TeamAware

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TEAM AWARENESS ENHANCED WITH ARTIFICIAL INTELLIGENCE AND AUGMENTED REALITY

Deliverable D13.3

Desirability and Acceptability Assessment

Editor(s):	Marta Burgos, Nour Salih
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Contributor(s):	Marta Burgos (ERI), Nour Salih (ERI)
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Abstract:	Acceptability and desirability assessment. This assessment will give an overview of the operational readiness of the solutions provided, consisting of both an assessment of the needed further development to make the solutions "operational ready" and a listing of the improvements The assessment report will be provided in D13.3
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Disclaimer	This deliverable reflects only the author's views and the Commission is not responsible for any use that may be made of the information contained therein

Document Description

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Terms and Abbreviations

ADS	Acoustic Detection System
AMS	Activity Monitoring System
ARMI	Augmented Reality and Mobile Interfaces
CDS	Chemical Detection System
CICIS	Citizen Involvement and City Integration System
COILS	Continuous Outdoor-Indoor Localisation System
COP	Common Operational Picture
DPO	Data Protection Officer
DSS	Decision Support System
EC	European Commission
EO	Electro-Optical
FR	First Responder
HMD	Human-Made Disaster
IMS	Infrastructure Monitoring System
IMU	Inertial Measurement Unit
IoT	Internet of Things
IR	Infrared
LIDAR	Light detection and ranging
ND	Natural Disaster
NGO	Non-Governmental Organization
SMART	Specific, Measurable, Achievable, Reasonable, Time-bound
SSCN	Secure and Standardised Communication Network
TAM	Technology Acceptance Model
TGM	Trial Guidance Methodology
TMS	Team Monitoring System
TP	TeamAware Platform
VSAS	Visual Scene Analysis System
WCDS	Wearable Chemical Detection System
WP	Work Package

Executive Summary

This deliverable provides an initial assessment of the acceptability and desirability of TeamAware components based on data collected through questionnaires during the Ankara mid-term demonstration in the last week of November 2022. It is one of the key deliverables of WP13 because it establishes an assessment of each TeamAware components and includes some aspects related to the usability and usefulness of the tools developed from the perspective of end users. The methodology and data collection tools will be explained in the first section of the deliverable. Following that, an analysis of each component will be presented and an overview concluding with some recommendations for the next demonstration.

1   Introduction

This deliverable describes the methodology and tools used to conduct a preliminary assessment of the TeamAware components. Two main goals are followed in this context, analysing feedback from those who attended the Ankara mid-term demonstration and making recommendations for the next demo after establishing an assessment for each component.

1.1   About this deliverable

This deliverable's major goal is to define the methodology for conducting an acceptability and desirability assessment as well as to evaluate the data from the Ankara demonstration, which will be used as the initial evaluation for each of the TeamAware components.

1.2   Document structure

This deliverable starts with an overview of the tools created in TeamAware in other WPs, followed by an explanation of the methodology and tools used to gather feedback from the attendees of the Ankara demo, an analysis of the results for each of the TeamAware components, an overview of the results, an overview of the ethical requirements and compliance in research for the project, and finally conclusions and recommendations associated with the analysis outcomes.

1.3   Relation with other tasks and deliverables

This deliverable relates to WP2, where user needs have been determined, as well as WP3, WP4, WP5, WP6, WP7, and WP8, as it provides feedback on areas where technicians and developers may improve. Also, it provides an assessment of the tools created within the TeamAware project. Finally, it relates to WP15 since ethical and data protection issues were taken into account during the study.

2   TeamAware project overview

The main objective of the TeamAware Project is to develop a comprehensive situational awareness system for first responders from various sectors, including firefighters, emergency medical services, and law enforcement agencies. This system will utilise a variety of sensors, including drone-mounted, wearable, and external sensor systems, in order to provide real-time, fused, refined, and manageable information to first responders through the use of highly-standardised augmented reality and mobile human machine interfaces.

The goal of the TeamAware Project is to enhance the crisis management, flexibility, and response capabilities of first responders by providing them with timely and accurate information. By using advanced technologies like augmented reality and mobile human machine interfaces, the TeamAware Project aims to improve the ability of first responders to make informed and effective decisions in emergency situations. Additionally, the integration and standardisation of different sensor systems will enable first responders from different sectors to collaborate more effectively and respond to disasters more efficiently. Overall, the TeamAware Project aims to improve the safety and effectiveness of first responders in the face of natural or human-made disasters.

2.1   Technology being developed

The TeamAware Project is developing a range of advanced technologies to enhance the situational awareness and response capabilities of first responders.

WP3, Visual Scene Analysis, is focused on developing head and drone mounted surveillance systems that utilise EO (electro-optical), IR (infrared), and LIDAR (light detection and ranging) sensors to model the visual environment, recognise surrounding objects, and provide a first-person view. These systems will be used to guide and map the environment, helping first responders navigate and orient themselves in unfamiliar or hazardous situations.

WP4, **Infrastructure Monitoring**, is focused on developing a system to identify and assess risks and threats to structures and infrastructure within the first responder's operational area. This system will use a variety of sensors to monitor the condition and stability of infrastructure, alerting first responders to potential hazards and helping them prioritise their response efforts.

WP5, Chemical Detection, is focused on developing wearable chemical detection systems that can analyse, detect, and recognise hazardous chemical agents in the environment of the first responder. These systems will help first responders identify and protect themselves from chemical threats, identify the dispersion of chemicals, therefore allowing them to respond more safely and effectively to chemical spills or releases.

WP6, Acoustic Detection, is focused on developing lightweight, wearable, and drone-mounted acoustic detection systems that can identify gunshots, explosions, human whistling, and human speech within the first responder's operational area. These systems will help first responders locate and assess threats in their environment, and will also be used to help coordinate and communicate with other first responders.

WP7, Team Monitoring, is focused on developing an integrated continuous outdoor/indoor localisation and health and body motion analysis system to monitor the health status, activities, motion anomalies, and location of the first responders. This system will use sensors to track the movement and vital signs of first responders, helping to ensure their safety and effectiveness in the field.

WP8, Citizen Involvement and City Integration, is focused on developing technologies to enable citizen involvement in events through the use of social media, CitizenApp and city IoT (Internet of Things) sensor infrastructure. This will allow first responders to leverage the resources and knowledge of the community to improve their situational awareness and response efforts.

2.2 Technology Acceptance

2.2.1 Traditional Acceptance Models (i.e., Ease of Use, Usefulness)

Information system professionals and researchers have studied why and how users decide to use new technologies. The prevailing model, which has been expanded greatly since its inception, is the Technology Acceptance Model (TAM). At its core [1], the model is interested in what factors of the system and the user's perception of the system predict their actual use (behaviour).
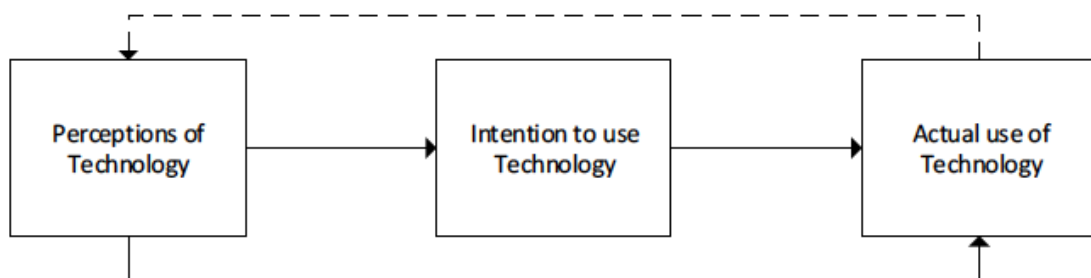
Figure 1: Basic Technology Acceptance Model [1]

Figure 1 above illustrates the basic model, which has been greatly expanded to account for the interaction of user, society, and technology use for systems developed in the TeamAware project. TAM while dealing with technology, originated from social psychology from the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975). This fundamental psychology theory explains and predicts behaviour as a function of our attitude (e.g., positive feelings) and subjective feelings (e.g., believes the action is important). Later the TRA was extended and became the Theory of Planned Behaviour (TPB). TPB incorporates a person's perceived control (e.g., the action feels difficult) as an additional predictor of behaviour. These psychology theories, which do not prescribe a context, were extended by information systems researchers in 1989 and became the Technology Acceptance Model (TAM). Since its inception, TAM has been the primary model for predicting and explaining if users will actually use new technology. TAM has been extended greatly over the years, but the primary predictors of technology use are listed in Table 1 below:

Table 1: Primary Technology Acceptance Model Factors

Perceived Usefulness	The user believes the technology will help them accomplish their task
Perceived Ease of Use	Does system improve the user's status or mirror the social norms of their in--group?
Intention to Use	Does the user intend to use the technology if it is available?

Referring back to Table 1, the perceived usefulness and ease of use of the technology would inhabit the first box (perceptions of the technology). The strength and valence (positive or negative impression) of these perceptions then predict their intention to use the technology, which ultimately motivates them to actually use it. Returning to the TeamAware project, the basic TAM model would dictate that users (in our case, first responders) must find the technology useful and easy to increase their likelihood of use. This manifests itself differently, but first responders must feel the technology helps them do their job and the technologies and corresponding procedures do not add any extra burden.

3 Extensions of Technology Acceptance Model

In the past decades since the TAM was originally proposed, there have been many extensions and improvements to the model [2]. The most important metric predicted by TAM is the intention to use and actual use of the new technology. To this end, additional factors have been added to the model, which will help predict behaviour.
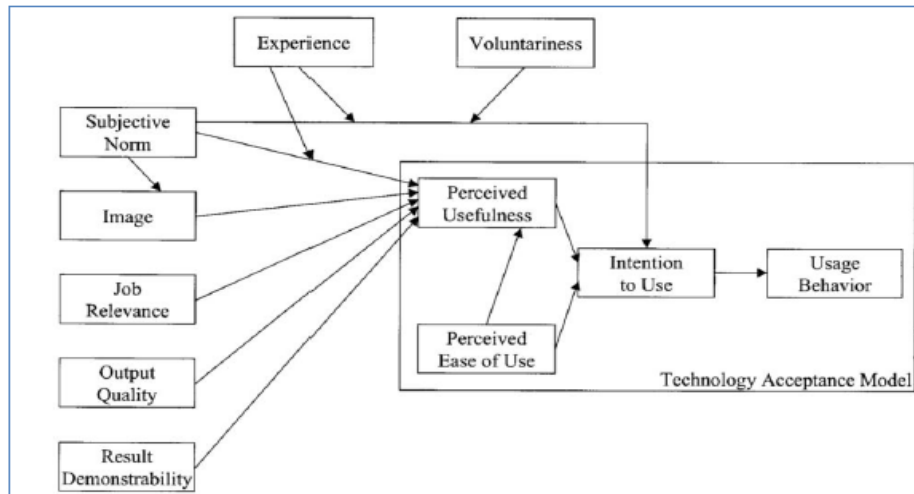
Figure 2: Technology Acceptance Model 2 [2]

The updated model is depicted in Figure 2above, which still contains the original TAM model discussed previously (i.e., perceived usefulness, perceived ease of use, intention to use, and use behaviour). However, the model now includes external variables that influence how useful the system is perceived to be. These extra variables add additional explanatory power in predicting if users will accept new technology. The new factors and what they measure from users are summarised below in Table 2.

Table 2: Technology Acceptance Model External Variables

Voluntariness	The extent to which system use is perceived to be voluntary.
Image	Does system use improve the user's status or mirror the social norms of their in-group?
Experience	How much experience does the user have with the new system?
Job Relevance	How applicable is the new technology for doing their job?
Output Quality	If the system is relevant to their job, how well does the system perform?
Results Demonstrability	How tangible is the result of using this new system?
Subjective Norm	How much does a person perceive that the most people who are important to him think he should or should not perform the behaviour?

3.1   Mid-term Demonstrations

According to the TeamAware project Grant Agreement, the TeamAware system was scheduled to undergo a midterm demonstration in the middle of the project (M18) in order to assess the progress and status of the project. The demonstration was planned in order to validate and test the individual components of the system mentioned above, including the sensor subsystems, communication network, platform software, and human machine interfaces.

As planned, the sensor subsystem providers demonstrated the first versions of their prototypes and corresponding subsystem architectures, and the network solution was demonstrated in terms of the message protocols, TeamAware domain ontology, and communication network architecture. The platform software and AR/mobile interface solution providers also demonstrated the functional capabilities of the software with simulated sensor metadata. This midterm demonstration allowed the project team to reassess and improve the roadmap for the project based on the self-assessment of the components. The final demonstration, which will be conducted at the end of the project in a relevant demonstration environment, will further validate the capabilities and performance of the TeamAware system.

The midterm demonstration of the TeamAware system was organised in Ankara, Türkiye by partner RAN, with the collaboration and support of partner HAVELSAN. This allowed the project team to gather in a central location to test and collect feedback and carry out a first assessment of each of the TeamAware components, taking into account the responses of those attending the mid-term demonstration, including the first responders.

3.2   Participants

The TeamAware project involves the participation of 6 first responder organizations as full partners:

2 firefighters´ organisations, 3 entities formed by medical first responders, and 1 resilience advisor network. Finally, 60 participants were involved in the mid-term demonstration. The strong involvement of these end-users and organisations as full partners provides the project with coordination and expertise in first responder operations. The skills of the participants highlight the multi-disciplinary nature of TeamAware, and the project leaders have been chosen based on their proven experience in relevant areas and R&D projects related to the work packages (WPs) of the project. The diversity of expertise among the partners will help ensure that the TeamAware system is designed and developed to meet the needs of first responders from various sectors and effectively address the challenges they face in emergencies.

4   Methodology for evaluation

The methodology to evaluate the acceptability and desirability follows a quantitative approach and will be used during the interactions that end users and stakeholders will keep with Team Aware tools in all project phases. It focuses mainly on the stakeholders' feedback after testing the tools and devices developed during the project. The first assessment was done during the mid-term demonstrations in Ankara, using questionnaires to collect feedback from the attendees.

The quantitative technique is utilised in this instance to gather quantitative data on user impressions and views of the TeamAware components. This includes information on user satisfaction, usability, and efficacy. Large amounts of information about user opinions and experiences can be gathered by using quantitative research techniques, such as surveys. With statistical analysis, the information gathered can be reviewed to identify trends and patterns that will help with design and development decisions.

5   Questionnaire

A questionnaire was developed for each of the six technological components of TeamAware. A series of sociodemographic variables were collected, such as gender, age, educational level, employment profile and other series of relevant variables to establish acceptability and desirability, such as the previous use of technologies and the years of experience in the position.

The questionnaire includes mainly closed and multiple-choice questions, however, some open questions were included to let the responders provide additional information. All TeamAware components shared the same sociodemographic data and product acceptability questions in the first section of the questionnaire, however the second section of the questionnaire featured particular questions about the functioning of the TeamAware component that was being evaluated. Following the assessment scales predefined in Deliverable 2.4, a 1-10 Likert scale to score each component has been used, as can be seen in Table 3.

Table 3: Scoring scale

Score	Explanation
1	No increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
2	Very, very difficult to see increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
3	Very difficult to see increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
4	Understandable but needs major reworking to see an increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
5	Understandable but needs substantial adaptation to see an increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
6	Understandable but needs significant adaptation to see an increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
7	Understandable but needs moderate adaptation to see an increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction

8	Understandable but needs some minor adaptation to see an increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
9	Easy to understand or use but very minor adaptation to see an increase in awareness, knowledge, usefulness, ease of use or Overall user satisfaction
10	Very easy to understand or use. No additional work required to see an increase, usefulness, ease of use or Overall user satisfaction

Attendees are be able to see the scale while completing their questionnaire, and the traffic light system helps clarify scoring:

- Red = Failed to meet the level of expected development at this time.
- Amber = Acceptable level of development at this time.
- Green = High level of development at this time.

The questionnaire has been captured via the online EU survey tool (https://ec.europa.eu/eusurvey/). All participants received a briefing on how to complete the questionnaire beforehand. WP13 personnel have been available to help if needed during the mid-term demonstration in Ankara, where the first feedback regarding the tool developed in TeamAware has been shown. Only anonymous replies have been collected.

It should be noted that the scoring scale has some limitations and attendees cannot provide the reason behind giving a certain score. Open questions mitigate this by allowing participants to provide free-form. The online platform might also influence the speed of their decisions.

The evaluation of acceptability and desirability has been carried out for each of the components developed in TeamAware within each of the work packages. The evaluation has been made with each one of the components with which we can have differentiated results. Finally, a global evaluation has been carried out. The results will be presented in Chapter 5 for each of the components to finally make comparisons of the most outstanding aspects before establishing conclusions, recommendations and next steps for developers.

6   Ethical Requirements and Compliance

The TeamAware project is committed to ensuring that ethical considerations are at the forefront of all its activities. As the ethics partner, the Eticas team has carefully observed the implementation of the ethical standards outlined by the European Commission in Work Package 15, which provides guidelines on ethical requirements and compliance in research for the project. From the start of the project, the team has been aware of the importance of upholding ethical principles and has taken measures to ensure that all aspects of the project comply with these requirements.

There are a number of ethical standards that research activities must take into account, according to the European Commission. Informed consent must be obtained from research participants when data obtained on this legal basis, participant data must be kept private and confidential, potential harm to participants must be minimised, the research must be done fairly and without discrimination, and it must not infringe on basic human rights.

In order to assess any potential ethical implications of the project's activities and to guarantee adherence to ethical standards, the European Commission also mandates that research projects be subject to an ethical review process. The evaluation of the research's potential risks and advantages, as well as the identification of any steps that can be taken to reduce these risks, are part of the review process. Overall, the European Commission's ethical guidelines are intended to ensure that research projects are carried out in an ethical and responsible way with the aim of safeguarding the rights and interests of all participants.

Within the context of the TeamAware project, there are 11 deliverables that fall under Work Package 15 and are dedicated to ethical requirements. These deliverables ensure that the project adheres to the ethical principles laid out by the European Commission, with the goal of protecting the rights and welfare of all individuals involved in the research. These deliverables deal with the following key aspects:

- Informed consent procedures, including templates and information sheets
- Approval of research by ethics committees/competent authorities
- Appointment of a Data Protection Officers and implementation of measures to safeguard data subjects' rights and freedoms
- Confirmation of publicly available data for project use
- Deliverables related to material import/export, health and safety procedures, environmental risks, dual-use items, risk assessment, and appointment of an independent Ethics Advisor
- Details on materials imported/exported from non-EU countries and necessary authorizations
- Follow health and safety procedures and mitigation measures for environmental risks
- Address potential dual-use items and provide risk-mitigation strategies
- Conduct risk assessment and prevent misuse of research findings
- Appoint an independent Ethics Advisor to submit three reports on their findings
- Adherence to strict ethical requirements and compliance in all areas

The ethical requirements outlined in the TeamAware project play a crucial role in determining the acceptability and desirability of the project to various stakeholders. As research involving humans becomes increasingly complex and multifaceted, it is essential to ensure that the research is conducted in an ethical and transparent manner that respects the rights and welfare of research participants.

One of the key ethical deliverables of the TeamAware project is the identification and recruitment of research participants in a fair and equitable manner. By ensuring that participants are representative of the population under study, the project can improve the credibility and acceptability of its findings. Similarly, the implementation of informed consent procedures that are clear, concise, and intelligible to participants can enhance the project's desirability and reduce the risk of misunderstandings or ethical breaches.

The appointment of an independent Ethics Advisor to monitor the ethical issues involved in the project is another crucial factor in determining responsible research. The Advisor can provide guidance and oversight on issues related to data protection, privacy, and potential harm to research participants or the environment. By demonstrating a commitment to ethical principles and transparency, the TeamAware project can build trust and credibility with stakeholders and enhance the project's overall acceptability and desirability.

6.1   Compliance during in the mid-term demonstration

As part of the TeamAware project's mid-term demonstration, the ethics partner, Eticas, conducted a survey to measure the acceptability and desirability of the project among its participants. The survey was conducted on members of the consortium who are actively involved in the first response and crisis management sector ensuring that the results are representative of the population under study.

Acceptability and desirability are critical factors to consider in any research and development project. Acceptability refers to the extent to which research participants are willing to take part in the study and the degree to which they find the research procedures, measures, and ethical considerations acceptable. It is crucial to ensure that research is conducted ethically and in a manner that is acceptable to the participants, as this fosters trust and collaboration between the researchers and the participants.

Desirability, on the other hand, refers to the extent to which research participants view the research as beneficial and desirable. It is essential to consider the desirability of the research because it determines whether the research is likely to be supported and sustained in the long run. In this way, desirability impacts not only the immediate success of the research but also its long-term impact on the community and society as a whole. Therefore, measuring acceptability and desirability can provide insight into how the research is perceived by those who are most affected by it, helping researchers to tailor their approach and improve the likelihood of success.

In order to comply with ethical requirements for the mid-term demonstration survey, Eticas provided information and consent forms to the participants. These forms ensured that the participants were fully informed of the activities to be carried out during the demonstration and what information would be collected from them in the surveys.

The purpose of the information and consent forms was to ensure informed consent from the participants, which is an important ethical principle in research. The forms provided clear and concise information about the survey, the data that would be collected, how the data would be used, and the rights of the participants. By providing this information, the participants were able to make an informed decision about whether or not to participate in the survey.

By providing information and consent forms, Eticas was able to ensure that the mid-term demonstration survey was conducted in an ethical manner and that the participants were fully informed and protected throughout the process. A copy of the information sheet and consent form can be found in Appendix 1.

7   Mid-term demonstration Survey Analysis

A total of 60 people who were present for the midterm demonstration signed the informed consent form. Although the survey received responses from 29 attendees for certain components to 37 in others, not everyone attended all of the TeamAware component demo sessions. For them, between 7 and 10 first responders answered the survey.

For the analysis, the responses collected from all attendees have been taken into account in comparison with the responses collected from the first responders since, as end users of the products developed in TeamAware, acceptability and desirability would focus mainly on their assessment for future improvements and developments.

In general, technicians and developers made up the large majority of attendance. The medical staff has the highest profile among first responders, followed by firefighters and commanders.

In terms of gender, men were often represented more heavily than women. The average age for the attendees is roughly 40 years old, while the first responders have an average age that is about 10 years higher.

Regarding the educational level, both participants and first responders mostly have a master's degree. High school is the second-most representative choice for first responders, although bachelor's is the choice for the participants.

As regards the overall participants in the Ankara event, almost half of the participants belong to a technical organisation and more than a quarter to an end user organisation. SMEs would be the third most represented type of organisation at the Ankara event.

The TeamAware components were then examined individually. As previously stated, the responses provided by individuals present at the midterm demonstration in Ankara were contrasted with those made by the first responders present at the same midterm demonstration.

7.1   WP3-Visual Scene Analysis System-VSAS

Concerning the WP3 Visual Scene Analysis System, 29 attendees responded to the questionnaire, 8 of whom were first responders. The tables that follow provide a description of key aspects for both general participants and first responders who completed the questionnaire. As it can be noted in Table 4, the age average of the first responders is over 10 years older than the age average of all participants. In terms of gender, Table 4 shows a greater participation of males than of females, with 100% of men in the case of the first responders.

Table 4: Age average

	All participants	First responders
Age average	41.5	51

Table 5: Gender distribution

Gender (Percentage)	All participants	First responders
Male	84%	100%
Female	12%	0
Prefer no response	4%	0

In terms of educational level, the majority of those who responded to the questionnaire have a master's degree. In the case of first responders, there are the same number of representatives with master's and bachelor's degrees, with high school being the next most representative option.

The majority of those attending the demo were technicians/developers. In the case of first responders, 62.5% were medical personnel, 25% were firefighters, and 12.5% were commanders. The health professional profiles outnumber the other FRs profiles.

In terms of years of experience in their position, 100% of first responders have more than 10 years of experience, while 65% of participants have more than 10 years and 19% have between 1-3 years of experience. It can be concluded that both samples primarily provide the opinions of professionals with extensive experience.

As regards the use of technology for the first responders, 12.5 % have not used technology and 12.5 % have used only Microsoft Package. 12.5 % have used a similar technology to TeamAware and 62.5% have used several kinds of technology. In the general example, 12% do not use technology, 54% of attendees use several technologies, including another kind of technology and use similar technology to TeamAware.

Regarding questions directed to the VSAS, the average score for all participants and first responders is shown in Table 6 regarding the added value of the product, the solution to the needs and the recommendation to others. It is important to underline that the score provided by the first responders is higher than the score provided by the whole of all participants. In all cases, the score is over 8 points meaning that the product is understandable but needs moderate adaptation to see an increase in awareness, knowledge, usefulness, ease of use or overall user satisfaction. According to the scale shown previously, this component has a high level of development at this time and a high level of acceptability for the first responders.

Table 6: Average of score

	All participants	First responders	Difference
How would you estimate the added value provided by this product?	8.61	8.75	0.14
How would you consider the product solves the needs it was designed to address?	8.38	8.37	-0.01
How would you recommend it to other users?	8.57	8.87	0.30

When asked who should pay for the product (Table 7), in the case of first responders, half of them consider that the component should be funded by the Public Administrations and over three quarters by the end users. In the case of participants in general, a majority considers that it would be the public administration that should pay for the VSAS, followed by end users and NGOs.

Table 7: Payment for the product

Who should pay for it? (Percentage)	All participants	First responders
Public Administration	53.8%	50%
NGOs	3.8%	37.5%
End users	42.3%	12.5%
None	0	0
Other	0	0

When asked if they would use it in their organisation (Table 8), most of the participants answered that they would use it. When asked why, since they are technical entities and not end users, they do not see the applicability in their own organisation. In the case of first responders, a huge majority of them would use it, and only 12.5 % of first responders would use it in their organisation.

Table 8: Desirability to use

Would you use it in your organisation?	All participants	First responders
Yes	53.8%	87.5%
No	26.9%	12.5%
I am not sure	19.2%	0

The Table 9 shows the average score for the functionalities of the VSAS. It is important to highlight that on the specific functions of the VSAS the first responders make a lower assessment than that of the general public in all aspects, (level of expectation, understanding of information, level of expectation in the helmet development and images provided). The level of the images provided got the lower assessment in both cases (general public and first responders) below 8 points. The helmet is scored below 8 points for first responders as well. Both functionalities show an acceptable level of development but being less advanced than other VSAS components. The helmet and the images provided are both in the amber zone and an improvement would be expected in later iterations.

Table 9: Average of score specific components

	All participants	First responders	Difference
How well did the prototype demonstrated meet the level of	8.23	8	-0.23

expected development at this time?			
How well could you see the images that were provided?	7.88	7.12	-0.76
How well did you understand the information that was displayed?	8.76	8.62	-0.14
How well did the prototype helmet meet the level of expected development at this time?	8.15	7.87	-0.28

However, some first responders have underlined the need to improve the images provided and the helmet, the huge majority (87.5 %) of first responders would use it in their organisations. As already indicated, 62.5% of the first responders are medical staff, and only 37.5 % firefighters or commanders. In addition, there is no female representation into the first responders being a challenge to engage more females and other FRs profiles in the next demonstration in order to analyse differences that could appear due these variables (gender and FRs profile).

7.2   WP4-Infrastructure Monitoring System-IMS

Regarding the Infrastructure Monitor System (IMS) developed in the WP4, 37 people responded to the questionnaire, 8 of them were first responders. The following tables show a description of these aspects both for the participants in general and for the first responders who answered the questionnaire. As in the previous case, the age average is more than 10 years higher among the first responders compared to the age average of the whole of the participants (see Table 10).

Table 10: Age average

	All participants	First responders
Age average	38.02	49.62

As regards gender, in both samples men predominate over women. Even if there are large differences also among the first responders in terms of gender representation, these are smaller compared with the entire general sample of participants (see Table 11). However, it would be an added value if, for future demonstrations, a more balanced sample was sought in terms of gender.

Table 11: Gender distribution

Gender (Percentage)	All participants	First responders
Male	91.89%	87.5%
Female	5.41%	12.5%
Prefer no response	2.7%	0

Regarding the profile of the representatives, the majority of those attending the demo were technicians/developers. In the case of the first responders, 3 quarters of the attendees were medical staff.

In terms of years of experience in their position, 100% of first responders have more than 10 years of experience, while nearly half of all participants have more than 10 years of experience, while more than a quarter have between 1-3 years of experience, with more experienced and less experienced participants.

Concerning the use of technology, there are more first responders who have not used any type of technology than in the general sample. On the other hand, no first responder has used a technology similar to TeamAware, however a quarter of them have used another kind of technology.

As regards the questions regarding the IMS, the score for all participants and first responders is shown in Table 12, being the score provided by the first responders a little bit lower that the score provided by the whole of all participants in relation to the added value, the needs to solve and the recommendation to others. In all cases, the score is over 7 points meaning that the product is understandable but needs moderate adaptation to see an increase in awareness, knowledge, usefulness, ease of use or overall user satisfaction achieving an acceptable level of development at this time.

Table 12: Average of score

	All participants	First responders	Difference
How would you estimate the added value provided by this product?	7.62	7.25	-0.37
How would you consider the product solves the needs it was designed to address?	7.65	7.13	-0.52
How would you recommend it to other users?	7.76	7.5	-0.26

When asked who should pay for the product, in the case of first responders, they are divided equally between the Public administration and end users. In the case of participants in general, a majority considers that it would be the public administration that should pay for the IMS, followed by end users and NGOs as shown in Table 13.

Table 13: Payment for the product

Who should pay for it? (Percentage)	All participants	First responders
Public Administration	67,57%	50%
NGOs	10,81%	0
End users	18,92%	50%
None	0	0
Other	2.7%	0

When asked if they would use it in their organisation, most of the participants answered that they would not or that they are not sure. Asking the reason corresponds to the fact that in most cases they are technical entities and not end users, so they do not see the applicability in their own organisation. In the case of first responders, the vast majority would use it, although still a quarter of first responders are not sure if they would use it in their organisation.

Table 14: Desirability to use

Would you use it in your organisation? (Percentage)	All participants	First responders
Yes	21.62%	62.5%
No	32.43%	12.5%
I am not sure	45.95%	25%

It is important to highlight that on the specific functions of the IMS the first responders provide a higher assessment than that of the general public as shown in Table 15. In the case of how well the system determines threats coming from the damage, the score provided by the FRs achieve 8 points meaning a high level of development at this time. It means that the IMS is closer to be understandable but needs some minor adaptation to see an increase in awareness, knowledge, usefulness, ease of use or overall user satisfaction getting an acceptable level of development in general terms and high level of development for the FRs regarding some specific functions.

Table 15: Average of score specific components

	All participants	First responders	Difference
How well did the system identify damaged structures/infrastructure (located within the first responder operation areas)	7.81	7.87	0.06
How well did the system determine threats coming from the damage structure/infrastructure (located within the first responder operation areas)	7.54	8	0.46

Finally, regarding the assessment made by the first responders, the acceptability is around 7 points for this TeamAware component and in some aspects higher than that of the general public. As a recommendation, more interaction with the technology and the opportunity to test it in closer contexts could help the first responders to accept and use this technology in the future. The vast majority (62.5%) of first responders would use it in their organisations. Although, as already indicated, 75% of the first responders are medical staff, it is therefore recommended for future demonstrations to engage a greater number of FRs profiles since the needs and opportunities provided by the technology may vary depending on the profile.

7.3 WP5-Chemical Detection System-CDS

Regarding the Chemical Detection System (CDS) developed in the WP5, 29 attendees responded to the questionnaire, 9 of them were first responders. As in the previous component evaluation, the age average is nearly 10 years higher among the first responders compared to the age average of the whole of the participants (Table 16) and males are more frequently represented than females (Table 18)

Table 16: Age average

	All participants	First responders
Age average	41.44	50

Table 17: Gender distribution

Gender (Percentage)	All participants	First responders
Male	93%	100%
Female	7%	0

With regard to educational level, both in the sample of all participants and in the sample of first responders, most of those who answered the questionnaire have a Master's. In the case of the first responders, the second most representative option is bachelor's and high school (same number of representatives), while in the general sample it is Bachelor's.

Regarding the profile of the representatives, the majority of those attending the demo were technicians/developers. In the case of the first responders, 56% of the attendees were medical staff, 22% firefighters and 22% commanders. As in the previous analysis, medical staff are more represented than other FRs profiles.

In the case of years of experience in their position, 100% of the first responders have more than 10 years of experience, while in the case of participants in general, 65% of them have more than 10 years and 20% of attendees have between 1-3 years of experience.

As regards the use of technology, most of the first responders used Microsoft packages or drones, however, 11% have not used technology. In the general example, 17% do not use technology, 17% of attendees use another kind of technology and 13% use similar technology to TeamAware.

As regards the questions concerning the CDS, the score for all participants and first responders is shown in Table 18, being the score provided by the first responders a little bit lower that those provided by the whole of all participants in the case of needs solved by the product and recommendation to others. However in the case of the added value the score provided by first responders is over 8 points and higher than the assessment provided by the general attendees. It means that the component is understandable but needs some minor adaptation to see an increase in awareness, knowledge, usefulness and ease of use but it still has a high level of development at this time.

Table 18: Average of score

	All participants	First responders	Difference
How would you estimate the added value provided by this product?	7.93	8.11	0,18
How would you consider the product solves the needs it was designed to address?	7.96	7.11	-0,85
How would you recommend it to other users?	8.03	7.88	-0,15

When asked who should pay for the product, in the case of first responders, over half of them consider that the component should be funded by the end users and less than a quarter by the public

administration. In the case of the general participant, a majority considers that it would be the public administration that should pay for the CSD, followed by end users and NGOs as shown in Table 19.

Table 19: Payment for the product

Who should pay for it? (Percentage)	All participants	First responders
Public Administration	58.6%	22%
NGOs	6.89%	11%
End users	31.03%	56%
None	3.44%	11%
Other	0	0

When asked if they would use it in their organisation, most of the participants answered that they would not use it. Asking the reason corresponds to the fact that in most cases they are technical entities and not end users, so they do not see the applicability in their own organisation. In the case of first responders, half of them would use it, although still 33 % of first responders would not use it in their own organisation as shown in Table 20. FRs underlined the need of performing additional tests, improvement in data presentation and testing the results in the worksite as conditions needed before incorporating the CSD as a tool in their organisations.

Table 20: Desirability to use

Would you use it in your organisation? (Percentage)	All participants	First responders
Yes	27.5%	56%
No	44.82%	33%
I am not sure	27.5%	11%

Concerning the specific functions of the CSD (Table 21) the first responders make a higher assessment than that of the general public in the aspects regarding the battery duration and recharging procedure of the global navigation satellite system, being the assessment over 7 points that means an acceptable level of development at this time. Regarding how well the mix of the historical data and data generated meet the level of expectation the average of the first responders is lower than the general public but it continues to be around 7 points.

Table 21: Average of score specific components

	All participants	First responders	Difference
How well did the mix of historical data and synthetic data generated for the purposes of the demonstration work meet the level of expected development at this time?	7.51	7.22	-0.29
How well did the aspects such as switch on, switch off and battery recharging procedure meet the level of expected development at this time?	7.51	7.66	0.15
How well did the instant measurement of the global navigation satellite system meet the level of expected development at this time?	7.58	7.88	0.30

Some first responders have underlined the need for further tests and developments to adapt this component. The majority (56 %) of first responders would use it in their organisations. As already indicated, 56% of the first responders are medical staff, and only 22% firefighters or commanders. As has been said, there is no female representation into the first responders being a challenge to engage more females and additional FRs profiles in the next demonstration in order to analyse differences that could appear due these variables (gender and FRs profile).

7.4   WP6-Acoustic Detection System-ADS

Regarding the Acoustic Detection System (ADS) developed in the WP6, 34 attendees responded to the questionnaire, 7 of them were first responders. In this case, the age average is over 13 years higher among the first responders compared to the age average of the whole of the participants (see Table 22). The gender distribution is similar between the general attendees and the first responders, being a higher male representation (Table 22)

Table 22: Age average

	All participants	First responders
Age average	39.58	52.71

Table 23: Gender distribution

Gender (Percentage)	All participants	First responders
Male	82%	86%
Female	15%	14%
Prefer no response	3%	0

Regarding the profile of the representatives, the majority of those attending the demo were technicians/developers. In the case of the first responders, 86% of the attendees were medical staff, and 14% firefighters, having no representation of commanders in this case. Again, the health professional profiles are more represented than other FRs profiles into the FRs sample.

In the case of years of experience in their position, 100% of the first responders have more than 10 years of experience, while in the case of participants in general, most of them have more than 10 years being both samples formed by experienced professionals.

As regards the use of technology, 29% of the first responders used only Microsoft packages and there is none who does not use technology. In the general public, 2.9% have no use of technology and 14.7% use only Microsoft packages.

Addressing the questions regarding the ADS, the score for all participants and first responders is shown in the Table 24. The score provided by the first responders is significantly lower than the score provided by the whole of all participants. In the case of the general public, the score is over 8 points meaning that the product is understandable but needs moderate adaptation to see an increase in awareness, knowledge, usefulness, ease of use or overall user satisfaction perceiving a high level of development. However, in the case of the added value the score provided by first responders is more than 1 point less of difference, which means that the component is understandable but needs some minor adaptation. In the case of the recommendation to other users, the assessment of the first responders is more than 1.10 points less that the score provided by the general public.

Table 24: Average of score

	All participants	First responders	Difference
How would you estimate the added value provided by this product?	8.29	7.28	-1.01
How would you consider the product solves the	8.44	8.14	-0.30

needs it was designed to address?			
How would you recommend it to other users?	8.26	7.14	-1.12

When asked who should pay for the product, in the case of first responders, there is the same percentage that consider that the component should be funded by the public Administrations and end users. In the case of participants in general, a majority considers that it would be the public administration that should pay for the CSD, followed by end users and NGOs as shown in Table 25.

Table 25: Payment for the product

Who should pay for it? (Percentage)	All participants	First responders
Public Administration	67.6%	42.9%
NGOs	2.9%	0
End users	26.5%	42.9%
None	2.9%	14.3%
Other	0	0

When asked if they would use it in their organisation, most of the participants answered that they would not use it. Asking the reason corresponds to the fact that in most cases they are technical entities. In the case of first responders, most of them (57.1%) would not be sure if they would use it in their organisation and they suggested that it could be used for training reasons as shown in Table 26.

Table 26: Desirability to use

Would you use it in your organisation? (Percentage)	All participants	First responders
Yes	26.5%	28.6%
No	41.2%	14.3%
I am not sure	32.4%	57.1%

Regarding the specific functions of the ADS the Table 27 shows the score provided. In this case, the first responders make a lower assessment than that of the general public, such as the aspects regarding the level of the expectation at this moment and the availability of the product to be counted in drone. For the general public the level of development is higher than expected at this moment being a green line. However, for the first responders, the component is an amber line although the product is considered acceptable at this level of development.

Table 27: Average of score specific components

	All participants	First responders	Difference
How well did the product meet the level of expected development at this time to - detect and localize emergency events such as explosions, gunshots, snipers and human voices?	8.52	7.57	-0.95
Was this product able to be mounted on a drone?	8.61	7.57	-1.04

The majority (56%) of first responders would not be sure of the use of it in their organisations. As already indicated, 86% of the first responders are medical staff, and only 14% firefighters.

The product is at an appropriate degree of development for first responders when considering its own functionalities, but it is at a high level of development for the general public, highlighting the disparities between general attendees and first responders.

7.5   WP7-Team Monitoring System-TMS

Regarding the Team Monitoring System developed in the WP7, 31 attendees responded to the questionnaire, 8 of them were first responders. The age average is over 11 years higher among the first responders compared to the age average of the whole of the participants (see Table 28). Concerning the gender distribution, as the Table 28 shows, men have a higher representation in both cases.

Table 28: Age average

	All participants	First responders
Age average	40.19	51.37

Table 29: Gender distribution

Gender (Percentage)	All participants	First responders
Male	84%	88%
Female	14%	12%
Prefer no response	2%	0

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Regarding the profile of the representatives, the majority of those attending the demo were technicians/developers. In the case of the first responders, 75% of the attendees were medical staff, and 12,5% firefighters and 12,5% commanders.

In the case of years of experience in their position, 100% of the first responders have more than 10 years of experience, while in the case of participants in general, most of them have more than 10 years being both samples formed by experienced professionals.

As regards the use of technology, 50% of the FRs used multiple technologies. 12.5% of them use only Microsoft Package and 12.5% do not use any kind of technologies. Regarding the general public, 12.9 % of the attendees do not use technology, 12.9% use only Microsoft Package and 41.9% of them use multiple technologies.

As regards the questions regarding the TMS, the score for all participants and first responders is shown in the Table 30. The score provided by the first responders is lower than the score provided by the whole of all participants. In the case of the general public, the score is over 8 points regarding the added value, the adaptation to the needs to be solved and the recommendations to others. It means that the product is understandable but needs moderate adaptation to see an increase in awareness, knowledge, usefulness, ease of use or overall user satisfaction and has a high level of development at this stage.

However in the case of all items considered, the score provided by first responders is under the 8 points, which means that the component is understandable but needs some adaptations and the level of development is adaptable at this time for the first responders.

Table 30: Average of score

	All participants	First responders	Difference
How would you estimate the added value provided by this product?	8.35	7.75	-0.60
How would you consider the product solves the needs it was designed to address?	8.06	7.5	-0.56
How would you recommend it to other users?	8.19	7.8	-0.39

When asked who should pay for the product, in the case of first responders, there is the same percentage that considers that the component should be funded by the public administrations and end users. In the case of participants in general, a majority considers that it would be the public administration that should pay for the TMS, followed by end users as shown in Table 31.

Table 31: Payment for the product

Who should pay for it? (Percentage)	All participants	First responders
Public Administration	54.8%	37.5%
NGOs	3.2%	12.5%
End users	38.7%	37.5%
Other	3.2%	12.5%

When asked if they would use it in their organisation, most of the participants answered that they would use it. Asking the reason corresponds to the fact that in most cases they are technical entities and not end users, so they do not see the applicability in their own organisation. In the case of first responders, most of them (62,5%) would use it in their organisation but still a quarter is not sure if they would use it as shown in Table 32.

Table 32: Desirability to use

Would you use it in your organisation? (Percentage)	All participants	First responders
Yes	41.9%	62.5%
No	32.3%	12.5%
I am not sure	25.8%	25%

Finally, it is important to highlight that on the specific functions of the TMS, the first responders make a lower assessment than that of the general public as shown in Table 33. The assessment is below 7 points for the comfortable units worked on the lower arms and on the head. This is one of the lower scores obtained in the demonstration session. For the rest of the assessment provided to the TMS, the FRs and general public scores are over 7 points meaning an acceptable level of development at this time. For the general public, the assessment is over 8 points for the comfort regarding the motor units on the body and the visualization of posture data; however, it should be noted that most of attendees are technicians and they do not have experience with the first responders equipment on the field.

Table 33: Average of score specific components

	All participants	First responders	Difference
Given the level of development how well/ comfortable do you think the motion units worked on the upper legs?	7.83	7.5	-0.65

Given the level of development how well/ comfortable do you think the motion units worked on the lower legs?	7.90	7.25	-0.33
Given the level of development how well/ comfortable do you think the motion units worked on the upper arms?	7.83	7.5	-0.33
Given the level of development how well/ comfortable do you think the motion units worked on the lower arms?	7.64	6.75	-0.89
Given the level of development how well/ comfortable do you think the motion units worked on the head?	7.35	6,5	-0.85
Given the level of development how well/ comfortable do you think the motion units worked on the trunk/body?	8.06	7.87	-0.19
Given the level of development how well do you think the posture information was translated into a visualization you could understand?	8.25	7.87	-0.38
Given the level of development how well did the system detect stumbling, faint, tiredness, fallen or laying officers and detected actions	7.70	7.62	-0.08

(such as walking, sitting etc.)?			
Given the level of development how well did the system provide the location information of the collapsed or unconscious firefighter?	7.67	7	-0.67
Given the level of development how well was this information delivered to the coordination chief?	7.67	7,37	-0.30

The majority (62,5 %) of first responders would use it in their organisations. As already indicated, most of the first responders are medical staff, and in this component, the point of view of the firefighters and commanders would be really appreciated since they are other profiles on the field with additional considerations. As has been mentioned, female representation is low into the first responders being a challenge to engage more females and additional FRs profiles in the next demonstration in order to analyse differences that could appear due these variables (gender and FRs profile).

7.6 WP8-Citizen Involvement and City Integration System-CICIS

Regarding the Citizen Involvement and City Integration System (CICIS) developed in the WP8, 36 attendees responded to the questionnaire, 10 of them were first responders. As in the previous component evaluation, the age average is over 10 years higher among the first responders compared to the age average of the whole of the participants (see Table 34) and there is a major representation of males regarding the gender distribution (see Table 34)

Table 34: Age average

	All participants	First responders
Age average	39.47	49.2

Table 35: Gender distribution

Gender (Percentage)	All participants	First responders
Male	83%	90%
Female	14%	10%
Prefer no response	3%	0

Regarding the profile of the representatives, the majority of those attending the demo were technicians/developers. In the case of the first responders, 60% of the attendees were medical staff, and 30% firefighters and 10% commanders. Again, the health professional profiles are more represented than other FRs profiles, however, there is more diversity of profiles in this last component analysed than in the other TeamAware components.

In the case of years of experience in their position, 100% of the first responders have more than 10 years of experience, while in the case of participants in general, over 50% of them have more than 10 years of experience and nearly 30% between 1-3 years of experience.

As regards the use of technology, 10% of the first responders use only Microsoft Package, 10% of FRs do not use technology and 10% of them use other types of technology. In the general public, 13,9 % have no use of technology and 11.1% use only Microsoft packages, 16.7% use other technologies and 14% use technology similar to TeamAware.

Regarding the CICIS, the score for all participants and first responders is shown in table 36. The average of the score provided by the first responders is a little bit lower than the score provided by the whole of all participants concerning the add value and the recommendations to other users. However, the score provided by first responders and the general public is the same in the perceptions regarding if the product solves the needs it was designed for. In addition the assessment is over 8 points in two categories considered a high level of development at this time.

Table 36: Average of score

	All participants	First responders	Difference
How would you estimate the added value provided by this product?	7.94	7.30	-0.64
How would you consider the product solves the needs it was designed to address?	8.30	8.30	0
How would you recommend it to other users?	8.16	8.00	-0.16

When asked who should pay for the product (Table 37), in the case of first responders, they consider clearly that the component should be funded by the public administrations (70%). In the case of participants in general, a majority considers that it would be the public administration too. In both cases, approximately 10% consider that none should pay for it.

Table 37: Payment for the product

Who should pay for it? (Percentage)	All participants	First responders
Public Administration	61.11%	70%
NGOs	5.56%	0
End users	13.89%	20%
None	11.,1%	10%
Other	8.3%	0

When asked if they would use it in their organisation, most of the participants answered that they would use it, being the percentage of first responders that would use it much higher than that of the general public, as can be seen in Table 38.

Table 38: Desirability to use

Would you use it in your organisation? (Percentage)	All participants	First responders
Yes	38.9%	60%
No	36.1%	20%
I am not sure	25%	20%

Finally, it is important to highlight that on the specific functions of the CICIS the first responders make assessments similar to that of the general public (see Table 39). In fact, the consideration that the CICIS improves the utility and the safety of citizens obtain the same average in both samples. For the first responders the product gets a score over 8 points for the availability to retrieve, store and analyse the information making available meaning a high level of development at this time. The first responders considered at a lower level than the general public that the CICIS enabled citizens to report relevant information to first responders.

Table 39: Average of score specific components

	All participants	First responders	Difference
Was the product able to retrieve, store, analyse, process to extract usable information and make that information available	7.94	8.1	0.16

Did the product enable citizens to report relevant information to first responders?	8.19	7.8	-0.39
Did the product improve the utility and safety of citizens by providing them with guidance to guide them during crisis events?	7.80	7.8	0

The majority (60 %) of first responders would use it in their organisations and consider that the public Administration should pay for it. In general terms the assessment of the first responders to different considerations to the product is near 8 only being near 7 regarding the added value provided.

7.6.1 Overall results

At the end of the Ankara midterm demonstration and, after an overview of all TeamAware components, a series of questions were posed to the attendees in order to make a more comparative assessment of the different technologies. 28 people responded to these questionnaires, being 10 of them first responders with the aforementioned sociodemographic characteristics.

In terms of which component is most useful to you, Table 40 shows the main results being most useful components for both attendees and first responders are the visual scene analysis (WP3) and team monitoring (WP7). Chemical detection (WP5) is considered useful for the general public, however, it is not considered by the first responders at all.

Table 40: Useful for you

Which product demonstrated this week would be most useful for you? (percentage)	All participants	First responders
WP3	50%	55.6%
WP5	7.1%	0%
WP7	42.9%	44.4%

Concerning the most useful TeamAware component for your organization, as shown in Table 41, half of the attendees consider that the team monitoring (WP7) is the most useful component for their own organization. The visual scene analysis (WP3) is considered the second most useful component. Although, the participants consider the other components of TeamAware useful as well in a lower percentage. Regarding the first responders, the dispersion is less since they consider only three TeamAware components useful for their organization: team monitoring (WP7), visual scene analysis (WP3) and, to a lesser extent than the previous two, citizen involvement and city integration (WP8).

Table 41: Useful for your organisation

Which product demonstrated this week would be most useful for your organisation? (percentage)	All participants	First responders
WP3	25%	33.3%
WP4	3.6%	0
WP5	3.6%	0
WP6	3.6%	0
WP7	50%	44.4%
WP8	14.3%	22.2%

In relation to the product on which they would most like to see improvements, the three most important components for the general public are WP5 (chemical detection), WP3 (visual scene analysis) and WP4 (Infrastructure monitoring) in this order while for the first responders it is WP4, WP5 and WP7 (team monitoring) with the same percentage of importance as shown Table 42.

Table 42: Product to see improvement

Which product would you most like to see an improvement on? (percentage)	All participants	First responders
WP3	25%	11.1%
WP4	21.4%	22.2%
WP5	28.6%	22.2%
WP6	10.7%	11.1%
WP7	10.7%	22.2%
WP8	3.6%	11.1%

As shown in Table 43, for the general public, WP7 (team monitoring) and WP3 (visual scene analysis) are the products that best satisfy the needs in the field. Although with a minor percentage, other components are considered as well. For the first responders, three quarters of them consider WP7 (team monitoring) as the component which best satisfies the needs in the field and one quarter consider WP3 (visual scene analysis) as the best product to cover their needs in the field.

Table 43: Product best satisfies needs

Which product best satisfies your needs in the field? (Percentage)	All participants	First responders
WP3	14.3%	33.3%
WP4	7.1%	0
WP5	10.7%	0
WP6	3.6%	0
WP7	57.1%	66.7%
WP8	7.1%	0

In relation to the product which provided solutions that are not currently available in the market, the participants consider that the citizen involvement and city integration (WP8) provided a new solution, followed by the team monitoring (WP7) and chemical detection (WP5) as shown in Table 44. For the first responders, there are some differences since they consider in a high percentage that the visual scene analysis (WP3) provides a solution new in the market, followed with the same percentages by chemical detection (WP5), acoustic detection (WP6) and team monitoring (WP7).

Table 44: Product provide solutions

Which product provides solutions that are not currently available in the market? (Percentage)	All participants	First responders
WP3	14.3%	33.3%
WP4	3.6%	0
WP5	21.4%	22.2%
WP6	10.7%	22.2%
WP7	21.4%	22.2%
WP8	28.6%	0

8   Conclusions and recommendations

It has been a limitation regarding the profile of those who attended the mid-term demonstration in Ankara for this first assessment. As previously stated, the majority of these participants were developers and technicians from the consortium's entities. First responders have been under-represented so it is strongly recommended engaging more first responders for upcoming demonstrations.

On the other hand, there has been little variation in the profile of first responders. They have been overrepresented by health professionals and, to a lesser extent, firefighters and commanders. As a recommendation for the next demonstration, it is suggested a greater engagement with these profiles that have not been represented or to a lesser extent, and involve other profiles, such as security forces and professionals that act on the field in case of emergency. It is thought that there may be more significant differences in the assessment of the components based on the first responder's profile, because some technologies can support the work of some roles more than others.

In this demonstration, women have been under-represented, particularly among the first responders. It is suggested that the consortium attempts to achieve gender balance in the following demonstrations to determine if there are differences in the valuation of the various components based on gender.

Due to the fact that all first responders had careers spanning more than 10 years, it was unable to identify variances in the evaluation of the TeamAware components based on this variable. The initial assumption is that there may be increased resistance to change brought about by new technologies as someone gains more professional expertise. It is advised that younger profiles be used in the upcoming demonstrations as well in order to show disparities depending on this characteristic.

In terms of the evaluation of TeamAware components, it can be determined that all of the items analysed are between 7 and 8 acceptance levels, that is, between an acceptable level of development at this time and a high level of development at this time. The differences between first responders and the general public who attended the Ankara demonstration have been observed and stressed in this report. Only the comfortable units working on the lower arms and on the head for the team monitoring system received less than 7 points (WP7). Taking these evaluations into account, comparisons can be made in the next demo session following the implementation of the developments until the next demo.

Regarding who should pay for the various TeamAware components, both for the general public and for first responders, it has been determined that the public administration with competences in civil protection and end users are the key financiers, with many nuances that have been recognised in the sections before.

In general, first responders value the team monitor system (WP7), visual scene analysis (WP3), and citizen involvement and city integration (WP8) for their organisations. As previously stated, it is recommended that more first responders of various profiles will be involved in the next demos, since the evaluation of some tools can be heavily influenced by the role and task to be performed by the FRs on the field.

Results obtained so far led to recommend some preliminary elements in terms of technological integration of identified acceptability factors:

- The placement of the TMS motion units should be reviewed, especially in the head and lower arms to ensure that it is more comfortable for first responders.
- In the case of the VSAS, although FRs have shown an acceptable level of satisfaction, it is recommended to pay attention to the presentation of the images and carry out more tests with the helmet to ensure that it is comfortable for the first responders.
- Some participants have identified that some components, such as the ADS, could be used for training purposes. It is recommended to explore this functionality because they point to new uses of the components developed in TeamAware.

Still, these requirements must be reviewed in light of future demonstrations and validation activities.

9   References

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10   APPENDIXES

10.1   APENDIX 1 Information sheet and consent form

CONSENT FORM FOR TEAMAWARE

Fields marked with * are mandatory.   ✖

Disclaimer   ✖
The European Commission is not responsible for the content of questionnaires created using the EUSurvey service - it remains the sole responsibility of the form creator and manager. The use of EUSurvey service does not imply a recommendation or endorsement, by the European Commission, of the views expressed within them.

Anonymous mode   ✖
The anonymous option has been activated. As a result, your contribution to this survey will be anonymous as the system will not save any personal data such as your IP address.

TeamaWare

Information Sheet and Consent Form

* Participant Name

* Contact Email
@

The TeamAware Project

The TeamAware project is funded by the European Commission's Research Executive Agency (REA), under its Horizon 2020 Framework Programme for Research and Technological Development under the Grant Agreement 101019808. It aims to build an integrated and cost-efficient situational awareness system for first responders from different sectors with heterogeneous and hardly interoperable sensors unit including drone mounted, wearable, and external sensor systems.

TeamAware Demonstration of the TeamAware Toolkit in Ankara, Turkey

The TeamAware demonstration is aimed at presenting the TeamAware Toolkit functioning in Ankara, Turkey at the Sheraton Ankara Hotel & Convention Center. It will take place from the 28th of November to the 2nd of December, 2022

The personal data that will be gathered

At the start of the event you will be prompted to fill out the consent form that follows this information sheet where we will record your name and email, this information will be used solely within the TeamAware project and will be collected by ethical partner Eticas Research and Innovation. At the end of each demonstration, you will be asked for your feedback on the TeamAware Toolkit and components. The data collected are subjective questionnaire data, comments, remarks and general feedback.

During the demonstration, partner Resilience Advisors Network (RAN) will be conducting interviews with participants who volunteer their time and knowledge, the nature of these interviews will deepen the data collected in the questionnaires.

There will be local media coverage of the opening activity on Monday 28th of November. Some picture/video could be taken during the demonstration and may be published digitally or in print for communication and dissemination purposes, any images containing personal data will be blurred out. All recorded data are anonymous.

How to withdraw from the demonstration activities?

Participation is entirely voluntary. You can withdraw from the activities at any moment by informing the Project Coordinator of your wish to withdraw from the activities.

Who will be responsible for the information once the Project is completed?

The collection, storage, protection, retention and destruction of personal data will be the responsibility of the data collecting and processing partners, whose DPO details are included in the information sheet. To facilitate the exercise of data rights, the ethical partner Eticas Research and Innovation acts as the point of contact for the DPOs and all requests should be sent to dpo@eticasfoundation.org

Who will have access to the information?

Apart from the participant (data subject), the respective data controllers (see below) will have access to the participant's personal data. The data controller will delete any personal data latest after five years.

Your personal data will not be shared outside of the TeamAware project.

	Data Colleted	Data Controller
1	Subjective data (questionnaire data, comments, remarks, general feedback)	Resilience Advisors Network (RAN)
2	Subjective data (questionnaire data, comments, remarks, general feedback). Personal data in consent form.	Eticas Research and Innovation (ERI)

The Data Subject's Rights

The participant is granted, free of charge, access to all data concerning them and, as appropriate, the right of rectification, erasure or blocking of data, in particular because of the incomplete or inaccurate nature of the data. The data subject also has the right of notification of rectifications to third parties to whom the data have been disclosed.

List of DPOs in the TeamAware project

Below is the information for the Data Protection Officer provided by the relevant partners. As different partners will be collecting and processing different data for the demonstration exercises, several organisations and DPOs are involved. In case you want to exercise your data rights a single point of contact is provided above as acting DPO for the demonstration exercises. The list below is provided just as a reference.

List of DPOs

	Partner	Country	DPO
1	Software Imaginations and Vision SRL (SIMAVI)	Romania	Catalin Petrea Catalin.Petrea@siveco.ro
2	Tree Technology SA	Spain	Abogados Écija dpo@treetk.com
3	THALES SIX GTS FRANCE SAS (THALES)	France	Madame Juliette Rouilloux Sicre juliette.rouilloux-sicre@thalesgroup.com
4	Centro Europeo Di Formazione E Ricerca In Ingegneria Sismica (EUCENTRE)	Italy	Riccardo Pietrabissa Riccardo.Pietrabissa@eucentre.it
5	Asociation De Investigacion De La Industria Textil (AITEX)	Spain	Eugenio Rufo erufo@aitex.es
6	Microflown Avisa BV NL (AVISA)	Netherlands	Etienne Wettingfeld wettingfeld@microflown.com
7	DUNE S.R.L. (DUNE)	Italy	See: D15.3 POPD - Requirement No. 3, Annex 1 - Data Protection Policy
8	Innova Integra Limited UK	United Kingdom	Lesley Badii lesley.badii@innovaintegra.com
9	SRDC Yazilim Arastirma Ve Gelistirme Ve Danosmanlik Ticaret Anonim sirketi (SRDC)	Turkey	Mustafa Yüksel mustafa@srdc.com.tr
10	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH (AIT)	Austria	Michael Löffler michael.loeffler@ait.ac.at
11	Fraunhofer Gessellschaft Zur Foerderung Der Angewandten Forschung E.V. De 12 Luciad NV (Fraunhofer)	Germany	Ralph Harter ralph.harter@zv.fraunhofer.de
12	Luciad NV	Belgium	Dhiraj Mohan dhiraj.mohan@hexagon.com
13	Sabanci University (SU)	Turkey	Çiğdem Geylan cgeylan@sabanciuniv.edu
14	Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (CERTH)	Greece	Ioannis Chalinidis ivchal@certh.gr

15	Eticas Research and Innovation (ERI)	Spain	Nour Salih dpo@eticasfoundation.org
16	Havelsan Hava Elektronik Sanayi Ve Ticaret (HAVELSAN)	Turkey	Hilal Esra Yaldız heyaldiz@havelsan.com.tr

17	.		DPO@resilienceadvisors.eu
18	Bursa Buyuksehir Belediyesi (BBB)	Turkey	Kemal DEMİR kemal.demir@bursa.bel.tr
19	Ambulance and Emergency Physicians Association (AAHD)	Turkey	Vahap Tecim. vtecim@gmail.com
20	Associacao Humanitaria Dos Bombeiros Voluntarios De Peniche (AHBVP)	Portugal	José António Carriço Lopez Rodrigues cmpc@cm-peniche.pt
21	Johanniter Osterreich Ausbildung und Forschung Gemeinnutzige GMBH (JOAFG)	Austria	Leopold Weninger datenschutzbeauftragter@johanniter.at
22	Elliniki Etaireia Epeigousas Pronosokomaiakis Frontidas (HSEPC)	Greece	Stylianos Xeniadis stxmer@yahoo.com
23	Enide Solutions S.L. (ENIDE)	Spain	David Quesada david.quesada@enide.com

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Consent form

The TeamAware project is funded by the European Commission's Research Executive Agency (REA), under its Horizon 2020 Framework Programme for Research and Technological Development under the Grant Agreement 101019808.

The following form is intended to record your consent as a participant to fill out the demonstration questionnaires and the processing of your personal data which has been explained in the information sheet provided to you by the project coordinator.

Consent	YES	NO
* I hereby confirm that I freely consent to fill out the TeamAware demonstration questionnaire. The purpose of this activity has been explained to me in writing and I am fully informed about the way in which my personal data is going to be processed. I am participating voluntarily and understand that I can withdraw from the activities at any time without any penalty or prejudice. I understand that my personal data will not be processed outside the TeamAware project. I understand that my feedback will remain anonymous, and that should I not wish to answer any particular question(s), I am free to decline without any penalty or prejudice. I understand that my answers to any questionnaire will remain anonymous, and that should I not wish to answer any particular question(s), I am free to decline without any penalty or prejudice. I have the right to request access to my personal data, and to have it rectified or deleted at any time by contacting the Project Coordinator I acknowledge that once the Project Coordinator or Exercise Leader receives notification that I chose to withdraw my consent, my information will no longer be processed for the purposes I originally agreed to, unless there are other legitimate bases for doing so in the law. I understand that the personal information included in this form (name and surname) will be kept by the data controller for a maximum of five years after the end of the project, in a secure environment according to data protection guidelines. It will be permanently destroyed or anonymized up to five years after the end of the project. A copy of the information sheet will be given to the signee (participant) and a copy will be kept by for their record.	☐	☐
* I understand that any picture/video taken during the demonstration will not contain any personal data.	☐	☐
* I will be available for the voluntary interviews to be conducted by RAN during the demonstration.	☐	☐
* I understand that there will be local media coverage of the opening activity on Monday 28th of November. I consent to the use of my photograph or likeness in any publication for the purposes of TeamAware dissemination activities.	☐	☐

* Date
   after 26/11/2022
   📅 DD/MM/YYYY

*

☐   I confirm that I have read the information sheet and provided consent accordingly.

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