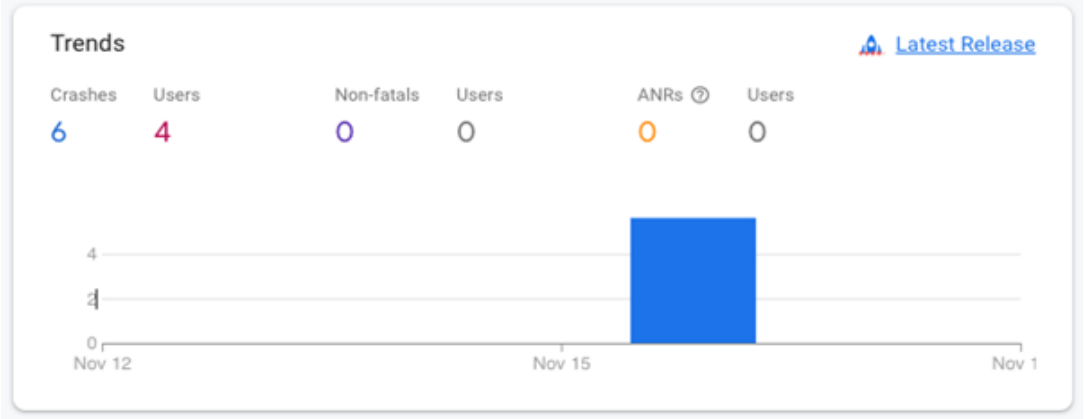

Figure 12: Number of crashes for ANDROID users during exercise

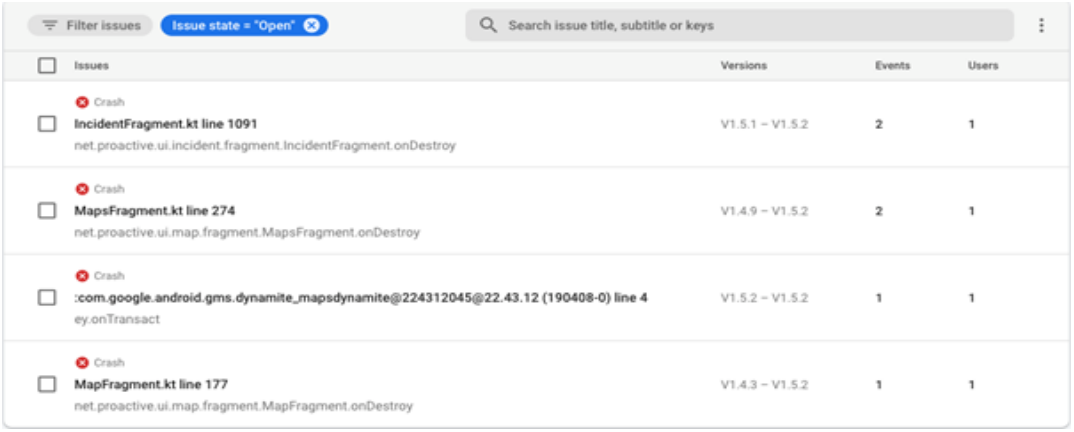

Figure 13: Portal report on crashes for ANDROID devices during the exercise

iOS users

The activity of iOS users is presented in Figure 13:

Table 13: Number of crashes for iOS users during the exercise

As it follows from this diagram, during the exercise the iOS application crashed zero times. That doesn't necessarily mean that the iOS application has zero bugs as the number of iOS users was significantly less than the number of ANDROID users. These tests will continue after the exercise ensuring that during the final PROACTIVE / eNOTICE exercise in Belgium there are no bugs in any of the developed software.

10.2. Evaluation of first-hand experience of volunteers based on questionnaires

Questionnaire data was collected from all participants both pre-exercise and post-exercise. Due to a miscommunication whereby the evaluators believed no children were in attendance, only the adult questionnaires were used.

As outlined in the methodology, these included both quantitative and qualitative questions. As the qualitative data needs to be translated prior to analysis, it is beyond the scope of D6.4 and will be included in the subsequent publication/D6.6. Where possible, volunteer numbers were used to link together responses pre- and post-exercise. The quantitative questionnaire data was analysed using one sampled t-tests, paired samples t-tests, regressions, and Pearsons correlations. In the subsections that follow the analysis is presented for questions relating to pre-incident information, differences between responses pre-exercise and post exercise, predictors of compliance with responder instructions and decontamination, and correlations between variables of interest (communication, identification and compliance). Mean scores for all measures and items are included in Table 16).

10.2.1. Pre-incident information

When probed about whether they read the pre-incident information for CBRNe incidents, twenty-eight of thirty-one volunteers responded. Nineteen volunteers (67.9%) reported that they had, and nine volunteers (32.1%) reported that they had not read the information. Moreover, none of the participants reported using the PROACTIVE App.

A one-sample t-test was run to analyse whether each pre-incident item was significantly different to the scale mid-point (see Table 14). The result show that volunteers who read the pre-incident information reported that they believed the pre-incident information would be an effective way to decontaminate and would also want to seek further information. They would also feel comfortable and willing to take the actions in the pre-incident information. However, the results also showed that even though participants report they wouldn't feel embarrassed and would find it easy to take the recommended actions in the pre-incident information sheet, these were not significant.

A paired samples t-test was conducted on the six pre-incident information items from pre-exercise to post-exercise to assess if the exercise influenced views on the pre-incident information. The results from the pre-exercise and post-exercise item on feeling embarrassed to take the actions recommended in the information sheet indicate that participants reported they would feel significantly less embarrassed to take the actions post-exercise (see Table 15). There were no significant differences between the remaining five pre-exercise and post-exercise pre-incident information items.

Table 14: Comparisons between the Means and the Scale Mid-Point for the pre-incident information

	M	SD	t	p	df	Cohen's d
If a real incident of this type were to occur, I think that taking the actions recommended in the pre-incident information sheet would be an effective way to remove a contaminant from my skin.	5.24	1.39	3.66	<.005	16	0.89
If a real incident of this type were to occur, I would feel comfortable taking the actions recommended in the pre-incident information sheet.	4.94	1.63	2.46	<.05	17	0.58
If a real incident of this type were to occur, I would feel embarrassed taking the actions recommended in the pre-incident information sheet.	3.72	1.78	-0.66	>.05	17	0.16
If a real incident of this type were to occur, I think I would find it easy to take the actions recommended in the pre-incident information sheet	4.56	1.50	1.57	>.05	17	0.37
If a real incident of this type were to occur, I would be willing to taking the actions recommended in the pre-incident information sheet.	5.78	1.11	6.77	<.001	17	1.60
If a real incident of this type were to occur, I would feel the need to seek further treatment after taking the actions recommended in the pre-incident information sheet.	5.00	1.57	2.70	<.05	17	0.64

Table 15: Analytical comparisons between pre- and post-exercise pre-incident information questions

	Pre-		Post-					
	M	SD	M	SD	t	p	df	Cohen's d
If a real incident of this type were to occur, I think that taking the actions recommended in the pre-incident information sheet would be an effective way to remove a contaminant from my skin.	5.25	1.44	5.56	1.32	-0.92	0.37	15	0.23
If a real incident of this type were to occur, I would feel comfortable taking the actions recommended in the pre-incident information sheet.	4.88	1.65	5.59	1.62	-1.90	0.08	16	0.46
If a real incident of this type were to occur, I would feel embarrassed taking the actions recommended in the pre-incident information sheet.	3.88	1.82	1.81	1.11	3.51	0.003	16	0.88
If a real incident of this type were to occur, I think I would find it easy to take the actions recommended in the pre-incident information sheet	4.47	1.51	5.18	1.98	-1.27	0.22	16	0.31
If a real incident of this type were to occur, I would be willing to taking the actions recommended in the pre-incident information sheet.	5.71	1.11	5.65	1.66	0.14	0.89	16	0.03
If a real incident of this type were to occur, I would feel the need to seek further treatment after taking the actions recommended in the pre-incident information sheet.	4.94	1.60	4.82	2.01	0.28	0.78	16	0.07

10.2.2. Difference between pre-exercise and post-exercise

Furthermore, paired samples t-test between the pre-exercise and post-exercise questionnaire on confidence and knowledge, perceived responder legitimacy, expectancy of help, identification with responders, identification with volunteers, and levels of anxiety if the incident was real were conducted. The results (see Table 16) showed that there were significant differences between pre-exercise and post-exercise questionnaires for confidence and knowledge and levels of anxiety if the incident was real. At post-exercise, volunteers reported significantly higher confidence and knowledge and significantly lower levels of anxiety if the incident was real compared to pre-exercise.

Table 16: Means and Standard Deviations for all measures in the pre- and post-exercise questionnaires, alongside analytical comparisons for scales measured at both time points

	Pre-		Post-					
	M	SD	M	SD	t	p	df	Cohen's d
Confidence and Knowledge*	3.72	1.74	4.71	1.82	-2.95	0.007	25	0.58
Perceived responder legitimacy*	5.96	0.98	5.94	1.40	0.07	0.94	25	0.01
Identification with responders*	4.56	1.78	4.92	1.64	-1.23	0.23	25	0.24
Expectancy of receiving help*	4.94	1.17	5.17	1.35	-0.91	0.37	25	0.18
Identification with volunteers*	5.06	1.37	4.77	1.51	0.90	0.38	25	0.18
Levels of anxiety if incident was real*	5.44	1.35	4.12	2.02	4.29	< 0.001	24	0.86
Accessibility	-	-	3.03	2.20	-	-	-	-
Level of anxiety of exercise	-	-	2.32	1.89	-	-	-	-
Perception of responder communication	-	-	5.25	1.32	-	-	-	-
Perception of communication message	-	-	5.56	1.28	-	-	-	-
Perception of practical information	-	-	4.97	1.15	-	-	-	-
Perceived responder competence	-	-	6.06	0.85	-	-	-	-
Emotional engagement	-	-	6.44	0.77	-	-	-	-
Expectations of compliance	-	-	6.23	0.82	-	-	-	-
Ethical procedures	-	-	3.03	2.20	-	-	-	-

*Note: the means and standard deviations for these items are based only on those participants who completed both time points as these are the ones included in the pre- post-analysis. Full means for all post-analyses are available on request.

10.2.3. Predictors of compliance

Regression analysis was subsequently conducted to assess whether perceived responder competence, responder communication, practical information, identification with responders, perceived responder legitimacy and identification with volunteers predicted complying with responders' instructions and complying with decontamination. The results (see Table 17) for the model were significant showing that perceived responder competence and practical information did predict expected compliance with responders or decontamination showers. Unexpectedly, the direction of effect for both perceived responder competence and perception of practical information were negative, implying that a lower perceived responder competence and perception of practical information predicts higher compliance during real emergencies. Separate analyses using each

predictor of compliance were ran, however, they also resulted in the same direction of effect. Responder communication, identification with responders, perceived responder legitimacy and identification with volunteers did not predict expected compliance with responders or decontamination showers.

Table 17: Results from the regression analysis conducted on the compliance measure

	Compliance	
	B	95% CI
Perceived Responder Competence	-0.42	(-1.77, -0.06)
Perception of Responder Communication	0.27	(-0.03, 0.57)
Perception of Practical Information	-0.31	(-0.56, -0.07)
Identification with Responders	0.27	(-0.19, 0.38)
Perceived Responder Legitimacy	0.01	(-0.29, 0.30)
Identification with Volunteers	0.01	(-0.21, 0.22)
Adjusted R2	0.31	
P	0.05	
F	3.20	

10.2.4. Correlation between variables

Pearson's correlations were run between confidence and knowledge, perceived responder legitimacy, expectancy of help, helping others during the exercise, identification with volunteers, identification with responders, anxiety, expected compliance, perceptions of privacy, perceptions of responder communication, perceptions of practical information, perceived responder legitimacy, and emotional engagement. All variables were from the post-exercise questionnaire. Correlational analyses are presented in Table 18, for ease of interpretation this analysis focused on the relationships between communication, identification, and compliance.

It was found (see Table 18) that perceptions of responder communication were positively associated with confidence and knowledge, perceived responder legitimacy, expectancy of help from other menbers of the public, identification with responders, perceptions of the communication message, perceived responder competence, emotional engagement and expected compliance. Perceptions of the communication message were associated with perceived responder legitimacy, identification with responders, perceptions of responder communication, and expected compliance. Finally, in terms of communication, perceptions of practical information negatively correlated with expected compliance (as discussed above) but positively associated with perceptions of privacy.

Identification with volunteers positively correlated with knowledge and confidence, identification with responders, and, unexpectedly with increased anxiety during the exercise. Identification with responders positively correlated with confidence and knowledge, perceived responder legitimacy, identification with volunteers, perceptions of communication message, perceived responder competence, and expected compliance.

Finally, to summarise the associations with expected compliance: there is a positive association with identification with responders, perceptions of responder communication, perceptions of the communication message, and ethical procedures, but a negative co correlation with perceptions of practical information (as discussed in the preceding section).

Table 18: Correlations between Variables in the post-exercise questionnaire

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Confidence and Knowledge	-														
2. Perceived responder legitimacy	-0.10	-													
3. Expectancy of help	0.12	0.40*	-												
4. Anxiety if real	-0.17	0.18	0.55**	-											
5. Anxiety during exercise	0.22	-0.18	0.26	0.42*	-										
6. Identification with volunteers	0.53**	-0.07	0.33	0.07	0.40*	-									
7. Identification with responders	0.53**	0.46*	0.17	-0.09	0.08	0.57***	-								
8. Perceptions of responder communication	0.43*	0.64***	0.31*	-0.00	0.15	0.19	0.68***	-							
9. Perception of communication message	0.18	0.49**	0.09	-0.05	0.24	0.10	0.40*	0.65***	-						
10. Perceptions of practical information	-0.24	0.31	0.18	-0.12	-0.08	-0.04	-0.06	0.11	0.1	-					
11. Perceived responder competence	0.38*	0.41*	0.24	0.08	0.01	0.06	0.42*	0.43*	0.32	-0.15	-				
12. Emotional engagement	0.37	0.13	0.29	-0.09	0.46*	0.31	0.37	0.47*	0.17	0.15	0.41*	-			
13. Expected compliance	0.28	0.05	0.05	0.07	0.04	0.23	0.38*	0.36*	0.40*	-0.38*	-0.11	-0.21	-		
14. Ethical procedures	0.16	0.35	0.44*	0.33	0.14	0.11	0.12	0.37	0.28	-0.07	0.03	0.06	0.48**	-	
15. Perceptions of privacy	-0.08	0.37	-0.09	-0.28	-0.20	-0.26	0.05	0.34	0.17	0.52*	-0.10	0.20	-0.03	0.29	-
16. Helping others	0.17	0.37*	0.94***	0.55**	0.21	0.25	0.15	0.29	0.12	0.06	0.15	0.20	0.18	0.50**	-0.09

. * $p < 0.05$ **p<0.01, ***p<0.001

10.3. Evaluation of first-hand experience of volunteers based on focus groups

Four focus groups were conducted in Italian by focus group leaders trained by the UKHSA evaluation team. One individual requested to be interviewed in English rather than Italian, and so this individual was removed from the focus groups and was instead given a 1-2-1 interview by a member of the UKHSA evaluation team. Due to a miscommunication whereby the evaluators believed there were no children in attendance, only the adult focus group guide was used. All focus groups and interviews were audio recorded; as the majority of these were conducted in Italian, the data needed to be translated and then subsequently transcribed prior to analysis. Given this, a full analysis of the focus group data is beyond the scope of this deliverable, and will instead be included in D6.6 and a manuscript that will be submitted for peer reviewed publication.

In lieu of this full analysis of focus group data, the UKHSA evaluators conducted informal debriefs with one respective focus group leader each and made notes on the key discussion points, top line findings, and issues arising that the focus group leaders could identify from their group discussions. These top level points are summarised in the section below and represent an initial snapshot of first-hand experiences of volunteers based on focus groups. These should be treated as initial insights and will be superseded by the full analysis of focus groups that will be presented in D6.6.

10.3.1. Perceptions of the exercise

According to the focus group leaders, the casualty volunteers reported that they believed that the procedures were technically perfect. That is, they were impressed by the look and feel of the exercise. However, there was some reflection on the artificiality of exercises; specifically, some individuals in the focus groups indicated that they found it difficult to act as they would in a real emergency and some indicated feeling that the responders were perhaps less formal than they would have been in a real incident. That said, there was also some perpetuation of myths among the public about disasters with some volunteers expecting to see more violence as part of the exercise.

Considered together, these findings suggest that there is work to be done in order to prepare casualty volunteers for the experience of participating in exercises without providing so much information that the event becomes fully artificial (broadly what to expect, how to act naturally in this context, etc).

10.3.2. Interaction with casualty volunteers with vulnerabilities

According to the focus group leaders there was also discussion around the importance of rapid triage and engagement with casualty volunteers - and particularly those casualty volunteers with vulnerabilities - as part of the focus groups. For example, casualty volunteers emphasised the importance of quickly identifying and responding to volunteers, and reflected that additional training to help recognise and triage vulnerabilities may help with this process. This viewpoint is likely also related to a broader theme identified by the focus group leaders concerning involvement within the exercise - that is, there was a view that individuals with vulnerabilities may not have been as integrated into the exercise as they could have been; it was speculated that this may be a reflection of responders “playing it safe”. Lastly, the focus group leaders also highlighted the importance of developing an “emotional plan” for casualties.

In summary, therefore, it seems that the casualty volunteers felt that more could be done to both integrate individuals with vulnerabilities into the exercise play, but also to recognise and cater to the needs of the casualties - both physical and emotional.

10.3.3. Importance of clear communication and information provision

The need for more communication with the casualty volunteers was clear from the debriefs with focus group leaders. For example, focus group leaders reflected the perception from the casualty volunteers that there was a lengthy wait process before decontamination began, and that more information provision during this time would have been desirable. Indeed, there was a view that additional responders would have been appreciated in order to communicate more effectively with the volunteers. This is exemplified in confusion relating to the shower tent and after the shower, with focus group leaders indicating that casualty volunteers wanted to be shown what they should do when showering, but that this information and guidance was not consistently provided. Lastly, according to the focus group leaders, when there was communication it was difficult to hear and understand - specifically there were issues with respirators/ PPE making it difficult for casualty volunteers to hear responders with the use of a megaphone/ loudspeaker suggested as a mitigation. Volunteer-to-volunteer interaction also occurred to fill this vacuum; this is covered in more detail in the next sub-section and also in the evaluation of observational data.

Overall, it seems clear from the focus group leaders' reflections that the casualty volunteers had a desire both for more clear and consistent communication throughout the exercise. Two specific pinch points seem to have emerged from the focus groups: first during the delay between evacuation and triage / decontamination, and second; during the decontamination shower and at the point of re-robing. This communication should both be more regular and also clearer in terms of message content and method of delivery.

10.3.4. Spontaneous volunteer-to-volunteer interaction

Focus group leaders also identified themes relating to volunteer-to-volunteer interaction during the exercise as part of the focus group debriefs. Specifically, the focus groups reflected that communication between volunteers was difficult to begin with but became easier as time went along. Specifically, one of the volunteers within the exercise played a very active role in relaying information from the responders to other casualty volunteers (see the section concerning evaluation of the exercise based on the evaluators' observations for more detail). This individual was specifically asked to reflect on their experience during the exercise and self-identified as an "expert in decontamination", indicating that they drew on this experience in order to take on a leadership role during the exercise. Focus group leaders further reflected that volunteers discussed the importance of helping one another during situations like these.

In summary, the focus groups reflected the value of spontaneous volunteer-to-volunteer interaction during the exercise, with some emphasis on the role undertaken by the one particularly proactive casualty volunteer who made themselves a point of contact between the responders and the casualty volunteers. The development of volunteer-to-volunteer interaction likely arose out of two related circumstances that have been highlighted in this section: first, the perceived lack of communication / triage / needs assessment between responders and the volunteers, and second; the delay period between the evacuation and initiation of triage or decontamination.

10.4. Evaluation of the exercise based on the evaluator's observations

Six evaluators from UKHSA positioned themselves around the exercise site in order to observe activity throughout the exercise. Two evaluators began in the train station to observe the initiation of the exercise before moving outside with the volunteers. All six evaluators subsequently observed the set up and initial waiting area before volunteers began to be taken through the triage process. At this point, two evaluators remained at the waiting area, two moved to observe the triage and disrobe process, and the remaining two moved to observe the showering process and post-shower area.

The below write-up is based on framework analysis, using key themes identified in the evaluation of the Dortmund exercise (see Carbon et al. 2022) and aligned to the PROACTIVE tactical objectives and KPIs as the framework into which analysis was conducted. This is a qualitative thematic approach that is often used in research that has implications for policy (Pope, Ziebland and Mays 2000, Ritchie and Spencer 1994), and was also used in D6.3 (Carbon et al. 2022).

The section begins with a description of the exercise procedure, before moving to consider specific themes drawn from observational data collated across the exercise period. These include the following themes identified in D6.3 (Carbon et al. 2022): communication from responders, with a specific focus on responder interactions with vulnerable individuals, and volunteer-to-volunteer interactions. The following themes were also identified through the data in addition to the themes identified in D6.3 (Carbon et al. 2022): volunteer behaviour, responder-to-responder interactions, reflections on the decontamination process, and elements of artificiality in the exercise play.

Note that throughout this section, the term "casualty" and "volunteer" will be used interchangeably to refer to the volunteer members of the public taking part in the exercise as casualties affected by the simulated chemical incident scenario.

10.4.1. Description of exercise

The exercise play began at 11am with all casualty volunteers sitting on the train inside the station when the disco fog (dry ice) was released, and all lights went off. Casualty volunteers evacuated the train in an orderly fashion with some using their phone torches to see when the lights went out. Military responders subsequently entered the train station, wearing PPE, and went through the train. Meanwhile, casualty volunteers were mustered outside of the train station. At 11:04 the police arrived, donned respiratory masks, and moved to stand in front of the casualties. At 11:05 the first fire tender arrived on scene, and at 11:07 the firefighters began putting up cordons (potentially indicating a hot zone). During the exercise there appeared to be three decontamination areas: one, was a large decontamination shower through which casualty volunteers were decontamination (hereafter referred to as the main decontamination shower), a second was set up by firefighters and was only used to decontaminate responders (before they went through the main shower) and a non-ambulant casualty (hereafter referred to as the secondary decontamination shower), a third seemed to be set up to decontaminate equipment but was not part of the observed exercise play. The large decontamination shower tent through which casualty volunteers were decontaminated was already built before the exercise began and was not assembled during exercise play (an artificiality of the exercise).

Due to inclement weather, at 11:14 casualties were moved underneath the gazebo. At 11:15 military respondents arrived, and at 11:16 a white tent began to be erected. Adjacent to the main decontamination shower there was a smaller, ancillary decontamination unit set up by firefighters at 11:18. As mentioned above, responders who underwent decontamination, as well as one non-ambulant mannequin were decontaminated first through this secondary shower, and then subsequently went through the main decontamination shower. No initial operational response[14] was carried out, and casualty volunteers remained huddled together in their full clothing and with minimal interaction with responders. By 11:20 the police had removed masks and were talking to colleagues, and nobody was standing with the casualty volunteers by 11:24. Additional responders wearing hazmat suits/ PPE continued to arrive on site throughout.

At 11:30 two responders entered the train station with a stretcher, it was not clear at the time why this occurred (this information was not relayed to the evaluators, and so we cannot speculate on why the stretcher was taken in or if the responders had been told that a stretcher was needed). At 11:32 a military responder wearing a respirator was escorted and supported out of the train station. At 11:44 a mannequin(non-ambulant) was removed from the train station on a stretcher and was taken to the secondary decontamination shower. The evaluators assume that this was the stretcher that was taken in at 11:30. The mannequin's clothes were cut off before it was picked up and "walked" through the secondary decontamination shower at 11:53. The mannequin was then taken through the main decontamination shower.

At 11:54, a responder in PPE began talking to the volunteers. Responders were subsequently taken through the main decontamination shower; no casualty volunteer disrobing or decontamination had occurred by this point. One responder began interacting with the volunteers in a more sustained way at 12:03, however they were talking without any auditory aid and so were only heard by a small group of casualty volunteers at the front of the group. One casualty volunteer began relaying information back to the rest of the group and became a de-facto spokesperson liaising between the responders and the casualty volunteers. At 12:08, the first casualty volunteers began to be scanned at the triage point, with the main decontamination showers being turned on at 12:09. No prioritisation appeared to be taking place, with casualties deciding among themselves whose turn it was to approach the triage. At 12:24 firefighters in decontamination outfits arrived and moved in front of the casualty volunteers to be taken through the main decontamination shower next.

The design of the main decontamination shower (with multiple flaps of plastic material) obscured the evaluators ability to watch the showering process in detail, who instead focused on the interaction between the responders and volunteers (which will be covered in detail in the subsequent thematic sections). Responders were not in the shower corridor with the casualty volunteers, and there was some confusion around the process of disrobe, showering, and rerobe which will also be covered in the subsequent thematic sections. As noted above, the showers were turned on at 12:09, with the first casualty leaving the tent at 12:12. During the showering process a backlog developed through the section following the decontamination shower, which subsequently extended into the showers themselves. Despite individuals still going through the shower corridor, the showers were turned off approximately halfway through the decontamination process with all remaining casualty volunteers

[14] The Initial Operational Response (IOR) is used to refer to early actions by non-specialist first responders to mitigate the harmful effects of an incident involving contamination, involving removal of outer layers of clothing and improvised and interim decontamination; full text at: https://www.jesip.org.uk/uploads/media/pdf/CBRN%20JOPs/IOR_Guidance_V2_July_2015.pdf

exiting dry.[15] The final casualty volunteer left the shower at 12:41, for a total of approximately 30 mins from initiation of the first shower through to the final individual completing the process.

Following this broad description of the exercise play, as noted above the sections that follow will go into more detail about aspects of the exercise of particular importance to the PROACTIVE tactical objectives. That is, communication and interactions (responder-volunteer, volunteer-volunteer, responder-responder); identification, triage, and treatment of casualty volunteers with vulnerabilities; volunteer behaviour; the decontamination process itself; and artificialities of the exercise.

10.4.2. Communication from responders

In contrast to the Dortmund exercise, this exercise involved a prolonged period of time during which casualty volunteers were mustered ahead of triage and decontamination. Initial engagement between first responders and the volunteers involved a first responder in a respirator mask keeping the volunteers back while the response organisations arrived and set up the cordons. Initial interactions were positive and involved smiling and what looked to be friendly chatting. Beyond this initial interaction, there was not much responder to volunteer discussion across the first hour of the exercise. No initial operational response was undertaken and there was no communication with the volunteers with regards to, for example, removing top layers of clothing or to avoid touching one's face.

During the exercise responders in PPE continued to arrive, with some escorting one responder out of the train station and others carrying out a non-ambulant casualty on a stretcher; no explanation for these steps seemed to be provided to volunteers. The absence of responder-to-volunteer communication may have contributed to an increased amount of volunteer-to-volunteer interaction as discussed in the following section.

The lack of consistent responder-to-volunteer interaction continued throughout the exercise. At one point, one volunteer moved away from the casualty group towards a cluster of responders in full-face PPE. She attempted to ask a question (pointing at her phone), but they waved the casualty away. The casualty subsequently walked back to the casualty area and responders went back to talking amongst themselves. Approximately one hour into the exercise, a responder in PPE began talking to the volunteers – gesturing and answering questions. This information was being provided directly to 4 or 5 volunteers at the front of the group, with no attempt to make sure all volunteers could hear; casualties were gesturing as though they could not hear the responder, and volunteers at the back remarked to an evaluator that they could not hear what was being communicated and that the responder needed a megaphone. Throughout this time, some volunteers looked confused, and others were observed by one evaluator to not be paying attention to the responder.

During this briefing period, the responder did successfully interact with one volunteer who was relaying information back to the broader volunteer group. Eventually, the responder began to interact with just this one volunteer, who functioned as an intermediary between the first responder and the rest of the casualties, seemingly informing them as to what the responder has informed him; an

[15] It was not clear to the evaluators why the showers were turned off. The team subsequently learned that as part of the exercise the identification team detected a safe refrigerating chemical instead of chlorine, which may have been the reason for turning off the showers. However, the volunteers were still walked through the shower even after it had been turned off. Furthermore, there appeared to be some attempt to repair something on the main decontamination unit, so this may instead have been due to a fault.

approach also observed in the good communication condition in the November Rain exercises from November 2012 (Carter et al. 2014).

During the disrobe and shower process, there was little verbal instruction initially provided to volunteers. Evaluators observed that the responders were very good with visual cues and guided volunteers how to stand at the initial monitoring step prior to decontamination. For example, gesticulating and acting out how volunteers should turn and spread out their hands and legs. However, this reliance on visual demonstrations created issues when visually impaired casualties needed assistance. Some brief verbal communications did sometimes occur, for example responders remarking “ok” to volunteers.

Furthermore, there were no responders waiting at the end of the shower, instead the responders at the exit were waiting outside of the decontamination shower unit. This may have contributed to some of the confusion observed during the process, including individuals being unclear about how to progress through the shower, where to go post shower, and one individual going through the shower clothed to then walk back through the shower to the disrobe section where they disrobed and re-entered the shower (covered in more detail in the volunteer behaviour section). Indeed, volunteers were regularly asking PROACTIVE evaluators for guidance on what to do immediately after exiting the shower, with responders themselves gesturing to the PROACTIVE evaluators to ask them to tell volunteers to exit. These issues with communication may have contributed to the backlog which began immediately post-shower and subsequently extended back into the shower corridor. Once the responders began shouting through the tent to tell casualties to leave, the backlog eased.

10.4.3. Responder interactions with vulnerable individuals

Throughout the exercise there was minimal engagement between the responders and the volunteers with vulnerabilities.

As far as the evaluators could see, there was no attempt to identify or prioritise triage and decontamination of volunteers with vulnerabilities. Indeed, one volunteer in a wheelchair was separate from the other volunteers, and, although there was a person in military uniform next to him, the interaction largely seemed to be between the volunteer, his parents and PROACTIVE staff. The volunteer in the wheelchair was eventually escorted away from the exercise area and did not undergo triage or go through the decontamination shower.[16] Visually impaired individuals either went through triage or the shower on their own or escorted by another volunteer, but not accompanied by any responders.

The non-ambulant casualty (mannequin) that was brought out of the train station did appear to be prioritised, and had its clothes cut off before being subsequently walked through the secondary decontamination shower and then was carried through the main decontamination shower ahead of all other individuals.

16 Following the exercise, the evaluators clarified that this individual was never intended to go through the decontamination shower. This does raise questions concerning the realism of the scenario, and relates to responses during the focus groups concerning the possibility of greater involvement of individuals with vulnerabilities within the exercise.

10.4.4. Volunteer behaviour

Across the exercise high levels of compliance amongst the volunteers were observed. During the pre-triage and decontamination muster period, casualties generally stood quietly. As acknowledged above, there was no initial or interim decontamination (i.e. removal of clothing or improvised decontamination); participants stood fully clothed with some touching their faces and hair, some touching their "contaminated" outer clothing, with others using their mobile phones. One volunteer with a visual impairment was regularly using his mobile phone like a magnifier in order to be able to see things more clearly.

Although volunteers typically stood and waited compliantly, the evaluators did observe volunteers looking confused and/or impatient; this included during the explanations provided by a responder in full-face PPE. Indeed, during these interactions there were casualties at the back of the group not listening, which may have been due to an inability to hear what was being communicated.

This confusion persisted into the main decontamination shower and was linked to unclear communication between the responders and volunteers. For example, at 12:11 the first volunteer entered the disrobe section with a responder in a hazmat suit. The responder looked like he was telling the volunteer to get undressed and where to put his clothes before then exiting the disrobe section and leaving the volunteer to get undressed. The volunteer then got undressed and put clothes in the bin but appeared confused and not knowing what to do next. The volunteer exited the disrobe section to get the responder to ask what to do next. The responder subsequently pointed at the shower and the volunteer entered the shower. Similarly, at 12:30, one volunteer entered the disrobe section and proceeded straight to enter the shower without disrobing. They were then directed back through by another volunteer then exited the shower through the entrance back into the disrobe section, before disrobing and re-entering the shower. Indeed, volunteers regularly asked for support and guidance during the showering process, and particularly after completing the showering when they routinely asked the PROACTIVE evaluators for instructions on where to go next.

10.4.5. Volunteer to volunteer interactions

Building on from the preceding thematic subsection, the muster period prior to triage and decontamination offered opportunities for volunteers to interact with each other. Initially following the evacuation, the PROACTIVE evaluators observed some individuals holding hands (though we do not know if they knew each other beforehand), with general pleasant chatting and laughter while clustered in groups. As the period of time in the muster / containment area continued, there were more signs of discussions between the volunteers with some pointing suggesting that they were explaining the situation to each other. One PROACTIVE evaluator observed that by 12:00 there was more volunteer-to-volunteer discussion and interaction than responder-initiated interaction. Chatting between volunteers continued throughout the triage and showering process, with one PROACTIVE evaluator remarking that casualties helped each other through the process, were generally well-spirited, and spoke to each other when waiting to exit together.

One clear and noteworthy example of volunteer-to-volunteer interactions comes from the aforementioned volunteer who began to function as an intermediary between the responder and the rest of the volunteers. One of the PROACTIVE evaluators observed that this individual appeared to command more attention and less confusion than the responder, and that his interactions were

followed by other volunteers explaining things to one another. As noted previously, the volunteer who took up this liaison role continued to do so throughout the time waiting to begin triage and soon became the focal point for the responder's own interactions with the volunteers (i.e. directed primarily at this one volunteer rather than the group).

In addition, upon approaching the triage point there was further evidence of volunteer-to-volunteer support and helping behaviour; for example, one volunteer was observed escorting another volunteer who had a visual impairment. The volunteer then asked a responder a question (to which the responder replied), before then escorting the volunteer with visual impairment through to triage. It was unclear at the time whether the volunteers had a pre-existing relationship, however it subsequently did not appear that they did (they were not together during the focus groups for example). Casualties awaiting triage also decided amongst themselves who to prioritise, in one instance settling on the individual with a pram, thus potentially demonstrating prioritisation of an individual who was vulnerable.

Finally, on one occasion volunteers were also observed providing emotional support to one another. Specifically, when there were a few volunteers remaining in the containment area there was a moment when a young-looking volunteer was crying quietly. She was comforted (hugged) by another volunteer, however it was unclear if the two were friends / relatives.

10.4.6. Responder to responder communication

During this exercise there was a substantial number of responders on site from a range of different response organisations, including the fire, police, and military. Throughout the exercise the PROACTIVE evaluators identified multiple instances of discussion between responders from different organisations, thus demonstrating a clear level of inter-agency communication.

10.4.7. Decontamination process

Throughout the exercise the PROACTIVE evaluators also made several observations regarding the decontamination process. Some of these have been covered in other sections, but are included here again for completeness.

- There was no initial or interim decontamination (e.g. removing top layers of clothing or improvised decontamination) conducted while participants were awaiting the triage process. As this was included in the PROACTIVE pre-incident information, this suggests that participants were not following these steps.

- Potentially as a function of the inclement weather, volunteers were all held very closely together under the gazebo – while an understandable exercise artificiality, this would also increase the risk of cross-contamination; similarly, volunteers were observed touching their clothing, faces, hair, and personal belongings, all of which could have resulted in cross-contamination during a real incident.

- During the exercise responders appeared to be prioritised to go through triage and decontamination – including one instance where triage of volunteers paused while responders went through the process.

- There was a lack of clarity about the point at which the showering finished – PROACTIVE evaluators noted that the showers themselves were turned off while some volunteers were still being processed through the decontamination corridors.

- There were some issues with communication and the queueing process through triage and decontamination to the point where a backlog developed and gradually moved backwards into the showers. Similarly, one PROACTIVE evaluator observed that there were points at which the queue for one shower corridor (within the main decontamination unit) was long but the other shower corridor was free, however the free responder did not provide support to the busy queue. In addition, one of the PROACTIVE evaluators also observed that the pram itself was not decontaminated despite being at the scene.

- Finally, throughout the exercise there was inconsistency in whether responders were wearing PPE across organisations and time periods.

10.4.8. Exercise artificiality

In any exercise there is a trade-off between realism and practicality / safety that results in some degree of exercise artificiality. In this subsection we present some reflections from the PROACTIVE evaluation team concerning artificialities associated with the current exercise. However, before doing so, it is also worth reflecting on some strengths of the exercise. Firstly, the introduction of a delay between evacuation and triage meant that there were more authentic opportunities to observe interactions between responders and volunteers, and between the volunteers themselves; this was of clear benefit for the evaluators in terms of addressing the requirements of the PROACTIVE tactical objectives. Secondly, the broad range of responder organisations in attendance provided an opportunity to examine organisational interoperability in addition to the key objectives of the PROACTIVE project.

- In terms of elements that enhanced artificiality: as noted above, the inclement weather unfortunately meant that the volunteers were huddled very closely together. Due to the same weather conditions, the exercise observers were also huddled together along with PROACTIVE staff under the same gazebos; this may have had the effect of impairing the realism of the scenario. Indeed, at points different individuals who were not participating in the exercise (both military and civilian) were noted to be interacting with the volunteers during exercise play. This included PROACTIVE staff supporting the individual who was in a wheelchair as noted in the preceding sections, and exercise observers.

- There was an individual in military dress who was providing a narrative accompanying the exercise in both Italian and English. While it was unclear whether this was meant to be heard by the volunteers, they were able to hear anyway by virtue of proximity. This therefore provided a narrative to the exercise that would not be present during a real incident.

- The PROACTIVE evaluators observed response staff engaging in casual conversation with the volunteers at different points of the exercise. At one point the initial police responders had removed their masks and were talking to colleagues. The nature of these casual interactions may have served to enhance the artificiality of the exercise.

- Finally, by virtue of needing to collect the volunteers' belongings, there were PROACTIVE staff very close to the exercise play at the entrance to the decontamination unit. Unexpectedly, there were no responders stationed at the entrance or exit of the shower corridor. This led to instances where PROACTIVE staff were being asked by volunteers for guidance, including members of the PROACTIVE evaluation team. While understandable under the circumstances, interaction with non-responders during the exercise does add to the artificiality of the exercise.

10.5. Evaluation of the exercise based on observer guide

The following chapter describes the feedback from observers reported by the 19 observers who answered the questions (Q) of the observer guide. Observers were physically present on the exercise site within a reasonable distance from the place where the action unfolded. They were able to observe the exercise directly with the naked eye.

10.5.1. Feedback about the observation task

Report on the confidence of observing (Q6)

The medium (M) self-reported level of observer confidence was high (M=4.79) suggesting an overall good reliability of the observations. Six observers reported very high confidence based on their experience and knowledge derived from similar activities in which they were involved in the past. Some of them had attended, organised and participated in many exercises before. Two observers were highly confident in their observations because they were able to move around the observer area freely. The observers who provided a lower rating explained that this is because of the little information which was provided to them such as information about the scenario. Those observers felt that the sequence of the incident and the scenario should be given to the observers beforehand, so they can make a precise judgement.

Feedback on observers' expectations towards the exercise (Q7)

The exercise was in line with some observers' expectations and against the expectations of others which led to an average rating (M=3.32). There was no consensus between observers, and opinions were polarised between those extremely satisfied (e.g., "Very professional prepared from eNOTICE / PROACTIVE and military site"; "Well prepared and well designed"; "The field exercise met my expectations and covered the objectives of the exercise") and those were very disappointed (e.g. "Would like to see more, every step in detail"; "No explanations during the exercise part two"; "No! No! No!!! It's not a serious exercise"). The negative evaluations were motivated by the lack of understanding of what was going on (n=2; e.g. detailed description of steps being performed by which entity) or the lack of realism of the exercise (n=3):

- "Especially the beginning was more a theatre play than an exercise. There was no panic, no wounded role player and everyone was calm. The decon took a long time as well - no victim registration, no agitation of victims, no sudden collapses due to worsening injuries."

- "Expected to see more of the initial casualties management rather than simply people walking off the train."

- "I actually expected the exercise of being more "situational" (more role activity). The passengers would have had some symptoms as well (e.g. disabled persons) and panicking. It was "too easy" for the responders."

However, the most frequently reported issue which seems to have been under expectations (n=6) was the communication that "was far from optimal". Firstly, some observers were "hoping to see more snatch rescue conversation between agencies – but saw no comms". Then, communication with the potential victims "was a lot to be desired". In particular, there was a "lack of information to deaf victims, so deaf people feel lost. And not only for the deaf but also possibly for deafblind and visually impaired people." All these examples illustrate several problems identified by the observers and explain the lowest ratings on this item.

10.5.2. Feedback about the decontamination exercise

Observation on the first responders' management of volunteers (Q8)

The observers felt that the first responders managed the affected persons at an average level (M=3.32). Only two observers were fully satisfied by this process:

- "I think first responders did everything necessary and correctly."
- "Evacuation was quick and different needs [...] addressed"

Four observers appreciated some good aspects but also highlighted some issues:

- "It took a long time, but after that the first responders managed effectively."
- "The volunteers were left alone for [...] quite long time. The evacuation was calm and decontamination effective. The affected people weren't told to do any self-decontamination."
- "The first responders managed in a good way the affected persons but they didn't prioritise the salvation of casualties and immediately decontaminate them. It should be done the same for the disabled persons. There was also a huge delay to bring them to the decon line. Once they went to the decon line all the procedures were followed in a proper manner."
- "In general first responders did their duty. There are some points [that] need further discussion as the following areas: The prioritisation in terms of whom treated first is an issue. Deaf and blind people or any disabled people (elderly, small children/babies) should have priority in terms of the guidance and examination decontamination. Also an expert could give info and advice of what will follow after the waiting area. Next steps but also interviews to extract further info for the incident."

However, a number of problems were raised by the observers in the way the responders managed the group of victims.

First, there were gaps in managing the vulnerable persons in the victim group (n=4):

- “The problem is that the first responders must never leave the group in the area even for a few minutes.”
- “It seemed to me that vulnerable people were left alone.”
- “There were several gaps in the first responders - actors/victims relationship. At the same time the volunteers did not receive any instruction for a very long time (30+ minutes).”
- “Yes, but always with difficulty with deaf people.”

Second, there was disorganisation of first responders and command line (n=3):

- “It was very disorganised, they didn't know what and where first responders shall conduct the activities.”
- “Without a command structure no one took charge and began decon early. No DIM [Detection Identification Monitoring] within [the] train station, warn zone workers going between cold + warm, no comms with casualty.”
- “It was not effective with respect to time management, a lot of walking around, no immediate remove, remove, remove, etc. During the train there was 1 first responder with gas mask but without gloves who touched multiple affected persons, this could lead to his own contamination.”

Third, there was a lack of proper triage (n=2):

- “Not visible command structure, not visible triage.”
- “They didn't implement triage.”

Finally, there were some problems signalled with respect to the SOPs (n=2):

- “Mixing chlorine with moisture would create acid. As the weather was wet would casualties have been controlled/ placed under cover on a tent.”
- “Military personnel leave the mask to communicate with deaf people.”

A set of five questions addressed more specific dimensions of the interaction between the first responders and the diverse group of victims. The rating of these specific elements was average, therefore indicating that there is plenty of room for improvement (Figure 14).

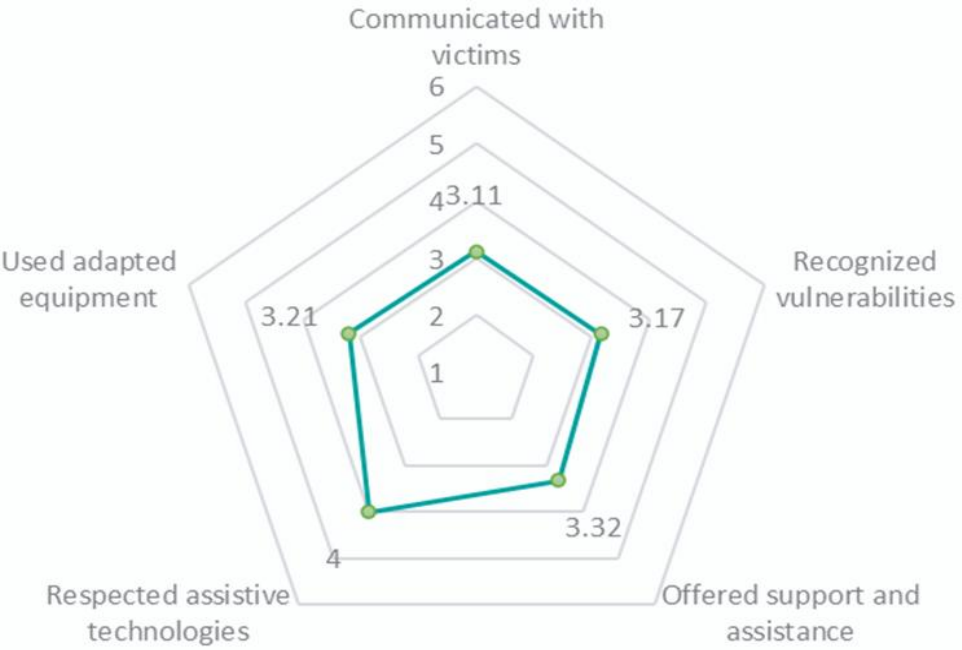

Figure 14: Five elements of the responder-victim interaction and their average observer score (1=lowest rating; 6=highest rating)

Observation on the first responders' communication with volunteers (Q9)

The least favourable evaluations concerned the way first responders communicated with the affected persons (M=3.11). The observers highlighted the lack of communication between first responders and the affected persons (n=3; e.g. "Hardly observed any comms between responder + casualty") or the fact that it took place too late (n=4; e.g. "It took a long time for the first responders to give instructions to the citizens"; "I have not seen a lot of communication, but it should have been earlier"; "The casualties then spent a long time on a tent with no communication for around 45 minutes").

Some observers pointed out issues in the communication process or the lack of means of communication (n=5): "First responders communicate in not realistic mode"; "A difficulty in the communication was identified among the first responders and CBRN specialists. There was a lack of communication means, like handheld megaphones, voice amplifiers, signs with markings for the disabled or non native speaking persons."; "Phonic masks are not suitable to talk to not trained civilians. Lack of other means of communications"; "No voice amplification used with respirator to aid with communication.; "The protective suits made it even more difficult to convey the instructions to the volunteers".

One observer reported that communication with the public is not the major concern of first responders: "Communication problem might persist - somebody said first responders did not talk much, did not explain things to people. However, it's not a task of first responders to talk, there shall be a responsible spokesperson to provide exact info, avoid uncertainty, deal with numerous questions. Operational first responders have no time, neither authority to do talk. What info to provide, when, to what level of detail, how to deal with panic, aggression (possibly) of worried people - all this is a big separate task for dedicated communication people, not for first responders in operation."

Observation on the first responders' efficiency in recognising vulnerable volunteers (Q10)

The first responders appeared to recognise vulnerable persons on average (M=3.17) and again opinions were divided. Six observers provided very low ratings and claimed that they could not see triage, they didn't observe "any activity to classify (examine) separate vulnerable people", or even that "children were left last, people with impairments were not identified as a normal procedure to follow in this kind of situations. There was a child in wheelchair and he was left at the end of the group, visibly separated from it and without any kind of communication with first responders." It was also pointed out (n=3) that first responders "recognised the vulnerable persons with a delay"; "Some vulnerable people were not identified immediately"; "It took a long time". Moreover, some vulnerabilities (even when visible) were ignored (n=3): "I think that deaf and blind people had not a priority in terms of their treatment/safety"; "I have seen only one example which was when they realised a woman was blind/had bad vision."; "I could not see that different treatment to the vulnerable persons would be provided. They stood together with all and guessed what might follow up."

Observation on the first responders' efficiency in supporting and assisting vulnerable volunteers (Q11)

In general, the first responders appeared to be relatively effective in supporting and assisting vulnerable people (M=3.31). Six observers thought that first responders "did everything well", "committed to fulfil a well-planned operation" and "following their procedures they fulfilled their task". Moreover, they noticed "lots of signs and instructions even initially", and "care and diligence shown to vulnerable people", such as "they took the blind woman and then supported together to be decontaminated".

However, five observers were more reserved:

- "I didn't see that at the beginning".
- "Could have been better later on."
- "Didn't see any difference between vulnerable/ non-vulnerable casualties."
- "I could not see any specific treatment especially from [a] psychological point of view since these people are most vulnerable."
- "I didn't observe any special treatment for vulnerable people. I would have expected e.g. that disabled people would have been the first to be decontaminated (or children)."
- Further, six observers were very critical (e.g. "For me, not all", "the first responders didn't attend to vulnerable."; "I haven't observed any kind of action that would have indicated special attention paid to vulnerable people, to their impairments/needs.") and highlighted a set of gaps or challenges (e.g. "Lack of specialised training; people waited for long time for professional help"; "They were effective, but not realistic").

Observation on the first responders respect towards assistive technologies used by vulnerable volunteers (Q13)

First responders appeared to be respectful of the assistive technologies used by persons with vulnerabilities and this was the dimension which scored the highest (M=4.00). A core group of observers (n=5) “didn't observe any assistive technologies” or was not aware of the kind of the assistive technologies that were in use, for e.g.: “I consider that I do not have the whole picture or evidences in order to say a lot for this issue.”; “Didn't observe the technologies being decontaminated. Pram was taken around the decontamination area - couldn't see if the baby was put back on.” Other observers (n=2) explained that they “could not observe so much difference between treatment of adults and vulnerable persons” or that there was “some uncertainty in the approach phase", despite the fact that respect was shown.

Observation on the adaptation of the first responders’ equipment to vulnerable volunteers (Q14)

The equipment used by first responders appeared to be fairly adapted for persons with vulnerabilities (M=3.21) at least “to some” of them. Several observers (n=4) preferred not to comment on this claiming they could not “see”, “observe” or “assess” this. Others were sceptical in absence of a clear observation of the facts, for example one observer said: “Haven't seen the decontamination tent. I don't think this is adequate for people with movement impairments or in wheelchairs.” Other opinions diverged between a positive answer (e.g. “Yes, their existing equipment of the unit covered that need”) or a neutral position on this topic (e.g. “Seems yes but did not see all details”; “I could not observe any adaptation I only saw that the same procedures including equipment was used.”).

Additional observations about the exercise (Q18)

When asked if observers had anything else to add about the practitioner and victim behaviours during the exercise, many observers pointed out that the exercise lacked realism (n=8). Three main explanations were given. First, practitioners weren’t observed as wearing appropriate PPE (n=4). For example, one observer pointed out that the “evidence of the unrealistic situation is given by some operators who wore no mask.” Second, some observers felt that the PROACTIVE staff were too present during the exercise (n=2). As put by one observer, “the non-exercise people mixed too much with the exercise organisation.” Third, one observer felt that the role play victims did not behave in an accurate way, stating that “there was no panic.”

10.5.3. Feedback about the PROACTIVE toolkits

Observation on the helpfulness of the PROACTIVE pre-incident information material for volunteers (Q12)

There is consensus among the observers about the PROACTIVE pre-incident information materials and that they seemed to be of help for those affected (M=4.62). Most observers considered the materials as a “useful” or “informative pack” and were helpful “to some affected”. Four observers do not have a clear position on this claiming they have not seen the materials or do not know this aspect. One observer provided an overall summary of the situation: “Pre-incident info material was very helpful. I greatly appreciated the App. Guidance provided to observers was clear, sufficient, helpful. Participants were well prepared and performed their role with a great sense of duty.”

Observation on the PROACTIVE App (Q23-40)

Designing and developing the PROACTIVE web based platform and mobile applications for LEAs and security policy makers is predominantly the responsibility of WP4, further details can therefore be found in D4.1. (Kolev, Markarian and Polushkina 2021). Input has been taken from WP1, WP2, WP3 and WP8 to determine the needs and gaps of the users in terms of current public perceptions relating to CBRNe incidents. Due to the pandemic and the delay of the field exercises, multiple workshops were held as detailed in D6.3 (Carbon et al. 2022). The outcome of the workshops between October 2019 to May 2022 was the evolution of the web platform and mobile applications in terms of design, useability and potential features.

In preparation for the exercise in Rieti, similar to the preparations for Dortmund, it was agreed in advance with the consortium partners and the eNOTICE project that the mobile App would not be the focal point of the exercise. However, to ensure valuable feedback was still received, it was agreed the observers would test the mobile App according to usability and features in line with the exercise. This is in line with expectations for end-users of the App, whereby it is most likely that witnesses to a CBRNe incident would use it to report, instead of affected persons on the ground. To enable the Objectives to be achieved, a significant level of technical development was required. This included:

- Implementation of the translations. This was completed manually by extracting a CSV/ Excel file from the back-end server listing all static phrases in the web platform and mobile application. Italian natives then translated the phrases before they were then uploaded back to the server.
- Deleting all prior incidents listed in the mobile App and web platform.
- Uploading the relevant pre-incident information to the CBRNe library in English and Italian.
- Preparing a list of live notifications to be pushed out through the web platform and mobile applications at pre-agreed times during the live exercise.

To pre-empt any technical challenges during the live exercise, based on lessons learnt in Dortmund, a small technical support team was present in Rieti. This proved to be beneficial and resulted in more people being able to access and test the App and web platform. During the exercise, the most common technical bugs identified, included the following:

- Push notifications received, but when clicked on, some users had difficulty reading them.
- Some users continued to have difficulty registering or logging into the App. The Tech Team in Rieti was available to support but not always successful.

Following the completion of the exercise, the engineers are continuing to stress test the web platform and mobile application to resolve any further technical bugs in preparation for the final exercise.

Part of the observer guide specifically addressed the use of the web platform and mobile application. Table 19 summarises the feedback received in regard to the Mobile App usability. The feedback received for the usability averaged at 4.58. Overall, the App averaged at 3.53 stars.

Table 19: Summarised feedback on App usability

Question	No. of Responses Dortmund	Mean score Dortmund	No. of Responses Rieti	Mean score Rieti	Qualitative feedback
23. I felt confident using the App	16	3.25	17	4.47	Some registration issues, training to use the App advisable (user guide).
24. The App design is easy-to-use	14	3.93	16	4.9	Features for accessibility needed. Concerns App would be used incorrectly.
25. Most people would learn to use the PROACTIVE App quickly	14	4.29	16	4.25	Simple to use if you are familiar with smartphones.
26. The App has effective accessibility features	11	4	13	4.38	Very limited. Basic accessibility features available.
27. The app respects my privacy (e.g., the privacy statement, GDPR obligations)	12	4.58	14	5.2	No additional comments, also no concerns around privacy.
28. The amount of text displayed was appropriate	12	4.33	16	5.19	Well balanced, particularly for the live notifications.
29. The visualisations were appropriate	11	4.18	17	4.76	Clear and simple. More visual notifications preferable.
30. The PROACTIVE App enhances the situation awareness of the population on CBRNe events	13	3.85	17	4.63	Dependent on users. Suggestion to use with existing communications.
31. I was confident that the incident information I saw on the App was the most recent update	13	3.31	16	4.81	Technical Issues prevented incidents being updated in real time.
32. It was easy to find critical information about the incident (e.g. time, location)	13	3.38	16	5	Easy to find, users would be more comfortable with practice.
33. I was able to find information resources/ materials on the topic of CBRNe	12	4.5	15	4.23	Mixed feedback, easy to find and definitely beneficial. Level of information queried.
34. I would use the PROACTIVE App in the case of a real CBRNe incident	14	3.07	16	4.13	Yes, in conjunction with existing infrastructure and with more accessibility features.
35. Based on today's experience, how many stars would you give the App, out of five?	14	2.57	17	3.53	General consensus - Yes.
Total Average	**13.00**	**3.79**	**15.85**	**4.58**	

Table 20 summarises the results of the feedback received for the features of the mobile App. Overall, the mobile App features averaged at 4.60.

Table 20: Feedback summary on App features

Question	No. of Responses Dortmund	Mean score Dortmund	No. of Responses Rieti	Mean score Rieti	Qualitative feedback
36. In-App notifications	12	3.92	16	4.94	Consensus, live notifications useful, further information on Next Steps required.
37. Push-Up notifications	N/A	N/A	17	4.82	Very useful but must be reliable.
38. Incident list	11	3.73	16	4.31	More incidents to be included in the App for reference.
39. Maps showing incidents	12	4.5	16	5.06	Excellent feature, especially for accessibility.
40. CBRNe Information Library	12	4.25	16	3.86	Useful feature, although not during incident.
Total Average	**9.40**	**3.28**	**16.20**	**4.60**	

The feedback received from the observers was limited, although a slight improvement on Dortmund, with more users being able to access the mobile application. The feedback received, was constructive and when analysed with the feedback from Dortmund, aligned with the consensus for improvements and new features as detailed here:

- Further consideration for features supporting accessibility, particularly deaf people.
- Customisable localisation for incidents. Enable the user to manually set a boundary around their location for notifications.
- Credibility of App in relation to the source of the information being provided.
- An online manual with basic guidelines would be useful.

10.5.4. Feedback about lessons learned

Observation on the realism of the exercise (Q15)

The unfolding of the exercise was generally perceived in a divided manner resulting in a score slightly above average (M=3.41). Two observers appreciated the realistic elements of the exercise: “Yes, it was a real exercise, not a demo. Delays, waiting, uncertainty - all realistic.” The other observers all noted some artificial elements which compromised the realism of the exercise. Two major themes emerged from the observations. First, the lack of “realistic causality distribution in time/space” (n=6), for example:

- “Not really, but I understand that there were some time jumps.”
- “Time compression is an issue affecting evaluation.”
- “Hard one due to time lines - structures arriving, cordon being put, snatch rescue, din discussions around decon, Police donned masks quickly but didn't see the first element that well as we were by the train.”
- “Of course it will take much longer till the first responders will arrive to the scene, but it is [an] exercise, so that is fine.”
- “Nothing is realistic: number of passengers, people fear/ panic reactions, health symptoms, evacuation preparedness, etc. Very bad.”

Second, the lack of realism because of a missing state of urgency, lack of emotional reactions of the victims, and their overall state of calm (n=6), for example:

- “Not sure everyone would stay in a train following an explosion nearby. Casualties [were] very compliant.”
- “Realistic no, because the volunteers are very tranquil.”
- “If this would be in a real situation you would not have such quiet and organised [...] personnel who will not e.g. wait for the first responders but will try to run away.”
- “The field exercise was realistic. Something can be improved. Assumptions should be declared in advance to avoid misunderstandings and misjudgement. The less assumptions we use the more realistic is the field exercise. Panic and crisis environment appearance was missing.”
- “The train passengers were too calm - no panic, passengers could have had symptoms as well etc. I didn't observe any action taken to ensure that it wasn't a “dirty bomb” (maybe I just missed the radiation check).”

Two observers also pointed out less realistic elements relative the command line or the SOPs:

- “The different organisations were too mixed/ close together without any apparent purpose. The use of “gas mask” varied and was a little bit confusing.”

- "The scenario was there. The first responders were there (fire brigade, firefighters, rescue-team, CBRNe first responders, Police, Army etc.) but my/ the feeling was that a command control desk was missing and the effective communication among the aforementioned groups was missing too. Also under many conditions the chlorine component could have other behaviour/consequences."

Thus, based on this feedback the design of the exercise can definitely be improved to reduce to a maximum the artificial aspects in the first responders' actions.

Observation on good practice examples for interactions between practitioner players and volunteers (Q16)

When asked to provide three examples of good practice that observers witnessed during the exercise, five main themes emerged: treatment of vulnerable persons, communications, decontamination, evacuation and gathering of victims in a warm zone and lastly fast arrival of emergency services.

Six observers noted that the practitioner players treated the victims well. For example, one observer says, "the boy in the wheelchair was nicely treated," another mentioned that it can be considered good practice that the practitioners "allow[ed] the blind woman to go with her supporter," and another commented that the practitioners facilitated the decontamination process of vulnerable persons.

Another five observers pointed out instances where they felt that the communication between practitioners and victims went well, such as "clear direction was given whilst being scanned" or that "when communication was made they were calm and informative."

Several observers (n=4) stated that the decontamination phase was well executed, with a few (n=3) also mentioning the evacuation and gathering of victims in a specific safe area as a good practice.

Observation on possible improvements in the interaction between practitioner players and volunteers (Q17)

When asked to provide examples for possible ways for improvement on the actions undertaken by practitioner players during the exercise vis-a-vis vulnerable groups and the public at large, the main focus was on communication aspects (n=12). Multiple observers pointed out that practitioner players should "contact the public immediately and explain to them about the event," or that practitioners should communicate "earlier and more often" or "provide guidance / information in terms of the next step of the process." The other main suggested improvement (n=7) was to register victims earlier and perform a triage to help identify vulnerable victims. For example, one observer wrote "good triage would have helped identifying children, people with impairments, etc." and another wrote that there was "no victim registration at early stage." Lastly, two observers commented that it should be made clearer who was in charge, for example by stating "it was not clear enough who was the commander."

Meeting the expectations of the CSAB (Q19)

The treatment of affected persons by the first responders did not entirely reflect the civil society's expectations. The average rating (M=3.12) suggests that the CSAB observers would have expected to be treated better during a CBRNe incident involving decontamination. Each observer wrote something different, ranging from suggesting that first responders communicate more and pay more attention to the victims, to expressing that the exercise was in line with their expectations only because they observed other exercises where the "errors are the same."

Increasing preparedness of the CSAB (Q20)

Thanks to this exercise, some civil society observers feel slightly better prepared to deal with first responders in a CBRNe incident (M=4.25). E.g. "Yes about capabilities and [the] SOP."

The inclusion of vulnerable groups in SOPs (Q21)

Overall, PSAB observers agree that their SOPs take into account vulnerable groups (M=4.75). An example given by one observer was that "In the UK, we use the "IOR" guidance, where people who are unable to remove themselves / their outer clothing / any contaminant, others around them are encouraged to help."

Feedback on preparedness to deal with vulnerable civilians in future CBRNe incidents following the exercise (Q22)

Observing this exercise was not seen to help improve preparedness in dealing with vulnerable groups (M=3.50), due to the fact that e.g. "there was no special treatment to deal with vulnerable people." However, others felt that "through this exercise shortfalls and discrepancies were identified" and that would help them not commit the same mistakes within their own organisation.

10.5.5. Feedback about ethics

Triage ethical concerns (Q45-48)

For most experts, there was no proper triage and no care for participants, who were left "on their own". For instance, it was said that "Poor triage - poor understanding of the need of the volunteers" was found. Along these lines, and concerning attention to specific and vulnerable groups during the triage process, it is said that "Not even for selection to their duty towards the children present on the scene", and that "Victims were abandoned near the scene."

Furthermore, not even the rain situation experienced during the exercise was considered by first responders; "At least I observe that the victims (passengers) were pretty much left alone in the train (they were lucky that a roof was in place)."

Another factor addressed by observers is the significant time required for managing the affected group. In this way, comments include: "Removed casualties from the train early but no further treatment / advice for a considerable period of time." Finally, another surveyed expert pointed out: "Waiting time too long".

Decontamination as an ethical concern (Q45-48)

Results from the assessment on decontamination conducted by observers are better than triage concerning standard protocols and treatment of vulnerable groups. Still, some aspects to be improved were pointed out.

These include the management of individuals inside the decontamination tent. During decontamination, inside the tent, the volunteers were separated from one another. According to an observer, "if one of them would have collapsed during showers, nobody would have noticed."

Another observer indicates that service personnel were well aware of effective communication and respect. However, after decontamination, "setup was insufficient". The expert underlines that no other tent for the post-decontamination process was available, which left people to be dressed outside the main tent. Moreover, the lack of disposable gowns and the provision only of thermal blankets is presented as an ethical issue since persons had to get dressed outside the tent.

Addressing ethics-related aspects in the PROACTIVE App (Q26, Q29-30)

Generally, observers perceive that the App does not go beyond state of the art or social media tools in enhancing the situational awareness of the population on CBRNe events (with a grade of 4.63 over 5). Observes indicate that usability and accessibility (scored 4.38) for vulnerable groups could be improved. Findings were similar for visualisations, which could be enhanced (scored 4.8). Still, answers are poor and limited within the 19 observers (many N/A). Finally, there is not much information about perceived privacy, and there is a general lack of knowledge and awareness of the issue.

Recommendations

Aligned with the above assessment, recommendations for improvement provided by end users and experts included three main axes:

1. More and better training for practitioners on ethical issues. This should also cover the formal educational system and also briefing and debriefing processes. In this way, research is placed as an opportunity to expand knowledge about CBRNe response.

   “More training on ethical aspects involved in emergency situations, which should comprise: “1st by classic training means. 2nd by debriefings after this type of exercises. 3rd by reflective judgement (case tensed simulations) to be able to recognise people with various types of impairments."

   "Education-education-education- Inclusion in schools curriculum and lifelong courses; in defence schools and first responders academies and/or services such as the Red Cross etc.”

2. Prioritisation of vulnerable groups and injured individuals, which should also be addressed taking into account their interrelationships and possible interactions in this process:

   “Depending on physical possibility - vulnerable people can be prioritised for triage and decontamination”

3. Communication, including mechanisms and protocols for specific vulnerable groups:

   “Talk to them. Explain delays. Reassure them.”

   Having with them all the time someone who would be able to fully provide them all information and would be able to fulfil all their needs”

   “SOP is necessary to create for deaf people.”

10.5.6. Feedback about the organisation of the exercise

Suggestions from observers on ways to improve their participation (Q49)

Most comments about ways in which to improve the organisation of observer participation were to say that the participation was well organised (n=4), for example:

- “Everything was great”
- “Overall I felt it was well run”
- “Very satisfied of the whole experience”

Some observers (n=2) felt that the narration should be improved, e.g. “Provide me someone who will inform me on the site what is going on.” Others wished that the observers could have had more access (n=3), e.g., “make possible for observers to see every step.” Others also suggested to present “the flow” of the observers and to focus less on the observer guide and App (n=2). Lastly, one observer mentioned that the needs of deaf persons should be better taken into account, especially concerning subtitles.

Additional comments about the experience as observers (Q50)

Overall, additional comments were positive about the experience:

- “I greatly appreciated the whole organisation. PROACTIVE informed us (observers) properly through a remote meeting that took place a week before the realisation of the exercise. We received via emails all the appropriate material, guidance and logistics info. [A] Group in WhatsApp [was] established and supported our interaction and communication. Additional social events [were] organised and brought us closer to each other. Well done PROACTIVE.”
- “Very nice experience and in the future I would like to participate again.”
- “I feel it was well run.”

10.6. Feedback of the EEAB observers

The following part describes the ethical review of the Rieti exercise based on the observations and evaluation of the external ethics experts: one expert as member of the EEAB and one expert as member of the CSAB (with professional background in ethics).

Ethics in CBRNe response: introductory elements

Ethics concerns are generally framed by observers surveyed as part of the Rieti exercise as key for CBRNe incident response, although four of them do not consider it relevant for the response moment. For those confirming this relevancy, the main focus is on the main principle of saving human lives and respect for individuals: "all that saves lives is the only real priority. All the rest, ethical considerations will hardly ever be remembered by everyone in a real-life CBRN incident response - too much stress and no time."

Differential treatment is also placed as crucial in this context, where people's needs should be prioritised not only based on their vulnerable conditions but also taking into account their types and levels of injuries: "You need to provide them information awareness to take care separately of more injured with priority, less injured who will wait for long before they will be treated."

However, observers also recognise a lack of ethical training, especially concerning vulnerable groups. Such preparation should also include a pre-assessment of ethical aspects, which should be shared by all levels of command and first responders, according to experts.

Finally, ethics is also understood by one of the experts as a pre-event factor. In this context, the observer underlined the need for privacy-compliant data mining during surveillance and intelligence required to protect individuals from these events by detecting risks in due time.

In the Rieti exercise, ethics advisors and observers addressed the above ethics-related issues and analysed how first responders took care of users' needs during the event. For some, practitioners' performance was according to protocol. Along these lines, an observer pointed out: "First responders did their best in order to manage to balance the duty of care to victims and the personal wellbeing." The initial reaction processes led by practitioners within the train station as part of the exercise were found to be correct. Along these lines, for a practitioner observer, victims "were quickly evacuated and got treatment."[17]

10.6.1. General remarks on ethical and legal issues concerning the project and the participants

All the EEAB members, including the one present at the exercise, had the opportunity to provide:

- Early stage feedback on the general approach to ethical and legal aspects of the field exercises in PROACTIVE, through written review, suggestions and comments to D8.3 (Marsh et al. 2021) (Ethics briefing pack for fieldwork).

[17] Still, from the methodological perspective, “more in-depth risk assessment on each step/section of a scenario to make it more close to what happens in the field.” This meta analysis concerns the project strategy for data collection.

- In-depth feedback on the last version of the ethics and legal policies and procedures through written review, suggestions and comments to the Ethics Protocol for Rieti exercise, including recruitment documents.

Given the extensive coverage of the ethics and legal policies and procedures and the quality of the work put in those documents, the EEAB members gave positive feedback and considered them to reflect the necessary level of precautions, legal compliance and ethical consideration for deploying the Rieti field exercise: “I think that the documents are finely crafted and appropriate.”; “I have taken a look at the documents attached and, while a little late, have no particular remarks to give. From an ethics and legal point of view, I think the field exercise is looking solid”.

One important aspect of the Ethics Protocols is related to **the quality of the consent and the importance of obtaining assent from children**:

- The Ethics Protocols contained sufficient information about all important aspects and were written in a relatively accessible language

- The recruitment process included the consent and the assent of the volunteers

A week before the exercise, the PROACTIVE PEO sent both ethics experts that confirmed their participation the Ethics Framework Observation and evaluation plan (Appendix 17) and the Ethics Observation and evaluation sheet (Appendix 18) for their preparation. The following part analyses the feedback received based on the filled-in sheet as described in Chapter 4.4.4. The analysis focuses on two types of ethical issues based on the observation and methodological framework:

1. Ethics of the response operations:
    - General ethical principles and dilemmas during the exercise
    - Consideration of Societal Dimensions
2. Ethics of the exercise, i.e. research ethics:
    - Operational and assessment ethics

10.6.2. Ethics of the response operations

The following part describes the general ethical principles and dilemmas identified during the exercise.

Contextual factors limiting respect for main ethical principles (beneficence, justice, autonomy)

The experts have underlined that the main contextual factors that are limiting with respect to the main ethical principles are:

- **The necessity to restrict the freedom of movement**: “Involved persons must, both for rescue purpose and for security purpose, be put on a predictable course of actions (decontamination, medical screening, police questioning) which impact the personal sphere of personal freedoms and at some degrees, human rights, even if they are not perpetrators.”

- **The restriction of the freedom of communication** which “hinders the involved persons fundamental rights and raise ethical concerns, because both the necessary crisis communications from the incident command, the necessary restrictions about security of communication (to avoid detonations of secondary device, coordination between spotters and perpetrators) impact largely all of the three main areas of ethical principles”.

- **Technical limitation imposed by the rescuer equipment** (PPE) which is usually both scary and limiting in communication (i.e. communicating behind a full facial gas mask)

The experts agree that the weather conditions created pressure on the participants from the perspective of beneficence principle: “The constant shivering of some participants was a sign that they were not comfortable with the situation they were in. This leads to an important tension between the need for a realistic field exercise and the impact on the participants”; “there were no special provisions to shelter both observers and role players from unnecessary weather exposure; if it is usual in the military and rescue context to operate in all time / all weather context, the diversity of the age and the presence of special medical / personal conditions in both population calls for [...] more attention to the planning of the activities which involved prolonged weather exposure”. However, the experts recognised that from a procedural perspective, the ethical principles have been followed considering the need for a realistic exercise: “An important aspect to be taken into consideration here is represented by the strict procedural work on behalf of the PROACTIVE project, which followed the ethical standards in this field and informed the participants about the possibility of leaving the exercise whenever they felt necessary and provided them the opportunity. The fact that the mother of the child decided to pull him out of the exercise and the organisers provided a van for transportation out of the “disaster area” is proof for the enforcement of these ethical standards”.

The experts also identified that the lack of communication between the first responders and the volunteers represented “an element of supplemental stress for the participants”: “They did not know what is expected from them because for more than 30 minutes they did not receive any kind of instruction from the first responders on the scene. Moreover, [through] the protective equipment of the first responders the communication between them and the participants [was] very difficult. And we are not referring to participants with hearing impairments, but to those who didn’t show any hearing problems and manifestly tried to understand what the first responders were saying to them. And when you add to this situation the restriction of movement (i.e. the participants were packed together under one canopy tent, which is not expected in a realistic scenario, even if this stands for a delimitation of the disaster area), the tension between the objectives of the field exercise and the ethical principles increases”.

Choosing between the plausible competing courses of action

The experts have identified 4 control points in total that are relating to competing courses of actions:

- One at the **very initial stage of the emergency** “where casualties and special needs population of the ambulatory populations and the elderly cannot pace the speed of the evacuation”.

- Second control point matches the **waiting phase for the decontamination** where “no communication (just very limited) was in place for the involved citizens, resulting in lack of general triage of the walking casualties, wide spread of resentment and unnecessary fear”. “As previously mentioned, there are many ethics aspects that may reflect negatively because of the poor communication and triage. Moreover, it wasn’t clear for both participants and

observers why the “train conductor” was decontaminated first when he had a mask on his face. This kind of discrepancy in the scenario / exercise was observed by the participants, who commented about the situation”.

- The third control point was **during the decontamination phase**, which has a good technical preparedness (i.e. separated showers) but for the sake of the speed of operations no communication towards all the population involved in the emergency was chosen by the incident command”. “Nobody seemed to observe that the water from the showers was leaking outside the tent, in the spot where participants were receiving towels, thermal blankets and shoes. This kind of leak, which was a clear cross-contamination situation, could have been easily spotted by a trained eye and better coordination of the CBRNe response on the ground. In other words, the “victims" were exiting the decontamination tent just to get contaminated again. This leads us to recommend that the CBRNe response training should include, besides the ethical aspects related to victims from both vulnerable groups and general population, more elements related to the setup of the decontamination and designated areas for both victims, contaminated and decontaminated, as well as first responders”.

- The last checkpoint, **in the post-exposure phase**, “sees a completely lack of basic needs, because even if some good solutions were in place (post exposure shoes, thermal blankets) the chosen layout for the decon point sees the exposure of individuals naked and to the weather with the lack of any sheltering, without the provision of disposable gowns, directly to the evacuation point”.

Taking care of cultural differences when dealing with “patients”; cultural clashes.

The experts indicated that the selection of volunteers has created the possibility to practice dealing with persons with different cultural backgrounds: “Both the persons from different cultural backgrounds and the special needs population are usually present largely in the context of railroad transport population and were adequately represented in the role players by real multicultural and special needs persons”. However, no particular attention was accorded on these aspects by the first responders: “The decontamination tent has separate showers (for gender separation), but except this no communication effort or a perceptible one was put in place by incident command, both hindering an effective crisis management and the ethical sphere”. “The appearance of at least one participant could have raised concerns regarding these aspects, but it didn’t seem to receive any special attention from the first responders. In real emergency situations, especially in countries with significant minorities, the first responders should be sensible to cultural differences and have interpreters or special cards with information written in multiple languages. Especially cards explaining the process of decontamination (where all clothes are thrown away due to the exposure to dangerous substances and privacy becomes an important issue)”. “The first responders did not treat cultural differences in any particular way. Based on my direct assessment of their behaviour during the exercise, I do not think that they were aware of the cultural differences or, if they were aware, no attention was paid to this aspect.”

Regarding the cultural clashes, one expert underlined the need for better awareness and preparation from the first responders: “The initial emergency phase and the triage phase and subsequent awaiting was not characterised from any provision to respond to multicultural and special [...] population needs. The lack of basic information, even to the general public could lead to widespread fear, panic, and sentiment of anger, and in the multicultural and special need population of patients act as a negative multiplier of effects”. “The decontamination and post decontamination phase calls

for better judgement and special pre-employment provisions, because, in this phase citizens were both naked and exposed, and deprived of personal belongings and communication means".

Choice between the duty of care to patients and personal well-being or responsibility owed to loved ones.

The experts have not identified any particular stage situations that would reflect this tension; however, one expert underlined that it is important to implement post-operation decompression/ debriefing - non-technical which could be very beneficial, both in real-life context and also during exercises. "CBRNe activities are one of the most stressful, dangerous and complex activities for civilian and military responders; therefore is a high risk job or volunteering, resulting in a high chance for personal injury or death in case of fatal error from the responder him/herself. The lack of psychological debriefing for operators, mandatory, post - op, calls for a better operation planning and to the duty of the incident command to take in account [...] this dimension for his operators. **Same applies in the context of the exercise as it is itself**, where if not mandatory, a post operation decompression / debriefing - non technical - could be beneficial for roleplayers and responders".

The following part describes consideration of societal dimensions**;** the issues that the experts had to consider related to respect for autonomy and privacy, prioritisation of vulnerable groups, respect for environmental rights, the role of spiritual beliefs and the welfare of the volunteers during the exercise.

Recognising the role of spiritual belief

The experts recognised that this aspect was not addressed during the exercise by the first responders and underline the pitfalls of relying on the Red Cross to support the communication with the "victims", as it is the case in Italy emergency response system; "From post-field exercise discussions with the organiser of the Rieti field exercise and representatives of the first responders, this aspect was taken into consideration but not addressed directly during the exercise. On the contrary, as it was the case with cultural differences, the first responders themselves did not pay attention to this aspect. The response received during the last meeting, on the 2nd day, provided us with a different story about how communication with "victims" is being taken care of in Italy during an emergency situation, namely the fact that the Red Cross is involved as an interface between first responders and "victims". The Role of the Red Cross is not just to communicate efficiently with the "victims", but also to cover cultural, spiritual and other challenges that may arise during such situations. The Red Cross also provides spiritual relief. This involvement of the Red Cross is not the best option and contributes to a moral blindness in the case of the first responders, i.e. they will not correctly assess the "victims" individual context and treat them accordingly".

The second expert underlined the need to follow the example of other nations and to include religious personnel representing a diversity of faiths: "In the USA and other nations, Fire Brigades and the Military has in it is ranks chaplains, imams and other religious personnel, which act, in case of the emergency both as spiritual advisors for the responders and for citizens involved in emergency, as well as religious staff for the incident commander, providing proper guidance".

Respect for autonomy and privacy

The experts identified that the configuration of the decontamination tent supports privacy and autonomy but doesn't serve very well the needs of vulnerable groups: "The decontamination tent was designed for autonomous people, not for those with movement or visual impairments. In a real situation, this would directly affect "victims" from vulnerable groups. The tent was also designed for privacy, with two decontamination showers separated with curtains, and "victims" were taken one by one, which avoided even more privacy issues. At the end of the exercise, when participants were taken away from the "disaster area", they had special rooms to change into their own clothes". The

second expert also underlined that privacy was assured during the decontamination, but was not designed for the needs of vulnerable people: “The decontamination shower design lacks also the capability to respect autonomy of disabled persons, or for not so tall persons, because the on/off regulators are out of reach for a large range of persons, not only disabled”.

Prioritisation of vulnerable groups

The experts identified that there are no procedures in place to support the prioritisation of vulnerable groups: “with the exception of the decontamination of a wheel chair and a baby carrier, no special triage protocol was in place, nor special equipment for search and rescue, decontamination, medical care, or especially trained responders”. “The triage was not properly conducted, people being taken to the decontamination tent not based on their particular context, but based on their position related to the tent. Because of that, a “victim” with no vulnerabilities was taken before those with visible needs and also the minors. Secondly, the fact that one of the train conductors was taken on a second line of decontamination reserved to first responders made the participants ask among themselves how things are being handled. This was the moment the mistrust made itself manifest”.

Respect for environmental rights

The experts identified that the fact that there was rain during the exercise emphasised the environmental implications of the decontamination process: “First of all, the waste water from the decontamination tent was not properly disposed of. This might have a long-term impact on the area where the CBRNe incident happened. It is necessary to include among the CBRNe response equipment some technology that either treats the contaminated water from biological and chemical dangerous elements or [...] takes it to a special treatment area where its impact is minimised or at least mitigated. Secondly, the cross-contamination at the [...] area of the decontamination tent made it even more important to ensure a better way to properly dispose [...] contaminated water”. The second expert also identified the risk of cross-contamination: “huge operational concern raised in all observers, both technical and ethical, about the resulting **cross-contamination** resulting from the lack of adequate waste water retrieval system, even if in place. Moderate to severe raining occurring during the incident showed the necessity to better the wastewater management system (which is almost the same in Europe) and to call for a better understanding of how non exceptional weather impacts not only the dispersions of contaminants but also the rescue operations on the environmental aspect”.

Care for the welfare of the “volunteers”

The experts underlined that the volunteers were properly treated all the time during the exercise: ”The participants were properly treated all the time, from their admittance in the exercise area to their leave. The organisers arranged for a bus to take them from a meeting place to the military location used for the field exercise and back. They received change clothes only for the exercise and had their personal belongings kept in one place. There was clear information about this that we learned about while we were explaining the setup of the location. During the exercise, besides the heavy rain that made the mission of the first responders even more difficult and influenced the mood of the volunteers, there were no problems regarding mistreatment of the participants.”

10.6.3. Ethics of the exercise, i.e. research ethics

The following part describes operational and assessment ethics. In the observation and evaluation sheet, the experts were asked to assess the ethics involved in organising the exercise, i.e. research ethics topics as: access to relevant information regarding the exercise, collection of consent, safety of the participants, proper conditions to support the integrity of the exercise and the ethics evaluations process.

Interaction between the participants, first responders and observers

The experts indicated that the integrity of the exercise has been respected, as the volunteers didn't interact with the first responders pre-exercise: "The field exercise coordinators have excluded any pre-exercise contact between first responders and participants/volunteers by segregating their introduction to the exercise location: the volunteers arrived at the location last, by bus, without having any contact with both first responders and external observers." "No communication rule was in place during the exercise, granting a "no bias" situation, due to unwanted contact". One expert indicated that more communication should be done to stop any participant in the exercise from interacting with the participants and such to jeopardise the integrity of the exercise. "Still, during the exercise, when the participants/volunteers were staying close together waiting to be informed by the first responders as to what will happen next, I had to stop someone from the PROACTIVE Project from interacting with the participants. This intrusion in the field exercise would have had a significant change in the course of action of the volunteers. It is recommended to point out in the briefing session not only what observers can or cannot do, but also what the PROACTIVE members are allowed or not."

Ensuring the safety of the participants and consideration of safety risks

The experts agreed that both the safety design of the exercise and the safety briefings were adequate: "The safety was a key issue for the organisers and this was reflected both during the briefing session and during the exercise. For example, white-red tape was placed around the exercise deployment area in order to avoid the entrance of external observers in the "exclusion zone". During the briefing session, the organisers also highlighted what anyone should do in case of a real emergency and nobody was left to wonder about the premises of the military base used for the field exercise". One expert identified a potential hazard area in regards to the train simulator: "The train station simulator present at Rieti was cool and useful in training responders, but is not designed to ensure an efficient evacuation route in case of a real emergency (it is an earlier design). If the main access is designed to create difficulties to personnel in training, the back exit is dangerous even in case of ordinary exit".

Access to relevant information prior and after the exercise: feedback to ethical and legal approach, access to the scenario, participation in debriefings

The experts agreed that they had access to the relevant information prior to the exercise, they were offered the opportunity to provide feedback on the ethical and legal approach, and had access to the scenario and to the relevant documents that support the ethics evaluation. They considered all the documentation provided as being of good quality and appropriate according to the objectives. "The PROACTIVE team provided clear and extensive information about the Rieti field exercise prior to the deployment. An online meeting based on this information was also held. I have appreciated the quality of this information, as well as the Ethics Assessment framework." However, regarding the debriefing session, one ethics expert considered that it would have been beneficial for the PROACTIVE observers and the first responders to have a debriefing session together, to support the improvement of SOPs: "It would have been a plus to have the first responders present at the debriefing session. Unfortunately, due to the fact that the first responders have held their own debriefing, without hearing the observations made by the external observers and ethics experts, I am sceptical about future improvements of their procedures to include the aspects PROACTIVE project is focused on."

Also, one expert identified the need that a more detailed scenario should be considered and that it is important to be offered for consultation to the ethics experts before the deployment. "A general scenario was provided prior to the deployment, but, as mentioned during the previous Dortmund exercise, the exact scenario should be provided to the Ethics Expert prior to the deployment for better assessment of the field exercise. The design of the field exercise is particularly important to spot special ethics elements that might pose a problem to the first responders. But in order to do

that, the scenario must be prepared in much more detail than just a storyline. For instance, in the Rieti exercise, the scenario involved a train wagon that was placed in a sheltered space; due to the design of that particular space, the participants with mobility impairments are “ab initio” excluded from the exercise itself.” Also, the ethics experts would recommend having access to the conclusions of the debriefing sessions with the volunteers' participants in the exercise, as would support its better evaluation: “The debriefing sessions with the participants/volunteers took place with closed doors, which, from my understanding, is a methodological requirement. It is recommended to send the conclusions of these debriefing sessions to the External Experts before they hand in their assessment to make sure they understand their perspective as well. Ethical assessment should not be done in vitro, without access to the conclusions of the debriefing sessions with the participants. For instance, I would have liked to know what the teenager involved in the exercise felt when she had to go through the decontamination tent and when she was left last to get in the van and leave the field exercise area. Or what people with visual and hearing impairments felt when they were left to wait with no information for more than 30 minutes.”

Collection of consent and assent

The experts agreed that the consent and assent documents were properly redacted and that consent forms were collected properly during the day of the exercise: “I have received all the consent forms and information sheet prior to the Rieti field exercise and I was able to evaluate them qualitatively. I can say that they were very good, covering all aspects related to the exercise, in a clear language and with Italian translation”; “I cannot assess how consent was collected from participants because I was not part of that process. I can assess how the consent was obtained from the ethics experts and external observers and I can say that it was as expected in this particular case. For an assessment of how the consent is collected from participants/volunteers, there should be an ethics expert designated to take part in this process. The procedure for the Rieti field exercise did not include this aspect.”

Issues related to PPE

The expert agreed that, in regards to the PPE used by the first responders during the exercise, this equipment is an impediment “both for communication with participants/volunteers and other first responders, as well as for triage” and recommends that “In real situations, the PPE might also restrict movement of the first responders due to the extra-large size. For facilitating communication and triage, some sound enhancements must be used. For avoiding injuries from improper use of the PPE, some duct tape or other types of restrictive measures should be used to secure the feet and hands of the first responders. During the exercise, we could see first responders being unable to walk properly due to the movement of the bottom part of the PPE.”

10.6.4. Recommendations

The experts have made recommendations with regards to the two areas of ethics that have been identified: the ethics of response operations and the ethics of the exercise, i.e., research ethics and they are summarised below:

Ethics of the response operations

Implement training for first responders in all issues related to vulnerable citizens (identification on the spot, prioritisation, specific communication, awareness around cultural issues and spiritual beliefs):

- “In our opinion, for an ethical approach to CBRNe procedures in real-life situation, the first responders must be prepared to recognise these people, to ask for and provide information in a way that is an accordance with the principle of respect of human dignity and to do triage

that reflects not only the clinical aspects, but also those that reflect vulnerabilities which might lead to a prolonged or supplemental harm. When you leave a person with hearing and visual impairments last because you take into consideration only the clinical tableau of the victim, in a real CBRNe situation, this may easily lead to further harm (e.g. because the person may end up in an area that still poses a danger)".

- "In real emergency situations, especially in countries with significant minorities, the first responders should be sensible to cultural differences and have interpreters or special cards with information written in multiple languages. Especially cards explaining the process of decontamination (where all clothes are thrown away due to the exposure to dangerous substances and privacy becomes an important issue)".

- "It is highly necessary to make available special training on cultural and ethical aspects to all forces involved in a CBRNe situation and also train them to spot any cultural differences and ethical challenges".

Specific configuration of decontamination tent to consider the needs of vulnerable citizens:

- "Another element that needs to be reconsidered is related to the decontamination tent. The design of the Rieti decontamination tent is not fit for people with movement or any other impairment. For instance, a person in a wheelchair could not fit the tent or use the decontamination showers. A person with visual impairments would be in a similar situation. A more suitable decontamination tent should include tactile and Braille indicators. This would reflect better the application of the autonomy principle in practice".

- "This leads us to recommend that the CBRNe response training should include, besides the ethical aspects related to victims from both vulnerable groups and general population, more elements related to the setup of the decontamination and designated areas for both victims, contaminated and decontaminated, as well as first responders".

Inclusion of technology to treat the contaminated water and minimise the risk of cross-contamination in order to support the environmental issues:

- "It is necessary to include among the CBRNe response equipment some technology that either treats the contaminated water from biological and chemical dangerous elements or [...] takes it to a special treatment area where its impact is minimised or at least mitigated".

Usage of sound enhancement technology/tools to facilitate the communication and the triage; the sound enhancement technology should be compatible with the use of PPE:

- "In real situations, the PPE might also restrict movement of the first responders due to the extra-large size. For facilitating communication and triage, some sound enhancements must be used. For avoiding injuries from improper use of the PPE, some duct tape or other types of restrictive measures should be used to secure the feet and hands of the first responders. During the exercise, we could see first responders being unable to walk properly due to the movement of the bottom part of the PPE."

Ethics of the exercise, i.e. research ethics

Include in the briefing sessions better clarification of rules of engagement during the exercise for all participants:

- “It is recommended to point out in the briefing session not only what observers can or cannot do, but also what the PROACTIVE members are allowed or not”.

Improve the design of the exercise, (especially a more detailed scenario) in order to support the awareness and the training around ethics issues:

- “The design of the field exercise is particularly important to spot special ethics elements that might pose a problem to the first responders. But in order to do that, the scenario must be prepared in much more detail than just a storyline”.

Send the first analysis of the debriefing sessions with the volunteers participants in the exercise to the ethics experts involved in the exercise in order to facilitate the understanding and to support the evaluation process:

- “It is recommended to send the conclusions of these debriefing sessions with the volunteers to the External Experts before they hand in their assessment to make sure they understand their perspective as well”.

10.7. Feedback of the SAB observers

The most significant key takeaway is the lessons learned from the Dortmund exercise were recorded, analysed and ultimately utilised to improve the Rieti exercise. This process confirms the original objective of the three exercises and the bridging opportunities from one to the next.

One SAB observer referred to the need to identify the security checks that were made by the NBC School at the point of entry, together with confirmation that vetting of individuals took place. Both points can be confirmed and in fact proved to be a challenge as the NBC School understandably gave PROACTIVE a deadline after which no additional volunteers would be allowed due to the vetting administration. This situation prevented the organisers from enlisting additional volunteers after that cut off point, unlike the situation in Dortmund where recruitment of volunteers could be more “last minute”. Further considerations can be found below:

Security considerations

- The requirement for all participants to provide documentation at registration and additionally to pre-forward was significant and very reassuring as to the actual identity of the persons attending.

- The second stage verification with the Ministry of the Interior for security verification and clearance removed the possibility of any infiltration of the exercise by undesirable elements.

- The fact that the exercise site was a military site and that the NBC School had full responsibility for security enhanced the integrity of the exercise rather than an external team being in charge. The NBC School team had a vested interest in maintaining proper security which significantly reduced any security risks.

- The exercise location was not pre-announced was an excellent security mitigation measure.

- Restricting media circulation of images of content pre and during the exercise was also an excellent security mitigation measure.

- Hiring local transport, catering and media reduces risk as there would be good local knowledge from the School of the persons involved.

- Having military and LEA personnel on site would also discourage any nefarious activities.

Assumptions

- Because there were other EU partners, we can assume that eNOTICE would have similar strong objectives and motives in respect of security of data and procedures.

- Responders from the School, military, police and fire are state institutions, we can assume their bona-fides for the exercise.

- Other participants such as StC would have an ethos of help and benign intentions and participated for the general good of society which again reduces any risk for the outputs or operation of the exercise.

Conclusion

The exercise was primarily about engagement in an industrial or terrorist type incident with local civilians or casualties, it is very unlikely that the perpetrators of such an incident would remain in the vicinity post the event to gain knowledge about the responding agencies, as once the incident has occurred their objectives are generally achieved. Accordingly, this exercise was all about communication with victims and providing assistance by the responders. The SAB observers have not identified any security concerns from the exercise or any material contained in this exercise report.

10.8.Feedback of the Child Welfare Officer

As a member of the PROACTIVE CSAB, StC participated in the Rieti field exercise and supported the recruitment of volunteers. The exercise, which simulated an incident on a mock-up train (and it involved hazardous chemicals and risk of contamination), was aimed at improving the preparation of citizens and emergency operators in the event of such an accident, especially taking into consideration those who may have additional needs due to age, disability or other issues. These kinds of simulation activities represent a great opportunity to better tailor programs and solutions on risk prevention and mitigation, as well as increase citizens' preparedness.

Key observations and general comments

Only one child was recruited for the exercise, thus it is not possible to draw any findings on the impact of the exercise on children. Involving children in disaster preparedness activities is one of StC objectives, therefore it would be advisable to find more effective ways to trigger the interest of facilitators such as schools and families.

The **absence of medical first responders**, namely the Red Cross, had a negative impact on the overall implementation, particularly because in the Italian context they are usually responsible for handling the communication with victims.

Little attention was given to particular **vulnerable volunteers** (i.e. people with hearing or visual impairments) which resulted in more confusion and misperception of what was going on. In a real-life situation this would probably enhance the possibility for panic attacks and increase of stress and anxiety, ultimately affecting the work of first responders. As a matter of fact, a newborn in the stroller was almost overlooked, a lady with hearing impairments was completely isolated when the train became dark and a lady with visual impairment could not understand when instructions were addressed to her or someone else.

Information and **rapid communication** to the victims during the evacuation and decontamination phases were often either missing or hard to hear / follow.

Little instructions were provided on how to **reduce the risk of contamination** such as do's and don'ts right after the intervention of first responders. It was witnessed that emergency operators raised their gas masks to speak, volunteers all stuck together with no distance, often touching their faces and clothes.

There was little clarity and clarification on paths to follow. Three different decontamination paths were set in front of volunteers who in turn felt confused and wondered which one they would take.

The field exercise seemed weak in terms of actual **learning from common / vulnerable people** as it was mostly perceived as more tailored to first responders as an opportunity to test their logistics and response procedures.

The theme of **lack of privacy** among volunteers should be addressed, as most times they had to stand in a swimming suit in front of a "watching crowd" just outside the showers. This is something to take into consideration, especially when dealing with children. In most cases, they had to rely on other volunteers' information and description of what was going on but no specific support was given by the persons in charge.

The **emotional aspect** of the exercise was sidelined. Perhaps, having volunteers trained to act in a certain way, showing different kinds of emotional reactions and being affected differently by the accident would have given a deeper sense of the situation and the exercise would have been more realistic / useful.

Volunteers' selection could be more diversified and take into further consideration other spectrums of vulnerability, diversity and disability.

Conclusion

Citizens volunteers demonstrated a great attitude in terms of their will to learn more about CBRNe, also to be able to better collaborate and support the work of specialised responders to minimise the impact of a disaster.

It was, to an extent, surprising to see the extent to which vulnerable citizens are proactive. The first comment they gave in the discussion was that they would have appreciated better communication

which would have helped them to identify themselves to the first responders in order to facilitate their work.

Citizens volunteers felt somehow sidelined during the exercise, however during the focus groups they also showed an amazing level of learning from the exercise and they went home satisfied. It is not pretentious to say that they felt more prepared and that for one night they probably became young CBRNe experts in their households passing on to their families the knowledge acquired in the exercise.

10.9.Final remarks of the NBC School

The following remark is an excerpt from the interview with the NBC School given for the dissemination video: “The value added of the public in this kind of training is amazing. This is a really rare occasion to work, training as you fight. The capability to communicate with the vulnerable people and that spontaneous reaction of the people, merge with our procedures, this is the most important thing, I think.”

11. GOOD PRACTICES AND KEY TAKEAWAYS

This chapter presents good practice examples from the exercise planning process as well as Key Takeaways (lessons learned) for the next exercise in Ranst, Belgium.

11.1. Good Practices from the exercise planning process

Before, during and after the exercise in Rieti, the 14 valuable good practice examples from the first PROACTIVE / eNOTICE joint exercise in Dortmund, Germany, were applied[18]:

Good practice 1	Implement an adaptable and flexible plan based on the IIMARCH process
The IIMARCH process again served as a planning framework for the exercise. No updates of the process were necessary to meet the new demands.	
Good practice 2	**Clearly define Roles and Responsibilities**
PROACTIVE used the same documents to outline and allocate roles and responsibilities. However, new areas of responsibilities had to be implemented. Therefore, each exercise requires an initial assessment of required roles and responsibilities that can/must be updated if required during the planning process. Especially since the responsibilities of PROACTIVE in the Rieti exercise agreed in the tripartite arrangement would not have been possible without involving Italian partners, they were firmly incorporated into the PROACTIVE organigram allowing a holistic mapping of all PROACTIVE related responsibilities. In addition, Italian-speaking partners were colour-coded to allow quick identification and ensure a buddy system among non-Italian speakers and translators being in place in all necessary activities (e.g. registration, briefings). This process creates a consistent framework to apportion roles required to deliver the exercise.	
Good practice 3	**Develop detailed timeline planning**
The creation of a detailed timeline followed the approach implemented in Dortmund that reflected all areas of responsibilities prior, during and following the exercise day. It facilitated the creation of milestones and scheduling all necessary activities. The timeline further supported the development of individual process maps and the briefing of all managers of the exercise.	
Good practice 4	**Use Process mapping to outline in detail elemental activities**
Based on the detailed timeline planning, PROACTIVE again introduced process maps for central areas of the exercise (handling of volunteers personal belongings, registration process, etc.). Due to new planned activities, the number of process maps had to be increased. They provided the project managers with a clear overview of the individual steps to be taken in these activities.	

[18] The Dortmund good practices can be found in detail in the report on the exercise in Dortmund (Carbon et al. 2022).

Good practice 5	Develop contingency plans that include a detailed risk assessment
As in Dortmund, a detailed risk assessment and contingency planning was conducted. The exercise in Rieti highlighted the importance of this contingency planning: due to heavy rainfall, the weather contingency plan had to be applied that made use of a closed hanger instead of an outdoor train station. Comprehensive contingency planning proved to be the backbone of a flexible exercise management, particularly in complex scenarios.	
Good practice 6	**Create a living procurement and "to-do" document to facilitate resource planning**
PROACTIVE again used an online procurement list that kept track of all required resources and actions by area of responsibility. This allowed the permanent monitoring of outstanding procurements and tasks.	
Good practice 7	**Define a targeted level of representation of vulnerabilities in volunteer sample (e.g. 15%) during recruitment process**
The initially defined minimum of 15% of vulnerabilities in the total volunteer sample was applied in Rieti. However, the ideal sample was updated to focus on additional categories of vulnerability. When planning for an exercise involving (vulnerable) civilians, defining such a sample helps to tailor the recruitment process and select appropriate measures.	
Good practice 8	**Build a strong collaboration network with (local) CSOs to facilitate the volunteer handling (e.g. recruitment process, handling, well-fare)**
Strong relationships with CSOs proved to not only facilitate the recruitment process, as in Dortmund, but proved to be moreover a fundamental pillar of the very same by overcoming language barriers, getting access to the local community and managing necessary activities like briefings. Furthermore, the collaboration with a local bus company turned out to be a surprising main driver in the recruitment process. Therefore, not only regular CSOs should be considered for collaborations, but also unthought-of organisations, companies and institutions.	
Good practice 9	**Ensure volunteer handling and welfare through briefings and security measures**
Ensuring the well-being of the volunteers was always a priority. The Rieti exercise implemented the same processes for volunteer handling and welfare, adapting them to the respective conditions on site and the respective vulnerabilities of the recruited volunteers. This was done in collaboration with the exercise host and the involved CSOs.	
Good practice 10	**Observe the immediate identifiable tangible benefit of including civil society volunteers as a challenge for training responders**
Similar to the host of the Dortmund exercise, the NBC School reported a tangible benefit of the exercise due to the imposed new challenges for responders in dealing with civilians, especially vulnerable individuals in CBRNe incidents. This was established through reflective practices by emergency responders and the exercise host.	

Good practice 11	Plan for focus group management to evaluate volunteer experience (e.g. numbers and format)
As a result of the higher number of volunteers, the number of focus groups was adjusted. The target was still 6-8 volunteers per focus group leader that proved to enhance the group dynamic. In line with established practice focus group attendee numbers should be 10 or less.	
Good practice 12	**Arrange translation where necessary to facilitate communication processes**
Especially when organising an exercise in a country where the language is not spoken by anyone in the consortium, sufficient translation measures should be considered: involve native speaking colleagues not involved in the project of organisations within your own consortium, collaborate with native speakers from partner projects involved in the exercise, hire translation companies, use online translation tools, etc. A mix of these options proved to be the most effective way to address different requirements. However, the optimum situation would ensure one local consortium member to the exercise site.	
Good practice 13	**Provide spare clothing for volunteers to secure personal property and enhance sense of community among volunteers**
As in Dortmund, spare clothing from the Caritas was used for the exercise to protect the volunteers' personal clothing. It again created a great sense of community among all volunteers during the re-dressing process.	
Good practice 14	**Engage a briefed professional filming and photography team**
The handling of filming and photography activities followed the good practice of Dortmund that involved a professional filming crew that was briefed beforehand on ethics and data handling towards the volunteers. The promotional material was used for several dissemination purposes. Interviews proved to be very valuable in capturing the essence of the exercise and supported the view that such exercises are a great benefit to both responders and society in general.	

All examples proved to facilitate the planning and execution of the Rieti exercise and can therefore be considered applicable to other CBRNe exercises involving (vulnerable) civil volunteers.

In addition to the good practices already identified in the Dortmund exercise, the following section further takes into account adaptations made in response to the key takeaways of Dortmund (DO) and new identified good practices based on the unique features of the Rieti exercise.

Key takeaway DO	**Implement broader exercise scope to elaborate scenario**
Good practice 15	**A broader scenario scope adds complexity to the exercise**

Compared to the exercise in Dortmund, the exercise scenario in Rieti was more comprehensive:

- In addition to a firefighting unit, the NBC School commissioned train personnel, a military unit and Carabinieri personnel. Unfortunately, the initially considered Red Cross Unit had to withdraw their participation due to a real life incident.
- The decontamination set-up including the tents were erected during the exercise rather than beforehand.
- A broader spectrum of vulnerabilities could be recruited including a minor.

All these factors contributed to make the exercise scenario more realistic.

Initially, a Red Cross unit was further foreseen to perform medical triage. However, due to an operation, this unit had to cancel their participation. However, medical triage should be included in a CBRNe exercise to elaborate the scenario.

Key takeaway DO	**Early engagement with exercise host helps to address identified challenges early on**
Good practice 16	**Regular on site meetings enhance the planning process**

Joint meetings among the planning team and the exercise host are crucial to identify potential challenges early on and implement adaptation strategies. Even though online meetings provide a regular exchange, both the Dortmund exercise and the Rieti exercise proved how crucial physical meetings are. It facilitated communication and generated greater outcomes. The sense of community among all involved stakeholders also increased dramatically. Therefore, such meetings should be included as fixed milestones in the planning process.

Key takeaway DO	**Exercise start times and days should allow for travel, registration, and preparation of volunteers**
Good practice 17	**Weekend late morning hours allow enough time for arrival delays and pre-exercise activities**

During the exercise in Dortmund, it was experienced that due to the early start time of the exercise, there was only limited time for important activities before the exercise (registration process, arrival of the exercise participants, etc.). In collaboration with NBC School, it was decided to start the exercise in the later morning hours. This practice further enabled the participation of volunteers from outside the immediate exercise region and buffered respective delays in transport.

Weekend exercises are better suited to meeting the needs of volunteers who generally work or are at school during the week.

Key takeaway DO	Separate volunteers and observers and implement a formal start and finish of the exercise day
Good practice 18	Separate participant groups before the exercise and bring them together afterwards to appreciate the success of the exercise
In both exercises, volunteers, first responders and observers were kept separated until the end of the exercise. Separation was managed through different arrival times and use of facilities. This process was deliberately chosen to prevent the groups from influencing each other before the exercise. However, since in Dortmund, participants of the exercise left the training centre uncontrolled due to a lack of a formal (joint) farewell, all participants of the Rieti exercise were seen off together in a ceremony after the exercise. This also created a moment of collectivity for all those involved in the success of the exercise. A group photo reinforced this.	

Key takeaway DO	Establish early on communication and negotiation on number of exercise participants to be invited
Good practice 19	Strive for a balance between all groups of participants
In Dortmund, the ratio between volunteers and responders was unbalanced (about 1:15). In cooperation with NBC School, a realistic balance was sought. Furthermore, in cooperation with eNOTICE, the observers were shared between the approved guest places of both projects in order to increase their total number. Cooperation was again the key to success.	

Key takeaway DO	Provide a dedicated evaluation strategy for ethical observations
Good practice 20	A comprehensive ethical evaluation can be carried out with a few additional measures
Dortmund proved the need for a dedicated ethical evaluation strategy in place. For this purpose, PROACTIVE expanded the responsibilities of the ethical and data security officer with regard to the exercise in Rieti, increased the involvement of external ethics experts in exercise planning and as observers, and dedicated a separate section of the observer guide to the ethical evaluation of the exercise. The EEAB feedback confirmed no gaps in the ethical treatment of volunteers in the Rieti exercise and at the same time provided valuable incentives for adaptation measures in CBRNe management.	

Key takeaway DO	Enable physical involvement for observers
Good practice 21	No live broadcast via screens can replace direct observation
During the exercise in Dortmund, only some of the observers were able to observe the exercise directly. The remaining observers had to observe the exercise to a limited extent via a screen in the observer room. Based on the observers' feedback, PROACTIVE and NBC School ensured that all observers could observe the exercise directly in dedicated observation areas on the ground.	

Key takeaway DO	Organise handling of volunteers' personal belongings
Good practice 22	**Consider that briefing on the dressing process may also involve individuals outside your own project**
A similar process of handling volunteer's personal belongings was applied as in Dortmund (storing personal belongings in sealed and numbered bin bags, etc.). However, while the respective briefing of involved first responders was handled by the host and first responders actively participated in this process, adjustments were made to limit confusion and other possible logistical complications. In Rieti, the decision was made to subsequently leave the process entirely to PROACTIVE staff but to pay a special focus on briefing the emergency forces by PROACTIVE planners on how to minimise disruptions of their procedures.	

Key takeaway DO	Address technical challenges with the PROACTIVE App through early release and testing
Good practice 23	**Implement a testing, briefing, support and evaluation phase when using Apps during the exercise**
To mitigate unforeseen technical issues during the exercise, PROACTIVE suggests implementing a testing phase that involves feedback of project internal and external end users. Furthermore, a workshop with the invited exercise observers was organised in which they downloaded the App guided by a technical expert and briefed on how to use the App during the exercise. Furthermore, the same expert provided technical support during the day at a dedicated IT desk. As a last step, a technical evaluation of the App performance was conducted to identify lessons learned towards the last exercise.	

11.2. Key Takeaways for the exercise planning process of the next exercise based on challenges experienced

The focus in this chapter is on identified challenges during the Rieti exercise planning process as well as on 9 key takeaways to address these challenges for the next PROACTIVE / eNOTICE exercise in Ranst, Belgium.

Challenge 1	**Location of exercise site in relation to travel requirements**
Careful consideration must be taken of challenges in transporting exercise staff, participants and observers to the exercise location. There is a need for good transport links from public transport including airports and trains. Unlike Dortmund, Rieti is an isolated location with poor transportation infrastructure links which required a complex and expensive transportation plan. As facilitators travelled individually depending on their responsibilities and available time, some even on Sunday, additional costs arose due to the necessary taxi rides and rental cars. Cooperation with a local bus company supported the transportation of certain participant groups like volunteers since some were recruited from Rome and had to make the 1.5 h trip to Rieti early in the morning. This cooperation was especially valuable as no local consortium partner could arrange transportation on site. However, the overall additional transportation costs had to be carefully considered in the overall financial planning.	
Key Takeaway 1	**Compensate for insufficient public connections using own resources as much as possible and as little as necessary**
All partners should be briefed on available transportation links and options ahead of time during the registration process allowing individual transportation measures to be taken. In this context, participants reporting to travel alike should be matched as much as possible (shared company or rental cars, etc.). As in Dortmund, the volunteer recruitment should focus on local civilians that require less or only local transportation.	

Challenge 2	**Cross border procurements and transportation logistics**
As PROACTIVE had to organise the exercise from a distance, procurements were initially managed online by two responsible partners. They checked the arriving goods and shipped big packages to Italy where a commissioned partner of NBC School received and stored everything. Only a few goods were bought locally briefly before the exercise. Last minute local procurements could compensate for some delays in online orders but are not recommended due to experienced unexpected opening hours or products being out of stock.	
Key Takeaway 2	**Engage with the exercise host early on to identify necessary procurements and storage options**
Early procurement of necessary goods facilitates the mitigation of difficulties such as shipping delays. The whole process requires a very precise procurement and “to-do” list that respects shipping deadlines. Procurement lists that have already been developed and tested can be used and adapted to the new requirements. Close cooperation with the host can facilitate the early adaptation of the procurement list and the subsequent storage. However, the procurement process must remain flexible due to the planning dynamics, and last-minute on-site purchases may have to be accepted.	

Challenge 3	Arranging exercises on secure sites
Whilst the facilities at these locations are generally of a high standard, security and vetting procedures can create long delays especially when members of civil society need extensive security checks. There were challenges in Rieti in getting authorisation for migrants to be included as vulnerable volunteers; this was only resolved after extensive and time consuming negotiations.	
Key Takeaway 3	**Engage with the exercise host early on to identify necessary security and vetting requirements**
If a secure establishment is to be used, the parameters for access should be set early in the planning process and sufficient time allowed for the appropriate security and vetting procedures to take place. Provision may also be needed for additional security measures that require dedicated resources or funds.	

Challenge 4	Hardships in recruiting children
In Rieti, the recruitment process of children proved to be extremely difficult due to the exercise taking place on a school day and no cooperation with a school could be established. In addition, two recruited children cancelled their participation shortly before the exercise. Although one minor participated in the exercise, a comprehensive evaluation of the experiences of children in such exercises was not possible.	
Key Takeaway 4	**Recruit children in groups to increase numbers**
Following Good Practice 17, exercises involving children should be performed on weekends or during school vacations. Although the date prevented schools from participation, the involvement of CSOs like StC facilitated the discussions with schools. To attract schools, a joint class project can be suggested that educates children on CBRNe incidents and culminates in their participation in the exercise.	

Challenge 5	Registration process involves too many documents
While it became apparent after Dortmund that the registration process needed to be simplified (too many documents), the process also proved challenging in Rieti, as the exercise took place on a military site. All participants had to go through a security clearance, which is why the volunteer recruitment could not run until shortly before the exercise. The volume of documents could also not be reduced considerably, due to the requirements of all tri partite parties.	
Key Takeaway 5	**Consolidate consent forms as much as possible**
Create one consent form instead of individual forms for certain activities (registration PROACTIVE, registration host, surveys, focus groups, etc.). For this purpose, PROACTIVE aims to use the registration form of the host of the Ranst exercise and elaborate it according to all PROACTIVE needs.	

Challenge 6	Miscommunication during the consent process for the evaluation
During the exercise, internal miscommunications led to an individual under 18 being provided with an adult consent form and participating using adult research materials (i.e. questionnaire and participating in the adult focus group).	
Key Takeaway 6	**Make age restrictions around consent clearer in the information sheet and consent process**
This ethical issue was recognised after the exercise and was a product of miscommunication during the exercise play. This has been discussed with the UKHSA Research Ethics and Governance lead. Mitigations identified during the discussion included: ● The individual in question was consented by parental consent to participate in the exercise, and was accompanied at the exercise by her mother who also took part. This could be considered tacit approval / consent. ● A representative from StC Italy was also in attendance at the event and we had discussed in the preparation the organisation acting as safeguarding for any children who attended. ● No identifiable or sensitive information was collected as part of the evaluation other than names on the consent form. ● The simplified children's versions of the forms and focus group guide were originally designed for those aged 7-12 years old, and this individual was above this age. ● To the best of the team's knowledge, nobody has raised any issues either during or since the exercise. In addition to integrating the consent forms together (see Key Takeaway 4), the information sheet and consent form will make it explicit that individual consent can only be provided if the individual is over 18 and that parental consent will be required otherwise.	

Challenge 7	Volunteers behaved exceptionally calm and patient during the exercise
While in the Dortmund exercise actors created an "emotional" atmosphere at the beginning of the exercise, this element was not included in Rieti. In Dortmund these actors were not involved in the exercise itself but were artificially taken out of the exercise separately before decontamination. In contrast, in Rieti no actors were used and the volunteers remained exceptionally calm and patient during the exercise.	
Key Takeaway 7	**Incorporate actors into the volunteer group during the exercise**
Actors should be incorporated into the exercise not as a separate atmospheric element but as additional volunteers. In doing so, the volunteers are more likely to experience the envisaged exercise situation and the actors are not treated as a special case by the first responders. However, the total number of actors relative to the number of volunteers should be carefully considered. To allow evaluation of volunteers' behaviour, identification such as coloured wristbands can be used to separate actors from volunteers, whereby the colour of the wristband is only known to the evaluators.	

Challenge 8	Observers interfered with volunteers and first responders during the exercise
Due to bad weather conditions, volunteers and observers were in close proximity to each other as they sought shelter under tents from the heavy rainfall. Although Good Practice 21 revealed that a close proximity of observers to the exercise is important to ensure good observation, the Rieti exercise taught that over-proximity can interfere with the work of first responders and encourage unwanted interaction between observers and volunteers. This engagement can contribute to the groups influencing each other and thus skewing the evaluation results.	
Key Takeaway 8	**Find balance between proximity of observers to exercise and necessary distance to volunteers and first responders**
The definition of the role of the umpire should focus more on preventing such interaction. In addition, observation areas should be designed in a way that ensures enough distance from the exercise players while still enabling good observation possibilities for the visitors.	

Challenge 9	Insufficient narration of exercise procedures
PROACTIVE and the NBC Defence School agreed that there should be a narrator at this exercise. The NBC Defence School had appointed an officer to be the narrator of the exercise. This narrator had a microphone and at the beginning of the exercise, read aloud the scenario. However, simply reading aloud the scenario was not deemed as providing enough information by the exercise observers, who wished for more details, to have the procedures explained step-by-step throughout the whole exercise and wished to have been able to ask more questions and obtain answers in real-time.	
Key Takeaway 9	**Clearly define the role of the narrator to meet the respective needs of the observers**
In future exercises, the description of the role of the narrator should be more detailed and it should be ensured that all parties understand what is meant by narrating the exercise and that narrators perform in line with the participants' expectations.	

12. CONCLUSION

12.1. Summary of Tactical Objectives findings

This chapter contains a summary of the key findings aggregated from across the datasets collected during the Rieti Exercise with a specific focus on reporting against both the tactical objectives and key performance indicators set out in Chapter 4.2. In short, during the exercise, the PROACTIVE project successfully collected data to enable reporting against all objectives and key performance indicators, and have been able to provide an assessment of the way in which the Rieti Exercise performed against both metrics.

No	Objective	Key Performance Indicator	Summary of findings
1	To involve and engage with civil society (members of the public as volunteers) in CBRNe exercises with at least 15% of these representing vulnerable groups.	This was assessed by evaluating the number of individuals with vulnerabilities in the final volunteer sample.	15 of 32 volunteers were members of vulnerable groups. This far exceeds the 15% target.
2	To evaluate the effectiveness of first responders to recognise vulnerable people during a CBRNe incident.	This was evaluated through: 1) focus group questions and prompts concerning volunteers' perceptions of responder effectiveness in recognising vulnerabilities, and 2) through the evaluators' observations focused on identification, prioritisation, and triage of individuals with vulnerabilities during the exercise.	As far as the evaluators could see, there was no attempt to identify or prioritise triage and decontamination of volunteers with vulnerabilities. Indeed, one volunteer in a wheelchair was separate from the other volunteers, and, although there was a person in military uniform next to him, the interaction largely seemed to be between the volunteer, his parents and PROACTIVE staff. The volunteer in the wheelchair was eventually escorted away from the exercise area and did not undergo triage or go through the decontamination shower. Visually impaired individuals either went through triage or the shower on their own or escorted by another volunteer, but not accompanied by any responders. The non-ambulant casualty (mannequin) that was brought out of the train station, did appear to be prioritised, and had its clothes cut off before being subsequently walked through the smaller decontamination shower and then was carried through the main shower corridor ahead of all other individuals. Similarly, according to the focus group leaders there was also discussion around the importance of rapid triage and engagement with casualty volunteers - and particularly those casualty volunteers with vulnerabilities - as part of the focus groups. For example, casualty volunteers emphasised the importance of quickly identifying and responding to volunteers. They reflected that additional training to help recognise and triage vulnerabilities may help with this process. This viewpoint is likely also related to a broader theme identified by the focus group leaders concerning involvement within the exercise - that is, there was a view that individuals with vulnerabilities may not have been as integrated into the exercise as they could have been; it was speculated that this may be a reflection of responders "playing it safe". Lastly, the focus group leaders also highlighted the importance of developing an "emotional plan" for casualties. Overall, a combination of the focus group and observational data suggest that the first responders did not effectively recognise and tailor their responses to vulnerable people during the exercise. In summary, therefore, it seems that the casualty volunteers felt that more could be done to both integrate individuals with vulnerabilities into the

No	Objective	Key Performance Indicator	Summary of findings
			exercise play, but also to recognise and cater to the needs of the casualties - both physical and emotional.
3	To evaluate the effectiveness of first responders in supporting and assisting vulnerable people during the CBRNe incident phases, through response measures (e.g. tools, equipment, procedures) which are adapted to the needs of vulnerable people.	The objective was evaluated using a multi-method approach. First, questions in the post-exercise questionnaire on the potential impact of accessibility on interactions with responders and on undergoing the decontamination shower were included. In the focus groups, the perception of the volunteers on how they felt their vulnerability needs were, or were not, met was explored. Furthermore, observational data were collected on interactions between the responders and volunteers, particularly revolving around the assistance and support provided to volunteers.	As noted in response to KPI2, the focus group and observational data suggest that the responders did not effectively support and assist the vulnerable people during the exercise. That is, more could have been done to integrate the volunteers with vulnerabilities into the exercise play, and also to respond to the physical and emotional needs of the volunteers. Looking at the questionnaire data, findings from the questionnaire data were more mixed. Consistent with the above, volunteers reported that they slightly disagreed, on average, that their condition impacted their interactions with first responders and their ability to undergo a decontamination shower. They did, however, report believing that the emergency services behaved in a fair and respectful way during the decontamination process and felt a slight sense of identification with the emergency responders. The descriptive assessment of identification and legitimacy is based on the means presented in Table 16 and so only considers responses from those who reported at both pre- and post-exercise time points. Overall, the results from the evaluation suggest that, although the needs of volunteers with vulnerabilities may not have been met by the responders (as per the focus group and observational data and the findings concerning the impact of vulnerabilities on interactions with responders/ ability to undergo decontamination), on average the volunteers identified with the responders and believed that the emergency responders behaved in an appropriate and respectful fashion. This is consistent with the general findings from the focus groups that volunteers were impressed by the look and feel of the exercise.
4	To evaluate the effectiveness of PROACTIVE pre-incident information and awareness during emergency communication with the public.	This was assessed mainly through measures included in the pre- and post-exercise questionnaire. Six questions were included in both the pre- and post-exercise questionnaire assessing perceptions of the pre-incident information. In addition, the observations undertaken by the PROACTIVE evaluators focused on volunteer behaviour during the containment phase (immediately post-evacuation and pre-triage), a period of time that is covered by the pre-incident information, in order to determine whether the pre-incident information was used during the exercise.	Unfortunately, slightly over half of the volunteers had not read the pre-incident information. However, among those who had, there was a belief (as demonstrated by responses significantly above the mid-point on a 7-point strongly disagree-strongly agree scale) that the pre-incident information would be an effective way to decontaminate and would also want to seek further information. These volunteers also responded that they would also feel comfortable and willing to take the actions in the pre-incident information. Furthermore, there were no significant differences concerning ease, willingness, comfort and perceived effectiveness of the behaviours recommended in the pre-incident information, and no change in the need to seek further treatment, when scores were compared between the pre- and post-exercise questionnaires. This suggests that participating in the exercise had no additive effect on volunteers' perceptions of the behaviours recommended in the information sheet over-and-above the effect of the pre-incident information itself. In other words, the pre-incident information was effective at communicating the recommended behaviours. The exercise did, however, have an additive effect on reducing feelings of embarrassment engaging in the behaviours, thus suggesting that physically performing actions does have some positive effect over-and-above the presentation of pre-incident information. Despite these positive effects on self-reported knowledge and confidence, within the exercise play, the exercise evaluators did not observe any consistent deployment of the behaviours detailed within the pre-incident information. This was true even given the long waiting period prior to decontamination, and the lack of information provision observed by the evaluators during the exercise. Overall, then, while those who read the pre-incident information reported confidence, ability, and knowledge related to recommended actions, these were not translated into actual behaviour during the exercise play. Further work is therefore needed to translate these attitudinal/ perceptual effects into action. Similarly, further work is needed to examine the effects of pre-incident information by comparing findings to a control condition who did not receive the information. The Ranst Exercise represents an excellent opportunity to investigate this further, employing a more experimental approach to assessing the pre-incident information (i.e., by potentially using a control condition, and more explicit training in the pre-incident information for those in the treatment condition).
5	To evaluate if communicati	This was assessed through multiple approaches. Firstly, through the post-exercise	Through the questionnaire responses, volunteers reported a slightly positive perception of responder communication about decontamination and the explanations that were provided (approximately 5 on the 7-point scale, thus

No	Objective	Key Performance Indicator	Summary of findings
	on with the public during the incident is pitched at an appropriate level in terms of language, complexity, and channels.	questionnaire in which two measures were included on responder communication. In addition, the focus groups included questions around volunteers' perceptions of responder communication. Furthermore, the observational data collection conducted by the PROACTIVE evaluators involved a focus on interactions between responders and volunteers.	indicating slight agreement). This suggests that better communication would have been desirable. Nevertheless, volunteers did feel positively (on average) about the responder's ability to manage the situation based on the descriptive data. Echoing the questionnaire data, through the evaluator's observational analysis we can also see that there were some limitations in the responder-to-volunteer communication. Specifically, although the initial interactions were positive and involved smiling and what looked to be friendly chatting, there was not much responder to volunteer discussion across the first hour of the exercise. No initial operational response was undertaken and there was no communication with the volunteers with regards to, for example, removing top layers of clothing or to avoid touching one's face. At one point the evaluators observed a volunteer attempt to ask a question of the responders, but they were waved away. When more sustained communication did begin, no form of amplification was used to ensure that all volunteers could hear. This resulted in the communication being provided to a small number of volunteers, including one volunteer who subsequently relayed information to the larger group. Although the attempts to communicate to the group were limited, the responders should be commended for recognising the role that this volunteer could play for relaying information. Evaluators observed that the responders did provide some visual cues to volunteers regarding how to stand at the initial monitoring site prior to decontamination; however, a lack of communication during the showering process was also observed, and this appeared to lead to confusion and queuing through the shower corridor. The need for more communication with the casualty volunteers was also clear from the debriefs with focus group leaders. Specifically, casualty volunteers had a desire both for more clear and consistent communication throughout the exercise. Two specific pinch points seem to have emerged from the focus groups: first during the delay between evacuation and triage / decontamination, and second; during the decontamination shower and at the point of re-robing. This communication should both be more regular and also clearer in terms of message content and method of delivery. Overall, although the volunteers did feel positive about the responders management of the exercise, and there was some evidence of good practice in communication (specifically the use of a volunteer representative to relay information), there was a desire for more sustained and consistent communication from responders to volunteers throughout the exercise.
6	To test the technical aspects of the PROACTIVE App in a live exercise environment.	This was assessed through monitoring of App performance during the exercise and recording key performance parameters, such as number of active users, App crashes, performance of iOS (Operating System for Apple) vs ANDROID, latency with reporting events, number of notification clocks, performance of App depending on the version of iOS or ANDROID.	Continuous monitoring of App performance during the exercise in Rieti and post exercise analysis has confirmed that the app was working reliably, that there were no obvious bugs which affected performance during the exercise, with both ANDROID & iOS versions working well, and very few App crashes. 28 active users were recorded, which implies that at least all invited Observers played their role of witness. Therefore, the overall app performance during the exercise was good.
7	To evaluate how usable the PROACTIVE App is for Civil Society in a live exercise environment.	The PROACTIVE App is intended to be used by witnesses of a CBRNe incident and not by victims. As such, this KPI was evaluated via the inputs from observers. App usability for observers was assessed using the App usability recommendation provided in the observer guide. While it was not expected that volunteers would use the App, those who would choose to do so were also given the opportunity to evaluate the usability of the App through volunteer questionnaires collected post exercise. Detailed	Observers reported to feel very confident in using the app and thought it was easy to use. The app got an overall rating of 3.53 stars out of 5, an improvement from the Dortmund exercise. In terms of usability, observers appreciated in particular the visualisations used in the app and the amount of displayed text. No volunteers at the exercise reported using the App as part of the post-exercise questionnaire, so there was no data available concerning useability of the app from the perspective of volunteers.

No	Objective	Key Performance Indicator	Summary of findings
		statistics and observations of these assessments are presented in Chapter 10.5.3.	
8	To evaluate the effectiveness of the PROACTIVE App in supporting the needs of Civil Society (e.g. communication needs, better information exchange).	The PROACTIVE App is intended to be used by witnesses of a CBRNe incident and not by victims. As such, this KPI was evaluated via the inputs from observers. App effectiveness for observers was assessed using the App features section of the observer guide. While it was not expected that volunteers would use the App, those who would choose to do so were also given the opportunity to evaluate the usability of the App through volunteer questionnaires collected post exercise. Detailed statistics and observations of these assessments are presented in Chapter 10.5.3.	Regarding the Observer feedback, most Observers stated that they would use the app in the case of a real CBRNe incident, demonstrating its effectiveness. Accessibility features can still be improved to make the app more effective. There was also a wish for the person who provided the information to be made known somehow. No volunteers at the exercise reported using the App as part of the post-exercise questionnaire, so there was no data available concerning the effectiveness of the app from the perspective of volunteers.
9	To develop the understanding of factors that may increase public compliance during CBRNe incidents.	This was assessed through several measures in the questionnaires,, including: confidence and knowledge of actions, expectancy of receiving help from other volunteers, helping other volunteers, perceived responder legitimacy, identification with volunteers, and identification with responders, perceptions of responder communication, perceptions of practical information, perceptions of privacy, collective action (the belief other members of a group will support the pursuit of a shared goal, which in the instance of the exercise may be decontamination), levels of anxiety during the exercise, perceived responder competence, and expect compliance during a real incident. Operational factors concerning the nature of decontamination and the exercise play were also considered as part of the PROACTIVE evaluator observations and are included as subsections within the results section of the report.	Analysis of the questionnaire data provided evidence concerning the predictors of likely compliance with responders' instructions and decontamination during a real incident. Specifically, perceived responder competence and practical information did predict expected compliance with responders or decontamination showers, but not in the direction expected. That is, those who perceived the responders as competent, and had more positive perceptions of the practical information presented by responders reported *lower* expected compliance if the situation had been real. This finding requires further exploration and is briefly discussed in section 11.2. Furthermore, responder communication and identification with responders did not predict expected compliance with responders or decontamination showers. However, the evaluator observations did identify multiple issues of confusion during the exercise resulting from poor communication, and a need for better communication was identified through the focus groups. Despite the lack of significant regression analyses, we did find associations between compliance and several factors specifically there are positive correlations between identification with responders, perceptions of communication, and expected compliance if this were a real incident. Thus, although the expected predictive relationship was not observed, there were associations between compliance and factors associated with identification and communication. The questionnaire analysis also found that participating in the exercise led to an increase in volunteers self-reported confidence and knowledge about what to do, and a decrease in the anxiety that they expected feeling, if a real incident of this type was to occur. Finally, the operational factors mentioned in the KPIs were considered as part of the evaluator observations. In summary, the decontamination process did not involve any initial or interim decontamination, and there were points at which the responders were prioritised for decontamination. Furthermore, there was a lack of clarity about the showering process, confounded by volunteer confusion and a lack of communication from responders during the exercise. There were also some artificialities within the exercise (some of which involved the weather, a circumstance outside of the organisers' control), some of which may have resulted from the close proximity between volunteers and both responders who were not in exercise play and exercise observers. However, there were also elements of the exercise which provided for greater realism than the Dortmund exercise. Most notably, the period of time between evacuation from the incident site and the initiation of triage provided greater opportunity to observe communication and behaviour throughout the exercise.

No	Objective	Key Performance Indicator	Summary of findings
10	To evaluate the extent to which ethical principles, dilemmas, operational factors, and assessment as well as societal dimensions are considered by first responders and researchers in dealing with CBRNe incidents.	Ethical issues and dilemmas were addressed by employing a combined strategy. On the one hand, the strategy consisted of ensuring responsible research and respect for participants, including a Data Management Plan, informed consent, ethics risk assessment, preventative measures and briefing. On the other hand, following the European Commission reviewers' recommendations included collecting specific information on first responders' performance regarding specific and predefined ethical concerns, variables and tensions between principles. The latest analysis is based on three main data collection tools. Firstly, fieldwork was conducted by ETICAS (two focus groups and observations). Secondly, ethical questions were included in the observer's guide. Finally, the reporting of the External Ethics Advisory Board (EEAB) which is also fed by the theoretical-methodological approach built by ETICAS and CBRNE through the provision of an evaluation guideline. This combination of sources provides comprehensive data on the relative alignment of management of humans in the Rieti scenario, including its initial response, triage and decontamination procedures.	Regarding responsible research aspects, as part of the evaluation questionnaire, volunteers (on average) strongly agreed that the first responders managed the exercise ethically (an average score of approximately 6 on a 7-point scale). Protocols implemented, including the ethics risk assessment, the data management plan and the informed consent procedure, allowed the team to ethically handle human participants and their (sensitive) data during and after the exercise. In terms of the study of ethical aspects of CBRNe response simulated scenario, and based on the ethical questions which were included in the Observer's guide, observers generally mentioned that the practitioner performance was according to the protocol in regards to how the first responders took care of the volunteers, but they underlined there was no proper triage for the volunteers, and the time required to manage the affected group was quite long. In regards to decontamination, they mentioned that the standard protocols were followed, but is still a need for improvement considering the management of individuals in the decontamination tent (do not separate them as “if one of them would have collapsed during showers, nobody would have noticed”). After the decontamination process, the observers considered that the set up was insufficient as no other tent for the post decontamination was available, and also was a lack of disposable gowns. The observers recommended better training for first responders on ethical issues, a better prioritisation of vulnerable groups and injured individuals, and better communication, including mechanisms and protocols for specific vulnerable groups. The in-depth ethical assessment performed by ethics experts revealed: There are contextual factors that limit respect for the main ethical principles, as the necessity to restrict the freedom of movement and the restriction of the freedom of communication (no mobile phones during the decontamination).The experts underlined that during the decontamination phase, the communication with the volunteers was very limited and in a real-life situation poor communication could hinder the success of the process. The decontamination phase was assessed as having good technical preparedness, but there were some blind spots as the possibility of cross contamination from the leaked water outside the decontamination tent. The ethics experts commented that the configuration of the decontamination tent supports privacy and autonomy but doesn’t serve well the needs of vulnerable people, especially those with movement or visual impairments. The experts also emphasised the fact that there are no procedures in place to support the prioritisation of vulnerable groups. Finally, the experts have made recommendations based on the previous observations: implementation of training for first responders in all issues related to vulnerable citizens, consider specific configuration for decontamination tents also protecting privacy in the post-decontamination transition phase, inclusion of technology to treat the contaminated water and minimise the risk of cross contamination, and use of sound enhancement technologies to facilitate the communication during triage and decontamination stages.

12.2.Conclusion of evaluation

The PROACTIVE exercise evaluation methodology enabled the project team to draw clear conclusions as to how the Rieti exercise performed against the Tactical Objectives and KPIs of the PROACTIVE project.

Looking across the datasets one can see that there were significant advantages to the Rieti exercise, particularly in terms of the volunteers self-reported experience of the exercise, their perceptions of the responders, the impact of the exercise on their knowledge and confidence about what to do (and an accompanying reduction of anxiety). Furthermore, from the perspective of evaluating behaviour, the introduction of a delay post- evacuation of the incident site and pre- triage provided the evaluators with the opportunity to explore not only responder to volunteer interaction (as per the PROACTIVE tactical objectives) but also the relationships between volunteers. This provided the opportunity to evaluate spontaneous volunteer-to-volunteer interactions within the exercise, including the role undertaken by one volunteer who made themselves a point of contact between the responder and other volunteers. This eventually led the responder to interact with just this one volunteer as an intermediary, an approach also observed in the good communication condition in the November Rain exercises from November 2012 (Carter et al. 2014). This was just one example of the way in which the volunteers spontaneously organised themselves to both communicate and provide support (physical and emotional) to one another.

However, there were some limitations to the exercise from the perspective of the PROACTIVE objectives. Indeed, it could be argued that the need for this spontaneous volunteer-to-volunteer interaction was a necessity that evolved from limitations within the communication between responders and volunteers. Specifically, a combination of the focus group and observational data suggest that the first responders did not effectively recognise and tailor their responses to vulnerable people during the exercise, and an absence of communication between responders and volunteers was observed across the first hour of the exercise. Indeed, when information was provided, it was provided in an ad hoc fashion, thus necessitating the involvement of the volunteer who nominated himself as a relay point between the responder and other volunteers. This is consistent with previous research which has identified that issues around poor communication from responders during exercises can influence experiences of volunteers (Carter et al., 2012). In summary, therefore, it seems that the casualty volunteers felt that more could be done to both integrate individuals with vulnerabilities into the exercise play, but also to recognise and cater to the needs of the casualties - both physical and emotional.

It is also worth noting that although the needs of volunteers with vulnerabilities may not have been met by the responders, on average the volunteers identified with the responders and believed that the emergency responders behaved in an appropriate and respectful fashion. Indeed, we know that identification can play a role in influencing compliance through working together towards a common goal (Carter et al., 2013), and we did observe correlations between identification with responders and both perceived responder legitimacy and compliance (although no effects of identification in the regression analyses). This is consistent with the general findings from the focus groups (reported above) that volunteers were impressed by the look and feel of the exercise. On the topic of identification, we did also find an unexpected association between identification with volunteers and anxiety, such that the more individuals identified with other volunteers the greater the anxiety they reported. Anxiety during the exercise was only correlated with identification with volunteers,

emotional engagement in the exercise, and anxiety if the incident was real (rather than any behavioural outcomes), and so should not be over-interpreted at this stage but will require further consideration ahead of the Ranst exercise.

Furthermore, the sub-optimal communication provided by the responders did not seem to directly influence perceptions of the responders – although the evaluators did observe multiple instances of confusion during the exercise resulting from poor communication – nor the volunteers' likelihood of complying with responders' instructions during a real incident. Though, that said, subsequent correlational analysis suggests that there are correlations between identification with responders, perceptions of communication and expected compliance which did not manifest in the regression analysis. Although the lack of effects within the regression analysis was unexpected, these correlations are consistent with previous research suggesting that a lack of shared identity, low perceptions of responder legitimacy and poor communication by responders can influence compliance to stay at the scene (Carter et al., 2013; Carter et al., 2015). In other words, although poor communication did not directly impact on volunteers' self-reported intentions to comply if a real event were to occur, there was evidence of confusion throughout the exercise and some evidence that communication may be associated with factors that could influence behaviour.

On the topic of compliance, the analyses reported herein demonstrate unexpected negative relationships observed between perceptions of practical information, responder competence and expectations of complying during a real incident (those who perceived better perceptions of practical information and responder competence reported *lower* expectations of future compliance). This is contrary to expectations and will require further consideration ahead of the Ranst exercise in order to establish whether this is a genuine effect (and to understand why) or if it is a limitation of the measures used (as briefly discussed in Deliverable 6.3 where no effects were identified through the compliance regression). For example, intentions to comply in a future exercise were not measured (only intentions to comply in a real event) and intentions were also not measured pre-exercise so we were unable to examine change over time. The role of communication on behaviour will continue to be explored in detail during the Ranst exercise.

In terms of the pre-incident information, although only around half of the volunteers had read the material, those who had reported confidence, ability, and knowledge related to recommended actions. This is consistent with the findings reported in Deliverable 5.1 (Nicholson et al., 2021) and Deliverable 6.3 (Carbon et al., 2022). However, observation of the exercise indicated that these were not translated into actual behaviour during the exercise play – there was no evidence of any interim decontamination similar to that described in the materials (though this could be due to the fact that the volunteers were not instructed to do so by the responders). Further work is therefore needed to translate these attitudinal / perceptual effects into action. Similarly, further work is needed to examine the effects of pre-incident information by comparing findings to a control condition who did not receive the information. The Ranst exercise represents an excellent opportunity to investigate this further, employing a more experimental approach to assessing the pre-incident information (i.e., by potentially using a control condition, and more explicit training in the pre-incident information for those in the treatment condition).

Overall, then, the evaluation of the Rieti exercise has identified some clear strengths of the response and the way in which the exercise was both administered (in terms of providing excellent opportunities for evaluation) and received by volunteers. However, there were also lessons to be

learned around best practice for engaging with both members of vulnerable groups and ensuring high quality communication with casualties. Furthermore, this exercise provided the opportunity to fine-tune the evaluation methodology first employed during the Dortmund exercise, ahead of a larger scale deployment, likely involving some experimental components, as part of the final Ranst exercise.

12.3. Use of lessons learnt from the previous exercise

In total, **23 good practices** could be applied during the exercise in Rieti (see Chapter 11.1). These good practice examples were partly adopted from the exercise in Dortmund and partly developed during the exercise in Rieti due to the specifics of the exercise. For the final PROACTIVE / eNOTICE exercise in Ranst, Belgium, these examples will be applied again, if possible, and good practice examples specifically targeted to the exercise specifics in Ranst will be developed during the exercise preparation.

In addition, the challenges described in Chapter 11.2 during the exercise in Rieti will be taken into account for the planning process of the exercise in Belgium.

13. NEXT STEPS

The three PROACTIVE field exercises are all planned to be executed in partnership with project eNOTICE. The aim of eNOTICE is to establish a network of CBRNe training centres and part of the project is to conduct a series of exercises. The three exercises carried out in partnership with PROACTIVE are referred to as joint activities, where a third party is invited to be part of the exercise. This tripartite collaborative approach is cost-saving for the projects and allows a single field exercise to serve multiple purposes: training, learning, and sharing of best practices among CBRNe centres (eNOTICE partners) and conducting new research and testing tools or procedures with the civil society volunteers through the joint activity (for PROACTIVE). The three exercises were conceived as a process composed of three phases: (1) running the exercise and its evaluation workshop, (2) analysing all the results generated by the exercise and workshop and producing the final report constituting the Deliverable, and (3) post-processing and transfer of all relevant lessons learnt into the next exercise. These phases are sequential and were designed as a feedback learning loop between each exercise. In addition, each phase has been optimised in terms of timing, leaving a gap of about 4 months between each exercise. This gap allows the project team to process the lessons learned in one exercise into the planning process of the next one. The Rieti exercise reported in this Deliverable is the second step in this process. Next is the third and final exercise in Ranst, Belgium, which will be the final event for both project eNOTICE and PROACTIVE. The exercise will be conducted by Campus Vesta, a school that provides training for emergency responders. On the PROACTIVE side, the exercise is mainly coordinated by a team from UMU.

For PROACTIVE, the focus following the second exercise will be to digest outputs and lessons learned thus far while preparations and plans for the final exercise develop. Each eNOTICE training centre hosting a joint activity brings its own unique infrastructure and set of opportunities to the planning process. They also bring their own set of regulations and procedures along with national specificities to which the PROACTIVE planning has to adapt. With that in mind, the goal of the third field exercise is to further evaluate the effectiveness of responses to a CBRNe incident focusing on harmonisation of procedures and tools that support the needs of civil society. In addition to drawing from lessons learned in the previous two exercises, there is also a clear ambition to increase the number of volunteers and amplify the scale of involved parameters. That means more volunteers, more types of responders, and more observers.

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APPENDIX 1: UKHSA ETHICAL APPROVAL

UK Health Security Agency

14th October 2022

UKHSA Research Management & Knowledge Division
Nobel House 17 Smith Square London SW1P 3HX
Tel: 01980 612922

www.ukhsa.gov.uk
https://research.ukhsa.gov.uk/

Dr Amelia Dennis
UKHSA
Porton Down
Salisbury
SP4 0JP

Dear Dr Dennis

Re: PROACTIVE: 2nd Exercise in Rieti, 16th November 2022

R&D Ref: R&D 523

Thank you for submitting your study to the Research Support and Governance Office (RSGO) for review by the UKHSA Research Ethics and Governance Group (REGG).

UKHSA REGG approval for your study has been granted. This approval is granted based on the information provided in the REGG application form and accompanying study documentation, and on the understanding that the study is conducted in accordance with the conditions stated in the applicable UKHSA policies and procedures.

Approval is only granted for activities for which a favourable opinion has been given by the UKHSA REGG. All amendments must be submitted to the RSGO. Any change to the status of the project (including changes to the research team) and any change to the project closure date must also be notified to the RSGO.

Confirmation of capacity and capability should be sought from all NHS organisations involved in the study. For non-NHS sites, site management permission should be obtained from the relevant host organisation. All organisations involved in the study must confirm through signing of agreements and/or other documents that they have given permission for the study to proceed before recruitment can begin.

The UKHSA is currently undertaking the implementation of a research management system and institutional repository. Aligned to this, from 1 September 2020 the UKHSA Open Access policy requires peer-reviewed research outputs to be made available open access. For further information contact Paul Rudd.

If you need any further support or information, please do not hesitate to contact the UKHSA RSGO quoting the reference number for your study.

Wishing you every success with your study

Yours sincerely,

Dr Elizabeth Coates
Head of Research Governance
Research Support and Governance Office

APPENDIX 2: PRE-EXERCISE QUESTIONNAIRE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 832981

Rieti Pre-Exercise Questionnaire

Please can you provide us with your participant number, this is on your wristband.

Please have the current exercise scenario of the release of a hazardous chemical in mind when answering the following questions. Please respond to each statement by circling how much you agree or disagree with it.

1. Please describe any expectations you have about the way in which the emergency services will manage the incident today.

2. Please describe any expectations you have about the way in which other exercise volunteers will behave during the exercise today.

3. If a real incident of this type were to occur, I would know what actions to take to protect myself.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

4. If a real incident of this type were to occur, I would know what actions to take to protect my loved ones.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

5. If a real incident of this type were to occur, I would feel confident that I could successfully undertake appropriate actions in order to protect myself.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

6. If a real incident of this type were to occur, I would feel confident that I could successfully undertake appropriate actions in order to protect my loved ones.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

7. I think that the emergency services will behave in a respectful way during the decontamination process today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

8. I think that the emergency services will behave in a fair way during the decontamination process today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

9. If a real incident of this type were to occur, I would expect emotional support from other members of the public who were involved.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

10. If a real incident of this type were to occur, I would expect to receive help from other members of the public who were involved.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

11. If a real incident of this type were to occur, I would be willing to help other members of the public.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

12. I identify with the other volunteers who are taking part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

13. I feel a sense of unity with the other volunteers who are taking part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

14. I identify with the emergency responders who will be taking part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

15. I feel a sense of unity with the emergency responders who will be taking part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

16. If a real incident of this type were to occur, I would feel nervous.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

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17. If a real incident of this type were to occur, I would feel anxious.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

18. If a real incident of this type were to occur, I would feel scared.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

19. Did you use the PROACTIVE app?

Yes	No

20. Did you read the pre-incident information for CBRNe incidents?

Yes	No

If yes

21. If a real incident of this type were to occur, I think that taking the actions recommended in the pre-incident information sheet would be an effective way to remove a contaminant from my skin.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

22. If a real incident of this type were to occur, I would feel comfortable taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

23. If a real incident of this type were to occur, I would feel embarrassed taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

24. If a real incident of this type were to occur, I think I would find it easy to take the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

25. If a real incident of this type were to occur, I would be willing to taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

26. If a real incident of this type were to occur, I would feel the need to seek further treatment after taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

APPENDIX 3: POST-EXERCISE QUESTIONNAIRE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 832981

Adult Rieti Post Exercise Questionnaire

Please can you provide us with your participant number, this is on your wristband.

1. If this were a real incident, I would know what actions to take to protect myself.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

2. If this were a real incident, I would know what actions to take to protect my loved ones.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

3. If this were a real incident, I would feel confident that I could successfully undertake appropriate actions in order to protect myself.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

4. If this were a real incident, I would feel confident that I could successfully undertake appropriate actions in order to protect my loved ones.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

5. I went through decontamination in the exercise. [Yes / No]

6. My disability/condition/vulnerability impacted my interaction with the first responders.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

7. My disability/condition/vulnerability impacted my ability to undergo a decontamination shower.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

8. If yes, please describe any ways in which accessibility impacted your ability to undergo a decontamination shower.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

9. I think that the emergency services behaved in a respectful way during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

10. I think that the emergency services behaved in a fair way during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

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11. If a real incident of this type were to occur, I would expect emotional support from other members of the public who were involved.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

12. If a real incident of this type were to occur, I would expect to receive help from other members of the public who were involved.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

13. If a real incident of this type were to occur, I would be willing to help other members of the public.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

14. I was willing to help other members of the public during the decontamination process today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

15. I felt nervous during the exercise.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

16. I felt anxious during the exercise.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

17. I felt scared during the exercise.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

18. If a real incident of this type were to occur, I would feel nervous.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

19. If a real incident of this type were to occur, I would feel anxious.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

20. If a real incident of this type were to occur, I would feel scared.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

21. If you felt anxious, stressed or scared during this exercise, please describe what the main reason for this was:

22. I identified with the other volunteers who took part in the exercise today.

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Strongly disagree	1	2	3	4	5	6	7	Strongly agree

23. I felt a sense of unity with the other volunteers who took part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

24. I identified with the emergency responders who took part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

25. I felt a sense of unity with the emergency responders who took part in the exercise today.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

26. Did you use the pre-incident information during the exercise?

Yes	No

27. Did you discuss the pre-incident information with other volunteers during the exercise?

Yes	No

28. If a real incident of this type were to occur, I think that taking the actions recommended in the pre-incident information sheet would be an effective way to remove a contaminant from my skin.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

29. If a real incident of this type were to occur, I would feel comfortable taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

30. If a real incident of this type were to occur, I would feel embarrassed taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

31. If a real incident of this type were to occur, I think I would find it easy to take the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

32. If a real incident of this type were to occur, I would be willing to taking the actions recommended in the pre-incident information sheet.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

33. If a real incident of this type were to occur, I would feel the need to seek further treatment after taking the actions recommended in the pre-incident information sheet.

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Strongly disagree	1	2	3	4	5	6	7	Strongly agree

34. Are there any changes that could be made to improve the pre-incident information?

35. Do you think the pre-incident information would be helpful to the public if it was provided to people before this type of incident occurred?

36. If the exercise had been a real emergency situation, I would have felt able to work with others to take appropriate actions to reduce the danger we were in.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

37. Emergency responders explained clearly what was happening during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

38. I found it easy to communicate with emergency responders during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

39. I felt that emergency responders were open about what was happening during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

40. Emergency responders gave me sufficient information about why decontamination was necessary.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

41. I understood why I was being asked to go through the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

42. Emergency responders provided sufficient practical information about what we were supposed to do during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

43. I was clear about what I was supposed to do at each stage of the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

44. I found it difficult to understand the information provided by the emergency responders.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

45. I had to ask emergency responders to repeat the information they provided.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

46. Please explain any ways in which you feel communication from emergency responders during the decontamination process could have been improved.

47. I trusted that the emergency responders who took part in this exercise knew how to manage the situation appropriately.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

48. I feel confident that emergency responders are prepared to deal with a real incident of this kind.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

49. Emergency responders took appropriate actions to manage this incident.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

50. Please describe any ways in which emergency responders could have dealt with the decontamination process better.

51. I had sufficient privacy during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

52. I saw volunteers co-operating with each other during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

53. Volunteers were courteous to each other during the decontamination process.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

54. Sometimes volunteers needed other volunteers to help during the decontamination process.

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Strongly disagree	1	2	3	4	5	6	7	Strongly agree

55. I felt emotionally engaged during this exercise.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

56. I took this exercise seriously.

Strongly disagree	1	2	3		4	5	6	7	Strongly agree

57. If this situation had been real, I would have complied with the instructions of the emergency responders.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

58. If this situation had been real, I would have been willing to undergo a decontamination shower.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

59. If this situation had been real, I would have been willing to be naked during the decontamination shower.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

60. If you would not be willing to undergo a decontamination shower during a real incident, or would not be willing to be naked inside the decontamination showers in a real incident, please explain why.

61. I think the emergency procedures that first responders used to manage this exercise were ethical.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

62. I think the first responders managed this exercise ethically.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

63. Please explain any ways the procedures and behaviours from first responders were or were not ethical.

64. Please explain any ways in which you feel the procedures and behaviours from first responders during the decontamination process could have been ethically improved.

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65. Did you use the PROACTIVE app during the exercise? [yes / no]

66. I felt confident using the app.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

67. The app design is easy to use.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

68. The app has effective accessibility features.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

69. The app visualisations and text were appropriate.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

70. The app will be useful to members of the public.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

71. I was able to easily find information resources on the topic of CBRNe on the app.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

72. The information provided in the app was helpful.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

73. I had confidence in the information on the app.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

74. I found the PROACTIVE app notifications useful.

Strongly disagree	1	2	3	4	5	6	7	Strongly agree

75. Please describe why the PROACTIVE app notifications were useful or not useful?

76. Please explain any ways the app could be improved.

APPENDIX 4: OBSERVATION GUIDE OF EVALUATORS

INCIDENT SITE/ WAITING PERIOD
Communication from responder to ppts (1 – interaction from responder to ppts)
Are responders talking / communicating with participants?
Can responders be heard? Loud enough? PPE?
Do they appear to be engaging or instructing participants?
Helping behaviour from participants (3 – interaction between ppts)
Participants helping other participants
Participants comforting other participants
Participants helping other participants disrobe
Pre-incident information
Leaving immediate area where the contaminate is
Not touching face or hair
Remove outer clothes
Improvised decontamination – likely brushing it off or blue roll?
Not touching potentially hazardous objects in the immediate area
Helping behaviour from responders
Responders comforting participants
Vulnerabilities (2)
Emergency responders adapting communication to vulnerable individuals
Responders helping vulnerable individuals to decontamination tent
Non-compliance
Participants trying to leave the site
Confusion
Participants looking to see what others are doing before carrying out any actions
Participants asking other participants to explain what they should be doing
Participants asking emergency responders to explain what they should be doing
DISROBING – AMBULANT
Responder communication
Did responders communicate to participants?
Did responders just verbally communicate, or did they show participants what to do?
Vulnerable individuals
Functional aids (glasses, hearing aids, and mobility aids such as walking sticks)? Were these taken off them? Were they decontaminated?
How did responders help ambulant vulnerable individuals? Any adaptations in communications?
Did responders lead any vulnerable individuals through?
Confusion
Participants looking to see what others are doing before carrying out any actions
Participants asking other participants to explain what they should be doing
Participants asking emergency responders to explain what they should be doing
Helping behaviours
Participants helping others to disrobe
Helping others shower
Queue for showers
How were participants led into showers?

Was there a queue for the showers?
Were participants talking to each other in the queue / before the showers?
Non-compliant behaviours
Participants refusing to carry out instructions (refusing to take glasses off, etc.).
DISROBING – NON-AMBULANT
Responder communication
Did responders communicate to participants?
Did responders just verbally communicate?
Did participants talk to responders?
Responder helping
Did responders comfort the participant?
Did the responder disrobe the participant?
Physical assistance towards participants?
Manhandling (rough handling) of participants
Disrobing
How were patients disrobed?
How were patients brought into disrobing?
Were there queues?
Functional aids
Where were vulnerable individuals' functional aids placed?
Responder to responder Interaction
Do they communicate a lot? Confusion among responders?
SHOWERS/ RE-ROBING – AMBULANT
Responder interaction
Did responders communicate to participants how to wash?
Did responders just verbally communicate, or did they show participants what to do?
Did responders help with washing participants?
Communication
Did responders communicate to participants? How much communication?
Did participants communicate to responders?
Participants communicating to other participants
Responder communication in re-robing
Vulnerable individuals
How did responders help ambulant vulnerable individuals? Any adaptations in communications?
Did responders lead any vulnerable individuals through?
Confusion
Participants looking to see what others are doing before carrying out any actions
Participants asking other participants to explain what they should be doing
Participants asking emergency responders to explain what they should be doing
Washing behaviour
Active showering?
Sponge?
Soap?
Time in shower
Non-compliance
Participants not wanting to go through the shower or not wanting to wash?
Responders' behaviour and response to non-compliance

SHOWERS/ RE-ROBING – NON-AMBULANT
Washing behaviour
Sponge?
Soap?
Time in shower
Re-robing
Did responder re-robe them
Were they carried to re-robing? With how many responders?
Are they left till last or later?
Functional aids
Were these returned to participants?
Were they decontaminated?
Responder communication
Responder communication during washing
Responder communication during re-robing
Was communication at each stage?
Could participants hear?

APPENDIX 5: FOCUS GROUP GUIDE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 832981

PROACTIVE: Rieti Focus Groups

1. **Introductions**
   - First, I just want to thank you all for your time today.
   - I am just going to pass round this paper and if you can write down your participant number that is on your wristband, we don't need you to write down your name just the number. *Hand out participant number paper*
   - If I just introduce myself - My name is …… and I am a ……. and I am one of the members of the PROACTIVE project.
   - So if we go round and you introduce yourselves, we aren't recording yet so none of this is being used it's just so we can introduce ourselves.

2. **Overview**

I just want to start with explaining the reasons we are running the focus group. In this focus group, we are interested in understanding your experiences of the exercise that you just took part in. There are no right or wrong answers we just want to hear about your experiences. The information you provide will be used to develop procedures and policy for the management of incidents like the one simulated in the exercise today.

I'd just like to remind you that all information that you give will be confidential, and any published data from these focus groups will be anonymous. I'd also like to remind you that we are recording these focus groups [using Dictaphones]; these will only be used to allow us to analyse the data collected.

3. **House rules**

So I am just going to go over the housekeeping and rules for this focus group

- Respect each other's opinions – challenge and disagree but be respectful
- There are no wrong or right answers – we are interested in understanding your experiences of the exercise
- Do not talk over each other – please raise your hand if someone is talking and you would like to talk next
- Don't hold back – be honest as this is a safe space to do so, there are no right or wrong answers
- Answers will remain anonymous - with the exception of disclosing any information that we think means you or someone else is at risk of harm. This means that you can't withdraw any information you have already provided once we start, as we won't be able to identify you to remove your contribution.
- Please don't say anything during the focus group that will enable us to identify you
- Confirm that you will now begin the recording

4. ***Start recording focus group and state your (focus group leader) name***

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5. Run focus group using the following questions and prompts

General Experiences

- Tell me about your experience of the exercise
  - Do you have any initial reflections?
  - How do you feel it went?
  - Was there anything that went particularly well?
  - Was there anything that went particularly badly?

Focus on Vulnerabilities

- Did you feel that the emergency responders identified any vulnerabilities during the exercise?

- *[If yes to identified vulnerabilities]* Did you feel emergency responders understood these vulnerabilities?
- [If yes to identified vulnerabilities] Did the emergency responders make any modifications based on vulnerabilities?
  - How did you feel about these modifications?
  - Do you feel vulnerabilities were treated with respect?
  - Are there any other modifications or considerations that were not mentioned?
- [If yes to identified vulnerabilities] Were these modifications enough to allow vulnerable individuals to go through decontamination?
  - Why/ why not?
  - Is there anything emergency responders could have done different or in addition to aid vulnerable individuals through the decontamination process?

- *[If no to identified vulnerabilities]* What do you feel that the emergency responders missed?
- [If no to identified vulnerabilities] How could they make sure that they identified vulnerabilities in a real incident?
- [If no to identified vulnerabilities] What modifications would you have liked to see emergency responders make based on vulnerabilities?

Perceptions of Responders

- Did you feel that emergency responders managed the exercise effectively?
  - Did this match your expectations of how they would manage the exercise?
  - How did you expect emergency responders to manage the exercise?
- How did you feel about the procedures emergency responders used to manage this exercise?
  - Did you feel confident they would be effective?
  - Do you feel these procedures included people with vulnerabilities?
  - Are there any changes to procedures that you would recommend based on your experiences?

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- How do you think emergency responders would behave during a real incident of this type?
  - Would they treat you fairly/ with respect?
  - Why / why not?

Communication and Information Needs

- Tell me about any interactions that you had with the emergency responders
  - How did the emergency responders communicate with you?
  - What kind of information did they give you?
  - How did you feel about the interactions and communications with the emergency responders?
- What do you think of the information that you received during the exercise?
  - Do you think it would be enough information for you to know what to do during a real incident?
  - Would it be enough information for you to feel willing to follow responders instructions if this was a real incident?
  - If not, why?
- Was it easy to understand the information provided?
  - Why?
  - Did you find the information provided was inclusive?
- Is there any further information that you would want if this were a real incident?
  - If yes, what information?

Perception of Decontamination

- How did you feel about going through a decontamination shower during the exercise?
  - Did you feel comfortable?
  - Did you know how to go through the shower?
  - Did you face any challenges when going through the shower?
- If a real incident of this type were to occur, would you be willing to remain at the scene and undergo a decontamination shower?
  - Would you feel comfortable undergoing a decontamination shower?
  - Would you find it easy to go through a decontamination shower?
  - Would you be willing to remove your clothes in order to undergo a decontamination shower during a real incident?
  - Do you think effort would be made to protect your privacy during decontamination?
- Would you want to seek further treatment after undergoing a decontamination shower?
  - If so / not, why?
  - Would you feel confident that you were clean after undergoing a decontamination shower?

Interactions with Volunteers

- Tell me about any interactions that you had with other volunteers, or observed between volunteers, during the exercise

- How did you interact with each other?
- What did you talk about? What did you do?
- Did you notice anything about the way that individuals were interacting with each other? Was it friendly? Unfriendly? Helpful? Unhelpful? [these prompts might not be ideal but they or a version of them could be used with other sub-questions here]

- Is there anything else you would like to talk about in relation to the exercise that we haven't already covered?

Thank participants for their time and state their answers have been helpful in understanding the experiences during exercises.

APPENDIX 6: OBSERVER GUIDE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 832981

PROACTIVE Observer Guide

Rieti Field Exercise
16 November 2022

Welcome to our joint field exercise between the NBC Defense School, eNOTICE & PROACTIVE projects.

An Observers is defined as an exercise participant who witnesses the exercise while remaining separate from exercise activities.

Please do not take any photographs or videos of the exercise. Official ones will be shared.

Your job as an observer is to watch the exercise unfolding and respond to this questionnaire afterwards, sharing your thoughts and opinions. You will benefit from a narrator who will explain what is happening. PROACTIVE consortium members are also here to help you.

We recommend reading through the questions in this observer guide before the exercise takes place, so you become fully aware of what kinds of information to look for. Feel free to also take any notes as you see fit. We are hoping to collect your impressions of the exercise. Specific details (such as the time an action occurs or the exact person who performs a task) are not required.

A key role you will play during the exercise is as a user of the PROACTIVE app. Please use the PROACTIVE app to look for information about the incident, as if you were a witness. We ask that you also use the app to Report an Incident, as if you were an incident witness during the exercise (feel free to use the feature of submitting a photo or an audio message with your incident report).

Make sure you have downloaded and installed the app:

1. TELL US ABOUT YOURSELF

Instruction: Choose / tick the answer which best suits you.

1. I represent:

☐ Civil society organisation
☐ Law enforcement agency
☐ Firefighting brigade
☐ Military
☐ Emergency medical responder
☐ Civil protection
☐ Other, please specify:
_____

2. In general, how familiar are you with the topic of CBRNe?

☐ Very familiar
☐ Rather familiar
☐ Neither unfamiliar nor familiar
☐ Rather unfamiliar
☐ Very unfamiliar

Please explain your choice (optional):
_____
_____
_____
_____

3. I have attended a CBRNe field exercise before (either as an observer or a participant):

☐ Yes ☐ No

4. Before today, had you read the PROACTIVE Pre-incident Information Materials?

☐ Yes ☐ No

5. How familiar are you with the PROACTIVE app?

☐ I do not use smartphone apps
☐ Very unfamiliar (I have only downloaded it)
☐ Somewhat unfamiliar (I have downloaded it and have had a look around)
☐ Rather familiar (I have tried the different features, e.g., reporting an incident)
☐ Very familiar (I have spent a lot of time on it)

2. QUESTIONS ABOUT THE FIELD EXERCISE

Instruction: Choose the answer which best reflects your impression (for each question tick only one option).

6. I feel confident about reporting on what I observed

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why:

_____

_____

7. The exercise was in line with my expectations

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples. Describe anything which may have surprised you:

_____

_____

8. Overall, the first responders managed the affect persons effectively

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

9. The first responders communicated effectively with the affected persons

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

10. The first responders were effective in recognising vulnerable persons

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

11. The first responders were effective in supporting and assisting vulnerable people

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

12. The PROACTIVE Pre-incident Information materials seemed to be of help for those affected

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

13. First responders were respectful of the assistive technologies used by persons with vulnerabilities

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

14. The equipment used by first responders was adapted for persons with vulnerabilities

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

15. The unfolding of the exercise was realistic

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

16. Please share at least three examples of good practice vis-à-vis how practitioner players (e.g., police, military) interacted with vulnerable groups that you observed in today's exercise.

    Please focus only on the interaction between the rescuers and the victims. Do not comment on other aspects such as the organisation of the exercise, this is addressed later on.

_____

_____

17. Please share at least three examples of the how the actions undertaken by practitioner players during the exercise vis-à-vis vulnerable groups and the public at large could have been improved?

    Please limit your comments to the improvement of the rescuers' actions towards the victims. Do not comment on other aspects such as the organisation of the exercise, this is addressed later on.

_____

_____

18. Do you have any further observations about today's field exercise to share with us?

    Please feel free to comment on any aspects of the exercise which were not addressed above, except organisational aspects which are addressed later on.

_____

_____

Continue to next section.

2.1. For Civil Society Organisations

Instruction: Skip this section and go to section 3.2. if you are a practitioner.

19. The treatment of affected persons reflected how I would expect to be treated during a CBRNe incident decontamination.

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

20. Thanks to this exercise, I will be better prepared to deal with first responders in a CBRNe incident.

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

2.2. For Practitioners

Instruction: Skip this section if you are a member of the civil society and go to section 4.

21. In my organisation there are SOPs that take vulnerable groups into account.

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please briefly describe the SOP. Is it different/similar to what you have seen here today?

_____

_____

22. Thanks to this exercise, my organisation will be better prepared to deal with vulnerable groups.

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

3. QUESTIONS ABOUT THE PROACTIVE APP

3.1. App usability

Instruction: Choose the answer which best reflects your impression (for each question tick only one option).

23. I felt confident using the app

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

24. The app design is easy-to-use

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

25. Most people would learn to use the PROACTIVE app quickly

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

26. The app has effective accessibility features

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

27. The app respects my privacy (e.g., the privacy statement, GDPR obligations)

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

28. The amount of text displayed was appropriate

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

29. The visualisations were appropriate

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

30. The PROACTIVE app enhances the situation awareness of the population on CBRNe events

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

31. I was confident that the incident information I saw on the app was the most recent update

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

32. It was easy to find critical information about the incident (e.g., time, location, severity)

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

33. I was able to find information resources/ materials on the topic of CBRNe

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

34. I would use the PROACTIVE app in the case of a real CBRNe incident

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

35. Based on today's experience, how many stars would you give the app, out of five? *Please fill in each star that you are giving. (Five stars is the best rating).*

3.2. App features

Instruction: Please rate the following app features in terms of their usefulness during a CBRNe incident. For each question choose only one answer:

36. In-app live notifications on the homepage

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

37. Push up notifications on your smartphone

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

38. Incident list

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

39. Maps showing incidents

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

40. CBRNe Information Library

Strongly disagree	1	2	3	4	5	6	Strongly agree

Please describe why and give examples:

_____

_____

41. Describe any new feature(s) you would like to see in the app:

_____

_____

42. What information would you expect to find in the News section?

_____

_____

43. Would you prefer the in-app notifications to be a big box that pops up on the screen or to be the small box at the bottom of the screen (which is the default for Android)?

_____

_____

44. Provide any other suggestions on how to improve the app:

_____

_____

5. QUESTIONS ABOUT THE ORGANISATION OF THE EVENT

49. Please provide any suggestions on how we might improve the organisation of your participation as an observer in a similar exercise in the future:

_____

_____

50. Please provide any additional notes or comments about your experience observing this exercise, especially regarding organisational aspects:

_____

_____

APPENDIX 7: OBSERVER GUIDE QUESTIONS ON ETHICS

4. QUESTIONS ON ETHICS

45. How did the first responders manage to balance the duty of care to victims and the personal wellbeing of the victims (e.g., during triage, decontamination, etc.)?

_____

_____

46. Based on what I observed in this exercise, what role should ethics have in CBRNe SOPs. *(You can also include suggestions about ethics in CBRNe SOPs beyond the context of this particular exercise)*:

_____

_____

47. What recommendations do you have to improve the ethical dimension of the response actions regarding vulnerable groups:

_____

_____

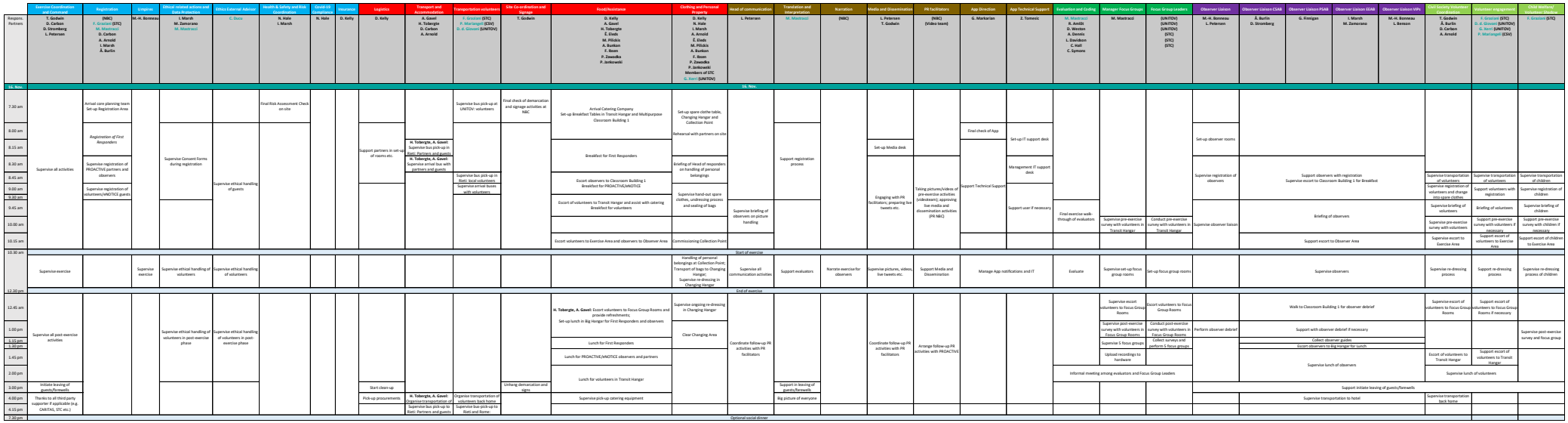
48. Do you have any further observations about ethics you'd like to share with us?

_____

_____

APPENDIX 8: EXERCISE TIMELINE

Rieti Field Exercise



Respons. Partners	Exercise Coordination and Command T. Godwin D. Carbon D. Stromberg L. Petersen	Registration (NBC) F. Graziani (STC) M. Mastracci D. Carbon A. Arnold I. Marsh Å. Burlin	Umpires M.-H. Bonneau	Ethical related actions and Data Protection I. Marsh M. Zamorano M. Mastracci	Ethics External Advisor C. Ducu	Health & Safety and Risk Coordination N. Hale I. Marsh	Covid-19 Compliance N. Hale	Insurance D. Kelly	Logistics D. Kelly	Transport and Accompaniment A. Gawel H. Tobergte D. Carbon A. Arnold	Transportation volunteers F. Graziani (STC) P. Mariangeli (CSV) D. d. Giovan (UNITOV)	Site Co-ordination and Signage T. Godwin	Food/Assistance D. Kelly A. Gawel H. Tobergte Ş. Elads M. Pilickis A. Bunkun F. Boen P. Zawadka P. Jankowski	Clothing and Personal Property D. Kelly N. Hale I. Marsh A. Arnold Ş. Elads M. Pilickis A. Bunkun F. Boen P. Zawadka P. Jankowski Members of STC G. Xerri (UNITOV)	Head of communication L. Petersen	Translation and Interpretation M. Mastracci	Narration (NBC)	Media and Dissemination L. Petersen T. Godwin	PR Facilitators (NBC) (Vidéo team)	App Direction G. Markarian	App Technical Support Z. Tomovic	Evaluation and Coding M. Mastracci B. Amitt D. Weston A. Dennis L. Davidson C. Hall C. Symons	Manager Focus Groups M. Mastracci	Focus Group Leaders (UNITOV) (UNITOV) (UNITOV) (STC) (STC) (STC)	Observer Liaison M.-H. Bonneau L. Petersen	Observer Liaison CSAB Å. Burlin D. Stromberg	Observer Liaison PSAB G. Finnigan	Observer Liaison GEAB I. Marsh M. Zamorano	Observer Liaison VIPs M.-H. Bonneau L. Benson	Civil Society Volunteer Group Activities T. Godwin Å. Burlin D. Carbon A. Arnold	Volunteer engagement F. Graziani (STC) D. d. Giovan (UNITOV) G. Xerri (UNITOV) P. Mariangeli (CSV)	Child Welfare Protection Officer F. Graziani (STC)
14. Nov.	14. Nov.																																	
7.30 am	Supervise all activities	Arrival core planning team Set-up Registration Area		Supervise Consent Forms during registration	Supervise ethical handling of guests	Final Risk Assessment Check on site			Support partners in set-up of rooms etc.		Supervise bus pick-up at UNITOV: volunteers	Final check of demarcation and signage activities at NBC	Arrival Catering Company Set-up Breakfast Tables in Transit Hangar and Multipurpose Classroom Building 1	Set-up spare clothe table, Changing Hangar and Collection Point		Support registration process				Final check of App	Set-up IT support desk											
8.00 am		*Registration of First Responders*								H. Tobergte, A. Gawel: Supervise bus pick-up in Rieti: Partners and guests			Breakfast for First Responders	Rehearsal with partners on site				Set-up Media desk			Management IT support desk			Set-up observer rooms							
8.15 am										H. Tobergte, A. Gawel: Supervise arrival bus with partners and guests				Briefing of Head of responders on handling of personal belongings																	
8.30 am		Supervise registration of PROACTIVE partners and observers									Supervise bus pick-up in Rieti: local volunteers		Escort observers to Classroom Building 1 Breakfast for PROACTIVE/eNOTICE					Engaging with PR facilitators; preparing live tweets etc.	Taking pictures/videos of pre-exercise activities (videoteam); approving live media and dissemination activities (PR NBC)						Supervise registration of observers	Support observers with registration Supervise escort to Classroom Building 1 for Breakfast	Supervise transportation of volunteers Supervise registration of volunteers and change into spare clothes	Supervise transportation of volunteers	Supervise transportation of children
8.45 am											Supervise arrival buses with volunteers																				
9.00 am		Supervise registration of volunteers/eNOTICE guests											Escort of volunteers to Transit Hangar and assist with catering Breakfast for volunteers	Supervise hand-out spare clothes, undressing process and sealing of bags								Support user if necessary							Support volunteers with registration	Supervise registration of children
9.15 am																																	
9.30 am																																	
9.45 am															Supervise briefing of observers on picture handling												Briefing of observers	Supervise briefing of volunteers	Briefing of volunteers	Supervise briefing of children
10.00 am																																	
10.15 am													Escort volunteers to Exercise Area and observers to Observer Area	Commissioning Collection Point													Support escort to Observer Area	Supervise pre-exercise survey with volunteers if necessary	Support pre-exercise survey with children if necessary
10.30 am	Start of exercise																																
	Supervise exercise		Supervise exercise	Supervise ethical handling of volunteers	Supervise ethical handling of volunteers									Handling of personal belongings at Collection Point; Transport of bags to Changing Hangar; Supervise re-dressing in Changing Hangar	Supervise all communication activities	Support evaluators	Narrate exercise for observers	Supervise pictures, videos, live tweets etc.	Support Media and Dissemination	Manage App notifications and IT	Evaluate	Supervise set-up focus group rooms	Set-up focus group rooms	Supervise observers	Supervise re-dressing process	Support re-dressing process	Supervise re-dressing process of children
12.30 pm	End of exercise																																
12.45 am	Supervise all post-exercise activities			Supervise ethical handling of volunteers in post-exercise phase	Supervise ethical handling of volunteers in post-exercise phase								H. Tobergte, A. Gawel: Escort volunteers to Focus Group Rooms and provide refreshments; Set-up lunch in Big Hangar for First Responders and observers	Supervise ongoing re-dressing in Changing Hangar	Coordinate follow-up PR activities with PR facilitators			Coordinate follow-up PR activities with PR facilitators	Arrange follow-up PR activities with PROACTIVE			Supervise escort volunteers to Focus Group Rooms	Escort volunteers to Focus Group Rooms	Perform observer debrief	Walk to Classroom Building 1 for observer debrief	Supervise escort of volunteers to Focus Group Rooms	Support escort of volunteers to Focus Group Rooms if necessary	
1.00 pm														Clear Changing Area								Supervise post-exercise survey with volunteers in Focus Group Rooms	Conduct post-exercise survey with volunteers in Focus Group Rooms		Support with observer debrief if necessary			Supervise post-exercise survey and focus group
1.15 pm																						Supervise 5 focus groups	Collect surveys and perform 5 focus groups		Collect observer guides			
1.30 pm													Lunch for First Responders												Escort observers to Big Hangar for Lunch			
1.45 pm													Lunch for PROACTIVE/eNOTICE observers and partners									Upload recordings to hardware			Supervise lunch of observers	Escort of volunteers to Transit Hangar	Support escort of volunteers to Transit Hangar	
2.00 pm													Lunch for volunteers in Transit Hangar									Informal meeting among evaluators and Focus Group Leaders				Supervise lunch of volunteers		
3.00 pm	Initiate leaving of guests/farewells								Start clean-up			Unhang demarcation and signs				Support in leaving of guests/farewells											Support initiate leaving of guests/farewells		
4.00 pm	Thanks to all third party supporter if applicable (e.g. CARITAS, STC etc.)								Pick-up procurements	H. Tobergte, A. Gawel: Organise transportation of	Organise transportation of volunteers back home		Supervise pick-up catering equipment			Big picture of everyone								Supervise transportation to hotel	Supervise transportation back home		
4.15 pm										Supervise bus pick-up to Rieti: Partners and guests	Supervise bus pick-up to Rieti and Rome																		
7.30 pm	Optional social dinner																																

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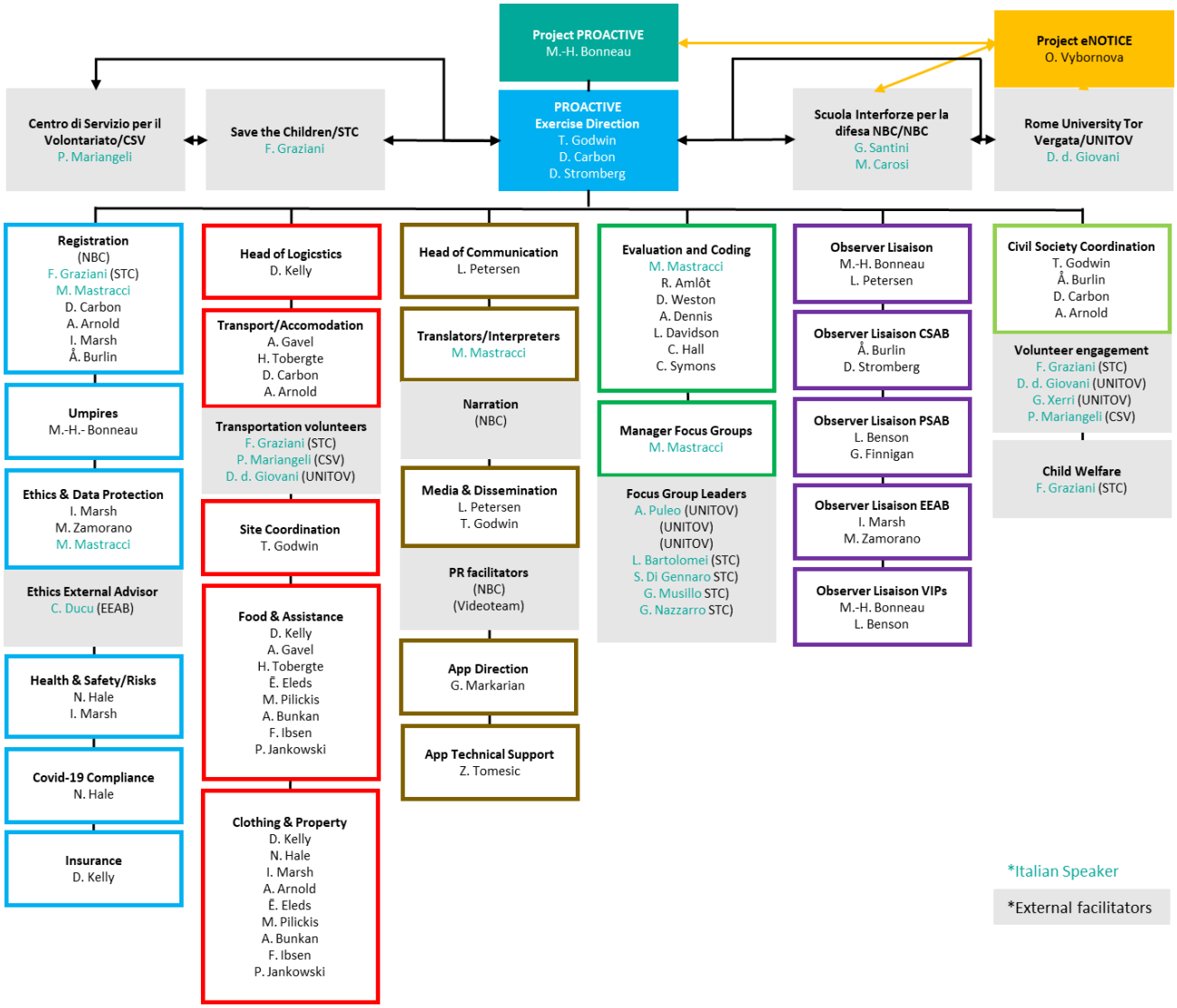
APPENDIX 9: DEFINITION OF ROLES AND RESPONSIBILITIES

Role	Definition
Exercise Director	To being in charge of the overall responsibility for the tactical coordination of the Field Exercise.
Assistant Exercise Director	To providing support to the Exercise Director and resilience in command structure.
Umpires	To ensuring those taking part in the exercise stick to their roles and responsibilities and arbitrating in the event of disagreement on exercise rules.
Ethical related actions and Data Protection	To ensuring all ethical matters are properly considered and addressed. To ensuring all data pertaining to those participating are complied with withing the parameters of the GDPR regulations. To design and carry out an ethical evaluation of the field exercise to provide the necessary data for the collation of findings and to generate recommendations in line with the DoA specification.
Ethics External Advisor	To provide independent oversight of the ethical actions being undertaken by the field exercise organisers.
I/C Health & Safety and Risk Coordination	To ensuring the field exercise is carried out in a safe and compliant manner and that risk is managed commensurate with the aims and objectives of the exercise. To liaise with the eNOTICE host Risk Manager with regard to exercise safety procedures and requirements.
Assistant Health & Safety and Risk Coordination	To supporting the person in charge of health, safety, and the management of risk.
Covid-19 Compliance	To ensuring those participating in the Field Exercise are both complying with the national regulations of the country in which the exercise is taking place. To ensuring appropriate measures of testing and hygiene are in place according to regulations set by the exercise host. To coordinating the logistics for (i) and (ii) above.
Insurance	In overall charge of the financial coverage of all eventual insurance issues related to the exercise.
Head of Logistics	Is the person in overall charge of matters relating to logistics. Additionally, the person coordinates the procurement, transport and safety of all necessary PROACTIVE equipment.
Transport and Accommodation	To coordinate the transportation of the volunteers and any accommodation deemed necessary. To coordinate the meet and greet procedures to ensure the volunteers can report to the location of the field exercise at the correct time. To enable the volunteer's return to home.
Transportation of volunteers	To support PROACTIVE in the organisation of transporting volunteers to and from the exercise.
Site Coordination (Signage and Exercise Demarcation areas)	To work with the eNOTICE host of the field exercise site ensuring the participants under the control of Project PROACTIVE are clear in their understanding of where they are allowed to be during all phases of the exercise.
Food and assistance	To coordinate with the eNOTICE host organiser the provision of food and liquids to the PROACTIVE participants and all volunteers. Special attention should be paid to volunteers needing special assistance with the catering and other related tasks (guidance to catering area etc.).
lothing, robing and the management of personal property.	To ensure the volunteers arrive wearing the correct garments for the duration of the exercise bearing in mind the weather and the possible need to wear swimming costumes underneath their clothing for the purposes of a wet decontamination. To ensure the safe keeping of any clothes and personal property belonging to the volunteers if not being worn. This may involve bagging the possessions and ensuring they are kept secure until returned to the owner. To manage the requirements, storage, and distribution of any specialist clothing required by participants.
Head of communication	To orchestrate all communication related tasks prior, during and after the exercise. To arrange all communication related activities e.g. videographer team, PROACTIVE App etc.

Translation, Translators and Interpreters	To identify the requirements of non-Italian speaking players in the field exercise to understand relevant activities and script. To identify and recruit necessary translators and brief them for their tasks. To coordinate the various translation functions for the field exercise.
Narration	To provide a narration during the exercise for all observers.
Media and Dissemination	To implement the media plan during the exercise in partnership with the eNOTICE host. To identify and leverage all possible public relation opportunities in respect to the field exercise, Project PROACTIVE and the EU Commission. To disseminate the aims, objectives and results of the field exercise to all stakeholders. To manage the videographer team.
PR facilitators	To carry out media and dissemination tasks during the exercise in close cooperation with the PROACTIVE media and dissemination team e.g. taking pictures and videos. To give guidance on how to carry out those tasks (NBC public information officer).
App Director	To direct the use of the PROACTIVE Tool Kit.
App Technical Support	To provide technical support prior and during the exercise. To set up and manage the support desk.
I/C Evaluators and Coding of Volunteers and Coding of Observers,	To design and carry out an evaluation of the field exercise to provide the necessary data for the collation of findings and to generate recommendations in line with the DoA specification. To brief and supervise external Italian-speaking evaluators if appropriate. To coordinate the hot debrief procedures at the conclusion of the field exercise and arrange appropriate follow up engagement as necessary. To carry out a focus group training with the focus group leaders.
Assistant Evaluators and Coding of Volunteers and Coding of Observers	To carry out the instructions of the In Charge organisation for the evaluation of the field exercise.
Manager Focus Groups	To organise the focus groups with volunteers including the translation of the pre-exercise and post-exercise survey. To assist in the organisation of the focus group training if necessary. To assist the focus group leaders during the day.
Focus Group Leaders	To oversee and collect the surveys with volunteers. To conduct the focus group interviews including the recording.
I/C Observer Liaison CSAB, PSAB, EEAB, VIPs	To organise, sustain, direct and care for the official CSAB, PSAB, EEAB and VIP observers invited to the field exercise. To collect and coordinate their views and opinions as a contribution to the evaluation of the field exercise.
Observer Liaison CSAB	To support the organisation in charge of “Observers” in relation to the CSAB. To supervise and support the CSAB observers during the exercise
Observer Liaison PSAB	To support the organisation in charge of “Observers” in relation to the PSAB. To supervise and support the PSAB observers during the exercise
Observer Liaison EEAB	To support the organisation in charge of “Observers” in relation to the EEAB. To supervise and support the EEAB observers during the exercise
Observer Liaison VIPs	To support the organisation in charge of “Observers” in relation to the VIPs
PSAB Observer	To provide feedback of the response actions being undertaken by the first responders during the field exercise.
CSAB Observer	To provide feedback of the response actions being undertaken by the first responders during the field exercise.
EEAB Observer	To provide feedback of the response actions being undertaken by the first responders during the field exercise under ethical aspects.
I/C Civil Society Volunteers Coordinator	To work closely with the third parties involved in the recruitment process and to supervise the recruitment process. To organise, sustain, direct and care for the invited Civil Society Volunteers To collect and coordinate their views and opinions as a contribution to the evaluation of the field exercise under the direction of the organisation in charge of the Evaluation. To work with the eNOTICE host to ensure reasonable adjustments are made at the exercise location to support the needs of vulnerable groups.
Assistant Civil Society Volunteers	To support the organisation in charge of the Civil Society Volunteers.
Volunteer engagement	To support the engagement with the volunteers prior, during and after the exercise.
Child Welfare	To ensure the safety of children throughout the whole exercise planning and execution phase.

APPENDIX 10: PROACTIVE ORGANIGRAM



APPENDIX 11: PROACTIVE APP NOTIFICATIONS

Notification #	Time since exercise start	Notification - English
1	+10 mins	It is confirmed that an incident occurred around 10.00 this morning (16.10.2022) at the local railway station. Reports have been received of a blast followed by smoke and this may be a CBRN incident. Please avoid the area as much as possible. Further information is being collected, please check this App for further updates.
2	+ 20mins	People requiring First Aid are asked to make the authorities on site aware of their needs.
3	+30 mins	The National and Local emergency plan have been activated, health assistance (Military Red Cross), Police, Carabinieri, the municipal Police and the NBCR Nucleus of the Fire Brigade are on the scene to evaluate and respond.
4	+45 mins	Confirmation received of a chemical substance leak requiring full decontamination. All people involved in the incident are being asked to remain calm, stay in the designated area indicated by the authorities and wait for instructions.
5	+60 mins	The 7th CBRN Defence Regiment are on the scene to perform sampling activities of suspect material in the contaminated area
6	+75 mins	A decontamination procedure is underway for all those effected to be decontaminated. Please keep calm and follow the instructions provided by the Fire Brigade on site.
7	+90 mins	The situation is now under control, the people affected are in the process of decontamination and no further risk to the public is perceived at this point. We continue to ask the public to stay away form the area until further notice.
8	+105 mins	All people effected have been decontaminated and are being supported by the psychological team on site. If you are looking for a loved one please contact your local authority through existing channels.
9	End of exercise	The exercise is now over!

APPENDIX 12: EXERCISE MAP

APPENDIX 13: H&S RISK REGISTER SUMMARY TABLE

No.	Hazard / Event Type	Exposed Persons	Commentary	Unmitigated[1]			Existing Mitigation in plans	Further mitigation measures provided	Mitigated Risk			Status
				P	I	R			P	I	R	
1	Slips, trips and falls within the exercise site.	All	Initial site visit has already taken place (See minutes of meetings). The site is enclosed (fenced). A large part of it will be used throughout the day. It is generally flat but further detailed checks needed. Need to ensure that exit/entry routes are clear (especially given potential additional needs of vulnerable groups)	M	M	M	1. Sturdy footwear. 2. For further review during site visits. 3. Protection around water to be confirmed. 4. First aider will be available from NBCDS 5. Exercise area is to be clearly defined and marked 6. Final check of site on exercise day.	1. Final site inspection immediately before exercise. 2. Exercise area defined in such a way that volunteers and other attendees will not be near to the water. 3. Supervision of attendees will be in their immediate vicinity. 4. Transfer bus from decon area to change area.	L	M	L	Open – keep under review
2	Crushing during exit from areas?	All	e.g. as a result of a real emergency within the exercise area. There could be a significant number of people present (NBCDS + volunteers + eNotice+ PROACTIVE + External guests +EC).	L	H	M	1. Exit routes to be reviewed during future site visits 2. Exit routes to be identified to all at site briefing on exercise day. 3. NBCDS to ensure that escape routes are to be kept free 4. Areas are generally spacious and well laid out. 5. Observers etc are in a separate area from the from incident.	1. Final site inspection immediately before exercise. 2. Routes are well defined.	L	M	L	Closed
3	Falls associated with entry and egress from bus / train.	All	Do not yet know the nature of the train / bus arrangement and if this is an issue or not.	L	H	M		1. Due to bad weather, in-door station to be used. Platform and train are level. 2. Train “staff” in attendance.	L	M	L	Closed
4	Rough surfaces on Site	Volunteers	Volunteers may have to undress in or walk in areas where surface is rough or has surface rubble / dirt - injury to feet once undressed might be an issue.	L	L	L	1. Area to be inspected and if necessary swept prior to exercise (see also item 7)	1. Re-robing slippers provided 2. Bus transfer from immediately after decon direct to change rooms.	L	L	L	Open – keep under review
5	Vehicle / Person collision in exercise area	All	Traffic within site area is limited (it is an enclosed site) but emergency vehicles will be present and possibly moving.	L	H	M	1.Site is enclosed and only NBCDS authorised vehicles should be present. 2. Traffic management plan to be agreed with NBCDS. 3. Volunteers will be supervised by NBCDS and PROACTIVE during the exercise.	1. Access roads kept clear by NBCDS and Proactive supervisors. 2. Carabinieri and fire engines arriving on site maybe at speed.	L	H	M	Open – keep under review

No.	Hazard / Event Type	Exposed Persons	Commentary	Unmitigated[1]			Existing Mitigation in plans	Further mitigation measures provided	Mitigated Risk			Status
				P	I	R			P	I	R	
							4. High Viz jackets for PROACTIVE staff on-site 5. Escorts identified.					
6	Injury during decon (from cold water?)	Volunteers	1. People will be cold water decontaminated by NBCDS in a temporary decon unit **(to be confirmed)** **2.** vulnerable (adult and children) may be at higher risk from cold water than others. 3. Weather in November could be cool.	L	M	L	1. Responders are trained in decontamination 2. Purpose designed national standard decon unit 3. All volunteers to be briefed how they can indicate real need to help - to be confirmed in joining note and at briefing on the day. 4. Re-robe packs provided.	1. Final site inspection immediately before exercise. 2. Weather forecast check in days before exercise. 3. Heated changing rooms provided, 4. Bus transfer from decon area to changing rooms. 5. Warm water decon to be provided.	L	L	L	Closed
7	Injury during decon (water on surfaces?)	Volunteers and Pro-active staff	Wet surfaces in the decon area may become slippery. Arrangements for decon not confirmed yet	L	M	L	1. Purpose designed national standard decon unit. 2. Proactive staff fully clothed and wearing suitable clothing.		L	M	L	Closed
8	Dehydration, hunger etc	Volun-teers and Pro-active staff	Exercise day is notionally from 10 till 2 and weather is likely to be mild.	L	L	L	1. Welfare arrangements will be provided 2. All players to be briefed how they can indicate real need to help - to be confirmed in joining note and at briefing on the day. 3. Breakfast , snacks, drinks (hot and cold) and lunch are to be provided by caterers on site.	1. Final site inspection immediately before exercise. 2. Heated area for initial breaks 3. Enclosed area for lunch.	L	L	L	Closed
9	Fire / other external incident	All	A fire could lead to a real emergency and need for evacuation	L	H	M	1. Emergency evacuation and fire arrangements are not adversely impacted by the exercise scenario 2.NBCDS are present and it is their site 3. Players can be alerted to a real emergency by controllers and Umpires. 4. END EX will be called. 5. Emergency services already in attendance and near by 6. No significant fire sources or loadings will be introduced by PROACTIVE	1. Final site inspection immediately before exercise.	L	L	L	Closed
10	Electrocution (tools, laptops etc)	Office users	No high powered tools or equipment are envisaged from CBRNE Ltd or PRACTICE partners (only	L	L	L	1. Individual organisations responsible for ensuring suitability of equipment supplied to their staff.	1. Final site inspection immediately before exercise. 2. Random inspection of laptops etc on the day.	L	L	L	Closed

No.	Hazard / Event Type	Exposed Persons	Commentary	Unmitigated[1]			Existing Mitigation in plans	Further mitigation measures provided	Mitigated Risk			Status
				P	I	R			P	I	R	
			laptops, cameras and the like).				2. Site visit did not identify other electrical hazards.	3. Minimal use of Proactive electronic equipment at site.				
11	Sunburn/ hypothermia	Volunteers and Mentors and Directing Staff	Decon volunteers may be standing around outside for a while, weather should be cool and not too sunny in November.	L	M	L	1. Re-robe kits provided - these will provide some protection 2. Volunteers will only be "undressed" for short periods, initial changing into swimwear (if needed) will be indoors if needed. 3. First aiders present. 4. Supervision/observation by NBCDS and PROACTIVE at all times.	1. Weather overcast and rainy on exercise day. Hypothermia issues covered in item 6.	L	L	L	Closed
12	Real injury / emergency	All	Not likely in such a small group but a possibility - age mix and abilities might be wide	L	H	M	1. Supervisors and directors will be specifically looking out for things diverting from the plan - no fake casualties in our team. 2. All attendees to be briefed how they can indicate real need to help - to be confirmed in joining note and at briefing on the day.	1. Emergency services are present / adjacent 2. System of tabards agreed with NBCDS	L	M	L	Keep under review
13	Inadequate assessment of the H&S needs of vulnerable persons	Vulnerable people	This group must be considered to be at a potentially greater risk than others	L	H	M	1. Needs of vulnerable groups will have been discussed with volunteer representatives prior to the exercise. 2. Rest and recovery areas to be available at the Site 3. Check access for people with restricted mobility. 4. Exact make-up of group is to be confirmed nearer exercise day.	1. Final site inspection immediately before exercise 2 Use of chaperones 3. All volunteers seen by Proactive prior to exercise and questioned about concerns or issues.	L	H	M	Keep under review
14	Manual Handling Injury	Project Team	1. PROACTIVE team will be responsible for the handling and movement of volunteer's belongings. These are unlikely to be significantly heavy items but they may be bulky, difficult to handle and numerous.	L	M	L	1. Volunteers to be pre-warned to minimise the number of items they bring with them 2. Those handling items to be fit and suitable to the task. 3. Area is generally flat and well surfaced. 4. Items will be moved in small numbers (1 or 2) and only short distances.	1. Final site/ facility inspection immediately before exercise. 2. Staff to be briefed about taking care when handling items. 3. Clothing transferred by bus or in small number by hand.	L	L	L	Closed
15	Virus / Pandemics (Covid and Monkey Pox)	All	Possible that volunteers or other's present may be at a higher risk and that they may require additional protection. Also risk of	L	H	M	1. Covid arrangements discussed in detail with NBCDS. 2. Keep watch on Monkey Pox issue (seems to be declining risk at August 2022)	1. Italian and NBCDS measures relaxed due to low threat level.	L	M	L	Closed

No.	Hazard / Event Type	Exposed Persons	Commentary	Unmitigated[1]			Existing Mitigation in plans	Further mitigation measures provided	Mitigated Risk			Status
				P	I	R			P	I	R	
			infection of attendees from attendee who is positive for virus									
16	Unauthorised and unbriefed personnel gain access to exercise area (e.g. press, activists).	All	Potential for interference with the exercise, control measures and safety arrangements.	L	M	L	1. NBCDS Safety Rules identify limited number of access points and these are controlled by them. 2. ID required at the entrance gate 3. List of all participants to be provided to NBCDS by PROACTIVE. 4. A suitable system for the identification of authorised visitors will be provided (tabards / hats / lanyards / badges etc). 5. Site visit has confirmed site security.	1. PROACTIVE lanyards / ID holders. 2. PROACTIVE Orange tabards for all non NBCDS working in the exercise area and yellow for observers.	L	L	L	Closed
17	Psychological distress caused by the exercise or by the NBCDS volunteers who are tasked as needing psychological support	All	It is possible that even though the exercise is a simulated incident that our volunteers may find is stressful and that they may need psychological support. This may be exacerbated if there are NBCDS actors to increase realism.	L	M	L	1. STC and first aiders and carers will be present. 2. All to be briefed how they can indicate real need to help - to be confirmed in joining note and at briefing on the day		L	M	L	Keep under review
18	Reduced visibility caused by fog being introduced - slips, trips, fall, breathing	All	Only very small amount is usually released, no visual hazard expected.	L	L	L	1. COSHH assessment (UK Regulations standard) 2. Agent to be used is to be identified. 3. Location of release to be identified.	1. Same agent as for Dortmund.	L	L	L	Closed
19	Welfare facilities (toilets, rest areas, worship areas etc) unknown	All	Need to identify and address welfare needs of the group - composition not yet fully known.	L	M	L	1. Suitability of facilities at site to be confirmed (suitable for children, those with mobility problems etc).	Excellent heated, indoors and wheel chair accessible facilities on site.	L	M	L	Closed
20	Use of drones - potential for impact with attendees	All	Potential for impact in case of drone failure / pilot error. Not confirmed that they will be used yet.	L	L	L	Use (or not) of Drones prohibited.		L	L	L	Closed
21	Allergies from food / soap / materials	All	Potential for allergic reactions to food and/or cleaning products used by NBCDS during decon and/or clothing provided.	L	H	M	1. NBCDS to use water only - to be confirmed 2. External caterers 3. Questionnaires to identify dietary and allergy issues	1 No issues identified.	L	M	L	Closed

No.	Hazard / Event Type	Exposed Persons	Commentary	Unmitigated[1]			Existing Mitigation in plans	Further mitigation measures provided	Mitigated Risk			Status
				P	I	R			P	I	R	
22	Excavations etc on site	All	Site visit has a water pit	L	H	M	1. Emergency services are on-site. 2. Barriers to be inspected prior to exercise. 3. Volunteers to be escorted at all times.	1. Final site inspection immediately before exercise. 2. Exercise arrangements keep volunteers and attendees clear of the water.	L	M	L	Closed
23	Volunteers' need for medications etc.	Volunteers	Possible deprivation of access to personal medications.	L	M	L	1. Volunteers will only be separated from their personal belongings in the period between undressing and re-robing. 2. Their belongings will be close to them during this period and easily accessible.	3. NBCDS responders are first aid trained and emergency services are immediately available.	L	M	L	Closed

[1] (P)ROBABILITY, (I)MPACT, (R)ISK, (L)OW, (M)EDIUM, (H)IGH.

APPENDIX 14: COMMUNICATION AND DISSEMINATION PLAN

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1. INTRODUCTION

This document presents the communication, dissemination and media plan for the joint activity field exercise from the PROACTIVE project side.

2. ETHICAL & LEGAL ISSUES – CONSENT

Consent will be obtained for all communication & dissemination activities as per the ethical rules of project PROACTIVE. Participants need to give their free and Informed Consent according to the best ethical practices and in compliance with the requirements of the GDPR. To comply with Article 13 of GDPR, consent forms including all the necessary information regarding the processing of their data will be produced. Participants also need to give Informed Consent regarding their expectations of the exercise, e.g. consent to take part, consent to undergo filming, etc.

Along these lines, all persons who partake in the exercise will be required to give specific, explicit and informed consent for communication & dissemination purposes besides consenting data processing for research purposes (see the Information sheet and Consent Form). All filming and photography will be done following the rules of the General Data Protection Framework of the EU. To ensure this, informed consent also details how dissemination data will be used after the exercises, allow to opt-out this processing without preventing participants from taking part in the process, and be available in local languages.

If people present who have a vulnerability preventing them from giving their Informed Consent in written form (for example, a visual disability), the consortium will have to find alternative methods enabling these people to give consent. For example, if individuals with a visual impairment take part in field exercises, they could be provided with the necessary information and give their Informed Consent orally (Recorded Audio Consent).

Moreover, research will be conducted following international standards and requirements for research with human subjects. In particular, the Nuremberg Code (1947), the Declaration of Helsinki (1964), and The Belmont Report (1979) will be observed. The Nuremberg Code underlined the need for guaranteeing and respecting the voluntary nature of human participation in research and pointed out the requirement of establishing mechanisms for Informed Consent, also ensuring people involved in research can withdraw from it at any time. Following the Code, researchers must ensure the welfare and protect the interests of participants. With this aim in mind, researchers must establish in advance mitigation measures for addressing any risk of harm for them.

Lastly, PROACTIVE researchers role in data management and ethics monitoring of human participants in the exercise will follow the four key ethical principles for responsible research established by the Belmont Report:

- respect for people: research subjects must be treated so as to protect their safety, respect their autonomy and ensure their consent on an informed basis;

- beneficence: possible benefits for the participants will be maximised while possible harm or risk will be minimised;
- justice: any benefits and burdens derived from research must be balanced;
- competence: the limitations and boundaries of the researchers' competence must be recognised and made explicit.

3. AUDIENCE

1.1. General Public

One intended audience for the dissemination of the exercise is the general public. This is to help educate them about the realities of a CBRNe incident, to inform them about correct behaviours, and overall increase preparedness.

2. Practitioners

One intended audience for the dissemination of the exercise is other CBRNe practitioners. The dissemination materials from the exercise will allow them to extract lessons learned from including the general public and vulnerable citizens in a field exercise.

3. European Commission & other policy makers

Another intended audience for the dissemination material is to demonstrate the success of the PROACTIVE project in meeting its goals. The disseminated materials may also help policy makers.

4. MESSAGES

Messages that **should not be shared on social media before and during the exercise** are pre-established here.

Civilian volunteers will receive all relevant information.

Before the event, no information will be shared directly with the media (e.g., press releases).

PROACTIVE project may communicate about the upcoming exercise on its social media channels (Twitter, LinkedIn), on its website and during relevant conferences/events. This includes generalities about the event.

Is there any information that CANNOT be shared? (e.g., for the FDDO FEX, they requested we not share the exact location of the exercise nor their exact SOP).

5. TOOLS - PROACTIVE

4. Photographs

PROACTIVE will have a professional photograph as part of the videographer team. Consortium partners would like to take photos on their mobile devices (smartphones).

PROACTIVE would like access to any professional photos taken on the eNOTICE or NBC School side.

5. Video

POACTIVE would like to invite a videographer team on site. PROACATIVE has allocated budget for "provision of a camera crew."

Video will be taken with two aims: 1) research and 2) dissemination. The same professional filming could be used for both aims.

5.1.1. PROACTIVE research video

PROACTIVE would like to hire a videographer and also take videos on consortium partners mobile devices (smartphones) for further observational coding of the event. Very few Evaluators will be allowed to code the live exercise, therefore filming the exercise will allow for the inclusion of further research codes and help ensure all necessary objectives are measured. PROACTIVE needs to film the decontamination procedure. This will be done with consent of the research participants!

The PROACTIVE Evaluators will also film from their own devices.

5.1.2. PROACTIVE dissemination video

Exercise official video (3 – 5 minutes)

PROACTIVE would like to hire a videographer to create a documentary of the event. The videographer will be educated about certain milestones that should be captured. This video will serve for the promotion of the exercise and the project. The video will also include interviews from key players. This video will only be shared post-exercise. This will require an external editing professional alongside the camera crew. This video will be closed captioned in English and in Italian. Ideally, we would include sign language interpretation. The dissemination video will not contain any images of naked body parts in order to ensure participant dignity.

See an example of the videos we created from the FDDO FEX:
https://www.youtube.com/watch?v=ml-oo5YFWEE&t=2s

PROACTIVE interviews for key players (e.g., a firefighter, a volunteer, project coordinators):

Consortium filming

PROACTIVE consortium partners would also like to take videos on consortium partners mobile devices (smartphones).

6. TOOLS – NBC SCHOOL/ENOTICE/OTHERS MEDIA TEAM(S)

Do any of the other organising parties of the exercise intend to have a media team?

7. CHANNELS

6. Social Media

7.1.1. PROACTIVE

PROACTIVE has social media accounts on Twitter, LinkedIn & Youtube and will show all communication & dissemination materials on these sites (photos, short descriptions of what is happening, etc.).

PROACTIVE would like to live tweet the exercise. Tweets are in English.

The hashtags #JointFTX and #Rieti will be used for each tweet and each LinkedIn post. Each tweet will also tag @H2020_eNOTICE.

7.1.2. Other parties

Will you use social media?

7. Press Release

PROACTIVE proposes that we write one joint press release.

7.1.1. PROACTIVE

PROACTIVE will make use of UIC's reach to publish 1 press release the morning of the exercise, explaining what will take place. This press release will be jointly drafted by all parties (FDDO, eNOTICE & PROACTIVE). UIC press releases are translated and sent out in English, French and German.

8. UIC eNews (PROACTIVE)

PROACTIVE will take advantage of the UIC eNews platform to publish a summary of the exercise after the event. This eNews will be sent to all relevant parties for approval before publishing (FDDO, eNOTICE, PROACTIVE). This eNews will be in English.

9. PROACTIVE Website

The PROACTIVE website has active links to the PROACTIVE Twitter account and the UIC eNews articles are directly published on the website. There is also the possibility to blog.

10. Scientific publications (academic journals) – PROACTIVE

The outputs from the exercise, especially the research video, will be used to create scientific publications going beyond the project deliverables. This will be done in line with the general PROACTIVE dissemination plan. It is not foreseen to require approval from FDDO for such publications.

1. Conferences and expos – PROACTIVE

The videos/photos from the exercise will be showcased as part of promotional materials of PROACTIVE at various conferences/expos, as per the general PROACTIVE dissemination plan. It is not foreseen to require approval from FDDO for such publications.

8. 3RD PARTY (JOURNALIST, MEDIA)

It is agreed that no third party media will be present at the exercise.

APPENDIX 15: INTERVIEW MANAGMENT PLAN

Role	Name	Gender	Consent	Interview Questions
NBC School Exercise Director	Giampaolo Santini	M	Verbal consent at beginning of interview	1. Could you please describe the scenario that the NBC School is training? 2. What are the steps involved? 3. Why are such trainings important? 4. What is the added value of including the public at large as role play victims? 5. What are the key takeaways from the training?
eNOTICE Project Coordinator	Olga Vybornova	F	Signed consent form (Observer form)	1. What do the eNOTICE training centres gain from training with PROACTIVE, when vulnerable groups as role play victims?
PROACTIVE Dissemination Manager	Laura Petersen	F	Not required b/c consortium agreement	1. What is the aim of the PROACTIVE project?
PROACTIVE App	Garik Marcarian	M	Not required b/c consortium agreement	1. Please describe the PROACTIVE app 2. How as the app used in the exercise?
PROACTIVE Exercise Director	Tony Godwin	M	Not required b/c consortium agreement	1. What were PROACTIVE's goals for this exercise? 2. Explain the PROACTIVE ETHOS, why it's important to bring vulnerable persons to role play victims during training exercises 3. Challenges faced, recruitment, how we overcame them. THANKS TO CSOs!!!
PROACTIVE Ethics	Irina Marsh	F	Not required b/c consortium agreement	1. What are the ethical concerns with bringing in the public at large as volunteers to role play victims during a training exercise? 2. How does PROACTIVE address these concerns?
PROACTIVE LEA partner	Craig Liston	M	Not required b/c consortium agreement	1. What was your overall impression of the exercise? 2. How different was it compared to exercises without civilian volunteers (especially considering volunteers with vulnerabilities)? 3. What were some good practice examples you saw in the exercise that would be useful for your own organisation?
PROACTIVE LEA partner	Liz Benson	F	Not required b/c consortium agreement	1. Why is gender balance important in CBRNe response? 2. In your opinion, to what extent does the public at large expect woman responders to be on the scene? 3. How can you meet those expectations? 4. How do training exercises with the public help prepare responders to meet these kinds of expectations?
PROACTIVE Observer (Civil society)	Aikaterini Poustourli	F	Signed consent form & PROACTIVE NDA	1. What was your overall impression of the exercise? 2. Do you feel better prepared for a CBRNe incident? 3. How effective were the first responders in managing the affected persons (volunteers), esp. re: persons w/vulnerabilities? 4. What role does the PROACTIVE app have to play in CBRNe response? 5. What role does the PROACTIVE app have to play in CBRNe preparedness?
PROACTIVE Observer (Civil society)	Francesco Graziani	M	Signed consent form & PROACTIVE NDA	6. What was your overall impression of the exercise? 7. Do you feel better prepared for a CBRNe incident? 8. How effective were the first responders in managing the affected persons (volunteers), esp. re: persons w/vulnerabilities? 9. Why is it important to include children in training exercises?

eNOTICE Observer	Maaike van de Vorst / Grace Xerri	F	Signed consent form (Observer form)	10. What was your overall impression of the exercise? 11. What were the benefits you observed of bringing in the public at large as role play volunteers? 12. Do you have any lessons learned that you will bring back to your own organisation?
Military responder	To be identified		Verbal consent at beginning of interview	13. How different was this exercise compared to previous exercises? 14. What are the challenges and benefits of having civilian volunteers? 15. Do you feel better prepared now to manage vulnerable groups?
Police responder	To be identified		Verbal consent at beginning of interview	16. How different was this exercise compared to previous exercises? 17. What are the challenges and benefits of having civilian volunteers? 18. Do you feel better prepared now to manage vulnerable groups?
Military Red Cross responder	To be identified		Verbal consent at beginning of interview	19. How different was this exercise compared to previous exercises? 20. What are the challenges and benefits of having civilian volunteers? 21. Do you feel better prepared now to manage vulnerable groups?
Train staff responder	To be identified		Verbal consent at beginning of interview	22. How different was this exercise compared to previous exercises? 23. What are the challenges and benefits of having civilian volunteers? 24. Do you feel better prepared now to manage vulnerable groups?
Volunteer non-vulnerable	To be identified		Verbal consent at beginning of interview	25. What was it like to partake in a disaster exercise as a role play victim? 26. What was your impression of the first responders? 27. What was your impression of the PROACTIVE app? 28. Do you feel better prepared for a CBRNe incident?
Volunteer vulnerable	To be identified		Verbal consent at beginning of interview	29. What was it like to partake in a disaster exercise as a role play victim? 30. What was your impression of the first responders? 31. What was your impression of the PROACTIVE app? 32. Do you feel better prepared for a CBRNe incident?

APPENDIX 16: CONSENT FORMS

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 832981

ANNEX 3 PROACTIVE INFORMATION SHEET AND CONSENT FORM

Project PROACTIVE 2nd Field Exercise, RIETI, Wednesday November 16th, 2022

PARTICIPANT INFORMATION SHEET
PROACTIVE PROJECT ETHICS OFFICER (PEO) Approval Reference: PEO no17/10.10.2022

Background and aims of the research activity:
This study is funded by Project PROACTIVE; (project funded by the European Commission No 832981). Project PROACTIVE aims to **improve how well prepared you and emergency workers are in the case of an accident involving harmful materials**. We are especially interested in helping people who may have additional needs because of things like age, illnesses, disabilities or other characteristics. We are getting the information we need by having three exercises which we will evaluate by engaging with the public and the emergency services as well as yourselves.

Why is this research being conducted?
The second PROACTIVE exercise will take place in Rieti on Wednesday 16th November 2022 with the PROACTIVE consortium in cooperation with the Scuola Interforze per la Difesa NBC (Italian Joint NBC Defence School) which is part of Project eNOTICE. The exercise will examine the behaviour of a group of the population that unexpectedly comes into contact with a hazardous substance due to an accident and is therefore to be decontaminated. For this purpose, a fictitious but realistic scenario will be set up to simulate the accident and the release of the substance. (Note: **No real substances are used in the exercise and there is no risk of participants coming into contact with hazardous substances during the exercise**.)

Why have I been invited to take part?
You have been invited because **you are over the legal age 14**, have no criminal record and live in the area of Lazio (Rieti) and Umbria (Terni). About thirty-five civilian volunteers have been invited, ten of whom represent particularly vulnerable groups within society, for example, those with mobility restrictions, hearing and visual impairments, or no knowledge of the local language. Members of the University of Tor Vergata and CARIS will take part.

Do I have to take part?
No. You can ask questions about the research before deciding whether or not to take part. If you do agree to take part, you may withdraw yourself from the study at any time, with no consequences and without giving a reason by advising Dr Irina Marsh (irina.marsh@cbrneltd.com) of your decision. All your personal data will be deleted from the PROACTIVE project databases if you withdraw your participation.

What will happen to me if I take part in the research?
The exercise will take place outdoors[1] and within a secured and controlled area. It is based on a **simulated accident** according to the following description:

Mid-morning a group of passengers are awaiting to board a train at a Railway Station when there is a loud noise from up the railway track followed by a cloud of "disco smoke" (harmless smoke used at dance parties)

[1] It should be noted that this is subjected to weather conditions.

which drifts onto the platform. The passengers show signs of irritation such as coughing, breathing difficulties, and streaming eyes. There follows a process in which the emergency services react to the event and the civilian volunteers role play their part as appropriate.

Please note that while completing the simulation of a decontamination shower during the exercise, all participants will be asked to **wear a swimming costume**. You should bring a small bag with you and will have the opportunity to change both during and after the exercise. If you **do not wish to participate** in this portion of the activity for any reason, you are not obligated to do so. Please be advised that photographs and video will also be taken to record the exercise (see below for further information). Should you have any questions or concerns regarding this aspect of the study, you are welcome to contact us (see page 4).

Following the exercise, you will be questioned about your experience during the exercise.

When you register your arrival at the site of the exercise, the organisers will talk you through the exercise procedures and give you the chance to ask any questions. Your participation in the exercise should take **approximately 6 hours** interspersed with refreshments. You can ask to withdraw from the exercise at any time.

If you decide to take part, the organisers will brief you about the exercise before it starts. To speed up the registration process we ask you to sign the Consent Form and hand it in or email it to whoever sends it to you at the point you agree to participate in the exercise.

Will I be photographed / filmed?

The organisers will photograph, video and audio record the exercise for research and dissemination purposes. These data will be used for the following purposes:

My personal data collected	Why is my data collected?	How is my data used?
Video/Images.	These data are collected for PROACTIVE **research and dissemination purposes**	If you consent, data will be used to analyse your behaviour during the exercise, test the PROACTIVE project app (you can check its (Proactive - Privacy Policy (proactive-app.net)) for more information), and publicise the project results online. Research data will be anonymised before publication.
Name, signature, email.	These data are collected for **research and logistic purposes**	If you consent, these data will be used to organise the exercise. These data will not be released outside the project and will be deleted after the established retention period.

Are there any potential risks in taking part?

The risks associated with you taking part are those associated with **breaches of confidentiality** (regarding your personal data), **physical risks** associated with moving around the exercise area and being decontaminated and **psychological risks** associated with being involved in an exercise that simulates an accident.

To reduce any potential risks, we carry out detailed risk assessments and will provide protection and safety measures. For those who are vulnerable, we have also consulted advisory bodies. Furthermore, all your personal data collected for research purposes (i.e., pictures, names, audios, etc.) **will be anonymised before publication** or any dissemination outside the PROACTIVE project consortium. **Only if you agree by signing this consent form,** your pictures and videos will be used to **publicly disseminate the PROACTIVE project online**.

Are there any benefits in taking part?

By participating, you will help improve **disaster management in Italy and beyond**. In particular, the participation of particularly vulnerable people helps to improve the inclusivity of response measures.

Optional: Expenses and compensation

You will receive **reasonable travel costs if necessary**, but it is planned that transport will be organised from Terni and back to Terni. Food and beverages will be provided free of charge during the day of the exercise.

What happens to the data provided?

Any data from which you can be identified, directly or indirectly, (name, email address, age, possible vulnerabilities (mobility restrictions etc, audio& video recording) is **known as personal data**.

Personal and sensitive data (such as personal data revealing racial or ethnic origin or health data) will be **stored on UIC premises**, encrypted before data sharing within the consortium. The project organisations will store data in a secured space with restricted access. The research team's computers are protected by a firewall and secure passwords.

- Personal data collected for **research purposes** is anonymised before publication or sharing outside the PROACTIVE consortium. These data and other research data (including Consent Forms) will be **kept for 5 years** after the finish date of the Project PROACTIVE.

- **Separate consent will be obtained for all communication & dissemination** activities as per the ethical rules of Project PROACTIVE. All filming and photography will be done following the rules of the General Data Protection Framework of the EU.

You should note that, as part of Project PROACTIVE data management, your personal data may be transferred to, and stored at, a destination outside the European Economic Area, in particular the UK. Identifiable data will be removed whenever possible, and any data transfer will be done securely and with a similar level of data protection as required under UK law. Concerning third parties outside the PROACTIVE consortium, personal data (including the name and ID of the participants) will only be shared with Scuola NBC as they are responsible for the access control at the day of the exercise.

Will the research be published?

The research data will be used to prepare a **report for the European Commission**, which will summarise the findings of the exercise in Rieti. The **anonymised research** may be published in open access academic publications and the PROACTIVE website.

Are there any liability specifications to comply with?

YES. The event will remain entirely **dependent on any COVID-19-related developments** between now and the event date regarding travel and/or sanitary restrictions that could enter into force. Moreover, you must **comply with the following measures adopted by the Scuola NBC** for the safety of all participants (belonging to the European projects and invited persons from those project's coordinators):

- You must take out adequate medical insurance cover for the entire period related to the event and to ensure that the event and your participation are confirmed before incurring any expenses concerning the activity;
- You must maintain minimum physical distancing apart at all times;
- You must be prepared to wear a mask at all times in public areas and meeting facilities/rooms if necessary or required.

Once your participation is confirmed, you will be provided further information on all prevailing measures adopted by Scuola NBC on-site, including hygiene awareness handout for delegates and meal arrangements.

Furthermore, external participants are responsible for obtaining **any necessary visas** (if requested), taking out **adequate insurance** (including, without limitation, travel and health insurance), and following the **health and safety requirements** and recommendations of the destination country as well as the company providing the relevant service (e.g. airline, train, car rental, venue, caterer, hotel, etc.). The Scuola NBC will not cover any expense incurred by applying those requirements and recommendations.

The **Scuola NBC hereby disclaims all liability for any damages or injuries**, including concerning a COVID-19 infection you may suffer or cause to others during or in connection with their round-trip journey and their stay in

the country where the activity is being held. Expressly referred to the civilian volunteers that will participate in the activity as the focus of the PROACTIVE project, the Scuola NBC disclaims all liability for injuries and/or damages that could occur during the exercise and/or related activities. The military training area is not subject to national provisions on workplace safety about specific exceptions from the provisions of the law. However, **specific warnings and the assembly areas** to go to in case of accidents or calamitous **events will be notified**.

Who has reviewed this study?

This study has been received ethics clearance through the Project Ethics Officer of Project PROACTIVE (Reference number: PEO no 17/10.10.2022).

Whom do I contact if I have a concern about the study or I wish to complain?

If you have a **concern about any aspect of this study**, please contact Tony Godwin (tony.godwin@cbrneltd.com) or PROACTIVE Project Ethics Officer (PEO) Irina Marsh (irina.marsh@cbrneltd.com) and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with.

Data Protection and contact information

The UK Health Security Agency (UKHSA) and International Union of Railways (UIC) are joint data controllers with respect to your personal data, and as such will determine how your personal data is used in the study. The legal basis for the processing of your data is your consent. **Our Data Protection Officer (DPO)** oversees compliance with our data protection policy, ensuring that individual rights are properly treated and deals with any doubt, suggestion, complaint or claim from participants. You can contact the Data Protection Officer by writing to Dr Irina Marsh (irina.marsh@cbrneltd.com)

Further Information and Contact Details

If you would like to discuss the research with someone beforehand (or if you have questions afterwards), please contact: Tony Godwin (tony.godwin@cbrneltd.com)

Project PROACTIVE 2nd Field Exercise, RIETI (Italy), Wednesday November 16th, 2022
PARTICIPANT CONSENT FORM

		Please initial
1	I confirm that I have read and understand the information sheet for the above research activity. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without any adverse consequences.	
3	I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.	
4	I understand how this research will be written up and published (i.e., including only anonymised data).	
5	I consent to being audio and video recorded for research purposes.	
6	I consent to having IP and password data collected for research purposes (only for the PROACTIVE app).	
7	I consent to being video recorded for dissemination purposes.	
8	I consent to having my photo taken for dissemination purposes.	
9	I understand how audio recordings / videos / photos will be used in research outputs.	
10a	I agree to the use of anonymised quotes in research outputs **OR**	
10b	I do not wish my anonymised quotes to be used in research outputs	
11	I understand how to raise a concern or make a complaint.	
12	I acknowledge and accept the liability measures outlined herewith for compliance	
13	I agree to take part in the research activity	

Name of Participant	**Date (dd/mm/yy)**	**Signature**
Name of person taking consent		

APPENDIX 17: PROACTIVE ETHICS FRAMEWORK OBSERVATION AND EVALUATION PLAN

proactive

LITERATURE REVIEW NOTES

There is a lack of a general consensus on how to address the legal and ethical dimensions of CBRNE events (O'Mathúna,2019; Rebera, 2019). So further study and analysis is required to set ethical frameworks adapted to operational scenarios.

Aspects addressed by the literature include:

- Disaster triage (Barilan et al. 2014; Ten Have 2014; Wagner and Dahnke 2015)
- Obligations and rights of healthcare professionals (Eckenwiler 2004; Grimaldi 2007)
- Disaster bioethics – the investigation of ethical questions raised by the occurrence of disasters and by the needs of those affected by them (O'Mathúna et al. 2014)
- Operational issues raised by CBRNE security (Carter et al. 2013; Davis and McHenry 2005).

The literature review underlines the need for developing and implementing ethical guidelines, codes of conduct, and training (Rebera, 2019). A broad ethical consideration is the degree to which and ways in which the society generally and the community(ies) that are at-risk or that have been affected are engaged in transparent discourse regarding preparedness planning for CBRNE and immediate response to events. To ensure equitable participation, such engagement must be based on relevant, valid data and information; recognizing and addressing the complexity of setting priorities and allocating resources for preventive action, intervention, and post-crisis response; and the ethics of trade-offs – balancing societal and individual rights and the roles and responsibilities of emergency responders (Rebera, 2019).

Moreover, new methods and technologies should be introduced: "*The deployment of technology – decision support tools, for instance – could promote ethical behaviour if it has been through some process of 'ethical design' aimed at mitigating certain potential ethical problems*.", addressing issues such as privacy by design (Rebera, 2019:39).

As reported by Bertrand et al. (2019), for any CBRNE events with casualties, there is a requirement to allocate resources on a priority basis whenever resources are outweighed by demand. This is based on the sorting of casualties so that the greatest good is provided to the greatest number of casualties. Triage is thus vital for ensuring the success of disaster management. Success relies on previous training in applying specific plans. Triage is part of the medical response to the incident that also requires cordoning, appropriate command and control, communications, assessment and hazard management. The World Medical Association's Declaration of Lisbon on ethics and emergencies highlights key points: preserve autonomy; offer the best health care, avoid negative consequences, preserve equity, prevent doctors to be under pressure.

Ethical dilemmas to be addressed are multiple and content dependent- but also not always aligned with societal frameworks for analyzing social impact or interpretations of fundamental rights (Rebera, 2019).

CBRNE incidents raise the genuine possibility of ethical dilemmas:

1. i.e. lose-lose situations for responders in which decisions must be taken amid extreme **time-pressure, information gaps, and other stressors to decision-making** (Karadag and Hakan 2012; Rebera and Rafalowski 2014).

2. Ethical challenges such as, for example, administering drugs (Castle et al. 2010), conducting field triage (Ramesh and Kumar 2010), and gathering patient consent (Rebera and Rafalowski 2014) may all be more difficult in CBRNE incidents due to the **use of PPE (personal protective equipment**, such as hazmat suits).

3. The duty of care that healthcare professionals bear to their patients cannot be simply assumed to outweigh personal interest in their own wellbeing, nor the responsibilities owed to loved ones (Sokol 2006).

According to Rebera (2019) and O'Mathúna et al. (2014), standard operating procedures (SOPs) are unlikely to adequately support responders in non-standard situations, when considering the kinds of ethical dilemmas faced by practitioners. They are seen by the authors as aspirational and lack the flexibility and creativity required to manage these situations. Alsan and Barilan (2019) suggest having openly prepared research protocols as part of CBRNE preparedness, especially regarding the care of CBRNE related workers, emergency and health services

METHODOLOGY:

In PROACTIVE Rieti field exercise, we will follow the '*modified consequentialist approach*' proposed by Rebera and Rafalowski (2014). It is an on-the-spot ethical decision-making perspective which works by setting a central value or principle (i.e. saving lives, for example) and using it as the basis of a "goal-oriented heuristic" (Rebera, 2019: 42). "Additional core rights and values are factored-in as 'side-constraints' (Nozick 1974; cf. Kinslaw et al. 2009), i.e. minimum standards beyond which any violation is unacceptable" (Rebera, 2019: 42).

This represents a flexible basic framework but it should also be noted that:

- an ethos must recognise that priorities may change in the event of, or during, an incident (ACP 2012: 37).

- significant and ongoing effort is required to ensure that the values given by an ethos can be readily operationalised, i.e. translated into actions and decisions in the field.

The framework, therefore, works as a raising awareness tool. Such awareness, which requires openness, capacity to deal with such situations using creativity and innovation (Mendonca and Fiedrich 2006; Webb 2004), as well as awareness of the impact of stress, cognitive bias and moral framing on judgement and decision-making (Greene et al. 2008; Starcke et al. 2012).

An appropriate social response to CBRNE must reflect two fundamental goods:

- the promotion of the common good

- protection of people from the subjection of anybody's interests to either the interests or will of others, without an appropriate structure of consent (Shapiro 2003).

Cultural diversity as a challenge for CBRNe ethics when trying to achieve international cooperation is firmly established as a principle of disaster bioethics and humanitarianism and regional and country-levels are key. Where agreements on shared approaches to ethical problems can be found, they should be vigorously pursued. Agreed approaches to resolving situations, in which the values and principles guiding the responders' decisions clash, should be established (Rebera, 2019: 46-47).

Recognition of the role of diverse spiritual beliefs and of bioethics is vital. Recently, the West has enriched the discourse on bioethics and enabled a broader understanding of both health ethics generally and its implications for CBRNE. Rights would be considered in the context of :

- interpersonal ethics (including freedom of choice)
- public health ethics (including equity and access to emergency response services)
- environmental rights, which pertain to all members of society (Jillson, 2019: 57).

Our tactical goal during the Rieti exercise is to present, discuss and contrast several ethical dilemmas that work as mechanisms for building a general ethos or code of conduct in similar contexts and which:

- ensure a good balance between generalization and application
- capture most casuistic occurring under unpredictable conditions

"KEY TASKS" TO BE ADDRESSED BY THE ETHICS FRAMEWORK

We have identified the main actions that will require an ethics oversight during the RIETI field exercise:

1. conducting of disaster triage,
2. decontamination,
3. evacuations, dealing with the public,
4. effective communication while in PPE
5. management of volunteers and healthcare workers

Task	Overriding goal of the task and main principle	Side ethical constraints	Choices and constraints (minimum standard for violation of main principle)
1. conducting of disaster triage	mitigate impact on health avoid negative consequences preserve equity Protect nearby hospitals from a sudden overload of work	impact on privacy, decide the order of treatment of (patients or casualties)	water-curtains in public view prioritize vulnerable groups (properly pre-established) Tag and trace all people involved
2. decontamination	i.e. save lives	i.e. impact on respect for autonomy	balance individual rights with social good
	consent	when the patient is unconscious	
	privacy		to determine the use of water-curtains in public view
3. evacuations, dealing with the public	i.e. save lives	i.e. physical and psychological impact	help and information points outside targeted area
4. effective communication while in PPE and at a general level	prevent risks and complications to increase public compliance	i.e. physical and psychological impact	factual, trustworthy and timely information to the public
5. management of volunteers and healthcare workers	reduce harm		principles: restriction of individual liberty, proportionality, reciprocity, clarity, transparency and trust, solidarity, and respect for human dignity, non-discrimination and equity

1.1. Triage steps

1. get situational awareness which should provide a global view shared in real time with first responders and the general population via reliable communication means and secured information networks;

2. safety and security issues which should be provided to the population and FRs equipped with suitable personal protective equipment (PPE);

3. safe health for the population, including the management of casualties with fast medical triage and appropriate treatment at scene and in hospitals.

1.2. Ethical dilemma game questions

The responder must decide between competing plausible courses of action, each of which carries some serious negative consequence, (the goal to aim for is to save life).

1. Which were the contextual factors limiting respect to main principles?

2. Were there any moments where it was needed to choose between competing plausible courses of action?

3. Was it necessary to take care of cultural differences when dealing with patients?
4. How have cultural differences been taken care of during the exercise?
5. Were there any situations where cultural values and principles which guide the responders decision clashed?
6. Was wearing PPE an impediment to administering drugs, conducting field triage or gathering patient consent?
7. Were there any moments where it was necessary to choose between duty of care to patients and personal wellbeing or responsibility owed to loved ones?
8. Have the role of diverse spiritual beliefs been recognized during the exercise?
9. Have environmental rights been respected?
10. Have patients been properly treated?
11. Have vulnerable groups been prioritized?
12. Have privacy and autonomy of patients been respected?

ETHICAL SUPERVISION OF ACTIVITIES DURING PROACTIVE 2ND EXERCISE, RIETI, 16TH OF NOVEMBER 2022

To provide ethical oversight during the PROACTIVE 1st Field exercise, the Ethics and Data Protection Supervisor (EDPS) has been appointed. The role is fulfilled by the PROACTIVE PEO, Dr. Irina Marsh. The role of EDPS is to ensure The Rieti field exercise is carried out in a manner that is ethically compliant with the relevant legislation set out in D8.1 Legal and ethical State-of the Art on CBRNe preparedness and response and D8.3 Materials and briefings for PROACTIVE exercises and will carry out an on-site evaluation of ethical aspects of the exercise seeking to ensure, in particular that:

- the Exercise is being carried out with respect for human dignity at all times;
- all proper authorisations have been obtained;
- the exercise briefings have been carried out in accordance with recommendations;
- volunteers have completed a consent form(s) as recommended;
- relevant legislation has been complied with.

The EDPS will be supported by the External Ethics Advisory Board (EEAB) members and other invited ethics experts. The ethics experts will provide a consultative role for the exercise planning team and:

- will provide advice and guidance on the conduct of the exercise where it relates to the management of the volunteers, safety and risks;
- will review materials and advice on their content (e.g. information sheets, consent forms etc.);
- will work in close relation with the EDPS, exercise planning team and emergency services participating in the exercise.

The supervising and the evaluation process will follow the *Ethical impact assessment framework* established in D8.1 (sections 3.4 and 3,5) and the associated ethical documents:

- *PROACTIVE Ethics Observation and Evaluation plan (Annex 1);*
- *PROACTIVE Ethics Risk Assessment Template (Annex 2);*

The PROACTIVE Ethics Observation and Evaluation Plan[1] is constructed as a package of interdependent values that underline the work of response teams and emergency medical staff when confronted with disaster situations. The document provides the knowledge background that supports understanding and interpretation of ethical issues that could arise during a CBRN incident as presented in the ethical framework.

The PROACTIVE Ethics Risk Assessment Template[2] should be used in close relation with the PROACTIVE Ethics Observation and Evaluation Plan. The Template serves as a heuristic tool. In other words, it provides the user with a framework to identify potential ethical issues associated with CBRN response tools and procedures. This is important because CBRN responses have traditionally been treated as primarily a technical and/or organisational challenge where technological advances were either generally understood as something positive or seen through a purely consequentialist ethical lens (that is: means and right secondary as long as outcome positive). However, CBRN response raise a wide range of issues touching upon the fields of disaster management ethics (e.g. individual liberty versus collective protection from cross-contamination), technology-related ethics (e.g. track & trace and privacy/data protection), research ethics (e.g. how to organise realistic exercises without violating rights of physical integrity), and others. The Template consists of a matrix: In the rows of the matrix, a catalogue of rights/norms is identified and categorised into five generic sections: fundamental rights, procedural rights, distributive rights, intergenerational issues, and informational rights. In the columns, questions of potentially arising/observed/undertaken ethical issues and their management in relation to the development of the exercise are listed.

[1] See PROACTIVE D8.1, section 3 and Stănciugelu et al., 2014
[2] See PROACTIVE D8.1 section 3 and Krieger and Stanciugelu, 2014

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ANNEX 1

PROACTIVE Ethics Observation and Evaluation Plan for Supervision and Evaluation of PROACTIVE 2nd exercise, Rieti, 16th of November 2022

CBRNE events raise important ethical issues in which fundamental principles have to be follow and competing values must be weighed. This *Ethics Observation and Evaluation Plan* should be seen as a package of interdependent values that underline the work of response teams and emergency medical staff when confronted with disaster situations; The document provides the knowledge background that supports understanding and interpretation of ethical issues that could arise during a CBRN incident.

The *Ethics Observation and Evaluation Plan* and the associated framework will be used to supervise and evaluate the PROACTIVE 2nd exercise, Rieti, 16th of November 2022.

Values to guide decision-making process during CBRN crisis

Substantive value / Description

- **Individual liberty;** in a CBRN crisis restrictions to individual liberty may be necessary to protect the public from serious harm. Restrictions to individual liberty should:
  - be proportional, necessary, and relevant;
  - employ the least restrictive means; and
  - be applied equitably.

- **Protection of the public from harm**; to protect the public from harm, first responders and public health authorities may be required to take actions that impinge on individual liberty. Decision makers should:
  - weigh the imperative for compliance;
  - provide reasons for public health measures to encourage compliance; and
  - establish mechanisms to review decisions.

- **Proportionality**; proportionality requires that restrictions to individual liberty and measures taken to protect the public from harm should not exceed what is necessary to address the actual level of risk to or critical needs of the community.

- **Privacy**; individuals have a right to privacy in health care. In a CBRN crisis, it may be necessary to override this right to protect the public from serious harm.

- **Duty to provide**; Category 1 and 2 Responders will have to weigh demands of their professional roles against other competing obligations to their own health, and to family and friends. Moreover, they will face significant challenges related to resource allocation, scope of practice, professional liability, and workplace conditions.

- **Reciprocity**; reciprocity requires that society support those who face a disproportionate burden in protecting the public good, and take steps to minimize burdens as much as

possible. Measures to protect the public good are likely to impose a disproportionate burden on category 1 and 2 responders, patients, and their families.

- **Equity**; all patients/victims have an equal claim to receive the health care they need under normal conditions. During a CBRN crisis, difficult decisions will need to be made about which health services to maintain and which to defer. Depending on the severity of the CBRN crisis, this could curtail not only elective surgeries, but could also limit the provision of emergency or necessary services.

- **Trust;** trust is an essential component of the relationships among first responders and citizens, staff and their organizations, the public and health care providers or organizations, and among organizations within an emergency system. Decision makers will be confronted with the challenge of maintaining stakeholder trust while simultaneously implementing various control measures during an evolving crisis. Trust is enhanced by upholding such process values as transparency.

- **Solidarity**; each person makes a commitment not only to family and loved ones but also to the community. Solidarity means that each individual must consider the needs of others. When there are limited resources, each person has an obligation to care for the other, knowing that with limited resources, each person must consider the greater good of the community rather than one's own self interest.

- **Fairness:** this value requires that health care resources be allocated fairly with a special concern that those most vulnerable are treated fairly. However, given the fact that there will be limited resources, the fair distribution of resources is governed not by what is best for the individual, but rather by the principle of "the greater good of the community." Given the fact that resources are limited, decisions will be made that result in certain people receiving these resources while others will not.

- **Respect for Person:** This value states that each person is a unique individual and is to be valued despite gender, ethnicity, age, religion, social status, economic value or any other variable. Since all persons are worthy of respect, it follows then that all persons must be treated fairly, justly and with dignity. With limited resources, some persons will receive full treatment, some will receive limited treatment and some will receive no treatment at all. No matter what level of care is administered, each person must know that they will always be respected and treated with dignity. In instances where individuals may not receive treatment, they should be assured that they will be provided with dignified comfort care.

- **Stewardship;** Those entrusted with governance roles should be guided by the notion of stewardship. Inherent in stewardship are the notions of trust, ethical behaviour, and good decision-making. This implies that decisions regarding resources are intended to achieve the best patient health and public health outcomes given the unique circumstances of the crisis.

Procedural values / Description

- **Reasonable**; decisions should be based on reasons (i.e., evidence, principles, and values) that stakeholders can agree are relevant to meeting needs in a CBRN crisis. The decisions should be made by people who are credible and accountable.

- **Open and transparent**; the process by which decisions are made must be open to scrutiny, and the basis upon which decisions are made should be publicly accessible.
- **Inclusive**; decisions should be made explicitly with stakeholder views in mind, and there should be opportunities to engage stakeholders in the decision-making process.
- **Responsive**; there should be opportunities to revisit and revise decisions as new information emerges throughout the crisis. There should be mechanisms to address disputes and complaints.
- **Accountable**; there should be mechanisms in place to ensure that decision makers are answerable for their actions and inactions.

I. Ethical challenges of specific activities

- **Communicating at the scene**
  In CBRN events, citizens face very unfamiliar circumstances. Responders must communicate clearly, precisely, and reassuringly. Different people from different backgrounds will have different needs. The 'worried well' for instance, should not be treated as a nuisance, but as victims who require help (i.e. guidance and advice).
- **Evacuation and quarantine**
  Evacuation and quarantine raise serious ethical issues and are liable to cause distress and fear. Support (practicalities like providing shelter and food and psychological and spiritual help) is called for. Quarantining may inadvertently cause harm if healthy people are quarantined alongside infected people. Moreover, quarantined people may be subject to stigma during or after the event. Feelings of isolation, abandonment and fear are likely. Decisions about evacuation and quarantine must be carefully scrutinized to protect people's interest.
- **Decontamination and emergency triage**
  Decontamination procedures are unfamiliar to the general public. Some groups may find it embarrassing or unacceptable to undress in public; some groups (e.g. children) may find the process frightening. Decontamination needs to be carried out effectively but sensitively – through what that means in practice requires investigation. Decontamination, emergency and medical triage actions force responders to make life or death decisions. Dignity – including that of the dead and dying is a key consideration here.
- **CBRN crime scenes**
  Although preserving and gathering forensic evidence is secondary to saving lives, victims – and society as a hole – have a right to justice. This may be critical component of restoring society to 'normal' after an event. Thus, gathering evidence is important, and it will be necessary to appropriately accommodate criminal investigation needs.

ANNEX 2

PROACTIVE Ethics Risk Assessment Template for Supervision and Evaluation of PROACTIVE 2nd exercise, Rieti, 16th of November 2022

Summary from the Ethics Risk Assessment: Rieti exercise (work in progress)

No.	Human rights/ Ethical values and principles	Explanations/ details	Exposed Persons	Commentary / Possible issue	Risk (with existing mitigation)	Existing Mitigation / Commentary
Basic human rights: These rights are individual rights that describe the human core (physical/mental integrity/life, freedom of action/choice, equal treatment, and property) that requires protection.						
1	Physical health	• Avoid physical harm or, abuse, • promote physical well-being, • minimise health risk to individuals	All	• Side-effects of showers with cold water • H&S Risks on site.		
2	Mental health	• No mental harm or abuse • enable learning	All	• Psychological stress from exercise and from dealing with responders wearing PPE suits (especially face masks).		
3	Choice/ liberty of action	• No constraints on choice of course of action • Empowerment through knowledge of available courses of action	All	• Containment on site		
4	Respect for person	• Non-discrimination • Empowerment of the most vulnerable	All	Undressing in a public setting		
5	Right to property	• Minimise damage to property, reparatory payments	All	If personal property is damaged during response		
Procedural rights: These rights concern the relation of technical/bureaucratic procedures and actions and the involved/affected individual.						
6	Proportionality	• No excessive restraints on rights, or restrictions on personal freedom	All	Restrained access to the mobile phones		
7	Inclusiveness & fair and meaningful participation	• Ensuring all relevant stakeholders are given voice, provision of resources such as information to ensure voice of even marginalised groups	All	Failure to take into account the opinions/ interests of some stakeholders		
8	Transparency	• Ensuring that interested/affected parties have access to tool information	All	Lack of knowledge on benefits and risks of participation.		
9	Accountability	• Ensuring that there is a clear line of accountability	All	Who is in charge of organising of the exercise (agency, persons)? How can we reach them?		
10	Safety	• Safety standards & regulations	All	Compliant with safety and health regulations?		
11	Legality of process, product, deployment	• Respect of legal restriction on development, use and export	All	Property or data protection rights of participants could be violated.		
12	Responsive-ness	• If concerns are being voiced, are there mechanisms in place to answer to these concerns?	All	Lack of identified route for communication / language difficulties.		
13	Informed consent	• Have all the stakeholders been informed about the exercises details and asked for consent?	All	Lack of consent and risk awareness		

No.	Human rights/ Ethical values and principles	Explanations/ details	Exposed Persons	Commentary / Possible issue	Risk (with existing mitigation)	Existing Mitigation / Commentary
14	Freedom of assembly and association	• No restraint of rights for participants to the exercise	All	Volunteer's and observers' right to reject their participation could be affected.		
14	Right of withdrawal	• If parties affected by the development/ deployment of a tool/ implementation of a procedure, have they been informed and given the opportunity to withdraw from the process?	All	If I decide to not continue taking part in a simulation exercise, is there an easy way out for me? Do the exercise protocols include safeguards?		
Distributive rights: These rights concern the distribution of risks and benefits between affected/involved groups, as well as principles of exchanges risks/benefits between different groups.						
15	Reciprocity	• Are those burdened by the use or exposure to a tool/ procedure being compensated by those that benefit from the tool's use?		Are the volunteers participating to the exercise compensated by those that benefit from the exercise?		
16	Solidarity	• Does a tool/procedure help care for others in need?		Does the exercise help to care for others in need (as for vulnerable people?		
17	Non-discrimination and equity	• If a tool/procedure implies benefits or burdens to those using/affected by it, are there certain groups that do not get the benefits or get a disproportionate share of the burden?		The research sample could be built over unfair criteria.		
Informational rights: CBRN response is likely to be information-intensive. Information can help improve responses but informational self-determination is also a fundamental right.						
18	Universal access	• Are certain users excluded from access to the tool/ procedure?		No risks identified since PROACTIVE guidelines are aimed at enhancing the situation of vulnerable groups.		
19	Accessibility	• Is the tool/ procedure too complex to be used for some?		No risks identified since PROACTIVE guidelines are aimed at enhancing the situation of vulnerable groups.		
20	Privacy& Data protection	• Does the tool gather personal data? Is the personal data protected?		PROACTIVE App, research and dissemination data		
21	Honest communication and transparency about the performance limits of CBRN tools and the CBRN threat	• Avoidance of ambiguous and/or exaggerated information about the protective performance of CBRN tools • Avoidance of misleading and/or exaggerated information about the CBRN threat level in Europe		Volunteers mislead about the efficacy oy water decontamination for CBRNE incidents		
Intergenerational rights: This concerns rights of future generations.						
22	Minimal environmental impact	• Use of materials/ substances/ processes that are not high polluting		Decontamination process could release polluting substances		
23	Sustainability	• Does the tool adversely affect future generation's social, economic and environmental rights?		No issues identified		

APPENDIX 18: PROACTIVE ETHICS OBSERVATION AND EVALUATION SHEET

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 832981

CBRNE (Chemical, Biological, Radiological, Nuclear and explosive) events raise important ethical issues in which fundamental principles have to be followed and competing values must be weighed. These tactical objectives are part of the ethical observation and evaluation plan and should be seen as a practical guide for the evaluation of the work of response teams and emergency medical staff when confronted with disaster situations.

EXERCISE TACTICAL OBJECTIVES

GENERAL

1. Ensure that the exercise is carried out with respect for human dignity at all times.
2. Guarantee that all proper authorisations (i.e. by corresponding local data protection agencies, LEAs, etc.) are obtained.
3. Ensure that exercise briefings are carried out in accordance with PROACTIVE ethics briefing pack materials and recommendations.
4. Make sure volunteers have completed a consent form(s) as recommended.
5. Ensure that relevant legislation concerning your duties in the exercise has been complied with.
6. Identify and take into account cultural differences during fieldwork activities.
7. Recognise the role of different spiritual beliefs during fieldwork activities.
8. Make sure environmental rights have been respected during fieldwork activities.
9. Respect privacy and autonomy of volunteers unless it becomes necessary to override these rights to protect the public from serious harm.
10. Make sure restrictions to individual liberty are proportional, necessary and relevant, employ the least restrictive means and are applied equitably.
11. Make sure, when resources are limited, that the needs of the exercise volunteers and surrounding community are considered rather than one's own self interest.
12. Make sure health care resources are allocated fairly with a special concern that those most vulnerable are treated fairly.
13. Ensure that communication with participants and among managers and researchers is clear, precise, and reassuring.
14. Ensure that decisions about evacuation and quarantine are carefully scrutinised to protect people's interest.

TRIAGE

1. Facilitate that all actors involved in the exercise get situational awareness which should provide a global view shared in real time with first responders and the general population via reliable communication means and secured information networks.
2. Provide safety and security tools to the population.
3. Equip First Responders with suitable personal protective equipment (PPE).
4. Evaluate if wearing PPE is an impediment to carry out exercise activities such as conducting field triage or gathering participant consent.
5. Prioritise vulnerable groups safety and wellbeing at all times.

OBSERVATION SHEET

GENERAL ETHICAL PRINCIPLES AND DILEMMAS DURING THE EXERCISE

no	Question	Notes
1	Which were the contextual factors limiting respect to main ethical principles (beneficence, justice, autonomy)?	
2	Where there any moments where it was needed to choose between competing plausible courses of action?	
3	Was it necessary to take care of the cultural differences when dealing with "patients"?	
4	How have cultural differences been taken care of during the exercise?	
5	Were there any situations where cultural values and principles which guide the responders' decision clashed?	
6	Were there any moments where it was necessary to choose between duty of care to patients and personal wellbeing or responsibility owed to loved ones?	

CONSIDERATION OF SOCIETAL DIMENSIONS

no	Question	Notes
1	Have the role of diverse spiritual beliefs been recognised during the exercise?	
2	Have environmental rights been respected?	
3	Have participants been properly treated?	
4	Have vulnerable groups been prioritised?	
5	Have privacy and autonomy of patients been practically respected (i.e. tents used for undressing procedure; waterproof curtains used for decontamination etc)?	

OPERATIONAL AND ASSESSMENT ETHICS

no	Question	Notes
1	Have safety been guaranteed at all times? Have potential safety risks been given sufficient attention?	
2	Have contact between responders and participants been minimised before the exercise in order to prevent biases in the exercise process and evaluation?	
3	Have you been able to interact with participants at all times?	
4	Have you had access to all relevant information?	
5	Have you been provided with the field exercise general scenario prior to the deployment?	
6	Have you been able to give feedback on the approach to ethical and legal aspects of the exercise?	
7	Have you participated in the debriefing sessions with the participants in the field exercise?	
8	Has consent been properly collected?	
9	Has the information sheet and the consent form been able to properly informed the participants?	
10	Was wearing PPE an impediment to conducting field triage or gathering participants consent?	

GENERAL OBSERVATIONS