ASSISTANCE

Adapted situation awareneSS tools and tallored training curricula for increaSing capabiliTies and enhANcing the proteCtion of first respondErs

European Commission

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Deliverable D1.8

Third Management Report

31/07/2022

[1] PU: Public; PP: Restricted to other programme participants (including the EC services); RE: Restricted to a group specified by the Consortium (including the EC services); CO: Confidential, only for members of the Consortium (including the EC services).

ASSISTANCE

Nowadays different first responder (FR) organizations cooperate together to face large and complex disasters that in some cases can be amplified due to new threats such as climate change in case of natural disasters (e.g. larger and more frequent floods and wild fires, etc) or the increase of radicalization in case of man-made disasters (e.g. arsonists that burn European forests, terrorist attacks coordinated across multiple European cities).

The impact of large disasters like these could have disastrous consequences for the European Member States and affect social well-being on a global level. Each type of FR organization (e.g. medical emergency services, fire and rescue services, law enforcement teams, civil protection professionals, etc.) that mitigate these kinds of events are exposed to unexpected dangers and new threats that can severely affect their personal safety.

ASSISTANCE proposes a holistic solution that will adapt a well-tested situation awareness (SA) application as the core of a wider SA platform. The new ASSISTANCE platform is capable of offering different configuration modes for providing the tailored information needed by each FR organization while they work together to mitigate the disaster (e.g. real time video and resources location for firefighters, evacuation route status for emergency health services and so on).

With this solution ASSISTANCE will enhance the SA of the responding organisations during their mitigation activities through the integration of new paradigms, tools and technologies (e.g. drones/robots equipped with a range of sensors, robust communications capabilities, etc.) with the main objective of increasing both their protection and their efficiency.

ASSISTANCE will also improve the skills and capabilities of the FRs through the establishment of a European advanced training network that will provide tailored training based on new learning approaches (e.g. virtual, mixed and/or augmented reality) adapted to each type of FR organizational need and the possibility of sharing virtual training environments, exchanging experiences and actuation procedures.

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Disclaimer

1 Executive Summary

This deliverable encompasses a summary of all the activities performed during the project third year and the three months extension. This document is based on the official template for the periodic reports in order to give a clear idea on what has been done and what activities have been performed by each partner.

The first section is related the objectives of the project and how the activities performed have contributed to accomplishing each of these objectives.

The document has also an individual chapter for each WP, which is divided in the following sections:

- A brief description of the WP including the partners involved
- The objectives of the WP
- A description of all tasks active during the reporting period, where all activities performed in each task are summarized. In addition, at the end of each task description, a short summary of the activities performed by individual partners is also stated.
- Finally, a table including the deliverables submitted under each WP during the reporting period is stated along with another table showing the milestones accomplished under each WP.

After the WP description sections, the document has additional chapters showing different potential updates if they are applicable to this reporting period (e.g. Update of the plan for exploitation and dissemination of result (if applicable), Update of the Data Management Plan (if applicable) and Follow-up of recommendations and comments from previous review(s) (if applicable)).

The next chapter shows potential Deviations from DoA (if applicable) in terms of manpower and budget and finally a table with all the meetings performed during the reporting period is shown.

List of Authors

Organisation	Authors
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Change control datasheet

Version	Changes	Chapters	Pages	Date
0.1	First draft	All	11	04/07/22
0.2	Internal version updated	All		
0.3	Internal version updated	All		
0.4	First Consolidated version	All		
1.0	First final version	All		
2.0	Final version	All		

Content

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Acronyms

AB	Advisory Board
ASSISTANCE	Adapted situation awareneSS tools and taIlored training curricula for increaSing capabiliTie and enhANcing the proteCtion of first respondErs
PC	Project Coordinator
D#.#	Deliverable number #.# (D1.8 deliverable 8 of work package 1)
DoA	Description of Action of the project
EC	European Commission
EU	European Union
GA	Grant Agreement
H2020	Horizon 2020 Programme for Research and Innovation
KER	Key Exploitable Result
M#	#th month of the project (M1=May 2019)
WP	Work Package
IPR	Intellectual Property Rights
PSC	Project Steering Committee
PIC	Project Implementation Committee
PSB	Project Security Board
TL	Task Leader
WPL	Work Package Leader

2 Explanation of the work carried out by the beneficiaries and overview of the progress

2.1 Objectives and progress achieved during the reporting period

The main ASSISTANCE objective is twofold, on the one hand the project will **protect and help the different FRs organizations that work together during the mitigation of large disasters (Natural or Man-made)** and on the other hand ASSISTANCE will **improve the FRs capabilities and skills for facing these kinds of events.** This will be achieved by accomplishing the following operational objectives:

O1. To pay attention to the FRs expressed needs and preference during the proposal preparation phase in terms of useful information for increasing their capabilities and new sensors being mounted on unmanned platforms or integrated in their wearable equipment.

O2. To develop a novel SA platform, including the integration of UAV, robots and drones' swarms and innovative modules that will enhance the FRs SA. These novel SA tools will be integrated in a complete SA platform that will be able to be adapted to the specific information needs of the different types of FRs organizations that cooperates during the mitigations of a big disaster (natural or man-made)

O3. To establish the core of an advanced training network based on virtual reality and/or augmented reality, which includes recognized FRs training institutions that form part of ASSISTANCE consortium along with a set of training curricula tailored to the needs of the different types of first responders (e.g. firefighters, sanitary staff, police, etc.) in order to improve their current capabilities.

O4. To provide robust network infrastructure for ensuring FRs and unmanned platforms connectivity during the mitigation operations. When it is not possible to have correct connectivity, the consortium will provide ad-hoc network performance capabilities based on drones' swarm to ensure the basic sensors and modules connectivity.

O5. To validate the project results in a cost-effective way under real conditions in a controlled environment through 3 pilots' demonstrations which will involve FRs from different organizations

O6. To measure the societal impact of the project and assure compliance with legal, gender and ethical EU principles and requirements, identify lacunae and hurdles and develop concrete recommendations to policy makers and FRs with the aim to improve the current level of protection for the FRs and increase their capabilities in a legal and ethical manner.

2.1.1 Summary of WP activities in period 3

During the third year of the project the consortium has worked in all active WPs for finishing their tasks successfully. In WP6, task T6.4 has been accomplished successfully and on time. The project's VR platforms have been used by the FRs organizations for accomplishing the different practical subjects described in the online curricula published through the project Moodle server. The subject 5 scenario was performed by the FRs organizations on-line through the 3 VR platforms available in the project.

The subjects 6, 7 and 8 scenarios were accomplished by the FRs organizations during the three project pilots performed in Turkey, The Netherlands and Spain, respectively. All the corresponding deliverables have been submitted. This WP contributes exclusively to accomplish objective 3.

In WP7 all tasks have been completed correctly and the corresponding deliverables submitted on time. Among other tasks during this WP, all pilots' activities including their evaluation have been accomplished successfully. This WP will contribute exclusively to accomplish objective 5.

In WP8, all tasks have been finished correctly and all the scheduled deliverables have been submitted on time. Different activities on data protection, gender, societal impact and so on have been accomplished. This WP will contribute exclusively to accomplish objective 6.

In WP9, the consortium has increased its dissemination and communication activities in T9.2 with the data obtained from the three project pilots. Nevertheless, some of the project dissemination objectives have been seriously affected due to the COVID 19 and the Ukraine war, since many live events and congresses have been cancelled (e.g. Security Research Event, which was cancelled in February due to the war and where Commissioner Johannsson had announced a visit to the ASSISTANCE Booth). Nevertheless, the consortium has put effort into producing scientific papers, articles and publications in social networks as is described in the overall WP9 description. Regarding the rest of the WP9 tasks, all of them have been finished according to the DoA. All the activities and deliverables of WP9 have been submitted on time.

1.1 Explanation of the work carried out per WP

1.1.1 WP1: Project management

This WP is in charge of the project management activities, which includes project coordination and representation, administrative project management, and coordination among work packages through the implementation of the project management structure and procedures, described in the DoA section

1.1.1.1 Involved Beneficiaries

This WP is led by UPVLC (project coordinator) and the whole consortium is involved in this WP

1.1.1.2 Objectives for the third year of the project (01/05/2021 to 31/07/2022)

The WP1 objectives are the following:

Objective 1: To establish efficient operation of all project bodies, including proper decision making and conflict resolution at all levels. This objective is related with T1.1

Objective 2: To organise overall project administration and supervision of financial flows as well as communication with EC and project reporting. This objective is related with T1.2

Objective 3: To ensure required quality of project work and its results as well as to perform self-assessment and corresponding project monitoring, including risk and opportunities management. This objective is related with T1.3

Objective 4: To provide necessary environment for collaboration within the consortium. This objective is related with T1.4

1.1.1.3 Summary of progress towards objectives and details for each task for the project third year (01/05/21 – 31/07/22))

Task 1.1: Project Management (M1–M39) - Leader: UPVLC

Contributors: The task is led by UPVLC, but the whole consortium is involved in some way in this task.

Overall Work progress for the task: this task is a horizontal task and therefore the 100% of the task has been performed at the end of the third year plus the 3 months of extension. The main activities performed under this task are the following:

Work performed: The coordinator has organized a plenary telco at least every three weeks during the whole third year of the project for having control of the activities performed in each active task.

In addition, bilateral or sectorial telcos (e.g. WPx Members) have been organized in order to ensure proper accomplishment of the project results in concrete activities, mainly focused in the successful performance of the three project pilots performed during the third year.

The coordinator has established a quality control procedure for deliverables in order to ensure the maximum quality of the submitted reports. This procedure has been performed with all deliverables submitted so far.

The coordinator organized the three project pilots performed during the third year of the project with some modifications of dates with respect to the DoA due to the Covid 19 situation. Specifically, the project pilots were organized in Izmir (from the 24th to the 28th of January 2022), Rotterdam (from the 28th of March to the 1st of April 2022) and Linares (from the 13th to the 17th of June 2022). All the details of these pilots are included in their corresponding deliverables (D7.3, D7.4 and D7.5). As a final activity of this task the coordinator has organized the project final review.

Partners contribution: All partners have participated in the project teleconferences organized by the coordinator. All partners also have used the GIT platform properly and the project deliverables have been submitted on time by the responsible partners. All partners also participated actively in the three project pilots. In addition, the partners selected for the peer review of the deliverables have performed their reviews properly and in due time.

Task 1.2: Administrative and Financial Management (M1–M39) - Leader: UPVLC

Contributors: The task is led by UPVLC, but the whole consortium is involved in some way in this task.

Overall Work progress for the task: this task is a horizontal task and therefore 90% of the task has been performed at the end of the third year. The task will be finished completely when the final payment is distributed by UPVLC after the final review and the financial statements approval by the EC. The main activities performed under this task are the following:

Work performed: The coordinator has managed the administration and supervision of the project financial flows. This includes collection and submission of all Financial Statements required at the end of the third reporting period.

The coordinator also has asked all partners to provide financial quarterly reports in order to have an updated knowledge of the resources spent by each partner and detect potential deviations in terms of effort spent. In addition, under this task, the coordinator has produced in the third year of the project D1.11 Third Cumulative report with the estimation of the costs per partner from 01/01/21 to 31/12/21.

Partners contribution: All partners have sent their quarterly reports information on time during the third year and have provided the necessary contributions for completing D1.11. All financial statements for the third reporting period have been also prepared and will be submitted to the EC before the 30th of September.

Task 1.3 End Users Group Coordination. (M1-M39) - Leader: AAHD

Contributors: The task is led by AAHD and internal and external end users participate also in this task.

Overall work progress for the task: this task has three dimensions: communicating with the previously formed Advisory Board (AB), coordinating the project end users and formation of the external End Users Group. Task 1.3 is related to other tasks explained below. Therefore, the work is not evenly distributed for every project year, 100% of the task has been performed at the end of the third year.

Work performed: 4 Members of AB contacted and invited to the project pilots. Unfortunately due to Covid 19 situation and also for personal issues they did not travel to the pilot sites.

The ASSISTANCE Project Letter of Intent (LoI) was prepared for inviting external End Users to the different project pilots and different external FRs organizations attended and even participating in the different project pilots (e.g. Izmir fire department, Rotterdam ambulances, Valencia local police).

The ASSISTANCE Project also participated in Clustering activities during the third project year with different brother projects funded by DRS calls.

Partners contribution:

- All project end users participated actively in the task including internal meetings and briefings performed during the project pilots.

Task 1.4 – Risk and opportunities management and quality assurance (M1 – M39) - Leader: RISE

Contributors: UPV, ETRA, TNO, ŁUKASIEWICZ-PIAP, IFV, UC, AAHD and VAS

Overall Work progress for the task: This is a horizontal task and therefore 100% of the task has been performed at the end of year 3. The main activities performed under this task are the following:

Work performed: The Risk and Opportunities Management Plan (ROMP) was reviewed and finished during the third year of the project.

No questions or challenges that could require changes to the ROMP have occurred since it was originally written, therefore there was no reason to make improvements or changes to it.

The R&O register has been kept up to date and is regularly reviewed to encourage the partners to be vigilant for new risks and opportunities and to understand the status of existing risks and opportunities. There were six new risks and 8 new opportunities registered since D1.3 was submitted in M6. Since there were no changes to the ROMP, only the updated R&O register was submitted (in M18) as D1.4.

There were no new risks and three new opportunities in the period from M18 to M30, which have been documented in D1.5. Three of the existing risks, dealing with bringing drones and robots to Turkey for Pilot 1, were resolved. Again, no changes were necessary to the ROMP. D1.5 was submitted late (M32) due to an oversight by RISE.

Partners contribution: All partners were given the opportunity to provide input and feedback for the ROMP and the risks and opportunities register.

Task 1.5 – Innovation Management (M1 – M35) - Leader: ETRA

Contributors: UPVLC

Overall Work progress for the task: 100% of the task has been completed. The main activities performed under this task in the current reporting period are the following:

Work performed: During the previous reporting period, a technology watch tool was setup to conduct periodic searches about the topics of interest in the market defined by the partners. In the current period, the searching parameters were fine-tuned while market trends and innovations were analysed. For each Key Exploitable Result (KER) defined in T9.1, competing solutions were preliminary identified thanks to the tool. Out of this, the most relevant competitors were selected by each KER owner. Features were compared to identify any risk of technology obsolescence or competitors ahead in the market. The related work is reported in D9.6.

Partners contribution: All partners were given the opportunity to provide their contribution to the technology watch activity.

1.1.1.4 Deliverables and milestones planned for the period

Deliverable number/name	S2R TD/WA addressed	Link to Exploitation Plan
D1.5 Risk & Opportunities Register 3	T1.4	NA
D1.7 Second Management Report	T1.1	NA
D1.11 Third Cumulative Expenditure Report	T1.1	NA

Table 1 Deliverables submitted in WP1 during the third year of the project

1.1.2 WP6: Advanced training network based on virtual and augmented reality

This WP is in charge of establishing a training network between the ASSISTANCE partners based on virtual reality platforms

1.1.2.1 Involved Beneficiaries

NIPV, UPVLC, RISE, CNBOP, AAHD

1.1.2.2 Objectives of this WP for the third year of the project (01/05/2021 – 31/07/2022)

The objective of WP6 is to establish the core of an advanced training network based on virtual reality and/or mixed reality, which includes recognized FRs training institutions that form part of ASSISTANCE consortium along with a set of training curricula tailored to the needs of the different types of first responders.
In order to achieve this objective WP6 has the following operational objectives:

- Objective 1: To develop training scenarios and setup of VR platforms (WP 6.3 M12-M23)
- Objective 2: To establish the training network and pilot's evaluation (M23-M37)

1.1.2.3 Summary of progress towards objectives and details for each task for the second year of the project (01/05/2021 – 31/07/2022)

Task 6.4 Training network establishment and training pilots' evaluation (M23-M38) Leader NIPV,

Contributors: RISE, UPV, CNBOP and all end users.

Overall Work progress for the task: This task finished in M38 and during the task all FRs of the project have had the opportunity of testing the three VR platforms available in the project through the scenarios described in T6.3 for subjects 6 to 8 of the produced curricula. In addition, the training performed with these VR platforms has been evaluated by the FRs through on-line questionnaires prepared according to the metrics established in T6.1.

All activities performed during the task have been included in D6.4, which has been submitted at the end of June 2022.

Specific contribution from UPV: UPV has prepared and deployed its VR platform in the different pilots' sites in order to perform the practical training with different FRs teams. In addition, UPV members have performed mentoring activities in training workshops for helping the FRs teams while using the UPV VR platform.

Specific contribution from RISE: RISE has contributed with input to the theoretical training subjects 1 to 4 and mentoring activities for students conducting subject 1 and 2. RISE has also contributed to the evaluations of the training methodology, e.g. by questionnaires and observations. RISE based this work on literature reviews on the topics of AI training and validation of web-based training and education. RISE has been part of user pre-tests and contributed with insight from research regarding human factors and usability. Together with TNO, RISE evaluated and reported the training subjects 6, 7, and 8 that were conducted at Pilots 1, 2, and 3, respectively.

Specific contribution from CNBOP: The CNBOP-PIB team supported the WP6 work package by helping prepare the training methodology and the definition of evaluation criteria. In addition, as a provider of a virtual reality platform, CNBOP-PIB participated in the scope of its own capabilities, in adapting training scenarios to the needs of the ASSISTANCE project. As part of this work package, members of the CNBOP-PIB team also acted as a mentor for participants via Moodle server, as well as prepared and conducted online VR sessions with project end-users.

Specific contribution from NIPV: IFV has contributed with input on how to achieve the best results for this task. During this period IFV has been working on the production of training scenarios, mainly for the pilots training workshops. We also used the time to adapt our virtual reality platform to the specific needs for achieving the ASSISTANCE goals. These activities are based on the analyses and conclusions taken from tasks 6.1 and 6.2. In addition, IFV members have performed mentoring activities during the training workshops performed in the pilots.

Specific contribution from END USERS: All FRs from different organizations were distributed in small teams for participating in the VR scenarios built for testing the different VR platforms during the project pilots. All FR organizations were very involved during the training sessions in the different pilots and after each session they evaluated the training performed in each platform.

1.1.2.4 Deliverables and milestones planned for the third year in this WP

Deliverable number/name	**S2R TD/WA addressed**	**Link to Exploitation Plan**
D6.4	T6.4	All VR platforms were used during the training sessions by the FRs and this kind of training could be another product provided by ASSISTANCE.

Table 2 Deliverables submitted in WP6 during the third year of the project

Milestone number/name	**Submission date vs planned**	**2 lines Milestone description / and reasons for delay (if applicable)**
MS7 ASSISTANCE SA platform ready for testing	Submitted M24 Planned M24	The ASSISTANCE training network has been deployed and successfully used by the FRs during training sessions of the project pilots.

Table 3 Milestones accomplished in WP6 during the third year

1.1.3 WP7: System demonstration and validation

This WP is in charge of testing and demonstrating the project results with real FRs in controlled environments during the 3 different project pilots. In addition, during this WP all developments tested have been validated by the end users.

1.1.3.1 Involved Beneficiaries

AAHD and the rest of the consortium

1.1.3.2 Objectives of this WP for the third year of the project (01/05/2021 – 31/07/2022)

This work package aims at validating the ASSISTANCE end products (including the SA platform and the training network). In addition, it was tested in a controlled environment in the project pilots' premises at Turkey, The Netherlands and Spain. The specific objectives of WP7 for the third year are the following:

- Objective 1: To test, deploy and validate the whole ASSISTANCE system implementation, with the whole consortium, in the different pilot sites according to the scenarios specified in WP2.

1.1.3.3 Summary of progress towards objectives and details for each task for the third year of the project (01/05/2021 – 31/07/2022)

Task 7.1 Validation Plan. (M18-M25) Leader: CATEC.

Contributors: UPVLC, ŁUKASIEWICZ-PIAP, RISE, AAHD, E-LEX,

Overall Work progress for the task: This task has been completed at the end of the third year. The main components of the ASSISTANCE system have been identified as well as the requirements that affect them and the use cases in which they participate.

Specific contribution from CATEC: Leading and coordinating the validation plan and implementing the one related to the drones' component.

Specific contribution from UPV: UPV has performed several telcos with CATEC (Task leader) for establishing the final approach for performing the validation plan. The final version of D7.1 was submitted on time

Specific contribution from ETRA: To finish the validation plan for the Sensor Abstraction Service (SAS) and the Damaged Assets Location and Routing (DAL&R) module. The latest was done in close collaboration with UC, considering their inputs on the evacuation component.

Specific contribution from rest of partners: NA

Task T7.2 Integrated System Test Bed (M25-M35) Leader: UPV.

Contributors: ETRA, THALES, TNO, ŁUKASIEWICZ-PIAP, CATEC, RISE, IFV, AAHD, VAS

Overall Work progress for the task: this task has been completely finished during the third year of the project.

During this task different bilateral on-line (due to covid19 situation) technical meetings were performed among different partners in order to test in a remote manner the proper integration of the different modules and sub-systems that composed the whole ASSISTANCE system. At the end of the meeting round all ASSISTANCE modules (e.g. SAS, CHT, DAL&R, drones, robots) were integrated correctly with the SAP. All the details of these integration on-line meeting are described in D7.2, which was submitted on time

Specific contribution from UPV: UPV organized different on-line meetings for testing the correct SAP integration with all ASSISTANCE modules. In the integration test with SAS, UPV checked that all data sent by other modules was correctly received in the SAS and then it could be downloaded by the SAP and visualized correctly. In the integration test with the CHT, UPV checked that plumes requested from the SAP were calculated by CHT and received through the SAS correctly for visualization, also alert messages for FRs sent by CHT were received correctly in the SAP using synthetic FRs locations during the test. In the integration test with the DAL&R, UPV checked that routes requested form the SAP were calculated by DAL&R and received through the SAS correctly for visualization. In the integration test with the drones, UPV checked that information from sensors installed in the drones (e.g. cameras, gas sensors) arrived correctly to the SAS and were received correctly in the SAP for visualization. In addition, telemetry information from the drones (e.g. speed, altitude, location, etc) arrived correctly to the SAS and also was received and visualized in the SAP. Finally, in the same test, MMM was tested and missions arrived perfectly to the drone Ground Control Station (GCS) and were correctly executed by the drone.

In the integration test with the robot (ŁUKASIEWICZ-PIAP), UPV checked that information from sensors installed in the robot (e.g. cameras, gas sensors) arrived correctly to the SAS and were received correctly in the SAP for visualization. In addition, telemetry information from the robot (e.g. speed, location, etc) arrived correctly to the SAS and also was received and visualized in the SAP. Finally, in the same test, the MMM was tested and missions arrived perfectly to the robot GCS and were correctly executed by the robot.

Specific contribution from ETRA: ETRA attended all integration meetings as responsible of the middleware of the platform, the SAS, where all data is retrieved and sent between pairs of ASSISTANCE components that exchange data through the system. The SAS was available during all integration tests, where ETRA personnel monitored and verified all data exchanges, implementing minor updates and improvements when necessary. Video streaming and storage, as well as definition of damaged areas and routes, was verified in the DALR in collaboration with UC, as responsible of the Evacuation Module.

Specific contribution from ŁUKASIEWICZ-PIAP: ŁUKASIEWICZ-PIAP organized two different live tests with the robot moving in their premises in Poland. All data sent by the robot (e.g. video flows, telemetry and so on) was received correctly in the SAP and visualized. All problems detected during the tests were solved correctly by ŁUKASIEWICZ-PIAP personnel.

Specific contribution from CATEC: CATEC organized three different live tests with several drones flying in the facilities in Seville. All data sent by the drones (e.g. video flows, telemetry and so on) were received correctly in the SAP and visualized. All problems detected during the tests were solved correctly by CATEC personnel.

Specific contribution from THALES and VIASAT: During all tests with robots and drones THALES and VIASAT performed missions through the MMM and these missions were correctly executed by drones and robots during the integration tests.

Specific contribution from TNO: TNO tested the CHT and the FRs locations during two different on-line tests. All plumes requested were sent to the SAS and visualized correctly in the SAP HMI. In addition, synthetic FR locations were used for testing their correct reception and visualization in the SAP HMI.

Task T7.3 Pilot Demonstration. (M31-M35) Leader: AAHD.

Contributors: ALL Partners

Overall Work progress for the task: This task has been completed at the third year of the project. This task was devoted to pilot operations with the involvement of the different FRs present as ASSISTANCE end-user organizations (AAHD, CNBOP, GB, MIR-PN, AVSRE, OSPOM and SBFF). The deployment of the whole integrated ASSISTANCE SA platform in a controlled environment has been carried out to validate and assess the ASSISTANCE platform capabilities against different simulated scenarios. The scenarios were prepared in a inclusive manner. The first one was hosted by AAHD in Izmir, the scenario was an earthquake; a natural disaster. Second one was hosted by GB in Rotterdam, the scenario was an industrial accident; an unintentional man-made disaster. Third one was hosted by MIR-PN in Linares, the scenario was a terrorist attack; an intentional man-made disaster. All of them have been carried out under Covid-19 measures, none of the consortium members got Covid-19 after the pilot testing. The detailed descriptions of these three pilots are included in the T7.3 associated deliverables (D7.3, D7.4 and D7.5) all these documents have been submitted on time during T7.3

Specific contribution from AAHD: The first pilot was hosted by AAHD during the last week of January 2022, in Izmir at the Fire and Natural Disaster Training Centre (IYDEM). The earthquake scenario was carried out outside, in the collapsed and semi-collapsed buildings of this training facility. AAHD provided all the necessary materials and equipment which the consortium members could not bring with them. AAHD provided halls for the VR training of the ASSISTANCE First Pilot Virtual Reality Scenario (lesson 6). AAHD also participated as an end user in the other two pilots.

Specific contribution from GB: The second pilot was hosted by GB during the last week of March 2022, in Rotterdam at the Deltalinqs Training plant, according the DoA schedule. The industrial accident scenario was carried out outside, in the simulated refinery area. ASSISTANCE Second Pilot Virtual Reality training workshop for lesson 7 was performed as well. GB, as well as the rest of the end users also participated in all pilots.

Specific contribution from MIR-PN: The third and final project pilot demonstration was performed from 13th to 17th of June 2022 near Linares in Spain, hosted by the Spanish Ministry of Interior at the Spanish Police operative training centre "La Enira". The event was organised by FADA-CATEC in cooperation with MIR-PN and UPVLC. The whole ASSISTANCE system was deployed in a controlled environment and the third pilot scenario was executed successfully validating the ASSISTANCE system capabilities. The scenario of the demonstration was centred around a terrorist attack involving 3 terrorists using explosive backpacks and a hostile drone for performing the attack in an urban environment. ASSISTANCE Third Pilot Virtual Reality training workshop for lesson 8 was performed as well.

Specific contribution from CNBOP, AVSRE, OSPOM and SBFF; All FRs organizations participated in the different project pilots using the system during the different scenarios above described. It is important to note that for the first pilot in January just 4 FR organizations participated (AAHD, GB, SBFF and CNBOP). The other FRs organizations and also other technical partners could not attend due to travel restrictions for the Covid 19 situation in January.

Specific contribution from all technical partners: All technical partners integrated and deployed their systems and modules in the three pilot sites so they could be used by the FRs organizations. The technical partners updated their systems after each pilot according to the FRs feedback provided. CEL and E-LEX also provided legal and ethical support during the pilots preparing the corresponding consent forms and performing several workshops during the pilots.

Task T7.4 Data Analysis, Economical and Usability Evaluation. (M32-M39) Leader: RISE. Contributors: UPVLC, THALES, ŁUKASIEWICZ-PIAP, UC, AAHD,

Overall Work progress for the task: This task has been completely finished during the third year of the project.

The usability and usefulness of the ASSISTANCE SA platform were evaluated during the pilots. The analysis was based on questionnaires, focus groups, videos of the first responders using the tablets, and observations during field and tabletop exercises. Follow-up interviews were conducted with some of the first responders as well. This work was done in coordination with UC, which is responsible for evaluating the societal impact of the technology. A tech/economic cost assessment, including an evaluation of first responder willingness to pay for an SA platform were also conducted by RISE during this period.

Specific contribution from RISE: RISE conducted the usability and usefulness evaluations and the cost-benefit analysis. These efforts are documents in D7.6, which was submitted on time.

Specific contribution from UC: Since UC and RISE both needed to collect information about the ASSISTANCE SA platform from the end user partners during the pilots, a single combined questionnaire jointly created by UC and RISE was used. UC moderated the usability focus group discussion for Pilot 1 and participated in collecting video data during Pilots 2 and 3.

1.1.4 WP8: Gender, ethical, societal and legal issues

1.1.4.1 Involved Beneficiaries

UC, E-Lex, ŁUKASIEWICZ-PIAP, RISE, CEL

1.1.4.2 Objectives of this WP for the third year of the project (01/05/2021 - 31/07/2022 –)

- Objective 1: To provide privacy and data protection recommendations for the project outcomes and monitoring ASSISTANCE tasks through a Privacy Impact Assessment (PIA). Related to Tasks 8.1 and 8.2.
- Objective 2: To analyze legal and ethical aspects related to ASSISTANCE tools and development. Related to Task 8.3.
- Objective 3: To demonstrate the role that human factors (societal aspects and gender dimension) play in innovation for disaster resilient-societies. Related to Tasks 8.4 and 8.5.

1.1.4.3 Summary of progress towards objectives and details for each task for the third year of the project (01/05/2021 - 31/07/2022 –)

Task 8.1: Project Ethical Monitoring (M1–M39)

Contributors: E-LEX, UC, ŁUKASIEWICZ-PIAP, CEL

Overall Work progress for the task (percentage estimation 100%): The main aim of this task is to investigate and illustrate the procedures and protocols necessary for handling legal and ethical issues during the whole project research process. It will also monitor the impacts of the ASSISTANCE project that developed on ethical, privacy and data protection aspects were monitored in order to support the project management in ensuring the project quality and the project partners in case of procedures as for the EU data protection legal framework. During this period the consent forms for the different activities performed (pilots, questionnaires, focus groups, etc.) were designed and distributed.

Specific contribution from E-Lex: E-Lex, with the collaboration of CEL and UC, has implemented the GELS toolkit, with the specific contribution in relation to legal and ethical aspects. Designed and distributed the Consent forms and information sheets for the pilots, questionnaires, focus groups, etc.

Specific contribution from CEL: E-Lex, with the collaboration of CEL, and UC has implemented the GELS toolkit, with the specific contribution in relation to legal and ethical aspects.

Specific contribution from UC: E-Lex, with the collaboration of CEL, and UC has implemented the GELS toolkit, with the specific contribution in relation to legal and ethical aspects as well collaborated in designing and reviewing the ICF.

Partners contribution: All partners participated in coordination actions and checking of activities.

Task 8.2: Privacy and Data Protection (M1–M39)

Contributors: E-LEX, UC, CEL

Overall work progress for the task (percentage estimation 100%): This task, starting from the legal and ethics EU framework pointed out in D.8.1, has the purpose to indicate the best practices, guidelines and processes relevant to the project related to the Fundamental Rights, Privacy and Data Protection. The main aim of the task is to issue some recommendations for software and technology developers, enabling the data protection, privacy and adoption of Privacy by Default and Privacy by Design approaches, as well as technical and organisational measures to protect personal data as defined by the new EU GDPR. In the reporting period, the privacy impact assessment of the project was designed and reported in D8.5 and completed in D8.7.

Specific contribution from E-LEX: Monitoring the developing process of the pilots to provide and support the partner managing personal data. E-Lex has provided a LOI and a questionnaire regarding the data protection aspects that has been submitted to each partner with the purpose to monitor the processing of personal data during the pilots. A questionnaire was distributed to all the technical partners after the three pilots in order to collect the necessary information to implement the privacy impact assessment of the ASSISTANCE Project. Upon the outcome of the analysis of the results and following the appointed GELS toolkit, E-LEX reported the final conclusions on the privacy assessment of the ASSISTANCE Project in D8.7. Moreover, under a dissemination perspective, the final privacy results related to the ASSISTANCE Project will be discussed in a workshop and in a position paper.

- **Partners contribution**: All partners participated in coordination actions and checking of activities.

Task 8.3: Ethical issues and Fundamental Rights Accomplishment (M1–M39)

Contributors: CEL, E-LEX, UC, PIAP

Overall Work progress for the task (percentage estimation of the task is: 100%): The task analysed the most important human rights involved in the DRS operations and assessing the ethics impact of the project technological platform on the affected community in terms of rights.

After the submission of D8.1 and WP10 deliverables (2019 - 2020) dealing with ethics requirements, CEL in 2020 has designed an ethics checklist, a tool that was adopted with two main functions:

- Self-assessment tool: the checklist is conceived as a sort of *vademecum* for the pilots' responsible partners to make sure that all most important ethics aspects have been appropriately considered during the phases of design and deployment of the pilots.
- Monitoring tool: the answers of the pilots' leaders will constitute further evidence for the monitoring process that social scientists should perform in WP8.

In a dedicated telco between CEL and UC of March 2020, the two partners have decided to adopt the checklist approach, proposed by CEL, as an integrated method called GELS (see D8.3). On the ethical side, GELS continues and extends the work done by CEL on ALETHEIA (see T8.1).

Indeed, the GELS toolkit is designed to integrate, monitor and evaluate Gender, Ethical, Legal and Societal aspects for the pilot demonstrations and advance training.

Pilot leaders, host organizers as well as the rest of partners work together according to this toolkit.

During the three pilot demonstrations held in Izmir (Turkey), Rotterdam (Netherlands) and Linares (Spain), CEL adopted the GELS toolkit for the realization of the activities. Specifically, CEL used the GELS self-assessment tool to assess the ethical compliance of the organization and the conduct of the pilots.

Then, a Monitoring Tool (a set of techniques used to conduct our analysis) was outlined to organize and conduct activities during all three pilot demonstrations to investigate the impact of ASSISTANCE technologies on First Responders.

After submitting a questionnaire to the users of the technologies to develop a targeting of the group and to get initial indications (i.e. baseline) based on different factors three different focus groups were conducted, each investigating a specific ethics topic:

- The first focus group, held in Izmir (Turkey), after the pilot demonstration, focused on “end users on human rights in rescues operations”, and specifically was dedicated to investigate the impact of the technologies on the **ethical aspects of situational awareness** (SA) of First Responders' teamwork.
- The second focus group, held in Rotterdam (Netherlands), aimed to explore the impact of technologies on **human rights issues**.
- The third focus group, held in Linares (Spain) focused on the impacts of technology on **team resilience**.

Subsequently, the results were analyzed through the Analysis Tool of the GELS framework that is a set of tools CEL used to analyses the responses obtained during the focus groups.

The motivation, the method, the observation and pre-interview, the focus groups execution, the results and assessment of these activities are described in D8.7.

Finally, a white paper, published on social media channels, has been produced by CEL and UC to analyze the role of gender in disaster recovery and the connection between gender and ethics-based approach to rescue management.

- **Specific contribution from CEL:** The definition of a checklist as ethics monitoring tool to be adapted by researchers and pilot leaders to measure the compliance between the deployment of the ASSISTANCE demonstrations and the EU ethics frameworks. The publication of the white paper together with UC to explain, in popular science terms, the role of gender in disaster recovery and the connection between a gender and an ethics-based approach to rescue

management. CEL has actively contributed to WP10 (ethics) deliverables, taking the editing leadership of some of them.

- **Specific contribution from E-LEX**: Collaboration within the revision of the checklist delivered to Partners involved in pilots in order to ensure the compliance the GDPR and support in the other legal issues during the task.
- **Specific contribution from UC**: Discussion, documents analysis and collaboration in the focus groups of pilot 1 and pilot 2.
- **Specific contribution from PIAP:** Participation in discussions and documents analysis, inputs to ethics related deliverables (including WP10 deliveries).

Task 8.4: Societal Aspects (M1–M39)

Contributors: UC, ŁUKASIEWICZ-PIAP

Overall Work progress for the task (percentage estimation 100%): Previous actions concerned the application of Societal Impact Assessment through three key perspectives: citizens, the project and the GELS toolkit for assessing human factors. The work carried out in the reporting period has focused on completing Societal Impact Assessment of the ASSISTANCE and its Technologies to develop the Best Practices Handbook (D8.6) and the human factors impact assessment (D8.7). The following activities were conducted.:

- Past experiences of First Responders: The study was divided into two parts: 1) online questionnaire (n=132) and 2) focus group sessions (n=7). The questions were derived from the top list of likely impacts defined in the Delphi process. The outputs provided an overall picture of the current conditions for first responders in relation to the selected societal aspects and technologies. This study allowed us to focus on actual information reported by end-users, Identify and understand the key societal issues and pinpoint new chances for innovation.
- The GELS Toolkit to integrate, monitor and evaluate non-technical aspects for the pilot demonstrations was refined. For the societal impact assessment, a survey was designed and conducted to get feedback from end-users when faced the ASSISTANCE technologies from a societal perspective. Results are the core of societal assessment of the assistance technologies.
- Large scale survey on citizens (n=1014). Two analyses were performed and reported. The case studies focused on risk propensity/preparedness and the protection motivation of citizens in the context of disaster response.

Specific contribution from UC:

- D8.6 Best Practices Handbook.
- D8.7. Human factor impact assessment.
- Designing, conducting and analyzing results of the online questionnaire and a focus group on Past Experiences of First Responders.
- Additional processing of results from the survey on citizens to analyze Protection motivation.

- Human factors impact assessment of the ASSISTANCE technologies during the three pilots by a survey distributed to end-users.
- Coordination with partners.

Specific contribution from ŁUKASIEWICZ-PIAP:

- Participation in research discussions on the application of Societal Impact.
- Supporting the design and translation process of the online questionnaire.

Task 8.5: Gender Dimension (M1–M39)

Contributors: UC, RISE, ŁUKASIEWICZ-PIAP

Overall Work progress for the task (percentage estimation 100%): During this reporting period two case studies were reported in D8.4 Report on Gender Dimension Strategy. The case studies explored gender impact on citizen's perceptions and attitudes toward disasters and gender in risk propensity, coping and resilience of First Responders. Apart from several assessments conducted by disaggregating data (by gender) in the overall datasets produced in this Work Package, the main activities conducted during this reporting period were:

- Designing and elaborating a Gender Dimension Strategy Guideline.
- Focus group on Gender Dimension conducted during the third Pilot with end-users to assess differences in vulnerabilities, exploring changes in perception of threats and risks, analyzing gender influence in the selection of coping strategies and testing gender impact in ASSISTANCE tools to avoid unintended negative consequences

Specific contribution from UC:

- Deliverable D8.4 Report on Gender Dimension Strategy
- Deliverable D8.7 Human Factor impact assessment
- Design and conducting a focus group on Gender Dimension with end-users to assess gender in relation to the ASSISTANCE project and its technologies.
- Submitting an open access scientific paper on gender dimension in perception of disasters.
- Coordination with partners.

Specific contribution from RISE:

- Participation in research discussions and gender research activities.
- Design, translations and distribution of questionnaires.
- Collaboration in the end-user focus-group.
- Joint publication with UC on gender dimension in perception of disasters.

Specific contribution from ŁUKASIEWICZ-PIAP:

- Participation in research discussions and gender research activities.
- Design, translations and distribution of questionnaires.

1.1.4.4 *Deliverables and milestones planned for the period in this WP*

Deliverable number/name	**S2R TD/WA addressed**	**Link to Exploitation Plan**
D8.4. Report on Gender Dimension Strategy (GDS)	*TD8.4-Task 8.5*	As one of the exploitable results of the project, GELS methodology serves as a tool for a self-assessment, monitoring and analysis of gender, ethical, legal and societal aspects of research projects. This deliverable presents some insights of gender analysis to be considered in GELS.
D8.5 Report on data protection, privacy and ethical impact.	*TD8.5 – Task 8.2*	This deliverable contains a report on data protection, privacy and ethical impact containing the results of the assessment of the impact of rescue operations in relation to ASSISTANCE technologies on privacy, data protection and human rights as one of the main inputs of the GELS methodology.
D8.6. Best Practices Handbook	*TD8.6-Task 8.4*	This deliverable includes the overall methodology to be implemented in GELS.
D8.7. Human Factor impact assessment	*TD8.7-Tasks 8.1, 8.4 and 8.5*	This deliverable presents the application of the GELS toolkit to the ASSISTANCE project

Table 4 Deliverables submitted in WP8 during the third year of the project

Milestone number/name	**Submission date vs planned**	**2 lines Milestone description / and reasons for delay (if applicable)**
MS8 Privacy, legal and ethical compliance performed	Submitted M28 Planned M28	The results of the assessment of the impact of rescue operations in relation to the ASSISTANCE technology on privacy, data protection and human rights have been presented. This milestone is verified through the production of D8.5
MS12 Societal (including gender) impact assessment done	Submitted M39 Planned M39	The evaluation and assessment results of the human factor perspective during emergencies including gender dimension has been performed. This milestone is verified through the production of D8.4 and D8.7

Table 5 Milestones accomplished in WP8 during the third year

1.1.5 WP9: Exploitation and dissemination

WP9 is dealing with exploitation and IP management activities, dissemination and communication activities, standardization and potential commercialization of the ASSISTANCE.

1.1.5.1 Involved Beneficiaries

The whole consortium is involved in this WP

1.1.5.2 Objectives of this WP for the third year of the project (01/05/2021 - 31/07/2022 –)

Objectives of this WP for the third year of the project (01/05/2021 - 31/07/2022 –)

- Objective 1: Review and update of partner's individual exploitation plans and overall ASSISTANCE platform exploitation plan.
- Objective 2: Development and implementation of a business plan to commercialise the results and take the system concept to market with exploitation partners within 2 years of the project end.
- Objective 3: Management of IPR including building on background and the protection of foreground IPR.
- Objective 4: Provision of inputs to standards & policy development, together with selection and adoption of appropriate standards to enhance exploitation potential.
- Objective 6: Dissemination to the scientific and technical community, the media and the public on advances beyond the state of the art.
- Objective 7: Targeted dissemination of key results and prototype demonstrations to policy makers, potential exploitation partners and end-user customers, to encourage partnerships to help take the results to global markets and encourage customer demand for this type of system.

1.1.5.3 Summary of progress towards objectives and details for each task for the third year of the project (01/05/2021 - 31/07/2022 –)

Task 9.1 Exploitation and IP Management (M12-M39) Leader: ETRA.

Contributors: UPVLC, THALES, TNO, ŁUKASIEWICZ-PIAP, CATEC, RISE, E-LEX, VAS, CEL

Overall Work progress for the task: 100%. The task focused on the definition, creation and exploitation of routes and strategies to take all ASSISTANCE results to the market, while protecting their IP. The main actions performed under this task include:

- Review results generated by the project and IP protection strategy. Discussions with business partners and research partners to identify the most promising results considering a commercial product perspective – 10 Key Exploitable Results (KERs) were identified.
- A questionnaire was prepared by the task leader, where all KER owners provided information regarding the exploitation strategy, including problem addressed, alternative solutions, unique selling point, value proposition, target market and early adopters.
- A questionnaire was prepared by the task leader, where KERs were rated based on end-users' interest in the further development of the solution and the product commercialization.

- Involvement in the EC Horizon Results Booster programme under Service 1: Portfolio Dissemination & Exploitation Strategy (PDES). Under the scope of this task, the consortium participated in the Module C with the goal of improving the exploitation strategy with the support of external experts. The top 5 KERs rated by the end-users were further analyzed and the expert provided recommendations to the KER owners. Interviews and a final seminar were conducted with the owners of the most promising KERs to discuss on possible next steps after project end.
- A final exploitation event during the pilot demonstration in Linares. Various end-users in Spain, not included in the consortium, were invited to attend the demonstration including Valencia Local Police – also representing the RESPOND-A project. They also had the opportunity to discuss with the technical partners and understand the value added by each of the technologies developed during the project, therefore promoting customer demand and encouraging a future uptake.

Specific contribution from ETRA: Leading the task for all actions described above, as well as collecting, processing and consolidating inputs from partners to generate ASSISTANCE Final Exploitation strategy, to be reported in D9.6.
Specific contribution from ŁUKASIEWICZ-PIAP: Inputs to deliverable D9.6 regarding Key Exploitable Result.
Specific contribution from the rest of the partners participants: Provided information about their individual exploitation roadmap for implementing the actions described above.

Task 9.2: Dissemination and Communication of Project Results (M1-M39) Leader: ŁUKASIEWICZ-PIAP.
Participants: ALL partners

Overall Work progress for the task:

The role of this task is to update and implement the dissemination plan for communicating and promoting the project and its findings.
During the period the task 9.2 progressed with the performance of the following actions:

- Updates of the project public website and social media accounts (Twitter, LinkedIn) with the most important news and events related to the project,
- Release of the project videos (published via the YouTube platform at : https://www.youtube.com/channel/UCh_nnrxpMA_o55OMM9z8gDw) – technical videos prepared by partners for Review Meeting, videos from project pilots,
- Preparation and release of the 2nd and 3rd issue of the project newsletter containing the update summaries of the second and third year of its execution, including accomplishments of the project milestones and completion of deliverables,
- Preparation and submission of deliverable D9.3 that reports in detail on communication and dissemination efforts of the project until month 18,
- Preparation and submission of deliverable D9.5 that reports in detail on communication and dissemination efforts of the project in the second half of its execution,

- Uploading materials to the ZENODO community to enable full Open Access to all publishable project results,
- Participation in Horizon Results Booster service Module A and Module B,
- Management of the Communication & dissemination activities collector sheet that serves for better coordination and reporting of the various communication and dissemination efforts of different partners,
- Numerous communication and dissemination activities performed by project partners, such as:
  - Preparation/presentation/submission of 7 research papers (ISCRAM 2021, Applied Siences, Revista Europea de Derecho de la Navegación Marítima y Aeronáutica, SSRR2021, IHSED 2021),
  - Attendance/project presentations/research papers at 15 large events (conferences/trade fairs eg. INGENIADRON 2021, DRONExpo 2022, International Association of Fire Safety Scientists (IAFSS), DroneTech WorldMeeting 2021, SSRR2021 2021 IEEE International Symposium on Safety, Security, and Rescue Robotics, Emergency Nurses Association (AHEMDER) 1st International 6th National Emergency Nursing Congress, IHSED 2021, 3rd International Izmir Democracy University Medical Congress (IMCIDU 2021)),
  - Over 80 Internet/social media activities – Tweets, posts or news items on project website and partners websites/social media accounts,
  - Organization and/or participation in over 10 workshops/seminars/webinars/meetings (e.g. Standardization Activities Workshop/Webinar for DRS and CIP projects, CERIS events, International Medical Congress, Bakırcay Smart University Workshop, JPAL),
  - 7 media/press releases (e.g. ABC magazine, Generalitat Valenciana webpage, elperiodic.com, Valencia News, Levante-El Mercantil Valenciano),
  - Several activities targeted at clustering and liaison with other initiatives (e.g. NO-FEAR project workshop on training in disaster medicine, INGENIOUS 1st International Workshop on "Tools for the First Responder of the future", FASTER stakeholders meeting scientific and practical Seminar, FASTER Exercises, FASTER Role Playing Game, Horizon Results Booster Module B meetings),
  - 2 master's theses on designing human-agent teaming for First Responders and designing adjustable work agreements for hybrid intelligent disaster management.

Specific contribution from the partners participants: All partners contributed to the overall project dissemination and communication activities as described above.

Specific contribution from ŁUKASIEWICZ-PIAP: Lead the preparation of D9.5 Final Dissemination Report, prepared three issues of the project Newsletter, continuously updated the project webpage and social media (including promotion of the project pilot demonstrations), assisted in preparation of the movies documenting project pilots, assisted in proceeding of the Open Access publications, participated in Horizon Results Booster service Module A and Module B.

Specific contribution from ETRA: Monitoring and curating dissemination and communication releases at ZENODO community.

Task 9.3 – Standardisation (M24 – M39 - Leader: RISE

Contributors: ŁUKASIEWICZ-PIAP, UC

Overall Work progress for the task: This task was not officially scheduled to begin until M24 but work started on it during M18 in recognition of the rather long time-frames associated with standardisation processes. The work was completed in M39 and reported in D9.6.

Work performed: An online kick-off meeting was held in M18, in which all partners (especially the end users) were encouraged to provide input regarding the standards their existing situational awareness equipment complies with so that interoperability issues can be avoided. The standards needs and knowledge of the ASSISTANCE partners was assessed via emails, a standards workshop, and questionnaires. The past and present activities of similar projects were analysed. Based on input from project partners, existing standards and pre-standardisation activities that could provide support to the exploitation of the technologies developed during the project were identified and brought to the attention of the appropriate partners. Together with the Task 9.4 leader (ETRA), RISE (representing the ASSISTANCE project) joined a CEN Workshop Agreement hosted by the STRATEGY project that is developing a pre-normative standard document on "Collaborative Emergency Response – Communication and sharing of operational information among multiple public safety agencies". This activity will extend beyond the end of the ASSISTANCE project.

Partner contribution from ŁUKASIEWICZ-PIAP: ŁUKASIEWICZ-PIAP assisted in preparation of the Standardisation Activities Workshop/Webinar for DRS and CIP projects, as well as planning the work of T9.3 and reviewed the final reporting text.

Partner contribution from UC: UC assisted in planning the work of T9.3, and collaborated in the workshop performed by providing the registration. As well UC created, managed, and analysed the results of the questionnaires sent to the ASSISTANCE partners to collect input about their standards needs.

Task 9.4: PCP, PCI preparation and Business Plan application (M12-M39) Leader: ETRA

Contributors: THALES, ŁUKASIEWICZ-PIAP, VAS

Overall Work progress for the task: 100%. The task focused on the elaboration of a detailed roadmap for preparing both a Pre-Commercial Procurement (PCP) and a Public Procurement of Innovation (PPI) of the main ASSISTANCE solutions. For this, a competitive benchmark analysis was performed, as well as the business models and commercialization strategy necessary to transform the project results into real products through the mechanisms mentioned. The main actions performed under this task include:

- A PCP and PPI awareness workshop was conducted to raise awareness about such processes among ASSISTANCE end-users. An external partner with vast experience was engaged in the process and provided valuable knowledge about the benefits of PCP and PPI processes. AAHD, who is actively working on the iProcureSecurity PCP, also contributed with its expertise. The workshop was recorded and provided to the whole consortium to deliver the necessary information to move forward with the solutions after the project.

- A Business Model Canvas was developed for the market uptake of both the ASSISTANCE Situational Awareness Platform (SAP), including all modules, and the ASSISTANCE Advanced Training Network (ATN), considering each individual partner exploitation plans.
- A commercialization strategy was developed, incorporating a risk analysis based on market barriers and relevant mitigation measures for both the solutions described in the point above. The strategic steps for reaching commercialization were developed based on the preliminary plan defined in D9.2 and the feedback from end-users under D7.6, which was used to define a set of tasks required to reach the market-ready product.
- A financial analysis was performed in line with the commercialization roadmap to evaluate the viability of the commercialization scenario.
- ETRA performed major revisions of the deliverable D9.6 and populated it with all the information gathered from KER owners in the last months. These include all project results, Key Exploitable Results information, exploitation strategies and business plans.
- ETRA produced the deliverable D9.6. These included all project results, Key Exploitable Results information, exploitation strategies and business plans.
- A detailed roadmap for preparing the ASSISTANCE PCP and PPI was developed. A High-Level assessment of user needs and requirements, as well as workplan, was performed based on a strong collaboration with D7.6 responsible. Such planning will be the basis for ASSISTANCE end-users when preparing the tender.

Specific contribution from ETRA: Leading the task for all actions described above, as well as collecting, processing and consolidating inputs from partners to generate the information contained in deliverable D9.6.

Specific contribution from the rest of the partners participants: Provided information about their individual exploitation roadmap for implementing the actions described above.

1.1.5.4 Deliverables and milestones planned for the period in this WP

Deliverable number/name	**S2R TD/WA addressed**	**Link to Exploitation Plan**
D9.5 Final Dissemination Report	T9.2	NA
D9.6 PCP and PPI preparation Plan for Commercialisation and Market Entry	T9.1, T9.3, T9.4	Release of ASSISTANCE Final Exploitation Plan

Table 6 Deliverables submitted in WP9 during the third year of the project

1.2 Impact

The expected impacts stated in the DoA are currently absolutely valid and they have been accomplished according to the schedule. The major impact stated in the proposal, which can be seen below is also the main project objective and it has no need to be updated at all.

- ***The major impact of ASSISTANCE will be to help and protect different FRs organizations and training them in order to increase their capabilities and efficiency for facing large disasters (natural or man-made) in a more secure manner***

With respect to the specific impacts stated in the call:

- **Novel tools, technologies, guidelines and methods aimed at facilitating their operations.**
- **New knowledge about field-validation of different tools, technologies and approaches involving first responders in (real-life) scenarios**

The project developments, including the advanced training, and the three project pilots' demonstrations already cover completely these impacts and therefore the information included in section 2.1 regarding these expected impacts is still valid and does not need to be updated.

1.3 Status Collaboration Agreement/s

ASSISTANCE project is included in a DRS02 projects cluster composed mainly by the DRS02 projects funded in the 2018 call. INGENIOUS, CURSOR, ASSISTANCE, RESPONDRONE and FASTER. Other DRS02 projects for other calls are also joining to this cluster.

Several on-line and face to face workshops were held during the third project year (e.g. the INGENIOUS 1st International Workshop on "Tools for the First Responder of the future"_24 May 2022_Hybrid or the NO FEAR network of practitioners' workshop 22-24/05/22) where ASSISTANCE participated and was presented.

During these events different consortium members exchanged experiences and future plans. Special focus was put on how the pandemic is affecting the projects developments and how each project foreseen the final demonstrations.

2. Update of the plan for exploitation and dissemination of result (if applicable)

The dissemination and exploitation plans were updated in M12 through D9.2. On the other hand, due to COVID 19 pandemic, there has been a reduction in the attendance of live events and also on papers submission. No updates have been performed during the last year of the project. The final release of the exploitation plan is reported in D9.6

3. Update of the Data Management Plan (if applicable)

NA in this period.

4. Deviations from DoA (if applicable)

Deviation 1

During the different financial QRs processing, it has been detected that RISE has increased its manpower stated in the DoA by 12,8 PMs (13,1% of their manpower), but according to the RISE responsible contact, maintaining their budget.

Explanation

The main reason that RISE appears to be significantly over the agreed budget of 43,5 person-months is that there were unavoidable personnel changes at RISE that required several people that have a lower salary to work on the project instead of fewer people with relatively higher salaries. Related to this, additional personnel were assigned to evaluate the AR/VR training in WP6 and a team of technology usability evaluation specialists became available and made substantial contributions to the work in WP7, especially during the extra 3 months that the project was extended.

When accounting for the budget spent in terms of PMs, it appears that RISE is putting much more time into the project than originally agreed. This is true; however, in terms of money, RISE is only over the agreed budget by roughly 3 %.

A side effect of this situation is that the European Commission gets more high-quality work without spending more money for it.

Deviation 2

During the different financial QRs processing, it has been detected that THALES has increased its manpower stated in the DoA by 7 PMs.

Explanation

Justification of the 7PM of deviation for TRT :

1. Lionel Gayraud left the Thales group in the end of 2021, so new people start to learn the inner working of the AI algorithms implemented by Lionel in order to finish the module and be able to deploy it for the pilots
2. Less experienced people than expected work on WP7 and WP9 so it takes more time for them to complete their tasks

Note that if there is a deviation of 16% of the PMs (+7PMs), there is only a very slight deviation on the total cost because less experienced people have a lesser cost per hour.

Deviation 3

UPV has spent 12,5 PMs more than expected, which is 11,5% more than expected.

Explanation

This extra manpower has been mainly spent in WP7 due to the 3 months extension for performing the pilots where several persons have been contracted by UPV during the last part of WP7 (6 PMs). In addition, extra manpower was needed also at the beginning of WP7 due to the difficulty of the

online modules' integration (2,7 PMs). Also, the overall coordination of the project, especially during the pandemic including pilots' preparation has generated extra effort (1 PM). Finally, an extra PM was spent in WP6 for preparing the VR scenarios (1PM).

Deviation 4

The project was extended 3 months due to Covid 19 situation in order to be able to perform the project pilots in face to face meetings with the whole consortium. This deviation was discussed and agreed with the PO.

Explanation

Due to the different Covid 19 waves all over Europe it was not possible to perform the project pilots in the dates stated in the DoA. For this reason, an amendment was signed with the EC mainly for a project extension of 3 months and also for the extension of the effected deliverables also by 3 months.

Deviation 5

During the different financial QRs processing, it has been detected that CATEC has increased its manpower stated in the DoA by 18,94 PMs.

Explanation

There are two main reasons for claiming more efforts than those initially planned.

The first and key reason is related to the extension of the project and the fact that most experimental validation and final adjustments of the technological developments took place near the end of the project life, previous to each of the three pilot demonstrations since FADA-CATEC has participated in all of them, but much more significantly in the last one. These testing campaigns involved many days and people working on the project activities, including drone safety pilots, technicians and engineers. There was a large team for achieving the multiple developments: the interception of the malicious drone that involved two platforms, the surveillance drone, and finally the swarm that involved up to four aircraft. Apart from these technological developments, the integration of all the generated data with the SAS had to be tested and validated, and also the live streaming of high-resolution video to ground equipment for visual feedback at the control room.

The second reason is related to the execution of the third pilot, where FADA-CATEC had a leading role in its logistics and organization, apart from taking part in the technical demonstrations. The organization of such an event, involving nearly 80 people among partners, end-users and external visitors, also implied more efforts for carrying out the associated activities (provide gazebos, local transport, manage accommodation, food, social event, provide power supply in open field and Internet connection, or media coverage).

Nevertheless, the CATEC budget has not been increased due to this extra manpower spent, since low rate salary personnel were in charge of different activities during the project extension.

Deviation 6

During the different financial QRs processing, it has been detected that ŁUKASIEWICZ-PIAP has increased its manpower stated in the DoA by 50,39 PMs.

Explanation

This deviation was already detected in year 2 and the PO was informed by ŁUKASIEWICZ-PIAP on this fact explaining the reasons for this deviation. The deviation was accepted by the PO after checking the ŁUKASIEWICZ-PIAP explanation. This explanation is detailed in D1.7.

Deviation 7

During the different financial QRs processing, it has been detected that CEL has increased its manpower stated in the DoA by 17,72 PMs.

Explanation

JUSTIFICATION OF DEVIATION	
Effort in pm according to DoA	17.50
Direct personnel costs according to DoA (in k€)	105.605
Other direct costs according to DoA (in k€)	17.325
Total direct costs according to DoA (in k€)	122.930
Actual estimated effort in pm	35.22
Actual estimated personnel costs (in k€)	117.70860
Actual estimated other direct costs (in k€)	5.86115
Actual estimated total direct costs (in k€)	123.56975 (+0.63975)

CEL is aware of the mostly doubled effort spent in the ASSISTANCE project w.r.t. plans from DoA, however, CEL continuously monitored the effort and the budget and it was always aware of respecting time, budget, outcomes and quality of results.

The current estimation of the budget exceeds the original budget of 639.75€, however, this estimation is not considering corrections due to vacations of the personnel during the period of July 2022. Therefore, reasonably, CEL will respect the original budget as per DoA.

An accurate analysis of the effort is reported in the table below, showing deviation per WP.

WP	WP Planned effort (DoA)	WP Actual estimated effort
1	0.50	1.10
2	0.50	1.13
7	0.50	0.42
8	14	31.99
9	2	0.58
Total	17.5	35.22

4.1 Tasks

Deviation ref. number	WP & Task Nb	Description	Reason	Impact on the use of resources, allocation of PM etc.	Impact on the planning	Impact on other tasks	Impact on S2R TD/WA addressed	Mitigation action and deadline
4	WP6 to WP9	Project 3 months extension	(Check explanation of deviation 4 for more details)	NA	All project activities pending were delayed for 3 months	None	NA	NA

Table 7 Deviations detected that affect concrete tasks

4.2 Use of resources

See section 4 for checking explanations on deviations of the use of resources between actual and planned use of resources in Annex 1, especially related to person-months per work package.

According to the PO instructions, the following table shows the PMs declared till 31 of July 2022 and the expected manpower for each partner. It is important to note that the calculation of the expected manpower is not exact, since some partners have just estimated their manpower, especially for July 22.

Partner name	PM expected	PM reported till July 22*	Significant deviation found
1 UPV	106	118,5	(See deviation 3)
2 ETRA	85	87,17	
3 THALES	42	49,04	(See deviation 2)
4 AVSRE	19	13,35	
5 ŁUKASIEWICZ-PIAP	78	128,39	(See deviation 6)
6 CATEC	78	96,94	(See deviation 5)
7 TNO	31	31,23	
8 RISE	43,5	56,99	(See deviation 1)
9 IFV	31	31,07	
10 UC	50	54,9	
11 GB	35	38,3	
12 AAHD	42	42,25	
13 MIR-PN	16	16,5	
14 VAS	39,5	40,56	
15 e-LEX	16	16,02	
16 SBFF	29	27,9	
17 OSPOM	35	31,80	
18 CNBOP	39	40,51	
19 CEL	17,5	36,5	(See deviation 7)

Table 8 Updated effort of the partners till end of July 22

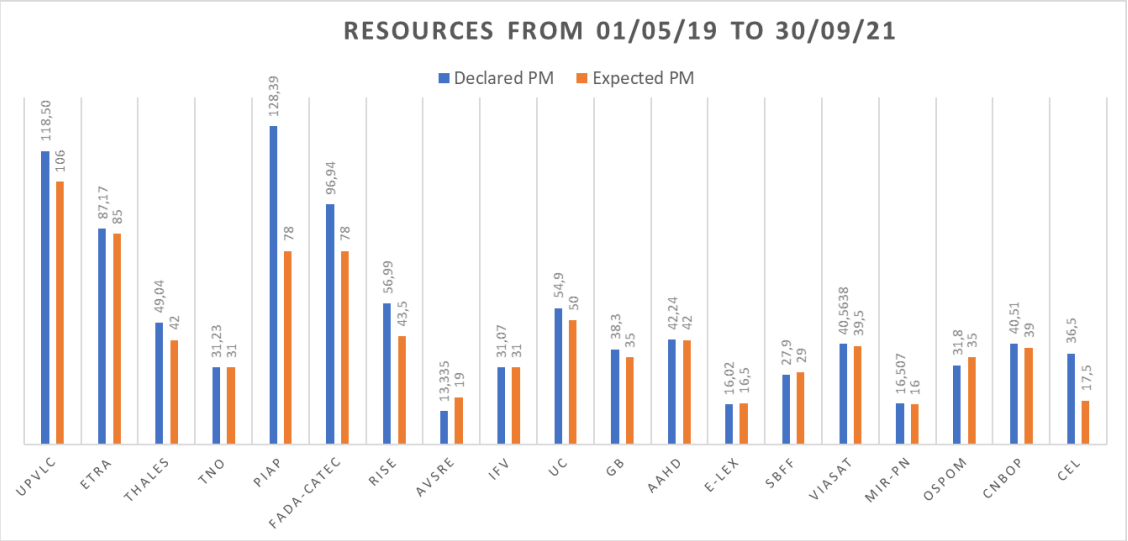

Figure 1 Graphical representation of the use of resources per partner.

4.2.1 Unforeseen subcontracting (if applicable)

No unforeseen subcontracting has been performed during the third year.

4.2.2 Unforeseen use of in kind contribution from third party against payment or free of charges (if applicable)

No unforeseen use of in-kind contribution has been performed during the third year.

5. Meetings organized and attendance

The three project pilots have been organized during the last year of the project. For the first one performed in Izmiz during January 22, the attendance was voluntary due to the high incidence of Covid 19 during that time. For the other two pilots the whole consortium attended the pilot sites.

No more face to face meeting have been organized.

All the rest of the plenary or technical meetings organized during the third year have been on-line.