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Related Documents:

This report and others are available from the **ANYWHERE** Project Website at:
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Summary

ANYWHERE (www.anywhere-h2020.eu) is a H2020 innovation action that proposes an operational **Multi Hazard Early Warning System (MH-EWS)** for climate emergencies able to translate the most advanced meteorological forecasts into **Impact forecasting products** (see <http://anywhere-h2020.eu/our-vision/catalogue-products>).

This **impact forecasting concept** of **ANYWHERE** is an **innovation disruption in the field of Civil Protection and Emergency Management**. Thus, AI is used to integrate the **hazard forecasts** served by the **MH-EWS** with **high-resolution local impact models** (like PROPAGATOR in the case of wildfire propagation, the FF-EWS flash-flood impact indicator, the EFAS flood awareness products or the snow impact forecasts on roads, among many others) automatically combining them with the **regional layers of exposure and vulnerability in the emergency command centres (EMCs)**. All this information, usually available but not interconnected, is now processed in the multi-risk decision support platform **A4EU (ANYWHERE for Europe**, see <http://anywhere-h2020.eu/services/multi-hazard-early-warning-platforms/a4eu>), to **automatically identify the affected critical points**, including their characteristics and location, and other advanced services designed to allow the emergency response operational staff to **focus on local IMPACTS**, not necessarily focusing on the details of the meteorological forecasts and triggers, **selecting the most vulnerable locations** (i.e. Schools, Train stations, Hospitals, Seveso facilities, etc.) instead of vast regions, supporting them to magnify their response capabilities.

These systems have been verified, tested and operationally demonstrated in **7 Emergency Management Centres covering all the climatic range in EU during more than one year** (see <http://anywhere-h2020.eu/services/multi-hazard-early-warning-platforms/a4eu/pilot-sites>), showing excellent results in a number of events, some of them over 50-year return period. The collected experiences have been presented as success stories in the **ANYWHERE** final Workshop held in Brussels (October 2019, see <http://anywhere-h2020.eu/final-conference/video-recording>) showing the **huge innovative potential of the ANYWHERE real-time implementations**.

These success stories have been completed by the operational implementation of the **ANYWHERE** tools to trigger automatic warnings to **activate self-protection plans**. They include the **A4Campsites, A4Snow, A4Schools** and **A4Grids** (see <http://anywhere-h2020.eu/services/self-preparedness-and-self-protection-tools>) as well as the municipal version of the platform, **A4Cities**.

The most important success of **ANYWHERE** is to have supported the participant EMCs to **move towards a “new paradigm”: transforming the emergency response from reactive to proactive** (starting before that the emergency occurs) thanks to the **ANYWHERE high-resolution impact forecasts** integrated in the **A4EU** platform, which allows a **better management of the emergency and a significant reduction of damages**. Success that has been achieved thanks to the **ANYWHERE co-creation and co-ownership concept**, allowing the **users’ needs and expertise to guide the entire innovation process, from the design to the implementation and the operation**.

This report describes the work carried out by the project consortium during the RP3, from December 2017 to January 2019.



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1 Explanation of the work carried out by the beneficiaries and Overview of the progress

1.1 ANYWHERE Objectives

The ultimate purpose of the **ANYWHERE** project is to empower responder institutions and exposed people to **enhance their anticipation and pro-active capacity of response to face extreme and high-impact weather and climate events** through the use of cutting-edge innovative technology as the best way to enhance citizen's protection and saving lives.

ANYWHERE has been designed as an **INNOVATION ACTION** seeking to fulfil its objectives integrating existing **current and new measures** and technologies not yet available in the market to **enhance the capacity of responder institutions and people exposed to high-impact and extreme weather and climate events**.

The project includes the design and implementation of a new Pan-European Multi-Hazard Early Warning System (**MH-EWS**) based on the operational experience of the partners running existing single-hazard ones, the improvement of forecasts and the development of new products, processes and associated services, as well as the implementation of a prototype of a highly customizable decision support system (**A4EU**) able to integrate the responders' local needs.

Thus, the products and services generated by the **MH-EWS** are the key to provide anticipation and to support more effective response during emergency events. **ANYWHERE**.



1.2 Summary of the work carried out

The major effort carried out during this RP3 has been related to the **7 operational pilot site demonstrations**. These testing activities have been complemented with the elaboration of the feedback from the users to prepare the final Deliverables summarizing the lessons learnt and providing recommendations for improvement and guidelines for the extension of the present tools to other Emergency Management Centres.

In this framework, the **major achievements fulfilled during the RP3 are:**

- The **7 prototypes of the A4EU** platform have been successfully operated in real time, up to **October 2019** in the pilot sites (**WP4** and **WP6**).
- **15 Deliverables and 3 Milestones have been achieved** (see Table 1 and Table 2 below).
- Four **ANYWHERE** tools to trigger automatic warnings **to activate self-protection plans** have been also tested in the four case studies of **WP5**. They have been also demonstrated in the Final Workshop live exhibits.
- **Three assessment and decision support tools and a crowdsourcing integration tool** have been implemented on the **A4EU** platform in **WP4** to improve the capacity of reactions in case of emergency. They have been integrated in some of the pilot sites and tested during the operational demonstrations (**WP4**).
- A first **hands-on training activity for stakeholders** was organized in March 2019 (**M34**) at the Spanish Civil Protection School with 70 attendees. A second **Hands-on demonstration** was organised in Brussels on 29 October 2019 (**M41**), with 157 attendees (**WP8**).
- The **Final ANYWHERE Workshop** was successfully organised in Brussels on 30 October 2019 (**M41**). A total of **214 participants from 25 different countries** attended the sessions and the exhibits. Especially remarkable were the presentations of success stories by the pilot sites representatives based on real emergency events registered during the previous months as well as the live exhibits of the operational tools (**WP8**).
- During the RP3, a total of **335 dissemination / communication activities** have been carried out by the project partners, involving a variety of actions performed. The **face-to-face communication and dissemination activities promoted** (not considering social media, visits to the website or the press broadcasts) by the **ANYWHERE** project **reached an audience of 7,399 people**. Thus, the impact of the **ANYWHERE** communication and dissemination actions **increase to 150,570 during the RP3** when **taking into consideration mass and social media and website visits** (**WP8**).
- Among them, the participation in the **SRE2019 exhibition** (DG-HOME & DG-ECHO), in two **CoU meetings** (DG-HOME) and a presentation at the **8th EU-Japan Workshop on Climate Change Research** (DG-RTD) (**WP7** and **WP8**).



- **A set of six new ANYWHERE videos** have been sketched and produced (accessible at <http://anywhere-h2020.eu/videos-page-1>, and in the YouTube channel <https://www.youtube.com/channel/UChx4MC8ypodvKMT-NU2D1Xg/videos>, **WP8**).

1.3 Status of Milestones and Deliverables

During this RP3, **15 Deliverables and 3 Milestones have been achieved** (see Table 1 and Table 2 below).

The majority of Deliverables of RP3 have been submitted in delay of few months for essentially two reasons:

- To include the last results compiled in the Pilot Sites (delayed up to October 2019, **M41**).
- Due to the interest of including the feedback gathered during the discussions at the **ANYWHERE** Final Workshop held at the end of October 2019 (**M41**) in Brussels. With this purpose, the submission of the final version of the majority of these Deliverables have been delayed up to December 2019 (**M43**).

Finally, Deliverable **D9.4** (this Final technical report), even if in the DoA has its submission date in M43 (end of the project), is submitted after the 60 days of period allowing us to compile the results and prepare the Final Reports, and is submitted at the end of February 2020 (**M45**).

Table 1: List of Deliverables during the 3rd Reporting Period.

Del. No.	Deliverable name	WP no.	Lead Part. name	Est. PMs	Type	Dissemination level	Delivery date
D7.2	Business Plan Report by Market Segment (B2G, B2B, B2B2C).	WP 7	UPC	27,5	R	CO	M40 (originally M34)
D2.5	Final report describing: (i) robustness of algorithms under worst-case climate projections, and (ii) methods implemented to characterize the uncertainty inherent in the hazard and impact forecasting algorithms	WP 2	UNIGE	52,13	R	PU	M43 (originally M37)
D5.2	Report describing the products, services and results of the 4 case studies in Tasks 5.3-5.6	WP 5	RINA	71	R	PU	M42 (originally M38)
D7.3	Final report on the Business Hub development, validation and tests	WP 7	AIRBUS	7	R	PU	M43 (originally M38)
D4.5	A4EU systems (A4Finn, A4Alps, A4Cat, A4Lig, A4Nor and A4Cor) final versions and performance assessment with focus on the comparison between the different A4EU systems' capabilities and functionalities.	WP 4	AIRBUS	58	R	PU	M42 (originally M40)
D5.3	Report on best practices and strategies for innovative self-preparedness and self-protection and the summary of lessons learned from case studies	WP 5	UPB	34	R	PU	M40 (v1) M43 (v2)
D3.4	MH-EWS final operational prototype and final test results	WP 3	HYDS	82	DEM	CO	M43 (originally M41)



D7.4	Innovation Exploitation Plan	WP 7	RINA	43,5	R	CO	M43 (originally M41)
D1.4	Results of the co-evaluation of the ANYWHERE tools, products and services on the pilot sites	WP 1	UFZ	80	R	PU	M43 (originally M42)
D6.4	Report compiling the conclusions and the recommendations of the users in the use of the A4EU systems implemented in each pilot site	WP 6	INTC	75	R	PU	M41 (v1) M43 (v2)
D6.5	Final report compiling the results of the A4EU operations in each pilot site	WP 6	CIMA	105	R	PU	M43 (originally M42)
D8.3	DVD with the produced videos.	WP 8	UPC	7	DEC	PU	M43 (originally M42)
D8.4	Final report on Dissemination and Communication activities	WP 8	UPC	68,5	R	PU	M43 (originally M42)
D9.3	Final supervision report from the Advisory Board and final recommendations	WP 9	UPC	16	R	CO	M42
D9.4	Final Technical report	WP 9	UPC	42	R	CO	M45 (originally M43)

Table 2: List of Milestones during the 3rd Reporting Period.

Mil. No.	Mil. Code	Milestone name	Related WP	Lead Part.	Date	Means of verification
MS 23	M8.5	Training School at ENPC (Madrid)	WP8	DGPCE	M34	Training School held
MS 9	M7.7	Presentation of the Revenue Sharing System on the 8 th Project Meeting in Leipzig.	WP7	UPC	M36	Presentation of the approved Revenue Sharing System
MS 24	M8.6	Final Training and Workshop held in Brussels	WP8	UPC	M42	Conference held

1.4 Critical risks encountered and corrective actions activated

The critical risks faced during the RP3 and the corrective actions activated are described below.

1.4.1 One or more partners of the project underperforming

During RP3 underperformance of partner AIRBUS has been again noticed mainly in **WP7** in which they have not contributed to the real work that has been done. They have produced **Deliverable D7.3** without any connection with the rest of the project partners, which clearly shows this underperformance.



1.4.2 Some partners declaring not having enough resources to complete their tasks

As a consequence **of applying the Recovery Plan** to overcome the accumulated delays caused by the underperformance of AIRBUS and achieve the project objectives, an **increase of efforts in WP4, WP6, WP7 and WP9 was required**.

By decision of the GA of March 2018, these partners will have priority to receive EC funds to cover these extra efforts in case other partners underspend (justify less eligible costs than foreseen) during the project.

Once the Final Financial Statement will be approved by the EC-REA, the Executive Board will make a redistribution of the potential funds available **to reduce the impact on the partners assuming the main part of these extra costs**.

1.4.3 Some resources not being used adequately

As described in the RP2 Technical Report, partner AIRBUS presented a declaration of resources that showed an unacceptable overestimation of the eligible costs that was not proportional to the efforts that the partners having developed similar prototypes declared for a supposed similar work. Overestimation that has not been justified in the RP2 technical report either.

As AIRBUS did not accept to accommodate their RP2 financial statement to the work really delivered in the project, an **Extraordinary Report on the Non-conformity of the Eligible costs declared by partner AIRBUS in RP2** was sent to REA on 25 August 2019 (**M39**).

After evaluation by external experts, REA notified on 19 September 2019 (**M40**) the details of the accepted eligible costs as well as the costs rejected in RP2 providing 30 days to request a payment review procedure, if applicable, period that expired without any request.

In particular the FINANCIAL STATEMENT ASSESSMENT SHEET FOR PARTNER AIRBUS included *rejected personnel costs equal to 327.235,02 €*. (see ANNEX II: RP2 Financial Statement Assessment for partner AIRBUS accepted by the EC)

Unfortunately, this issue seems to be reopened again, and at the moment of the submission of this report **AIRBUS has presented a RP3 financial statement in which it includes largely overestimated adjustments for the RP1 and RP2 (209.2733,51 € for RP1 and 589.134,27 € for RP2, see details in ANNEX III: RP3 Financial Statement for partner AIRBUS as it is uploaded at SyGMA website including adjustments for RP1 and RP2)**. These are unjustified adjustments that seem like a trial to find a back-door to supersede the decision of the European Commission regarding the rejection of part of their declared eligible costs in RP2.

At the time of elaborating this report we are still evaluating all the available information, that will be presented to the next meeting of the Executive Board next 4 March 2020.

In case that the exorbitant costs reported may be again confirmed as unjustified, the Coordinator will present a new claim to REA regarding the financial statement of AIRBUS for RP3.



1.4.4 Unforeseen critical risks

1.4.4.1 Some partners unable to submit their financial report in due time

At the day of the deadline for the first submission of the periodic report (1st March 2020), some partners have not been able to complete their financial statements since the requested CFSs cannot be closed.

This is mainly related to the fact that being the RP3 Review Meeting after this deadline (on 5 March 2020), the inclusion of the travel expenses related to the participation on the review meeting cannot be included up to some days after the end of the trip.

After some discussion some of them have uploaded a dummy PDF file instead of the actual completed CFS (that is compulsory for finalise the submission). This temporary document will be replaced by the completed one once the travel expenses to the review meeting will be audited and incorporated.

However, further to the partners concerned by the participation in the Review Meeting, three partners more (the SMEs RAB and ARANTEC) have not been able to complete the financial statement in due time.

Thus, the reporting session will be submitted on Monday 2 March even if not all the partners have fully completed their Financial Statements. Then the Coordinator will send a request to the Project Officer to reopen the session once the Reviewer's report will be available to make the recommended improvements and to upload the definitive financial statements including the last travel expenses.



2 Explanation of the work carried per WP

2.1 WP1: Developing a framework for innovation co-ownership (Leader: UFZ)

The work performed in **WP1** during the 3rd Reporting Period (RP3) focused on **Task T1.5**, i.e. the application of the co-evaluation methodology previously developed in **Task T1.4** at all **ANYWHERE** pilot sites.

2.1.1 Main advancements and achievements during the RP3

The main advancement during the RP3 was to master the challenge of applying the co-evaluation methodology to gather a helpful feedback from the pilot site demonstrations.

On one hand the co-evaluation framework had to be flexible enough to be adapted to the situation at the different sites given the site-specific context conditions, needs, preferences, expectations, and starting conditions, and on the other hand robust enough to rigorously compare the evaluation outcomes across the pilot sites. Site-specific Multi-criteria analyses were used for the assessments and results were not only discussed at site level, but also from a more general perspective. Deliverable **D1.4** summarizes the activities carried out in **Task T1.5**. At the end of the demonstration phase of the **ANYWHERE** platform some light could be shed not only on the overall performance of the **ANYWHERE** systems compared to the Legacy systems, but more specifically on the pros and cons, on what was achieved and in which aspect there is still room for improvement.

The overall analysis revealed that at each pilot site the **ANYWHERE** system outperformed the Legacy systems, i.e. overall supported the emergency management process in a better way than the existing systems (even though some versions such as **A4Alps** and **A4Lig** less dominantly than others). Overall the **ANYWHERE** systems **performed better with respect to 14 out of 21 criteria**. They performed equally well with respect to 4 criteria and were inferior to the Legacy systems with respect to 3 criteria, i.e. trust, transparency of decision-making for insiders and supported languages adequacy (language support for all officially required languages). Regarding these 3 criteria it can be expected that given a continuous and increasingly intensive use of the **ANYWHERE** systems and updates for language support the perception of the end-users will also be more positive in the future.

2.1.2 Advancement in the Deliverables

Deliverables **D1.1**, **D1.2** and **D1.3** were already completed by the beginning of the reporting period. Deliverable **D1.4** was completed and submitted during this last reporting period (**M43**).

Deliverable **D1.4** has been submitted with 1 month of delay (from **M42** to **M43**) due to the efforts to include the feedback gathered during the discussions at the **ANYWHERE** Final Workshop held at the end of October 2019 (**M41**).



Table 3: Status of the advancements in the WP1 Deliverables at the end of the project (M43).

Deliverable	Title	Submission date	Progress status (in %)
D1.1	Report with the recommendations and feedback obtained from WORKSHOP 1.	M06	100%
D1.2	Report on needs and requirements from the users, society and how to address ethical, legal and environmental issues	M14	100%
D1.3	Report describing the methodology for the co-evaluation of the ANYWHERE platform A4EU at the pilot sites	M19	100%
D1.4	Results of the co-evaluation of the ANYWHERE tools, products and services on the pilot sites	M43	100%

2.1.3 Advancements per Task

During the RP3 only Task **T1.5** was active, being the previous ones finalised before.

2.1.3.1 Summary of Task 1.5 Application of the evaluation methodology to assess the benefit of the innovation implementations and its application during the Pilots

This task was completed during the third reporting period.

The co-evaluation methodology developed in **T1.4** was applied for six of the seven ANYWHERE pilot sites. Due to the level of maturity of A4Cenem, the first national level of the **A4EU** platform prototype, the co-evaluation was primarily focussed on the 6 regional pilot sites (the 6 originally planned).

The basic structure of the ANYWHERE co-evaluation methodology can be described by the following six steps:

- Step 1: Context analysis
- Step 2: Description of baseline and ex post scenario
- Step 3: Selection of indicators
- Step 4: Selection of evaluation method
- Step 5: Data collection
- Step 6: Data aggregation and analysis

ANYWHERE Deliverables **D1.1** (“Report with the recommendations and feedback obtained from the Workshop”) and **D1.2** (“Report on needs and requirements from the users”) are the basis for the context-analysis as well as the description of the general aspects of the baseline scenarios, i.e. the emergency management process at the pilot sites using the current system. The description of the ex-post scenarios, i.e. the specific set-up of the ANYWHERE systems at the pilot sites is presented in the Deliverable **D4.5**. Hence, the Deliverable **D1.4** (“Results of the co-evaluation of the ANYWHERE tools,



products and services at the pilot sites”), which compiled the results of the analyses conducted in **T1.5** focuses on steps 3 to 6.

Step 3: The performance of the **ANYWHERE** platform and the respective Legacy systems was assessed along the lines of the four impact areas “economic”, “social”, “technological” and “environmental”. For these impact areas corresponding “effects”, “criteria”, “sub-criteria” (if applicable) and indicators were specified. Pilot site partners rated potential criteria listed with regard to their suitability, i.e. ability of criteria to capture relevant performance aspects, and feasibility, i.e. data availability or possibility of data collection in the context of **ANYWHERE**. The determination of the final set of co-evaluation criteria was performed in an iterative way. Firstly, a pre-selection of criteria was conducted and presented at the **ANYWHERE** meeting in Bastia in June 2018. Secondly, based on bilateral consultations with the UFZ team a site-specific set of criteria was determined which formed the basis for the co-evaluation questionnaire. The results were presented at the **ANYWHERE** meeting in Barcelona in November 2018 and used to prepare the midterm co-evaluations at the pre-test sites in spring 2019. Thirdly, the actual (and not the expected) ability to collect data for each criterion and corresponding indicator determined the final set of criteria to be used at each pilot site.

Step 4: The different evaluation methods at hand were described in detail in the Deliverable **D1.3** (“Report describing the methodology for the co-evaluation of the **ANYWHERE Decision support in Emergency Management Operation Services platform (A4EU)** at the pilot sites”). A comparative appreciation of the different methods led to the conclusion that weighting the pros and cons of the approaches, acknowledging the properties of the performance data to be dealt with (scales, metrics, level of uncertainty) and reflecting the pre-conditions of the application of the various Multi-criteria approaches at hand the use of a probabilistic Multi-criteria outranking approach seemed to be most advisable.

Step 5: Once the Legacy systems and **ANYWHERE** systems were specified, performance criteria and indicators were selected and evaluation methods chosen the data collection process was initiated. A specific data collection strategy was determined for each pilot site. For every indicator capturing a single performance aspect of the **ANYWHERE** system and the Legacy system data was collected. Due to the lack of statistical performance data substantial shares of the information used for the co-evaluation was sourced through questionnaire-based expert interviews with operators and coordinators who were experienced in using the **ANYWHERE** platform. The questionnaire was pre-tested in the context of the midterm co-evaluation of **A4Finn** and **A4Cat** through personal on-site interviews. Based on the results of these pre-tests the questionnaire was revised. Data was collected through personal interviews at the end of the demonstration period, i.e. in September and October 2019. The UFZ team conducted the interviews for **A4Alps**, **A4Cat**, **A4Finn** in person on-site and for **A4Nor** via a 4 hours Skype conference. The UFZ team trained **ANYWHERE** partners of ECMWF and CFR to conduct the interviews for the co-evaluation of **A4Cor** and **A4Lig**. These partners also took part in the interviews for the assessment of **A4Cat** to ensure that the same interview routine is to be followed. The UFZ team assisted the interview in Liguria via Skype conference. Spanish partners filled the co-evaluation questionnaire to provide data for the very lean version of the co-evaluation of **A4Cenem**. This was prepared through an intense personal exchange beforehand. The



relative importance of the criteria was determined through an interactive exercise based on the revised SIMOS weighting technique. All filled questionnaires, documentations of the criteria weighting and other interview data was digitalised for further use. A database was compiled, which formed the basis for the statistical analyses as well as Multi-criteria analyses conducted.

Step 6: For all pilot sites, the results were presented in the following way: 1) General impressions (first impressions, experiences, main advantages/drawbacks); 2) Comparison of Legacy system and **ANYWHERE** system regarding a) the usefulness of relevant features of the emergency management systems, b) social and c) technical performance aspects; 3) Relative importance of the performance criteria weights from the perspectives of the operator and coordinator; 4) Overall results of the probabilistic Multi-criteria analysis, incl. a breakdown by criteria and as a sensitivity analysis (in the annex) results of separated Multi-criteria analyses for operators and coordinators.

Figure 1 shows how the **ANYWHERE** systems are performing across all pilot sites¹ and Figure 2 illustrates relative differences between the new and the existing systems. According to the evaluation of users, the new **ANYWHERE** systems perform better with respect to 14 out of 21 criteria, it performs similar with respect to four criteria and worse with respect to three criteria. It should be expected that regarding those 3 criteria improvements can be achieved as a consequence of a more intense use of the **ANYWHERE** system.

¹ Criteria are considered for which performance data is available for at least for 4 of the 6 regional pilot sites.

Performance comparison based on all criteria used by at least 4 of the 6 pilot sites

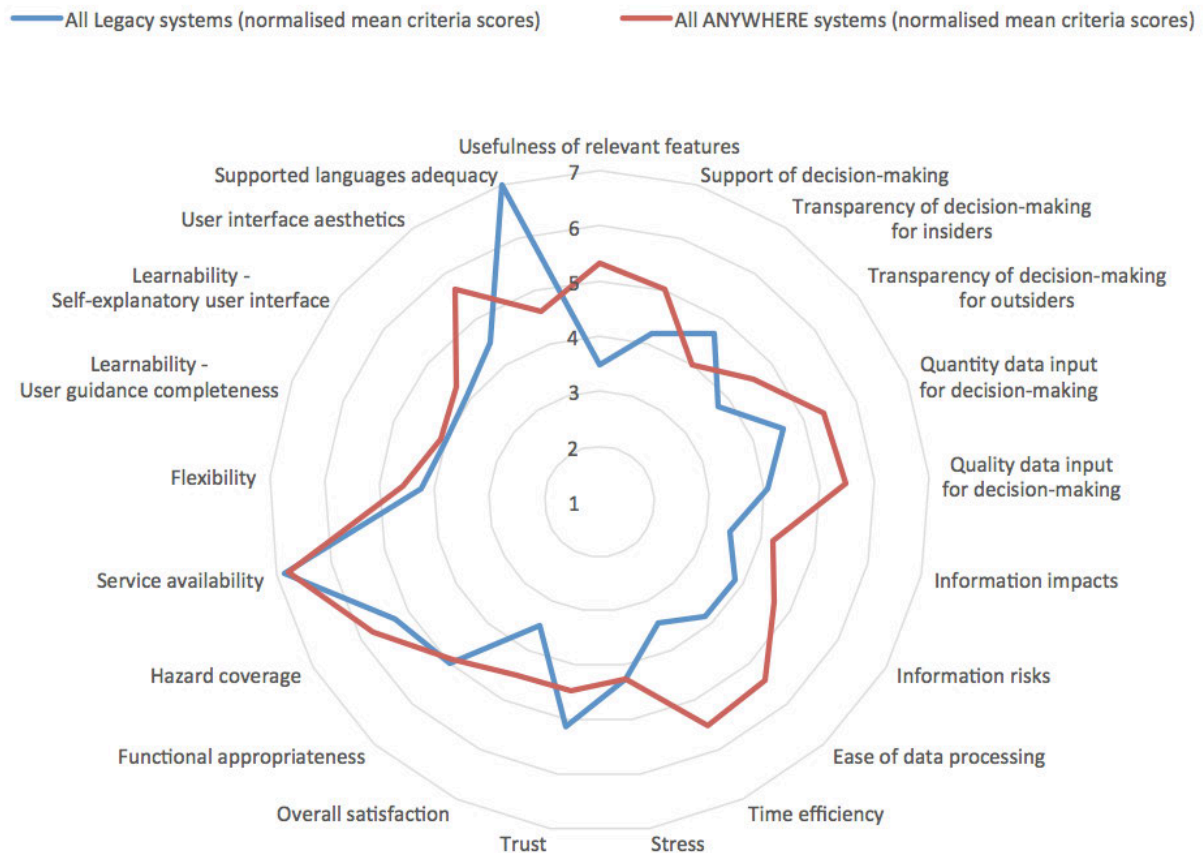


Figure 1: Performance comparison of ANYWHERE systems and Legacy systems: All criteria

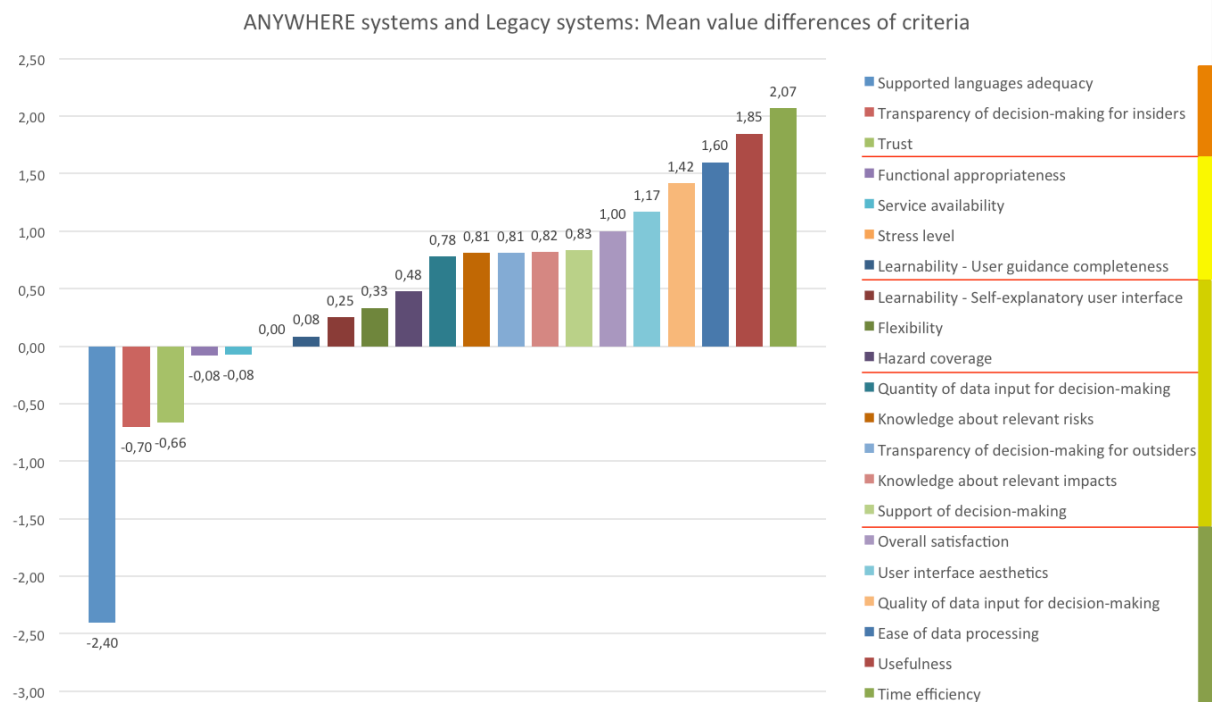


Figure 2: Performance comparison of ANYWHERE systems and Legacy systems: Mean value differences of criteria



2.1.4 Identification of difficulties and delays and actions foreseen

No major difficulties have been experienced during the RP3.

2.1.5 Deviations on the use of resources

All resources of **WP1** partners were used as planned. The only deviation from the plan was that DGPCE spent 4 PMs instead of 3 PMs on **WP1**-related activities. The reason for this extra expenditure was that after the training session in March 2019 DGPCE developed a separate validation questionnaire for the stakeholders testing **A4Cenem**, i.e. water agencies, 112 Valencia, Balears, Murcia and Andalusia, collected and analysed the data.

This effort can be justified as the co-evaluation activities in **WP1** primarily focused on the systems on the regional level, so that this additional analysis offers valuable insights for the operation of the **ANYWHERE** system on the national level.



2.2 WP2: Advanced forecasting models and tools to anticipate Weather and Climate impacts (Leader: WUR)

The main objective of **WP2** is establishing algorithms and tools to forecast the impacts of a broad spectrum of weather-induced natural hazards ranging from wet (e.g. floods) to dry (e.g. wildfires). These algorithms/tools have been connected to, or encapsulated in the operational Multi-Hazard Early Warning System (**MH-EWS**, **WP3**).

The algorithms/tools combine weather forecasts with radar products, which allow seamless blending to forecast and nowcast natural hazards with lead times from sub-hourly to seasonal (7 months). The hazards include riverine floods, flash floods, landslides, storm surges, wildfires, heat waves and air quality, droughts and other weather-related hazards (e.g. precipitation forms). About thirty algorithms/tools generate hundreds of hazard and impact forecasting products, and some of these even contain over tens of sub-products that address the probabilistic nature of the hazards. At the start of the current reporting period all algorithms/tools were running in real time and performance was assessed in the 24/7 demonstration of the **A4EU** platforms in the Pilot Sites (**WP6**), and several algorithms/tools were used for the uncertainty and robustness analysis at larger scales, including pan-European scale.

2.2.1 Main advancements and achievements during the RP3

WP2 advancements in the RP3 mainly focussed on the improvement and synthesis of knowledge on uncertainty of forecasted weather-related hazards, robustness under a future climate and compound hazards, as well as impact forecasting beyond the Pilot Sites, incl. the pan-European scale. The outcomes have been included in **Deliverable D2.5** that also analyses the operationalizability of algorithms/tools.

WP2 managed to establish algorithms/tools to forecast hazards induced by weather-induced events that were implemented in the operational **MH-EWS** (**WP3**), which once integrated in the **A4EU** platforms helped responder institutions and citizens to enhance their anticipation and pro-active capacity of response to face extreme and high-impact weather events (**WP5**, **WP6**). More specifically, weather and hydrological forecasts were tailor-translated to anticipate weather-induced impacts, incl. combining them with remote sensing products (e.g. radar) and other local information.

Advanced existing algorithms/tools that forecast impacts from hazards induced by extreme weather under prevailing geo-climatic settings across Europe were revised, partly newly developed and integrated to eventually be implemented in the operational **MH-EWS**. Uncertainty of algorithms/tools to forecast and nowcast natural hazard at different spatial and temporal scales beyond the Pilot Sites was described. Information on robustness of the outcome from part of the algorithms/tools under a future climate could be provided. Compound hazards (coinciding, cascading) is still an emerging field of research. **WP2** has contributed to improvement of knowledge both on compound dry and wet hazards, Forecasting and nowcasting of impacts associated with the weather-related hazards has primarily done in Pilot Sites (**WP6**), but **WP2** has provided pathways, incl. examples, how to move from hazards to impacts at the regional and pan-European scale.



2.2.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP1** at the end of the project (**M43**) is:

Table 4: Status of the advancements in the WP2 Deliverables at the end of the project (M43).

Deliverable.	Title	Submission date	Progress status (in %)
D2.1	Compilation of the first version of the algorithms and products to forecast impacts of W&C induced hazards at adequate time-space resolution for different geo-climatic settings across Europe. (Leader: WUR).	M09	100%
D2.2	Preliminary report assessing the robustness and uncertainty of models to forecast weather-induced hazards and impacts. (Leader: UNIGE)	M19	100%
D2.3	Report describing the improved version of the algorithms to be incorporated into the MH-EWS. (LEADER: CFR)	M18	100%
D2.4	Final version of the code of the algorithms to be implemented in the MH-EWS. (LEADER: WUR)	M19	100%
D2.5	Final report describing: (i) robustness of algorithms under worst-case climate projections, and (ii) methods implemented to characterize the uncertainty inherent in the hazard and impact forecasting algorithms (LEADER: UNIGE)	M43	100%

Deliverable **D2.5** has been submitted with 6 months of delay (from **M37** to **M43**) due to the efforts to include a response to the requests provided by the reviewers of the 2nd Progress Report (May 2019, **M36**), adding information about the operationalizability of algorithms/tools and including elements and information to ensure the assessment of the impact forecasting at large scale.

2.2.3 Advancements per Task

During the RP3 only **Task T2.8** was active, being the previous ones finalised before.

2.2.3.1 Summary of Task 2.8: Robustness and uncertainty of algorithms to assess weather-related event induced impacts

The main activity of this task was collating and synthesizing knowledge about the **uncertainty and robustness (U&R)** of the algorithms and tools integrated in the **MH-EWS** and in the **A4EU** platforms translating the meteorological forecasts into climate and weather impact forecasts, describing the results in **Deliverable D2.5**.

D2.5 report is a follow-up of the Deliverable **D2.2** which contained a preliminary assessment of U&R. Thus, **D2.5** describes the uncertainty aspects for each of the algorithms/tools, as well as a summary table added showing how re-forecasts were



compared with observations, or with proxy observations based on re-analysis data or solely using simulation output.

Robustness, i.e. if the algorithms and tools are transferable in space and time (towards a future climate), was described based upon existing literature (running the weather forecast platforms was beyond **ANYWHERE** purpose and resources). This meant exploration if algorithms and tools can be parameterized in any region in any time.

On the other hand, knowledge on compound natural hazards (coinciding or cascading) was extended in the current reporting period by finalizing studies on both dry and wet hazards. Main findings are included in the **D2.5** report.

Finally, based on experiences in the **ANYWHERE** project and beyond, operationalizability of each algorithms and tools has been documented in terms of development stage, uses, and required data/resources. The task has been concluded by presenting some examples on **how natural hazards can be translated into impacts for large-scale applications** (pan-European, regional) and following different approaches (bottom-up and top-down). Additionally, a specific effort following the requests of the reviewers during 2RP review, some pan-European **maps providing information on vulnerability have been incorporated to the MH-EWS** (population density, critical infrastructure) to allow the capacity of crossing dynamic and static information to convert meteorological forecasts into impact forecasts.

Specific contributions to **Task T2.8** are described below.

AMAYA: contributed to the uncertainty analysis of several natural hazard forecasting products in Spain.

ACA: contributed to the uncertainty analysis of the standardized and threshold-based drought indices in Catalonia.

CIMA: Drought, heatwaves and wildfires as compound dry hazard was assessed.

CFR: contribution to: (i) uncertainty of European Storm Surge model (ESS), (ii) uncertainty of Regional Storm Surge model, (iii) uncertainty of inundation and erosion model, (iv) robustness assessment of the European Storm Surge model (ESS), Regional Storm Surge model, and Inundation and erosion model under a future climate. Coastal flooding as compound wet hazard was assessed. Operationalizability of the storm surge algorithms and Inundation and erosion model was provided.

ECMWF: contribution to: (i) uncertainty of the Integrated Forecasting System (ECMWF-IFS), (ii) uncertainty of the hydrological forecasts (EFAS), (iii) uncertainty of weather-induced fires forecasting indicators, (iv) uncertainty of the probability of precipitation type, (v) robustness assessment of the ECMWF-IFS under a future climate, (vi) robustness assessment of the weather-induced fires under a future climate, and (vii) robustness assessment of the precipitation type under a future climate. Cascading effects of extreme precipitation with pathway schemes were assessed. Heatwaves, wildfires and drought as compound dry hazard was assessed. Operationalizability of the ECMWF-IFS, EFAS, weather-induced fires and probability of precipitation type was provided.



FMI: performed uncertainty analysis for three of FMI products. The pan-European tool used for identification, tracking and nowcasting of convective cells (CC-ITN) was applied on the EUMETNET OPERA-radar composite and GLD360 lightning data and its performance was verified with eight historical convective precipitation events during July-August in 2016 and 2017. The second verification was to examine the uncertainty of the probabilistic precipitation type forecasts and compare the skill of ECMWF and FMI models. The third uncertainty analysis concerned the snow load algorithm, and as there are no direct ground truth data available, the product skill is tested through cascading scenario to the amount of emergency assignments related to snow load hazards.

UNIGE/METEODAT: contribution to uncertainty of downscaling precipitation mountainous regions. Cascading effects of extreme precipitation with pathway schemes were assessed.

UOR: contribution to: (i) uncertainty of Universal Thermal Climate Index (UTCI), (ii) uncertainty of the Regional Air Quality (RAQ), (ii) robustness assessment of the Universal Thermal Climate Index (UTCI) and Regional Air Quality (RAQ) under a future climate. Heatwaves and wildfires as compound dry hazard was assessed. Operationalizability of the Universal Thermal Climate Index (UTCI) and the Regional Air Quality (RAQ) was provided.

UPC: contribution to: (i) uncertainty of the flash flood hazard nowcasting algorithm at both European and regional scales (FF-EWS over Catalonia and Liguria), (ii) uncertainty of the landslides and debris flows hazard and impact assessment, (iii) robustness assessment of flash floods, landslides and debris flows under a future climate. Operationalizability of the flash flood hazard nowcasting (FF-EWS) and landslides and debris flows hazard algorithms was provided. Pan-European vulnerability information was collated and impacts were forecasted at the pan-European scale and regional scale. Cascading effects of extreme precipitation (snow case in Catalonia) with pathway schemes were assessed.

WUR: contribution to: (i) uncertainty of the standardized drought indices, (ii) uncertainty of the threshold-based drought indices, (iii) uncertainty of the areal drought indices, (iv) robustness assessment of standardized drought indices, threshold-based drought indices, and areal drought indices under a future climate. Drought, heatwaves and wildfires as compound dry hazard was assessed. Operationalizability of the standardized drought indices, threshold-based drought indices, and the areal drought indices was provided. An example was given how drought impacts can be forecasted at the pan-European scale.

2.2.4 Identification of difficulties and delays and actions foreseen

No major difficulties have been experienced during the RP3.

2.2.5 Deviations on the use of resources

There are no deviations from the DoA of the Amendment. However, the additional work required to respond the request of the 2RP review has led to a higher effort than



planned. This is noticed in the PMs declared, but the partners have tried to minimize the effects on the eligible costs through an internal restructuration of their resources.

2.2.6 Identification of exploitable Results, and details to be included in the Results Map of Ownerships and Rights

WP2 partners have not applied for patents, trademarks, registered designs, utility model, etc. However, the developed algorithms, tools and products that forecast climate and weather impacts (Tasks **T2.1** to **T2.8**) that can be considered as foreground of the project will be IPR-protected following what was agreed in **Deliverable D7.1 IPR protection Plan**.

In particular, the marketable algorithms, tools and products have been already identified as **ANYWHERE** exploitable results and their description has been included in the **Deliverable D7.4 Innovation Exploitation Plan** prepared during this RP3 by **WP7**.

2.2.7 Scientific Publications

Table 5 provides a summarized list of the scientific publications associated to the developments within **WP2**.

Table 5: WP2 scientific publications

No	Title	Authors	Year	Journal, Impact Factor (IF)	DOI
1	How to improve attribution of changes in drought and flood impacts	Heidi Kreibich, Veit Blauhut, Jeroen C.J.H. Aerts, Laurens M. Bouwer, Henny A.J. Van Lanen, Alfonso Mejia, Marjolein Mens, Anne F. Van Loon	2019	Hydrological Sciences Journal IF = 2.18	10.1080/02626667.2018.1558367
2	Towards robust pan-European storm surge forecasting	T. Fernández-Montblanc, M.I. Voudoukas, P. Ciavola, E. Voukouvalas, L. Mentaschi, G. Breyiannis, L. Feyen, P. Salamon	2019	Ocean Modelling IF = 3.01	10.1016/j.ocemod.2018.12.001
3	Using nowcasting technique and data assimilation in a meteorological model to improve very short range hydrological forecasts	Maria Laura Poletti, Francesco Silvestro, Silvio Davolio, Flavio Pignone, Nicola Rebora	2019	Hydrology and Earth System Sciences Discussions IF = 4.94; IF(5-yr): 5.62	10.5194/hess-2019-75
4	Comparison of two early warning systems for regional flash flood hazard forecasting	Carles Corral, Marc Berenguer, Daniel Sempere-Torres, Laura Poletti, Francesco Silvestro, Nicola Rebora	2019	Journal of Hydrology IF = 4.41	10.1016/j.jhydrol.2019.03.026
5	Quantifying Positive and Negative Human-Modified Droughts in the Anthropocene: Illustration with Two Iranian Catchments.	Kakaei, E., Moradi, H.R., Moghaddam Nia, A.R. and Van Lanen, H.A.J.	2019	Water IF = 2.07	10.3390/w11050884
6	Improving medium-range forecasts of rain-on-snow events in pre-alpine areas	Michael Fehlmann, Estíbaliz Gascón, Mario Rohrer, Manfred Schwarb, Markus Stoffel	2019	Water Resources Research IF = 4.36	10.1029/2018WR024644
7	Anticipating cascading effects of extreme precipitation with pathway schemes - Three case studies from Europe	Simone Schauwecker, Estíbaliz Gascón, Shinju Park, Virginia Ruiz-Villanueva, Manfred Schwarb, Daniel Sempere-	2019	Environment International IF=7.94	10.1016/j.envint.2019.02.072



		Torres, Markus Stoffel, Claudia Vitolo, Mario Rohrer			
8	Long-term analysis of gauge-adjusted radar rainfall accumulations at European scale	Shinju Park, Marc Berenguer, Daniel Sempere-Torres	2019	Journal of Hydrology IF = 4.41	10.1016/j.jhydrol.2019.03.093
9	Mapping combined wildfire and heat stress hazards to improve evidence-based decision making	Claudia Vitolo, Claudia Di Napoli, Francesca Di Giuseppe, Hannah L. Cloke, Florian Pappenberger	2019	Environment International IF = 7.94	10.1016/j.envint.2019.03.008
10	Using paired catchments to quantify the human influence on hydrological droughts	Anne F. Van Loon, Sally Rangelcroft, Gemma Coxon, José Agustín Breña Naranjo, Floris Van Ogtrop, and Henny A. J. Van Lanen	2019	Hydrology and Earth System Sciences IF = 4.94; IF(5-yr): 5.62	10.5194/hess-23-1725-2019
11	ANYCaRE: a role-playing game to investigate crisis decision-making and communication challenges in weather-related hazards	Galateia Terti, Isabelle Ruin, Milan Kalas, Ilona Láng, Arnau Cangròs i Alonso, Tommaso Sabbatini, Valerio Lorini	2019	Natural Hazards and Earth System Sciences IF = 2.88	10.5194/nhes-19-507-2019
12	Growing spatial scales of synchronous river flooding in Europe	Wouter R. Berghuijs, Scott T. Allen, Shaun Harrigan, James W. Kirchner	2019	Geophysical Research Letters IF = 4.34	10.1029/2018gl081883
13	Exploration of the importance of physical properties of Indonesian peatlands to assess critical groundwater table depths, associated drought and fire hazard	M. Taufik, A.A. Veldhuizen, J.H.M. Wösten, H.A.J. van Lanen	2019	Geoderma IF = 4.34	10.1016/j.geoderma.2019.04.001
14	Verification of Heat Stress Thresholds for a Health-Based Heat-Wave Definition.	Di Napoli, Claudia; Pappenberger, Florian; Cloke, Hannah L.	2019	Journal Applied Meteorology Climatology IF = 2.36	10.1175/JA-MC-D-18-0246.1.
15	Moving from drought hazard to impact forecasts.	Sutanto, S.J., van der Weert, M., Wanders, N., Blauhut, V. and Van Lanen, H.A.J.	2019	Nature Communications IF = 11.88	10.1038/s41467-019-12840-z
16	Evaluating skill and robustness of seasonal meteorological and hydrological drought forecasts at the catchment scale – Case Catalonia (Spain).	Van Hateren, T.C., Sutanto, S.J., Van Lanen, H.A.J.	2019	Environment International IF = 7.94	10.1016/j.envint.2019.10.5206.
17	Heatwaves, droughts, and fires: exploring compound and cascading dry hazards at the pan-European scale.	Sutanto, S.J., Vitolo, C., Di Napoli, C. D'Andrea, M., Van Lanen, H.A.J.	2019	Environment International IF = 7.94	10.1016/j.envint.2019.10.5276.
18	Potential of pan-European seasonal hydro-meteorological drought forecasts obtained from a Multi-Hazard Early Warning System.	Sutanto, S.J., Van Lanen, H.A.J., Wetterhall, F., Llort, X.	2019	Bulletin of the American Meteorological Society (accepted) IF = 7.93	https://doi.org/10.1175/BAMS-D-18-0196.1 .
19	Characterisation of the dynamics of past droughts.	Diaz, V., Corzo Perez, G.A., Van Lanen, H.A.J., Solomatine, D., Varochakis, E.	2019	Science of the Total Environment (accepted). IF = 5.59.	https://doi.org/10.1016/j.scitotenv.2019.134588
20	Approaches to analyse and model changes in drought and flood impacts over time for past and future: reply to discussions of “How to improve attribution of changes in drought and flood impacts”	Kreibich, H., Blauhut, V.G., Aerts, J.C.J.H., Bouwer, L.M., Van Lanen, H.A.J., Mejia, A., Mens, M., Van Loon, A.F.	2019	Hydrological Sciences Journal IF = 2.18	https://doi.org/10.1080/02626667.2019.1701194 .
21	Development of a combined empirical index for a 5-day forecast of heavy precipitation over the Bernese Alps	Liliane Nguyen., Mario Rohrer, Manfred Schwarb & Markus Stoffel	2019	Environment International IF = 7.94	https://doi.org/10.1016/j.envint.2019.105357



22	Hydrological application of radar rainfall nowcasting in the Netherlands	Heuvelink, D., Berenguer, M., Brauer, C.C., Uijlenhoet, R.	2020	Environment International IF = 7.94	10.1016/j.en vint.2019.10 5431
23	Stochastic Spectral Method for Radar-Based Probabilistic Precipitation Nowcasting	Pulkkinen, S., V. Chandrasekar, and A. Harri	2019	J. Atmos. Oceanic Technol.	https://doi.org/10.1175/JTECH-D-18-0242.1
24	Fully Spectral Method for Radar-Based Precipitation Nowcasting	S. Pulkkinen, V. Chandrasekar and A. Harri	2019	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	10.1109/JSTARS.2019.2908974
25	A 1980-2018 global fire danger re-analysis dataset for the Canadian Fire Weather Indices	Vitolo, C, Di Giuseppe, F., Krzeminski, B., San-Miguel-Ayanz, J	2019	Scientific Data, IF=5.929	https://doi.org/10.1038/sdata.2019.32
26	Verification of Heat Stress Thresholds for a Health-Based Heat-Wave Definition	Di Napoli, C, Pappenberger, F.	2019	Journal of Applied Meteorology and Climatology, IF = 2.463	https://doi.org/10.1175/JAMC-D-18-0246.1
27	ReAFFIRM: Real-time Assessment of Flash Flood Impacts – a Regional high-resolution Method	Ritter, J., Berenguer, M., Corral, C., Park, S., Sempere-Torres, D.	2020	Environment International IF = 7.94	10.1016/j.envint.2019.105375



2.3 WP3: Integrating impact models and tools in a Multi-Hazard operational Early Warning System (Leader: HYDS)

WP3 has designed, developed, and tested in the Pilot Sites (**WP6**) an **operational Multi-Hazard Early Warning System (MH-EWS)** integrating the forecast and impact models developed within **WP2** through the adapted A4EU Platforms (**WP4**) and the self-protection tools (**WP5**).

2.3.1 Main advancements and achievements during the third reporting period

During this RP3, **WP3** continued the demonstration of the **MH-EWS** as well as the continuous monitoring and improvement of the system, deploying new versions of the algorithms/tools integrated and improvements in the IT modules, ending with the final (current) version of the **MH-EWS**, which is planned to be running to feed the different users even after the end of the project.

More specifically, in this RP3 (M33 - M43) **WP3**:

- Continuously strengthened the robustness and performance of the IT modules during the demonstration period in order to support the different user applications.
- Integrated new versions of algorithms/tools in the **MH-EWS** and well as some new Pan-European impact demonstration products (air quality).
- Deployed several-scale local high-resolution [HR] versions of the Pan-European algorithms/products, covering particular pilot sites using local HR information.
- Evaluated and refined the **MH-EWS** platform towards the last prototype version (**Deliverable D3.4** “MH-EWS final operational prototype and final test results”).

WP3 integrated the different algorithms/tools to forecast hazards induced by weather-induced events produced in **WP2** into a common operational **MH-EWS**. The **MH-EWS** has been used by the different **A4EU** prototypes developed in **WP4** for the Emergency Management Centres in charge of the Pilot Sites, and by the systems developed in **WP5** to enhance the anticipation and pro-active capacity of response of selected activities at risk to face extreme and high-impact weather events in the Pilot Sites (**WP6**).

MH-EWS integrated the **ANYWHERE** algorithms/tools at two levels: (i) *connected/encapsulated* depending on the needs and availability and showed both the flexibility of incorporating/adapting algorithms; and (ii) improving IT services, and the capability of expanding the product portfolio with tailored local high-resolution versions of the algorithms/tools. Both of them allowed the demonstration period on the Pilot sites and enabled a controlled scalability and expansion of the system.

2.3.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP3** at the end of the project (**M43**) is:

Table 6: Status of the advancements in the WP3 Deliverables at the end of the project (M43).

Deliverable	Title	Submission date	Progress status (in %)
D3.1	Modules/tools requirements to be integrated into the MH-EWS (Leader: ECWMF)	M09	100%
D3.2	Design of the MH-EWS platform including products, services, interfaces and tests (Leader: HYDS)	M12	100%
D3.3	Performance assessment of the MH-EWS platform on the pilot sites (Leader: RINA-C)	M28	100%
D3.4	MH-EWS final operational prototype and final test results (Leader: HYDS)	M43	100%

Deliverables D3.1, D3.2 and D3.3 have been submitted during the first and second reporting period. **Deliverable D3.4** has been submitted during this last reporting period.

Deliverable **D3.4** has been submitted with 2 months of delay (from M41 to M43) due to the efforts to include the feedback gathered during the discussions at the **ANYWHERE** Final Workshop held at the end of October 2019 (**M41**), and to incorporate the last version of the MH-EWS within the project lifetime.

2.3.3 Advancements per Task

During the RP3 only **Task T3.4** was active, being the previous ones finalised before.

2.3.3.1 Summary of Task 3.4: Testing and performance evaluation of the MH-EWS system and modules/tools refining

The principal aim of **Task T3.4** is to test and validate the overall functionality and performance of the **MH-EWS** through the different **A4EU** implementations in the Pilot sites (**WP6**;) and in the case study applications of **WP5**; using the feedback information to iteratively improve the whole system.

During this third reporting period, the evaluation and improvement of the **MH-EWS** continued following the procedures already started in the previous reporting with the Deliverable **D3.3**, which compiled the results of the first tests and performance evaluation done a few months later than the **MH-EWS** implementation on the Pilot Sites. The information collected in this deliverable, drove the works for the improvement of the **MH-EWS** modules/tools, and **WP3** produced a final version of the **MH-EWS** evaluated in **Deliverable D3.4** (focused on the IT part).

The main improvements of the integrated algorithms on the **MH-EWS**, during this reporting period are:

- Radar-based rainfall nowcasting and flash flood forecasting: **For the first time, the Italian radar network has been integrated operationally with the**



European mosaic OPERA. MH-EWS has implemented a new version of the rainfall nowcasting and flash flood forecasting modules increasing efficiency and robustness. Final implementation in real time of the new high-resolution (50 m) configuration for Canton Bern.

- The upgraded EFAS (JRC, ECMWF) domain' and projection' implementation has been also operational during this reporting period.
- Droughts: Integration in the **MH-EWS** of the new version of the drought scripts (adapted to the new version of EFAS and seasonal forecasting system) involving a larger pan-European domain and a new geographical projection.
- Storm surges: A new version of the scripts for the storm surges products at different scales (European, regional and local) has been integrated in the **MH-EWS**.
- Meteorological forecasts: New version of the meteorological forecasts delivered by the ECMWF including the increase of the temporal resolution from 3h hours to 1h time-steps. In addition, some new variables have been derived as relative humidity or wind speed magnitude and direction.
- Air quality: Implementation of the European Air Quality Index based on the forecast of different pollutants, as well as other products showing the impact on the population.

The evaluation of the **MH-EWS** done in **Deliverable D3.4** (focused on the IT part) showed that the **MH-EWS** performance has been stable during that period and small improvements in the response of some IT services has been successfully achieved.

2.3.4 Identification of difficulties and delays and actions foreseen

No major difficulties have been experienced during the RP3.

2.3.5 Deviations on the use of resources

There are no deviations from the DoA of the Amendment. However, the additional work to improve the MH-EWS during the demonstrations plus the addition of an additional Pilot Site in WP4 and WP6 have led to a higher effort than planned. This is noticed in the PMs declared, but the partners have tried to minimize the effects on the eligible costs.

2.3.6 Identification of exploitable Results, and details to be included in the Results Map of Ownerships and Rights

HYDS developed an IT system to acquire data, *encapsulate* algorithms to process it and serve the resulting information through a set of services, focused in the real-time processing of hydrometeorological, hazard and impact datasets: The **ANYWHERE MH-EWS**.



This **MH-EWS** developed in **WP3** contains a set of integrated algorithms and products developed by **WP2**. Those have been integrated at two levels: *connected* or *encapsulated*. In this framework, different project partners contributed to the **MH-EWS**:

- a) Partners that uploaded models into the repository of the **MH-EWS** and have been integrated to run as *encapsulated* modules of the **MH-EWS**:
 - UPC:
 - modules to assess and forecast the flash floods and landslides/debris flows hazards,
 - WUR: modules to assess and forecast droughts.
 - CFR: modules to assess and forecast storm surge hazard.
- b) Partners that connected their models to the **MH-EWS** to provide products:
 - ECMWF:
 - Different Numerical Weather Prediction [NWP] products.
 - Wildfires hazard assessment (EFFIS).
 - Jointly with JRC: EFAS products.
 - Jointly with UOR: Modules to assess and forecast health hazards (Thermal indexes and Air quality parameters).
 - CIMA:
 - RISICO model to assess and forecast wildfires hazard (both Pan-European and local high-resolution local versions).
 - FMI:
 - OPERA radar products.
 - Different NWP products.
 - Convective cells identification algorithm.
- c) HYDS developed a series of algorithms to cross in real time the information provided by the different hazard and impact products with previously predefined local vulnerable elements.

All the results mentioned above are exploitable. The data and algorithms from **WP2** have been already identified as **ANYWHERE** exploitable results and their description has been included in the **Deliverable D7.4 Innovation Exploitation Plan** prepared during this RP3 by **WP7**.

The IT developments are under examination of possible ways to exploit them to achieve a sustainable model.



2.4 **WP4: ANYWHERE platform for Decision support in Emergency Management Operation Services A4EU (Leader: UPC)**

The main goal of the **WP4** is to develop an operational **ANYWHERE Decision support platform for Emergency Management Operation Services (A4EU)** that could be a general solution for providing support to any emergency management centre in Europe. Platform that should be **easily customizable to the local needs, and adaptable to the local data availability** with the purpose of being a powerful support tool in the decision-making process during weather induced emergencies. Moreover, it should also be transposable to new locations at low cost of developments to **maximize the exploitation and market uptake potential of the results of the ANYWHERE innovation action**.

The proposed strategy for **WP4** has been to develop 7 operational prototypes of the **A4EU** concept to be implemented, tested and demonstrated in the pilot sites during the project operational demonstrations of the **WP6**, which will have the same basic objectives:

- Enable **integration of forecasts and hazard impact indicators provided by the MH-EWS service platform (WP3)** and local risk and vulnerability datasets, open and commercial data, local sensor data, crowdsourced data and social media information **for monitoring the evolution of the event and supporting decision-making during emergency management**.
- Be able to serve the products of the **MH-EWS to any emergency management command centre** located “anywhere” in Europe to support decision making during weather-induced emergencies. To that end, the lessons learnt in the implementation of **A4EU** in the 7 pilot sites will be used to make improvements on **A4EU** (prototypes) focusing on its commercialization and facilitate its deployment in any new location.

To that end, the **A4EU** prototypes have been co-designed and co-created in close collaboration with the main end users of the pilot sites (CDG, ARPAL, INTC, ACA, FMol, VOLBE, HSUH, SIS2B and DGPC) following the co-ownership principle developed in **WP1**. Pilot site representatives have been responsible to gather and transfer the end users’ experiences and needs to the system developers who have done their best to develop and improve **A4EU** systems that can satisfy their needs in the most simple and effective way.

In order to ensure that the progress of the developments is aligned in time with the major milestones of the project, the work has been redistributed among partners AIRBUS, CIMA, HYDS and PREDICT (Tasks **T4.2** to **T4.8**). These partners were assigned to develop the **A4EU** prototypes in collaboration, **taking care of the commonalities to enhance a common vision of the final version of A4EU** able to be easily **deployed in a new location, “anywhere” in Europe, and worldwide**.

2.4.1 **Main advancements and achievements during the RP3**

The different versions of the **A4EU** decision-support platform were **ready for starting operational demonstrations** at the end of the previous reporting period. During the



RP3 the different **A4EU** prototypes capabilities have been operationally tested in depth in a variety of real emergency events based on weather and climate induced hazards. Through this testing period, **A4EU** prototypes have been proven to be a useful tool for emergency managers while dealing with (and before) emergency episodes from weather-induced hazards.

The features of all the prototypes are very similar at higher level (Pan-European) and some differences start appearing when going into the local operational needs that every system has had to integrate (local products, maps, layers, sensors...), and the end-user preferences expressed by the pilot sites. Some of the local products and layers are very specific to each site and have been deployed depending on the information available and requirements defined from each pilot site.

Different additional tools have been integrated into the different **A4EU** platforms. The number of these implemented tools on each prototype differs from system to system, due to the initial requests from end-users combined to the limited adaptability of some of the toolkits to the different sites.

The different **A4EU** platforms, capable of working anywhere in Europe but adapted to the particularities of the Pilot Sites defined by the local end-users, were showcased and demonstrated to a broad audience during the **ANYWHERE Final Conference held in October 2019 (M41)**.

A final performance assessment of all A4EU systems was carried out and its results were gathered in deliverable **D4.5 (M41)**: *“A4EU prototypes (A4Finn, A4Alps, A4Cat, A4Lig, A4Nor and A4Cor): final versions and performance assessment with focus on the comparison between the different A4EU systems’ capabilities and functionalities”*.

The feedback from end-users after the operational demonstration period is mainly gathered in deliverable **D6.4 (M41)**: *“Report compiling the conclusions and the recommendations of the users in the use of the A4EU systems implemented in each pilot site”*. From the feedback received it can be concluded that in general terms the **A4EU** prototypes have been deployed in a timely manner and have been functional and stable during the operational demonstration period and the different developers addressed. Also, the majority of issues/improvements requested by end-users were addressed.

Unfortunately, in the case of the **A4EU** prototypes developed by AIRBUS, some end-users reported that the deployment was carried out with delay (**A4Nor**), the requested improvements were not completely fulfilled (**A4Finn**, **A4Alps**, **A4Nor**), including inability to guarantee the reliability of the prototype since the access to the platform was often limited or the data was not displayed.

2.4.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP4** at the end of the project (**M43**) is:

Table 7: Status of the advancements in the WP4 Deliverables at the end of the project (M43).

Deliverable	Title	Submission date	Progress status (in %)
D4.1	A4EU interfaces, processes, tools, RI design report (Leader: UNS)	M24 (originally M19)	100%
D4.2	Report describing the operational A4EU systems (A4Finn, A4Alps, A4Cat, A4Lig, A4Nor and A4Cor) ready for the demonstrations, including the recommendations for improvement provided by the users after the beta tests (Leader: AIRBUS)	M32 (originally M29)	100%
D4.3	Report describing the awareness and decision support tools integrated in the A4EU systems, including the recommendations for improvement provided by the users during the 5 first months of demonstrations (Leader: RINA)	M34 (originally M32)	100%
D4.4	Report describing the Crowdsourcing and social media communication report tools, including the recommendations for improvement provided by the users during the 5 first months of demonstrations (Leader: KAJO)	M34 (originally M32)	100%
D4.5	A4EU prototypes (A4Finn, A4Alps, A4Cat, A4Lig, A4Nor and A4Cor): final versions and performance assessment with focus on the comparison between the different A4EU systems' capabilities and functionalities (Leader: AIRBUS)	M42 (originally M40)	100%

Deliverable D4.5 was submitted within the RP3 timeframe, with a slight delay due to the time to include the last results compiled in the Pilot Sites (delayed up to October 2019, **M42**).

The rest of milestones and deliverables were already submitted during the previous reporting periods.

2.4.3 Advancements per Task

Advancements in Task **T4.1** concluded during RP2 delivering **D5.1**.

Tasks **T4.2** to **T4.10** have continued testing and validating their developments in the framework of the operational demonstrations in the pilot sites.

2.4.3.1 Summary of Task 4.2: Development, deployment and verification of A4EU in Liguria

During the RP3 the **A4EU** prototype adapted to the Liguria pilot site (**A4Lig**) has been run and improved by CIMA following the feedback and requests of improvements provided by the end users of this pilot site (CDG and ARPAL).

The Italian Civil Protection department, ARPAL and CDG have provided additional POI (points of interest) and relevant exposed elements (such as schools, hospitals, building, inhabitants per building, road networks, train networks, critical infrastructures, parks, cultural sites and commercial activities) that have been integrated in **A4Lig**, as well as

high-resolution Italian, regional and local products (in addition to the **MH-EWS** products) in order to maximize the hazard products available during the operational demonstration. Figure 3 shows an example of operational application of **A4Lig** in Genoa.

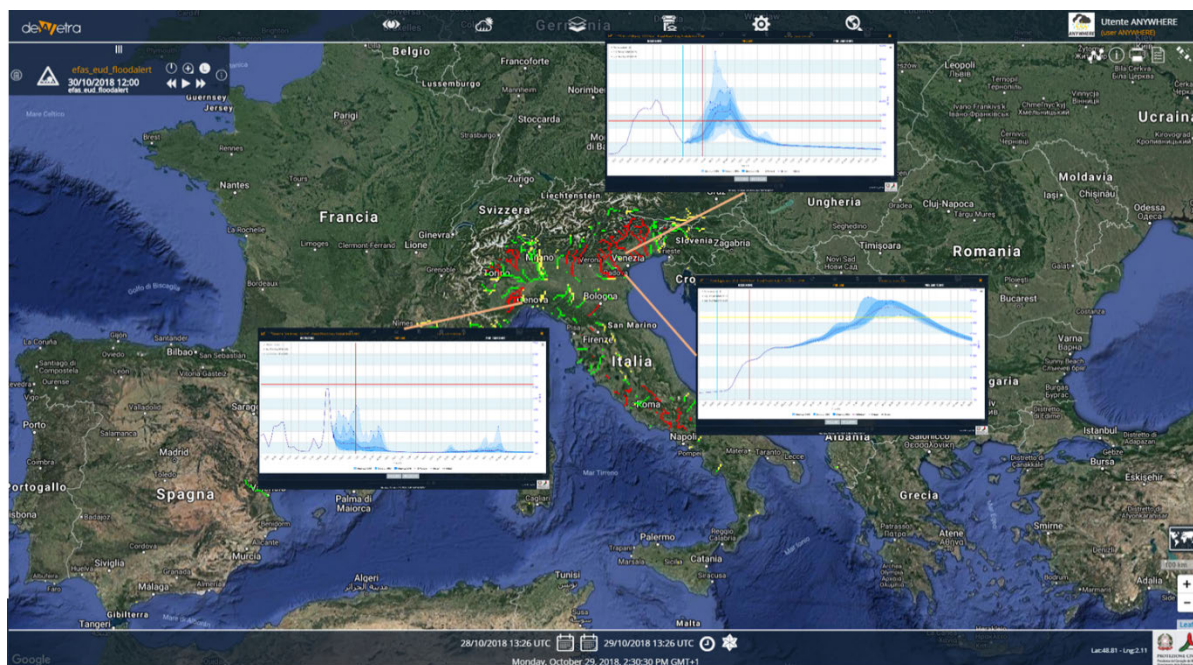


Figure 3: Example of flood forecast from **EFAS** system available through the **MH-EWS** and visualized through **A4Lig** for the 29th of October 2018 event.

The **A4Lig** prototype integrates the following additional toolkits and extensions:

- Propagator (developed by CIMA).
- **ANYWHERE** Scenario tools (developed by CIMA) that allows to combine in real time hazard information from the **ANYWHERE MH-EWS** with the exposed elements provided by regional or local authorities.

The **A4Lig** platform operated at CDG also includes a bridge to the information system operationally used by ARPAL to issue and follow in real time hydro-meteorological warnings at Liguria Region level.

A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

2.4.3.2 Summary of Task 4.3: Development, deployment and verification of A4EU in Catalonia

During the RP3 the **A4EU** prototype adapted to the pilot site of Catalonia (**A4Cat**) has been run and improved by HYDS. following the feedback and requests of improvements provided by the end users of this pilot site (INTC and ACA). During this period **A4Cat** has become a **key tool** in the daily operations at CECAT (Catalunya Civil Protection Emergency Centre) being used in a 24/7 operational environment by INTC. Its usefulness has already been proven along the demonstration period, but specially during the recent storm Gloria in January 2020, see **Task 6.3** description in

Section 2.6.3.2, in which its capacity to support proactive management of the emergencies has been widely proven (see Figure 4).

A4EU: Successful emergency management episode (Floods 15th Nov 2018. Barcelona, Spain)



Figure 4: Example of the **A4EU** new concept to support proactive management of climate emergencies through the example of the flood on 15 November 2018 in Barcelona using the **A4Cat** platform in a mobile smartphone device.

During the demonstration period and based on end-user requests, **A4Cat** has implemented new connection capabilities to different sources of local hazard information in real time, including: emergency calls (112) that are geo-located in real time, sensors (stream gauges, rain gauges, reservoirs) from different hydrometeorological institutions, dams and infrastructure managers, high-resolution radar observations, official meteorological warnings, air quality sensors, traffic incidents reports and webcams; traffic impact on roads caused by snowfalls (developed by UPC-CRAHI in **WP5**), among others.

In addition, local vulnerability information has been included for several hazards: Flooding areas and risk associated to different return periods, both for riverine and marine floods (available for the entire Spain); Critical elements for floods (infrastructure, Seveso chemical plants, schools, hospitals, local priority elements, etc.); Critical elements for forest fires (infrastructures, transportation network, isolated elements, etc.); Critical elements for snow (critical locations on transportation network, salt silos, etc.).

Thus, **A4Cat** enables impact forecasting by crossing in real time the hazard and impact products served by the **MH-EWS** and/or from local providers with the available vulnerability information to provide a local assessment of the potential impacts. For instance, for flooding related hazards Automatic Warnings are automatically triggered



and depending on the return period the municipalities and the critical points affected are highlighted.

The improvements of the **A4Cat** platform operated at INTC also includes a new IT bridge to retrieve and follow in real time hydrological warnings issued by the information system of the Catalan Water Agency, ACA.

Details and examples of the platform capabilities (including the real-time crossing of the hazard information with the vulnerability layers) and the products included can be found in the wiki associated to the system:

<http://confluence.hyds.es/display/A4CATDOC/A4EU+Documentation>

A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

2.4.3.3 Summary of Task 4.4: Development, deployment and verification of A4EU in South Savo

During the RP3 the **A4EU** prototype adapted to the pilot site of South Savo (**A4 Finn**) has been run by AIRBUS and tested by the end users of this pilot site (FMol, FMI and ISTIKE).

At the end, the solution proposed by AIRBUS to provide a response both to the need to make accessible the **MH-EWS** products and to offer access to specific local products has consisted in creating two different workspaces (see Figure 5):

- 1st level: The Pan-European workspace, that in fact is the **A4Nor** prototype (see Section 2.4.3.5) but that it is used in all the pilot sites developed by AIRBUS (**A4Finn**, **A4Nor**, **A4Alps**) to visualize common Pan-European products and toolkits.
- 2nd level: Specific **A4Finn** workspace only for Finnish users accessible through the **A4EU** Pan-European workspace. This workspace complements the Pan-European workspace with specific local needs.

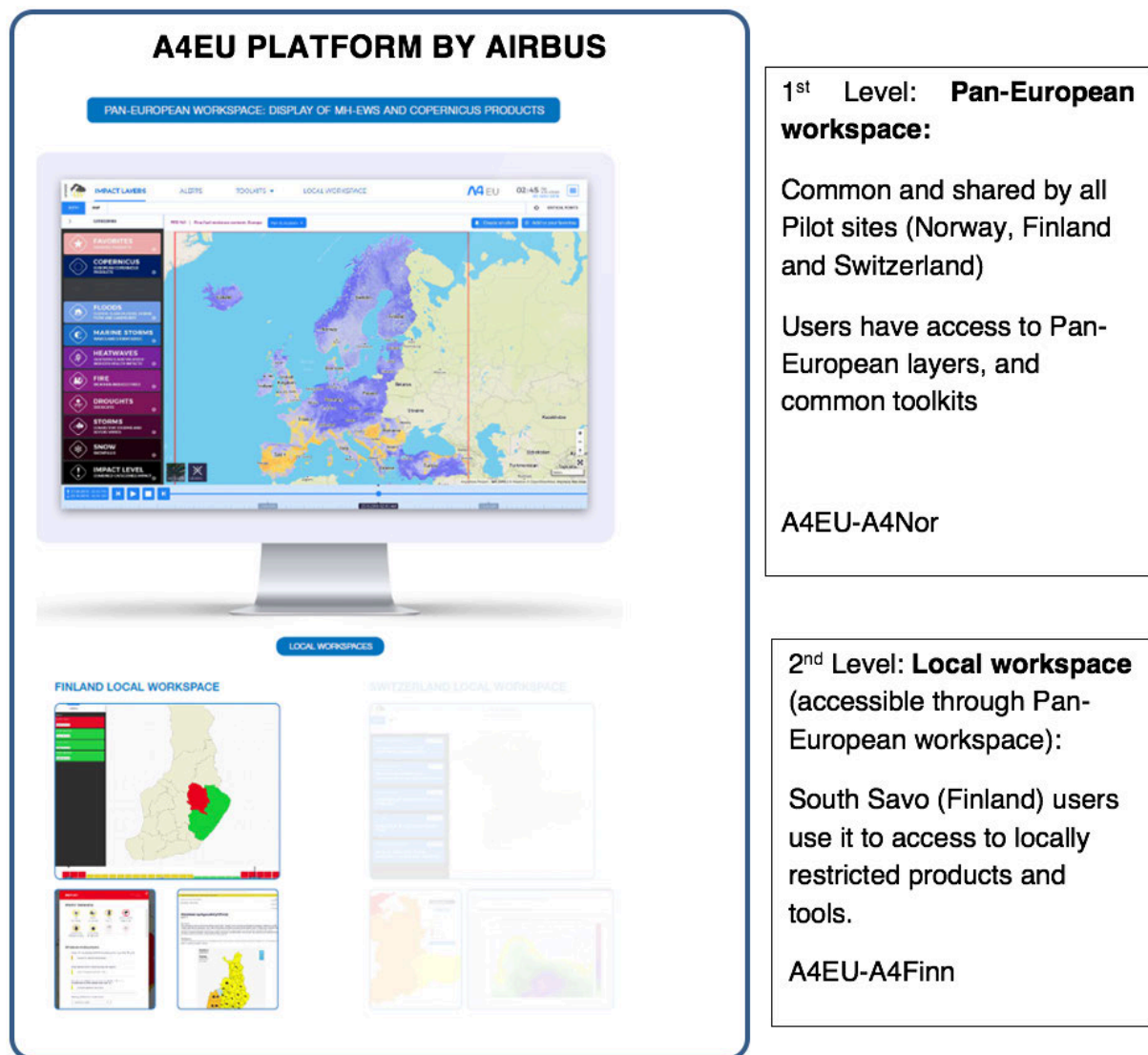


Figure 5: A4EU - A4Finn dual workspace developed by AIRBUS

The Pan-European workspace (1st level) is common for the pilot sites of South Savo (Finland), Canton Bern (Switzerland) and Rogaland region (Norway) and it is in fact the same platform developed initially for Rogaland (A4Nor). Therefore, it offers the same functionalities and features, mainly: online map interface, access to the **MH-EWS** products, timeline, generic Points of Interest (POIs), selectable and favourite layers, Alerts and Notification system, toolkits access menu, etc. The main view of this generic **A4EU** platform is shown in Figure 8.

The operational prototype of the platform has been implemented and run for testing during the operational demonstration period. Besides having access to the global Pan-European tool with the generic products provided by the **MH-EWS** (1st level), a complementary area to monitor displayed local products and decision support tools (2nd level) is available with the features (specific for the **A4Finn** platform) described below:

- Local decision tool providing risk evaluation and impact prediction.

- Interaction with regional and local information, specially vulnerability and exposure layers: Local products are displayed according to user's specifications in order to identify risk levels and select monitoring timeframe. It also publishes bulletins (official warning report from FMI: "LUOVA bulletin"), allows ISTIKE operators to complete local information (via state security network: KRIVAT system), and generates a risk analysis evaluation for 4 different regions (North Savo, South Savo, North Karelia and South Karelia) for the following 48h (evaluation for every 1h frame).
- Specific functionalities like "Local data collection tools" extension which allow retrieving data from local sensors and functionality for transferring retrieved data back to the platform and its decision support tools.
- Specific area for local products has been developed in **A4Finn**. Local products are processed from **MH-EWS** and focuses on the weather impact on four selected regions. It provides forecast and alert system for the following 48h as requested by the end users. This area is exclusive to local users.

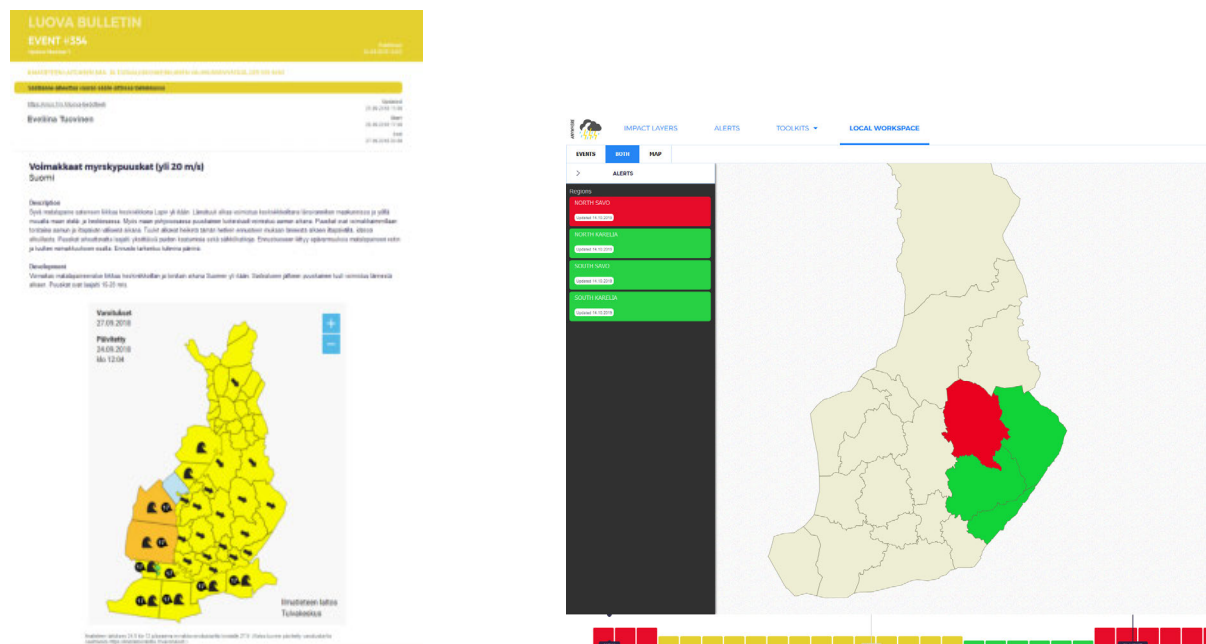


Figure 6: Sample views of **A4Finn** specific workspace (Luova bulletin and global warning level interface)

In addition, available toolkits and extensions have been integrated:

- Propagator (developed by CIMA)
- Crowdsourcing and social media communication (developed by KAJO)

A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

Finally, and according to the **feedback sent by the A4Finn end-users** and supporting partners, a couple of unfortunate aspects shall be mentioned:

- The improvements of the prototype requested by the users were not completely fulfilled, which required that FMI needed to invest extraordinary (own) resources



not initially foreseen to create a demo of more high-resolution product for ISTIKE of **A4Finn** because AIRBUS did not perform the asked improvements for **A4Finn**.

- The prototype was not fully reliable and unfortunately it was usual having problems accessing platform, which was often unavailable or the data were not displayed. This fact represented a major drawback when operating the prototype during the demonstration period.

2.4.3.4 Summary of Task 4.5: Development, deployment and verification of A4EU in Canton Bern

During the RP3 the **A4EU** prototype adapted to the Canton Bern pilot site (**A4Alps**) has been run by AIRBUS and tested by the end users of this pilot site (VOLBE).

In this pilot site AIRBUS has followed the same principle as for **A4Finn** and **A4Nor**, releasing two workspaces. Since the Pan-European workspace (1st level) is common (same functionalities) for the three prototypes (already explained previously), the description below will be focused on the specific restricted workspace (2nd level) for the **A4Nor** platform (see Figure 7).

The maps are interactive and detailed graphs and information is available on specific pop-up windows when clicking on required region of the map or legend.

The additional features of the **A4Alps** platform are:

- Interaction with regional and local information, specially vulnerability and exposure layers. Local layers for Swiss users have also been implemented.
- A specific area is dedicated for local products and tools, which are directly uploaded in the **A4Alps** platform (not using **MH-EWS**) and displayed according to end-user specifications and focused on specific regions. Five major categories of Local products included are:
 - Disposition of Shallow spontaneous landslides – 5 regions (provided by GEO7).
 - Downscale daily precipitation – 1 region (UNIGE).
 - Evolution of the precipitation type – 1 region (provided by UNIGE).
 - Medium-Term disposition forecast for natural hazards – 1 region (provided by UNIGE).
 - Disposition permafrost degradation and process chains – 3 regions (provided by GEO7)
- Specific functionalities like “Local data collection tools” extension which allow retrieving data from local sensors and functionality for transferring retrieved data back to the platform and its decision support tools. Specific area for local users has been developed.

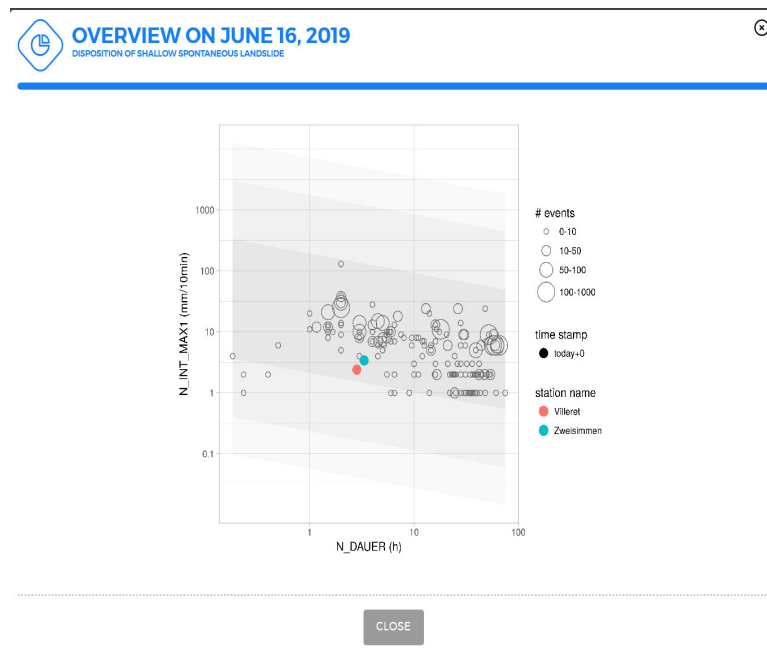
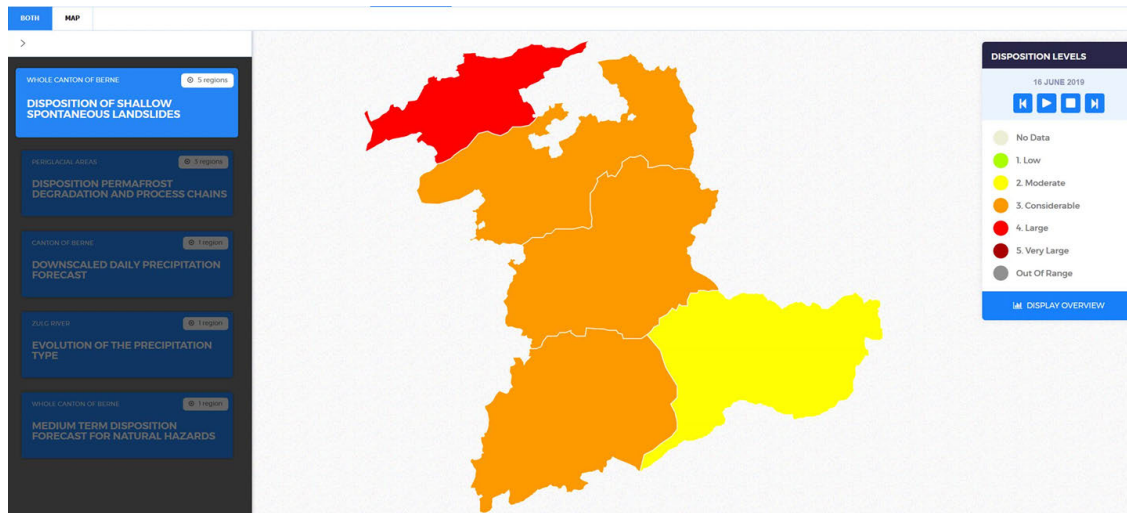


Figure 7: **A4Alps** Disposition shallow landslides levels map and overview.

In addition, available toolkits and extensions have been integrated:

- Propagator (developed by CIMA)
- Crowdsourcing and social media communication (developed by KAJO)

A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

According to the feedback received from the **A4Alps** end-users and supporting partners, a couple of unfortunate aspects shall be mentioned:

- Requested improvements were not completely fulfilled by AIRBUS, limiting the functionality of the prototype.
- The prototype was not fully reliable and unfortunately it was usual having problems accessing platform, which was often unavailable or the data were not

displayed. This fact represented a major drawback when operating the prototype during the demonstration period.

2.4.3.5 Summary of Task 4.6: Development, deployment and verification of A4EU in Rogaland (Norway).

During the RP3 the **A4EU** prototype adapted to the Rogaland pilot site (**A4Nor**) has been run by AIRBUS and tested by the end users of this pilot site (HSUH and Stavanger and Sauda municipalities).

In this case, the **A4Nor** prototype developed AIRBUS mainly includes the Pan-European workspace (1st level) also used as Pan-European viewer for **A4Finn** and **A4Alps**, having basically the same features (see main screen of **A4Nor** in Figure 8). Of course, certain functionalities and forecasting products are much more oriented to the specific characteristics of the region, such as the Marine Storms products (see Figure 9).

The operational prototype of the platform is implemented and accessible 24/7 to the pilot site for test during the operational demonstration period, having access to the global Pan-European tool with the generic products provided by **MH-EWS**, and an exclusive area to monitor displayed local products and decision support tools.

The main screen of **A4Nor** is shown in Figure 8.



Figure 8: **A4Nor** main screen and menus also used as Pan-European viewer for A4Finn and A4Alps

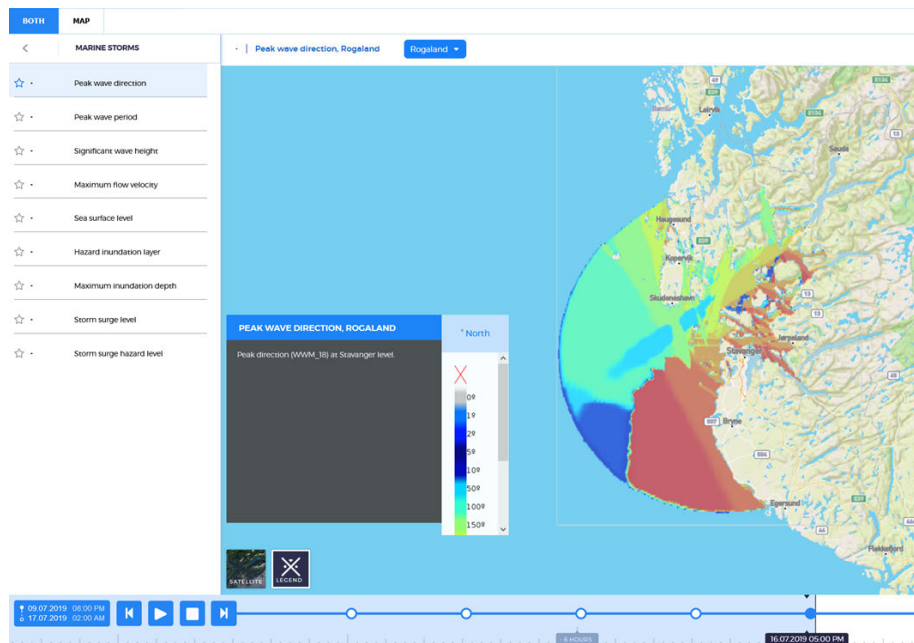


Figure 9: Example of layer display Peak Wave Direction product at Rogaland level resolution, in Marine Storms category displayed in the **A4Nor** prototype.

In addition, **A4Nor** integrates the following toolkits and extensions:

- Propagator (developed by CIMA).
- Crowdsourcing and social media communication (developed by KAJO).
- **ANYWHERE** Risk Assessment tool (ARA) by SINTEF.

The Risk Assessment tool has been implemented, based on locally defined algorithms for decision support based on weather and impact data (screenshot is displayed in Figure 10).

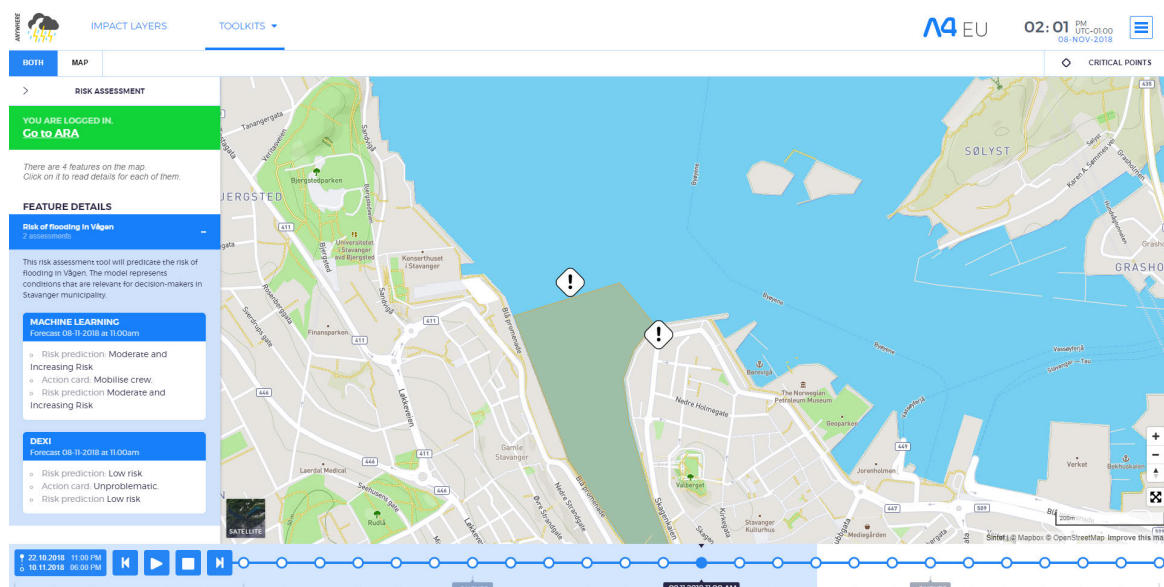


Figure 10: Risk Assessment Tool displayed in the **A4Nor** prototype



A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

Finally, according to the feedback received from the **A4Nor** end-users and supporting partners, some unfortunate aspects shall be mentioned:

- The **A4Cor** deployment was carried out with a significant delay, which affected the start of the demonstration period and the possibility of refining the prototype.
- Requested improvements were not completely fulfilled by AIRBUS, limiting the functionality of the prototype.
- The prototype was not fully reliable and unfortunately it was usual having problems accessing platform, which was often unavailable or the data were not displayed. This fact of course represented a major drawback when operating the prototype during the demonstration period.

2.4.3.6 Summary of Task 4.7: Development, deployment and verification of A4EU in Corsica

During the RP3 the **A4EU** prototype adapted to the Corsica pilot site (**A4Cor**) has been run and improved by PREDICT Services following the feedback and requests of improvements provided by the end users of this pilot site (SIS2B).

Even if PREDICT Services has only become partner and started its activities within the **ANYWHERE** project on early June 2018 (**M25**), they were able to implement it and start running in November 2018, being able to be tested by SIS2B during the full period of the **ANYWHERE** demonstrations. In order to meet the needs of the Pilot site operational partner (SIS2B) in such a short timeframe, it was decided to integrate the **ANYWHERE** forecasting products (accessed via **MH-EWS**), layers and algorithms on PREDICT's already well-established platform that counts with a multichannel communication system, developing the **A4EU** in Corsica (**A4Cor**).

A4Cor can be accessed properly in different kinds of devices (from PCs, to tablets and smartphones), as shown in Figure 11.

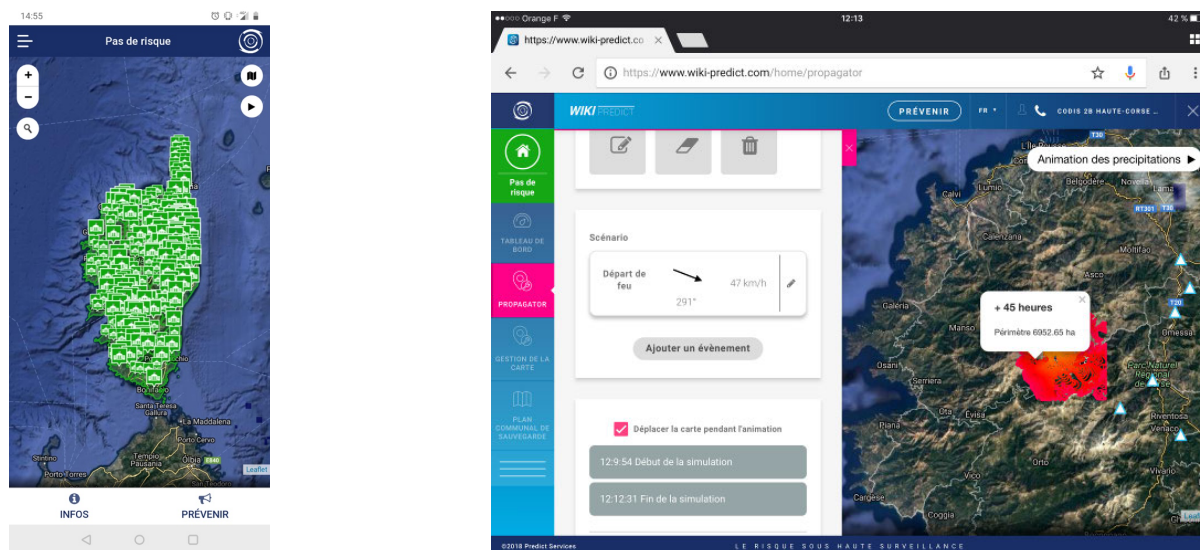


Figure 11: Screenshot of A4Cor Smartphone and tablet versions

Besides the dashboard with risk and alert messages, the maps and cartographical layers and access to the products included in the **MH-EWS**, the **A4Cor** platform implements other features such as:

- Consult the status of the 236 Corsican municipalities, with detailed maps containing the main vulnerabilities / issues of each territory arising from the IGN (French National Institute for Geographic and Forest Information) database.
- Points of activity or interest (POI) that locate buildings or sites with particular purposes such as administrative, industrial, transportation, health, water management and leisure. Those are sensitive points that, if impacted, could jeopardize the proper functioning of the municipality and the life of its inhabitants.
- Visualize the PCS (acronym in French for “Municipal Safeguard Plan”), if available.
- Besides the exhaustive identification of each issue on the municipality and the actions to be carried out during a crisis, it was created a map to allow the quick understanding of the hydrological context and support the decision-makers. In the map, arrows indicate the risk level: green (safely, no issues), yellow (low risk), orange (medium risk), red (high risk), which depends on several factors: number of issues, exposure, urbanization and type of watercourses. As well, there are four types of arrows to characterize the different flow behaviour: runoff, torrential, quick fluvial and slow fluvial depending on the catchment area.

In addition, A4Cor integrates the following toolkits and extensions:

- Integration of the Propagator toolkit (developed by CIMA).
- Prepared for the integration of the Resilience API developed by UNS.
- Crowdsourcing and social media communication (developed by KAJO).

A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

2.4.3.7 Summary of Task 4.8: Development, deployment and verification of A4EU in CENEM (Spanish Emergency Management Centre)

Seen the success of the **A4Cat** implementation, the Directorate General of the Spanish Civil Protection (DGPCE) proposed to develop an additional prototype for the Spanish Control Centre for Emergency Management (CENEM), so-called **A4Cenem**. This additional development has been carried out by HYDS under the agreement that DGPCE will transfer a share of their action budget to cover the marginal costs of the developments of this new **A4EU** prototype.

The prototype was implemented at national scale in Spain and started running in November 2018, being able to be tested by DGPCE during the full period of the **ANYWHERE** demonstrations (see Figure 12).

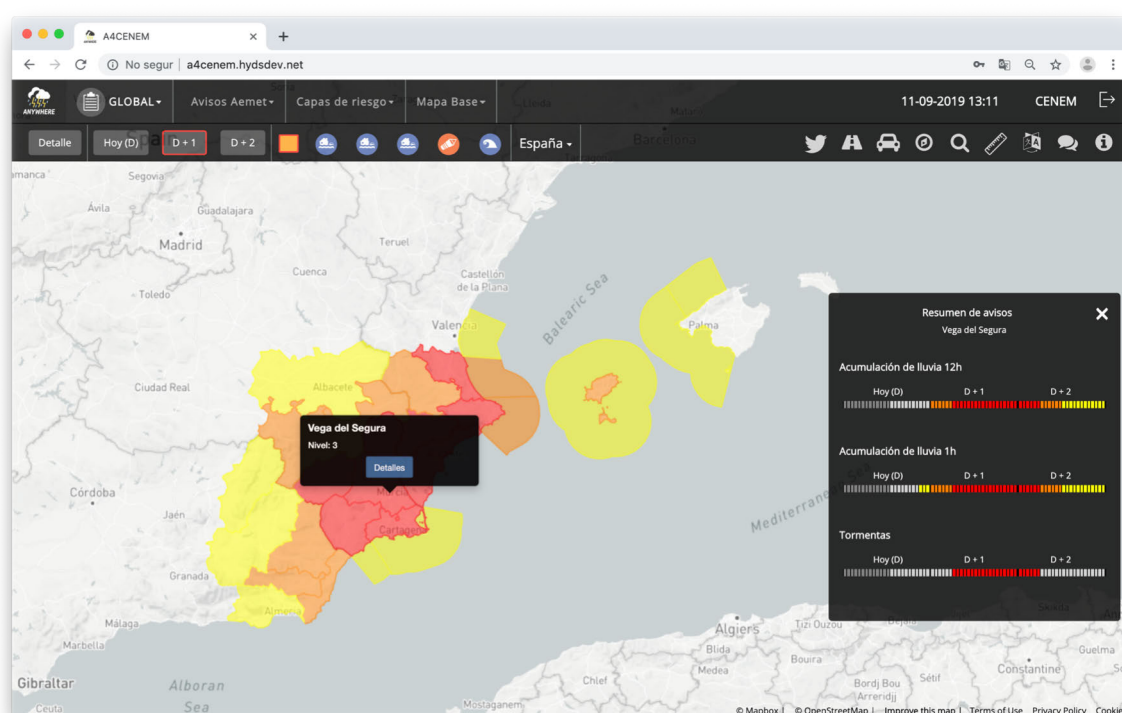


Figure 12: Example of the summary starting page of **A4Cenem** showing the current official meteorological warnings corresponding to the flood event of 12-13 September 2019.

A4Cenem prototype has the same main functionalities of **A4Cat**, but replacing the local data (sensors) and information layers by specific data and new layers requested by DGPCE and provided by different Spanish Official directorates and/or regional governments. The main add-ons included are listed below:

- Local Topographic, Ortophoto, and land use maps of the *Comunidad Valenciana* provided by the *Institut Cartogràfic Valencià*.
- Local Topographic, Ortophoto, and land use maps of the Balearic Islands provided by the *Mapa Urbanístic de les Illes Balears*.
- Train and Road networks provided by the *Instituto Geográfico Nacional*.
- Administrative boundaries provided by the *Instituto Geográfico Nacional*.

- Administrative catchments divisions provided by the *Dirección General de Aguas*.
- Administrative municipal boundaries and urban areas provided by regional Civil Protections.

A4Cenem is an important landmark for **ANYWHERE**, since it is the first prototype operationally implemented out of the initial pilot sites, demonstrating the feasibility of deploying new prototypes in new locations in a reduced timeframe, widening the scope of the **ANYWHERE** capabilities and products to support the emergency management at the scale of a whole EU country.

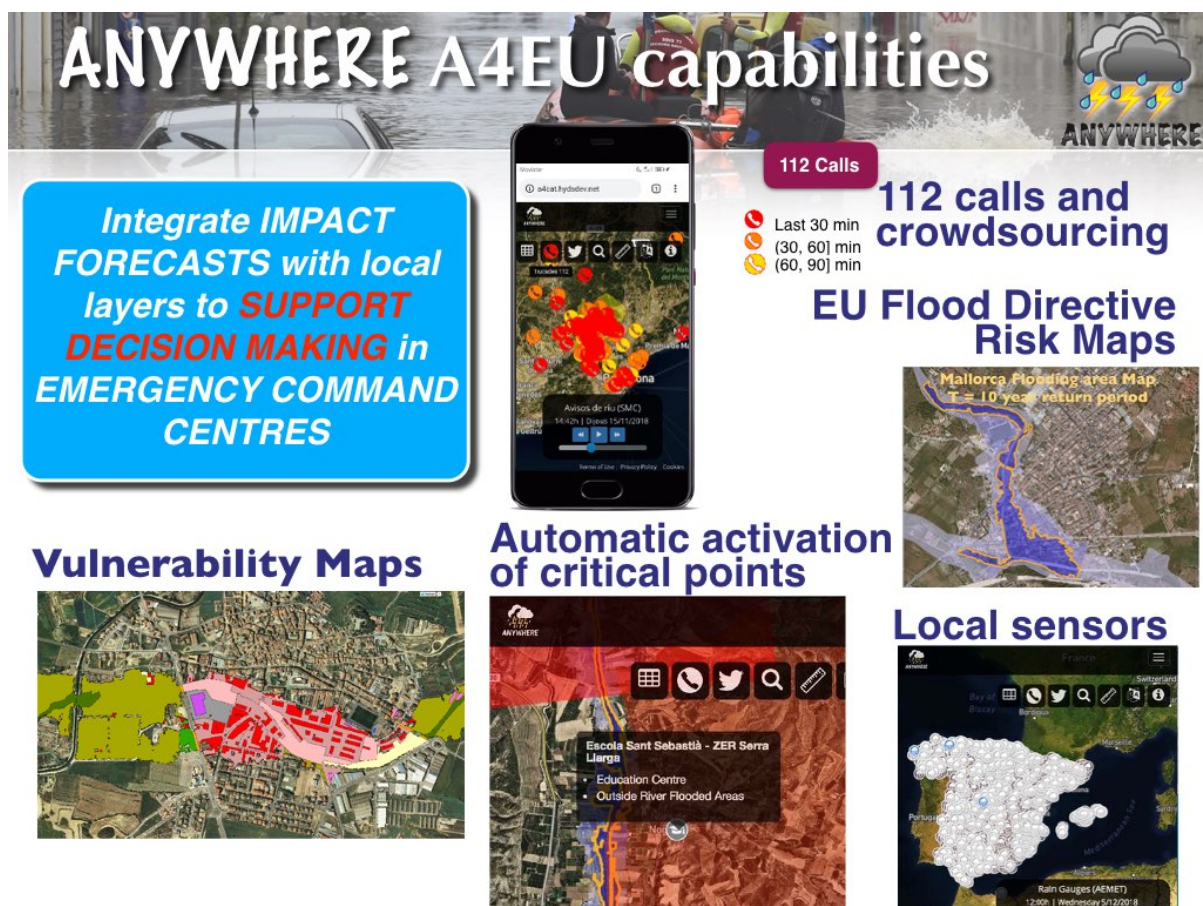


Figure 13: Summary of the **A4EU** capabilities integrated in the **A4Cenem** prototype, showing the **ANYWHERE** concept to integrate the impact forecasts provided by the **MH-EWS** with sensors and local data as risk and vulnerability maps, to generate automatic activation of predefined priority points requiring actions during a weather and climate induced emergency at national scale.

A detailed description of the complete platform features as well as its performance assessment is gathered in deliverable **D4.5**.

2.4.3.8 Summary of Task 4.9 A4EU Integration and deployment of local specific awareness and specific decision support tools

A series of Decision Support Tools have been included on the **A4EU** platforms to improve the emergency reactions in case of emergency. Its development has been



user-centered, meaning that the end-users have been the main drivers of the development according to their needs to improve and extend the **A4EU** platform capabilities. The local decision support tools retrieve data from the **MH-EWS** and other information sources, such as the operators in the emergency control room, for improving situation awareness and risk assessment.

The implemented local specific awareness and specific decision support tools are listed below:

- **Operational Resilience Assessment Tool (UNS)** produce an Operational resilience index at building/block scale. This relative index allows the end-user capturing the resilience of the urban system towards a given hazard. Once the ORI has been computed by the trained users, it brings a synthetic vision on the critical aspects of the urban system, allowing taking decisions accordingly;
- **The Risk Analyzer Tool (ARA)** (SINTEF), which transforms the weather parameters (forecasts) , hazard assessments and sensor data (real time) forecasts as inputs into consequences of specific risk scenarios (risk level with associated and suggested actions for the given risk level). Risk values are provided for the next 3 days (as well as risk values in the past). Decision-makers can alter the risk models' parameters (likelihood, consequence) based on their local insights, and observe how risk changes according to these alterations;
- **The Decision Support Tool (RINA C)** that aims driving the user in the situation comprehension and decision taken via a questionnaire, preload rules and action prioritization. Moreover, it integrates a traffic management prevision system (Macroscale Transport Chain Planner - MTCP) for logistics support which is able to estimate traffic conditions on the base of some emergency scenarios that can be determined by weather events. The tool offers support to the emergency operator in the situation comprehension and decision to be taken: action plan, action Prioritization.

The initial implementation of the tools on the pilot sites was already achieved by the end of RP2 (**Milestone M4.2**, November 2018, **M30**), which results and preliminary feedback from end users were gathered in the **Deliverable D4.3**. Their main functionalities were already described in depth in the RP2 technical report.

During RP3, the works related to the local specific awareness and specific decision support tools consisted in refining the tools to improve their usability and response in the operational environment.

2.4.3.9 Summary of Task 4.10. Integrating crowdsourcing and social media communication skills (both ways) in A4EU

The **ANYWHERE** Social Media Analytics Toolkit (**SMAT**) has been developed to collect information posted on Twitter social network, and has been explained in detail in previous RPs. The tool enriches the information gathered from social networks with crisis relevant metadata (e.g. being related to floods), geo-reference and aggregated and disseminated via dedicated API interface. One of the core components of the **SMAT** is the **automated classifier**, which is designed to predict the probability associated with the message belonging to certain predefined category. The classifier

designed in this project is **based on convolutional neural networks**, which are the current state of the art for text classification and are able to capture semantic similarities that are relevant for our task of distinguishing hazard-related messages. The **ANYWHERE** SMAT only shows in the respective **A4EU** platforms the Tweets over 80% of likelihood (see an example in Figure 14).

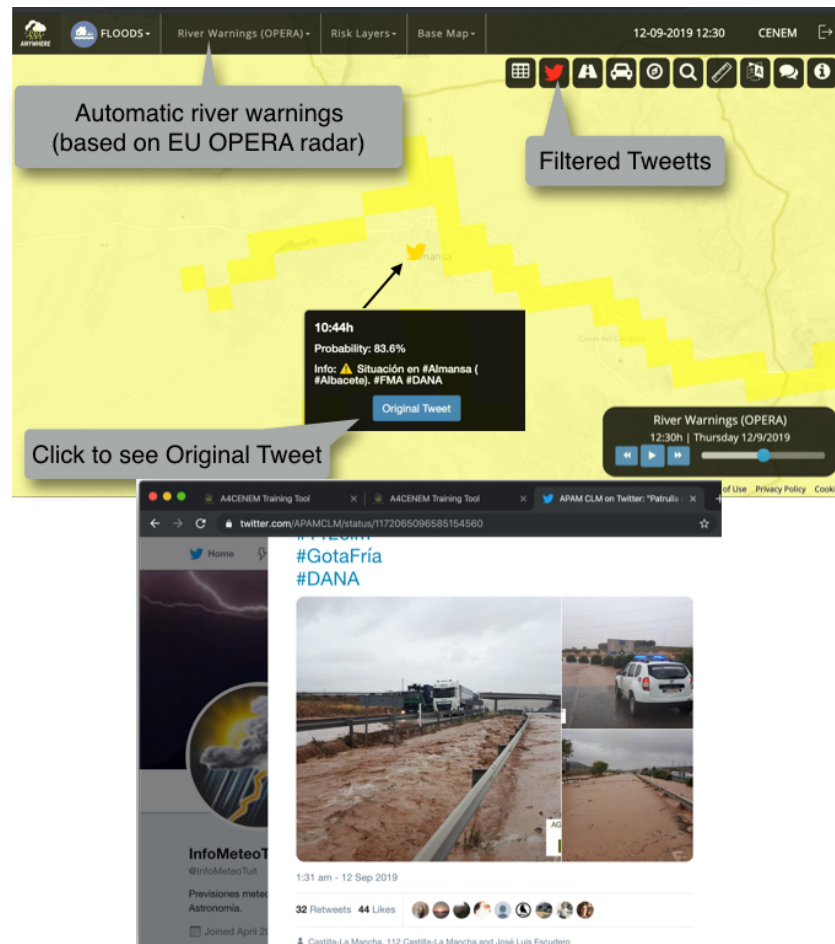


Figure 14: Example of a Tweet in Almansa (Spain) with a 84% flood-related probability, reporting on the river Segura (Spain) during the severe flood event on September 2019 seen through **A4Cenem** and connection to the original Tweet (bottom) in Twitter.

After the first months of the operational demonstration testing of the **A4EU** platforms, users identified some issues and improvements, which were gathered in Deliverable **D4.4**.

During RP3, the works have been oriented mainly to address the issues identified in the testing phase improving the final version of the implemented tool. The main improvements are listed below:

- New feature implemented in the API that allows gathering end-users' feedback during the operational demonstration to validate tweets and use this validation to train the SMAT classifier (based on neural networks).
- A new geo-parser has been developed, with a much efficient and fast algorithm.



- A complete database of Open Street Maps facilities, POIs and geographic places with their multilingual names has been implemented. Some categories of critical infrastructure have been defined (transport, health, education facilities) and OSM data extracted for those classes.
- Training the SMAT with more languages, such as Finnish: The first results were unsatisfactory since, apparently, the text mining tools do not work well with Finish language.
- The adaptive learning method for continuous training of the models is currently under test. Training of the new Named Entity Recognition algorithm has not been done yet. This requires development of new web interface which will need more time. An existing commercial solutions (PRODIGY) is being used as benchmarking.
- Development of indicators to detect the onset of the new events and filter the noise of the recession in the social media signal after the event (e.g. moving window normalisation on time-series of processed signal for different spatial units). The new data stream is already included in the SMAT API. The performance assessment and tuning of the parameters is ongoing.
- Implementation in the SMAT API of the JIT mechanism of marking tweets as representative. The performance of the "representative" tweet identification is still not completely satisfactory and has to be tuned during the real cases and/or when more data become available.
- Integration of news (GDELT project <https://www.gdeltproject.org/>) for obtaining statistics of selected events (for historic events): The data acquisition from the GDELT database has been completed, being stored in an ElasticSearch computing cluster. An analytical dashboard for creating event specific (name, geographic area and time constrained) ontologies of disaster impacts has been developed. The solution is being merged with our own geo-parser to improve the location of the news reports.
- Image recognition and classification (in addition to text): We have developed a prototype for classifying images, detecting objects in images (FLOOD IR) and streamer to store images posted on Twitter. We have also prepared the training dataset for floods. Preliminary results showed that the infrastructure needed to run the FLOOD IR is extremely demanding (both in terms of processing power and storage). The classifier works well in classifying the flood related images, but the main hurdle is that the system is unable to analyse the time when the image was taken (e.g. pictures of the same location during historical floods). This activity is still considered promising (especially considering the huge progress in the ML/AI technology), but it will require more time and resources.

2.4.4 Identification of difficulties and delays and actions foreseen

No relevant difficulties have been encountered during RP3.

Deliverable D4.5 was submitted with a slight delay, October 2019 (**M42**), but to include the last results compiled in the Pilot Sites finalised in **M41**.



2.4.5 Deviations from DoA and updates of the Implementation Plan

Although the critical situation that **WP4** has experienced during RP2, the efforts done through the **Recovery Plan**, including the change of **WP4** leader, the incorporation of PREDICT Services as a new partner and the re-assignment of tasks and efforts as reformulated in the **DoA of the GA Amendment** (November 2018, **M30**) have allowed the Consortium to recuperate the delays and achieve all the initial objectives during RP3.

Therefore, there are no deviations from DoA at the end of the project.

2.4.6 Identification of exploitable Results, and details to be included in the Results Map of Ownerships and Rights

The developed tools and products (Tasks **T4.2** to **T4.10**) that can be considered as marketable results of the project have been identified as **ANYWHERE** exploitable results and their description has been included in the **Deliverable D7.4 Innovation Exploitation Plan** prepared during this RP3 by **WP7**.



2.5 WP5: Raising self-preparedness and self-protection to reduce population vulnerability (Leader: UPB)

WP5 envisages raising self-preparedness and self-protection (self-p*) of citizens and enterprises to reduce population and economical activities vulnerability.

2.5.1 Main advancements and achievements during the RP3

During RP3, **WP5** focused on finalizing case studies and drawing conclusions from observations and feedback received. Especially those case studies which are motivated by winter weather phenomena (snow impacts) finalized data collection. Even though no high-impact weather events could be observed throughout all four case studies, feedback could be collected by simulated events and structured workshops.

The case studies were observed from different perspectives based on WP5 case study manual, resulting in final studies: communication aspects were integrated into the **ANYCaRE** game definition; ethical and legal issues (including those mentioned in the second evaluation of the project) were reflected; business impact and business continuity were investigated focusing on all cases. With special efforts, the **ANYCaRE** serious game was played in the PROCIV workshop in Helsinki (July 2019) during the Finnish European presidency supporting the analysis of preparedness towards a multi-hazard event. All studies and findings are documented in deliverable **D5.3**.

The results obtained can be interpreted from two perspectives: Firstly, all results were accomplished both by case study teams within the framework of pilot sites (reporting to **Deliverable D5.2**) as well as by the overarching scientific team focusing on various perspectives (**Deliverable D5.3**). Secondly, no high-impact weather events and even hardly any extreme weather was observed at the sites of interest during the RP3. Only few events could be used to capture real feedback from end users regarding self-preparedness and self-protection (self-p*). These were observed only in Catalonia (river gauge close to camp sites) and in Finland (convective storms affecting transmission grids). Thus, conclusions regarding impacts on risk communication, ethical and legal issues as well as uptake and business cases are almost completely based on simulated cases and deepening literature reviews. Nonetheless, contacts with additional potential customers (like the city of Milano, further camp sites in Catalunya, railway operators in Finland as well as municipalities being obliged to take actions in case of snowfall) and with further uses cases in automotive, transport and agriculture support the ambition of **ANYWHERE** to address self-p* as an additional market.

Finally, an additional case study **for municipalities** has been explored as a consequence of the feedback received during the Hands-on training activity held in March 2019, and a new **A4Cities** service have been tested in collaboration with the municipality of **Blanes** (Catalonia), **Mafra** and **Setúbal** in Portugal.

2.5.2 Advancement in the Deliverables

During the RP3 **WP5** has delivered two Deliverables: **D5.2** and **D5.3**.



Deliverable D5.2 includes reports from all four case studies of how **ANYWHERE** can support the operational application of self-protection plans. All tools and services were implemented and deployed on selected pilot-sites. Reports cover the technical perspectives, data collection by observation and interviews/ workshops as well as envisaged business models/cases. Standard reporting schemes were used to support the transfer of results within WP5 and towards exploitation perspectives of **ANYWHERE**. Due to required compensation measures and extended data collection in some case studies, the delivery of **D5.2** was slightly delayed.

While **D5.2** covers documentation of specifications and data, **D5.3** includes interpretations and conclusions from scientific perspectives. Missing data due to lack of real events was compensated by literature research and workshops, both documented in **D5.3**. The delivery was slightly delayed due to dependencies to **D5.2** (providing input) and **WP7** (intended to act on **WP5** results).

Table 8: Status of the advancements in the WP5 Deliverables at the end of the project (M43).

Deliverable	Title	Submission date	Progress status (in %)
D5.1	Report describing approaches supporting innovation for self-preparedness and self-protection (Leader: UPB)	M19	100%
D5.2	Report describing the products and services of the 4 case studies in Tasks 5.3-5.6 (Leader: RINA)	M42 (originally M38)	100%
D5.3	Report on best practices and strategies for innovative self-preparedness and self-protection and the summary of lessons learned from case studies (Leader: UPB)	M40 (v1) M43 (v2)	100%

2.5.3 Advancements per Task

Advancements in **WP5** are split into five Tasks. Tasks **T5.1**, and **T5.2** concluded during RP2 delivering **D5.1**.

Tasks **T5.3** to **T5.7** have continued testing and validating their developments in the framework of the operational demonstrations in the pilot sites.

2.5.3.1 Summary of Task 5.3: Reducing storm-driven impacts on electricity transmission grids in Finland

FMI developed the nowcasting and forecasting tools of the case study *Reducing storm-driven impacts on electricity transmission grids in Finland*. The aim of this task was primarily to develop forecasting products tailored for Finnish power transmission companies, with the ambition to implement the products later by similar companies in different locations and countries. The products developed in this project, serve the electricity company's resource allocation as well as the forecast of the disturbances in electricity networks by combining meteorological information and geo-spatial information from electricity grids.

The thunderstorm-induced power cut forecasting product was the main development target of this task, but at the end of the project, also the development of a winter storm tool was begun. The winter tool aims to forecast the impacts of interruptions during the fall and winter season, when the Finnish weather is influenced by mid-latitude storms.

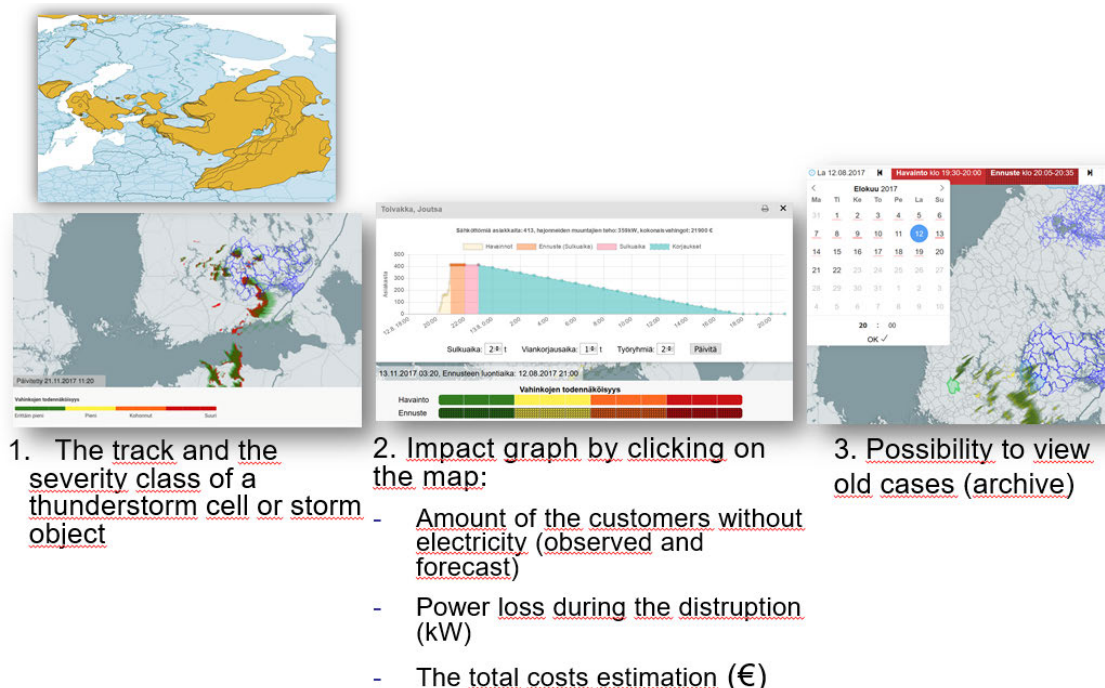


Figure 15: Output of the impact estimation products

The demonstration products (Figure 15) were piloted by a Finnish electricity operator, *Järvi-Suomen Energia* (stakeholder). During the pilot period, FMI performed interviews for the end-users (JSE/SSSoY) as a part of the case study and gathered the interview material. The results are more closely introduced in **D5.3**. Based on the interviews and the feedback collected during the testing periods (summer 2018 and 2019), further algorithm and interface improvements were implemented in 2019. In general, the end-user finds the product useful in estimating the damages for power grid and for relocating resources. In addition to the user interviews, also verification of the classification algorithm was performed by FMI. The verification methods and results are introduced in **D5.2** and are described in more details in Tervo et al. (2018, 2019).

2.5.3.2 Summary of Task 5.4: Enabling self-response of the logistic platforms of the food distribution companies during severe weather events

During RP3, the **A4Snow** module to forecast the impact of the snow falls on the road conditions for improved management of the logistic platforms of food distribution companies developed by UPC (see its description in **D5.2**) has been continuously running for the pilot site of Catalonia.

These forecasts were integrated in a specific tool for the operators of the Mercadona logistics platform (one of the largest supermarket networks in Spain and partner of the Council of Food Distribution Companies of Catalonia, CEDAC (stakeholder of the project). The feedback collected showed that, despite of the winter season of 2019

being very mild in the study area (with very few snowfall events outside the mountainous areas), the developed tool showed some potential to identify the road conditions and provide useful information for the logistics platform operators during the relatively minor events. Also, UPC has focused on the evaluation of the performance of the system in terms of the quality of the meteorological and road conditions forecasts. The main findings have been summarized in **D5.2** and in the work of Huertas (2019).

Additional potential use cases have been studied. In this regard, the road condition forecasts of the **A4Snow** module have been made available through the **ANYWHERE MH-EWS**. The outputs for the pilot site of Catalonia, have been thus integrated also in the **A4Cat** and **A4Cenem** platforms since the start of the demonstrations in October 2018 and have been used at the Emergency Control Centre of Catalonia (CECAT) and the National Centre for Emergency Coordination (CENEM) during the winter 2019-2020 (see Figure 16). This experience triggered the development of some additional features (alerts for critical and priority roads and for school transportation routes) during the reporting period. These new features have been available during the last months of the project and continue at present to be tested beyond the end of the project during winter-spring of 2020.

Furthermore, UPC has applied the **A4Snow** module to forecast the snow fall impacts on the road networks of Valencia region and Basque Country (Spain). The outputs have been integrated in **A4Cenem** and are being tested during winter 2019-2020 in collaboration with DGPCE and the Department of Interior of the Basque Country. The Storm Gloria in January 2020 has provided a big success story of these products that have been able to forecast the road affectations due to the snow in the highways of the Valencia region (A-3 and A-31) and on critical points of Catalonia as it is the point of *Coll de Ravell* in the highway C-25 (Figure 17).

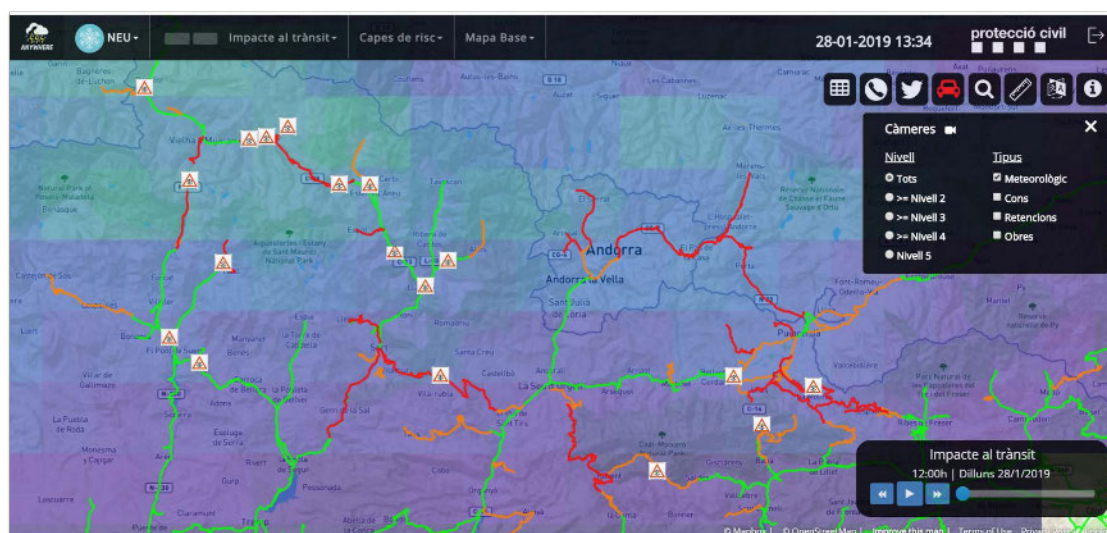


Figure 16: **A4Snow** traffic impact forecasting products visualized through the **A4Cat** platform. The image shows the forecasts of the snow accumulated depth and the impact on the road networks: red segments indicate that traffic will be severely affected by snow, orange segments that traffic will be moderately affected, and green segments that traffic will not be affected. The traffic incidents reported and the available webcams are also available through the **A4Cat** platform.

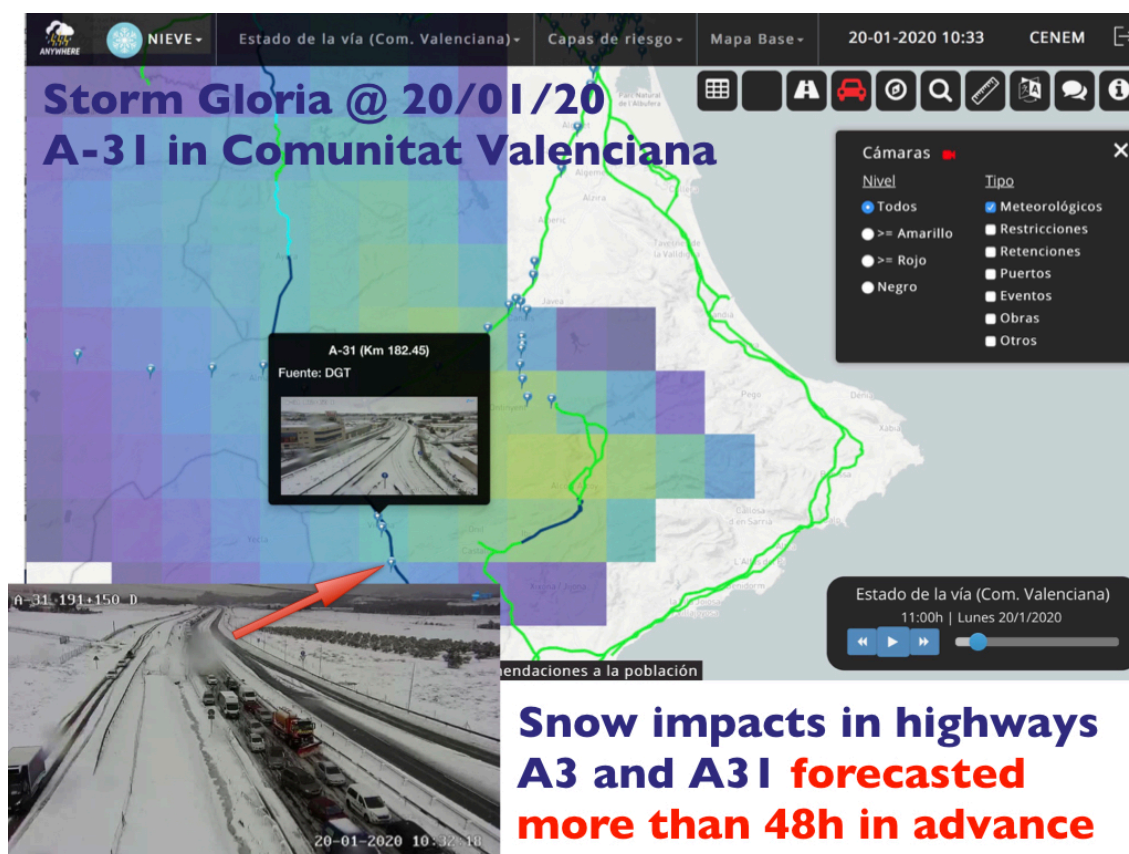


Figure 17: **A4Snow** road impact forecasting visualized through the **A4Cenem** platform during the storm Gloria (19-23 January 2020) in the Valencia Region (Spain). The image shows the accumulated depth of the snow forecast and the impact on the road networks: dark blue segments indicate that snow equipment will be required, light blue that snow will accumulate on the terrain and green segments that snow won't cause impacts. The snow impacts on roads were forecasted more than 48h in advance to the real effects seen through the traffic webcams also incorporated in the **A4Cenem** platform.

Storm Gloria @ 20/01/20 (Catalonia)

Tram : C-25 - Eix Transversal

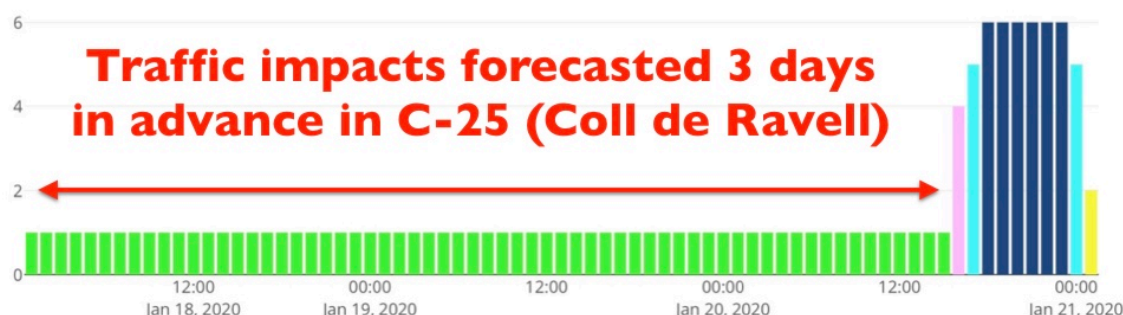


Figure 18: Example of the **A4Snow** road conditions impact forecasting visualized through the **A4Cat** platform during the storm Gloria (19-23 January 2020) with affectations on the Catalonia pilot site (Spain). The image shows the temporal detail of the forecasted impact on the road networks for the segment of the highway C-25 at *Coll de Ravell*: dark blue indicate that snow equipment will be required, light blue that snow will accumulate on the terrain; pink that precipitation is in form of sleet, yellow that



the road will be in wet conditions and green no impacts are foreseen. In this event the snow impacts on roads were forecasted up to 3 days in advance with an excellent anticipation capacity.

On the other hand the snow impact forecasting products of **A4Snow** are being validated during winter time through the science-citizen initiative “*Carretera Nevada*” (Snowed road, see Figure 26 and <http://crahi.upc.edu/carreteranevada/>).

In parallel, RINA-C has focused on the implementation of a vulnerability function translating road condition into capacity reduction into a Macroscale Transport Chain Planner and the development of a web-based Decision Support Tool. These tools have been demonstrated in the second case study of Genoa, and feedback has been collected from the Municipality of Genoa through interviews, demo and meeting from operational and exploitation perspective.

An effort has been done to disseminate the results and identify additional stakeholders (Resilience department of Milan Municipality, Aiscat S.r.l.) interested in the case study. RINA-C has also contributed to **D5.2** describing the transportation case study and the technical development of the service and products achieved as well as their implementation during the period, and the framing of the business case.

2.5.3.3 Summary of Task 5.5: Increasing self-protection in campsites located in flood prone areas in Catalonia

During this period, operational implementation of **A4Campsite** has been available for 14 affected campsites in near the Tordera river in Catalonia. This way, the testing phase started in July 2018 has been extended up to the end of the project, covering another season on campsite activity.

Three river sensors from RAB Consultants (project partner) have been installed in March 2019 in the affected area. These sensors have been incorporated in **A4Campsite** in addition to the ones already available, belonging to the Catalan Water Agency (ACA, also partner in **ANYWHERE**). Figure 19 shows the sensor located in the main river bed (closer to the campsites than the ACA sensors), and the other two are in small intermittent streams that have never had previous sensors.

The tool itself has been complemented with a help documentation, explaining all the data available, the workflow of the tool and the configuration options available to users. An online questionnaire for feedback has also been prepared and it is permanently available to gather evaluations on the usefulness of the tool on events as well as possible technological bugs. Both the documentation and the feedback questionnaire are accessible from the main view of the tool.

During last months, interaction between ACA, Campsites Association and HYDS has been devoted to face the continuity of the tool beyond the end of the project. As a first step, ACA provided updated flooding studies on the Tordera river, so sensor thresholds (that trigger warnings) have been configured now according to official sources.

A dissemination video on this task has been carried out involving campsite owners and municipal Civil Protection (https://www.youtube.com/watch?v=jnQ_6hw9d8Q).

Finally, **Storm Gloria (19-23 January 2020)** has severely affected the area providing an extremely relevant case study (over 50-year return period) that has obliged to

evacuate the Campings of the Tordera River, among many other impacts. And the bridge in which the RAB sensors were located has been fully destroyed by the torrential flood. This event, which occurred after the end of the project, is currently under study by several partners of the project, but unfortunately it has been impossible to include here any analysis. However, it will be included in the publications that will be produced during the next months as consequence of the work of **ANYWHERE**.

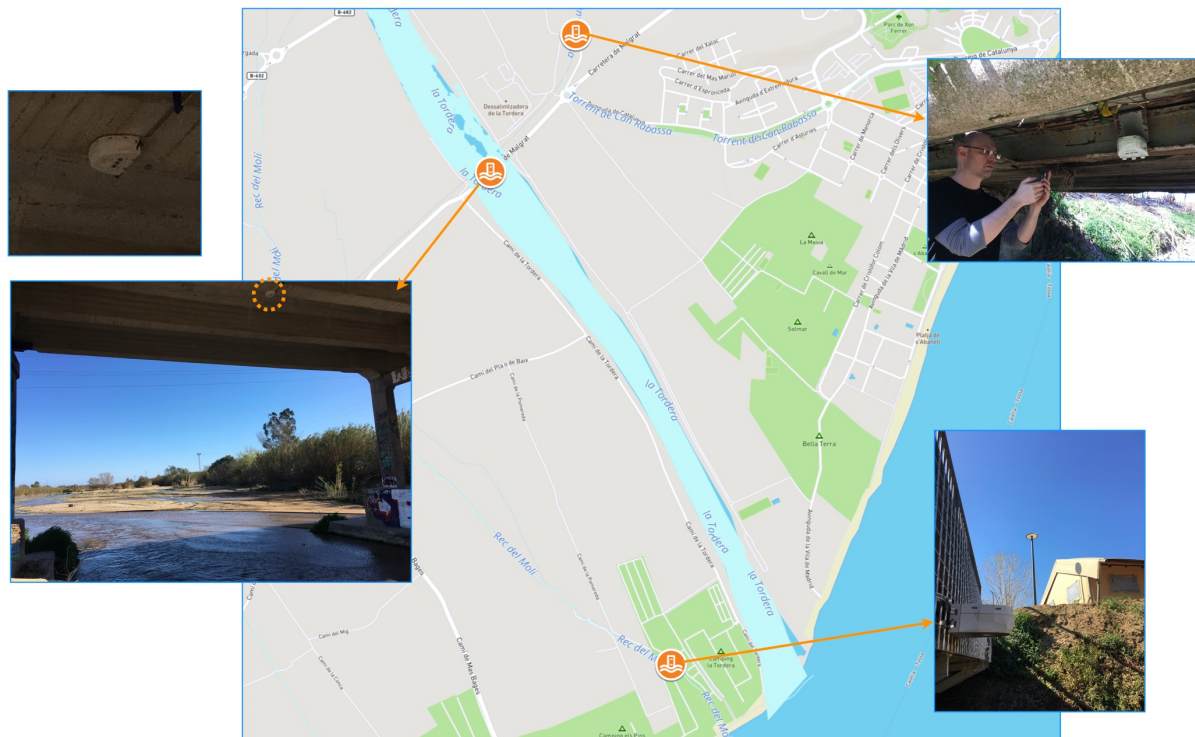


Figure 19: Location of RAB sensors (orange) in the Tordera Delta area together with illustrative pictures.

2.5.3.4 Summary of Task 5.6: Increasing self-awareness and self-protection in front of flooding risk in schools in Liguria

During RP3 the activities of **T5.6** were related to the pre-operational use of the tools with the selected schools and stakeholders that collaborated in the design phase (see RP2 Technical Report). The **A4Schools** tool has been implemented by using a Telegram BOT whose functionalities were defined through a participatory design involving school directors, teachers and parents. The procedure is triggered by the information from **A4Lig** and messaging is integrated into the operational tools used by the City of Genova (partner CDG). Messages are distributed to registered end-users using a dedicated system and received by a dedicated Telegram BOT.

Evento del 14/09/2018			Evento del 14/09/2018			Evento del 14/09/2018			CLOSE EVENT	EVENT START
SCHOOL_CODE	SCHOOL_NAME	SCHOOL_DESCR	NOTIFIED		ACTION					
GEAA839006	298 - I.C. BOLZANETO - S.MAT. - I.BRONFENI	SCUOLA DELL'INFANZIA								
GEIC82900A	304 - I.C. BOLZANETO - SCUOLA SEC. I GR. PIERO GASLINI	SCUOLA SECONDARIA DI SECONDO GRADO								
GEIC792006	302 - I.C. BOLZANETO - D'ALIGHIERI	SCUOLA PRIMARIA								
GEIC839009	306 - I.C. MARASSI - I.C. MARASSI / S.M. LOMELLINI	SCUOLA SECONDARIA DI SECONDO GRADO								
GEAA839005	300 - I.C. MARASSI - S.MAT. - PAPA GIOVANNI XXIII	SCUOLA MATERNA								
GEAA839004	308 - I.C. SESTRI EST - SCUOLA DELL'INFANZIA	SCUOLA DELL'INFANZIA								
GEIC839008	307 - I.C. SESTRI EST - SECONDARIA DI SECONDO GRADO	SCUOLA SECONDARIA DI SECONDO GRADO								
GEAA839002	299 - I.C. STAGLIENO - MAZZINI	SCUOLA PRIMARIA								
GEMD849007	311 - I.C. STAGLIENO - SCUOLA PRIMARIA G.MAZZINI	SCUOLA PRIMARIA								
GEIC829006	305 - I.C. STAGLIENO - LUCARNO LODI	SCUOLA SECONDARIA DI PRIMO GRADO								
GEIS009009	308 - I.P.S.C.T. - MONTALE - NUOVO IST. PROF. COMMLE	SCUOLA SECONDARIA DI SECONDO GRADO								
GERI102004G	319 - I.P.S.S.A.R. N.BERGESE/SEALE	SCUOLA SECONDARIA DI SECONDO GRADO								
GEIS00900Q	310 - I.S. I. CALVINO	SCUOLA SECONDARIA DI SECONDO GRADO								
GETN00900R	314 - I.T.E. - E.FIRPO	SCUOLA SECONDARIA DI SECONDO GRADO								
GETD00900G	311 - I.T.S. - E.MONTALE	SCUOLA SECONDARIA DI SECONDO GRADO								
GEIS009006	309 - I.T.E. M.BRONFENI	SCUOLA SECONDARIA DI SECONDO GRADO	14/09/2018 13:24		14/09/2018 13:24					
GEAA839004G	307 - I.C. TERRALBA - MARCONI - SCUOLA DELL'INFANZIA	SCUOLA DELL'INFANZIA	14/09/2018 13:22		14/09/2018 13:22					
GEIS00900R	301 - I.C. TERRALBA - SCUOLA PRIMARIA	SCUOLA PRIMARIA								
GEIS009005	289 - I.M.MACOLATINE	SCUOLA DELL'INFANZIA								
GERI102006	318 - I.P.S.S.A.R. N.BERGESE	SCUOLA SECONDARIA DI SECONDO GRADO								
GETD00900B	305 - I.T.S. C. BONELLI	SCUOLA SECONDARIA DI SECONDO GRADO	14/09/2018 13:22		14/09/2018 13:22					
GESL00900P	320 - LA PAUL KLEE-N.RARABINO	SCUOLA SECONDARIA DI SECONDO GRADO								
GEPC00900P	312 - I.C. DORIA	SCUOLA SECONDARIA DI SECONDO GRADO								
GEPC00900E	313 - LICEO CLASSICO E LINGUISTICO G. MAZZINI	SCUOLA SECONDARIA DI SECONDO GRADO								

Figure 20: **A4Schools** dashboard at CDG Civil Protection. This tool allows for evaluating immediately the status of each school for what concerns the activation of protection measures.

The **A4Schools** tool has been used to support CDG, during the operational period activities in the Liguria pilot site, sharing the warnings and emergency information directly with the **A4Schools** users (school directors, teacher, parents that participated in the design phase and with the **ANYWHERE** partners involved – CIMA and ARPAL). During the operational phase not relevant emergency events affecting the areas of the selected schools occurred. For this reason, a live exercise test has been organized confirming the benefit of the methodology for the users.



Figure 21: School following the self-protection procedure triggered by **A4Schools** tool during a live exercise.

2.5.3.5 Summary of Task 5.7: Defining recommendations for self-preparedness and self-protection to reduce the vulnerability of the population

Within this reporting period, all case studies have been framed, analysed and reported in **D5.2** and **D5.3** to define recommendations for self-p*. In particular, the documentation the report has been organised from a technical perspective in order to allow a structured analysis of the technical development (concept, models), implementation of functionalities and feedback gathered from the respective target users (see **D5.2**). For each case study, an additional analysis of business potential has



been also performed ensuring coherence with **ANYWHERE** exploitation plan. In detail, the analyses covered the framing of the value proposition, potential customers and form of commercial configuration. Conclusions were derived with high-level considerations identifying the overall suitable business model (B2M) for the **ANYWHERE** concept and products and the type of customers/users highlighted through these case studies (i.e. civilian population, commercial companies). To gather lessons learnt and recommendations from the case studies (see **D5.3**), the methodology to scope, collect and analyse data was applied (case study manual). In addition to the cases study analysis considering developed tools to support self-p*, various perspectives like business continuity management, risk communication aspects or ethical and legal aspects were examined. This led into the development of strategies for innovative self-preparedness and self-protection as well as the consideration of an additional case “Strategy for innovative self-p* for a railway operator”. Promising fields of innovation to identify possible cases with different partners were identified and analysed.

As a result of the feedback received the guidelines initially framed in **D5.2** and the support tools were revised and described in **D5.3**. F.I. developed guidelines have been made available through the Common Information Space as short guidelines.

1. Within **T5.7**, further case studies were identified and analysed. Based on generic business model patterns proposed by Gassmann and Enkel, business model patterns for innovative self-preparedness and self-protection were identified. The additional case study of innovative self-preparedness and self-protection for a railway operator (“*Deutsche Bahn AG*”) was developed (see **D5.3**) triggered by feedback from **T5.3**. By applying the scenario technique tool, the business potential for the reduction of the effects of high-impact weather on the railway network was rated. Seven additional case studies were identified based on creativity techniques. They were reflected with partners within the research network of the Heinz Nixdorf Institute at UPB. Examples were the integration of **ANYWHERE** components into firefighting products and the development of novel business models for an autonomous driving solution by integrating weather and impact forecasting. With the automotive engineering company EDAG Engineering Solutions, a weeklong workshop was held to develop such services and related business models. During that workshop, six different ideas and concepts were developed, as for example the tailoring of the EDAG city bot to service in preparation and during high impact weather. EDAG considers uptake of **ANYWHERE** to adapt the routing, calculated by the navigational system, with regards to impacts as severe weather predictions as well as air pollution or temperature and rain.

2.5.4 Identification of difficulties and delays in relation with the Implementation Plan and actions foreseen

No major difficulties have been experienced during the 3rd reporting period.

2.5.5 Deviations from DoA and updates of the Implementation Plan

There are no deviations from the DoA of the Amendment.



2.5.6 Identification of exploitable Results, and details to be included in the Results Map of Ownerships and Rights

Results in **WP5** are distinguished into two categories:

- Overarching tasks:
 - Results from studies (**D5.1 – T5.1/T5.2** – UPB, SSSA, CNRS, others)
 - Conclusions from pilot site visits (**D5.1 – T5.2** – CNRS)
 - Design and offline/online realization of the ANYCaRE serious game (documentation in **D5.1 – T5.2** – CNRS, KAJO, ACA)
 - Guidelines (Annex of **D5.1** and **CIS – T5.1** – all partners)
 - Scenario Tool design and desktop application implemented in Matlab (documentation in **D5.1 – T5.1** – UPB)
 - Scenario Data Model and content regarding influence factors and projections (documentation in **D5.1 – T5.1** – UPB)
 - Design and updated version of the **CIS (T5.7 – UPB)**
- Case study services/tools:
 - A web service and desktop application to calculate an impact graph in case of thunderstorms (observed/forecasted amount of the customers without electricity, power loss during the disruption in kW and total costs estimation) tested by electricity transmission grid operators (documentation will be included in **D5.2 – FMI**)
 - A web service to estimate weather impact on roads in terms of snow accumulation and implications on traffic (documentation will be included in **D5.2 – UPC**)
 - A decision support tool utilizing the output of the UPC tool to estimate the impact on relevant logistics-related information (costs, routes, queues, velocity, etc.) (documentation included in **D5.2 – RINA**)
 - A support tool for camp site operators based on SaaS including flood-info including sensor data, interface to MH-EWS products, official warnings as well as self-protection plans and interactive checklists (documentation included in **D5.2 – HYDS**)
 - A procedural model and a messaging tool (web service, smartphone app) for school managers to inform parents about the safety status of their children and provide corresponding advice (documentation will be included in **D5.2 – CIMA, CDG, ARPAL**).

The developed tools and products (Tasks **T5.3** to **T5.6**) that can be considered as marketable results of the project have been identified as **ANYWHERE** exploitable results and their description has been included in the **Deliverable D7.4 Innovation Exploitation Plan** prepared during this RP3 by **WP7**.



2.6 WP6: User-driven pilot sites implementation and demonstration (Leader: CIMA)

WP6 aims to show, test and demonstrate the operational application of the technologies developed in the project, starting from the algorithms to anticipate impacts (**WP2**), their operation 24/7 in the real-time **MH-EWS** (**WP3**), and their adaptation to the local needs and requirements through the **A4EU** prototypes (**WP4**), including third-party developments and tools, and the developments oriented to raise self-protection of population and activities (**WP5**).

2.6.1 Main advancements and achievements during the RP3

WP6 activities from **M33** to **M43** were focused on the demonstration in the different pilot sites of the project. The **ANYWHERE** pilot sites for the demonstration activities are:

1. Genoa - Liguria (Italy), the local **A4EU** system is called **A4Lig**.
2. Catalonia (Spain), the local **A4EU** system is called **A4Cat**.
3. Mikkeli - South Savo (Finland), the local **A4EU** system is called **A4Finn**.
4. Canton of Bern (Switzerland), the local **A4EU** system is called **A4Alps**.
5. Stavanger (Norway), the local **A4EU** system is called **A4Nor**.
6. North Corsica (France), the local **A4EU** system is called **A4Cor**.
7. National Emergency Control Centre of Spain (CENEM), the national **A4EU** system is called **A4Cenem**.

During RP3 the different **A4EU** systems were operationally testing 24/7 the different algorithms and products made available through the **MH-EWS**. The developments oriented to support self-protection plans for activities at risk (**WP5**) were also tested.

The aim has been to show the effectiveness of the **ANYWHERE support to the decision-making process in the emergency management centres** of the pilot sites, as well as the actual **improvement of the first responders' operational capabilities** before, during and in the aftermath of emergencies induced by extreme and high-impact weather and climate events.

The results have been showed in the **hands-on training activity for stakeholders** held in March 2019 (**M34**) at the Spanish Civil Protection School, as well as in the **Hands-on demonstration** and the **Final Workshop** held in Brussels at the end of October 2019 (**M41**).

2.6.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP6** at the end of the project (**M43**) is:



Table 9: Status of the advancements in the WP6 Deliverables at the end of the project (M43).

Deliverable.	Title	Submission date	Progress status (in %)
D6.1	Detailed planning of A4EU implementation specifications in each pilot site (Leader: AIRBUS)	M22 (originally M19)	100%
D6.2	Detailed planning of A4EU training of local operators and first responders in each pilot site. (Leader: CIMA)	M23 (originally M19)	100%
D6.3	Report compiling the evaluation and recommendations for improvements provided by the users after the beta tests of the A4EU prototypes implemented in each pilot site, ready for the demonstrations (Leader: AIRBUS)	M32 (originally M28)	100%
D6.4	Report compiling the conclusions and the recommendations of operators and first responders (Leader: INTC)	M41 (v1) M43 (v2)	100%
D6.5	Final report compiling the results of the A4EU operations in each pilot (Leader: CIMA)	M43 (originally M42)	100%

Deliverables **D6.1**, **D6.2** and **D6.3** were already completed at the beginning of the reporting period. Deliverables **D6.4** and **D6.5** have been completed and submitted during RP3. **D6.4** has been submitted with 1 month of delay (from **M42** to **M43**) due to the efforts to include the feedback gathered during the discussions at the **ANYWHERE** Final Workshop held at the end of October 2019 (**M41**).

2.6.3 Advancements per Task

Task **T6.1** concluded during RP2 delivering **D6.1** to **D6.3**.

A new Task T6.8: **A4EU** Demonstration on the Spain national pilot site (ES), has been added to incorporate the 7th Pilot Site over the peninsular territory of Spain.

2.6.3.1 Summary of Task T6.2: A4EU Demonstration on the Liguria pilot site (IT)

The operations of **A4Lig** were done by the Municipality of Genoa (CDG) with the data support of ARPAL, the Meteo-Hydrological Centre for Civil Protection – Liguria Region (ARPAL). CIMA supported the operational partners during all demonstration activities and used a continuous feedback approach to iteratively improve the system. In particular, the demonstration activities were coordinated by the Civil Protection of the city of Genoa (CDG) in strong collaboration with the regional level (ARPAL) and with the National Level through the support of CIMA.

CIMA is a Competence Centre of the Italian Civil Protection Department for Flood and Fire risk and it is the developer of the **A4Lig** system based on **MyDewetra**, an IT

decision support tool operationally used by the Italian Civil Protection Department. During the operational period the specific tool for information dissemination to schools in flash-flood prone areas (developed in **T5.6**, **WP5**) have run in this pilot site as part of the operational duty with the aim of testing the capacity of the tool to increase self-awareness a self-protection in the population.

The different levels of Civil Protection (National, Regional and Local) have been linked by the **A4Lig** system. This was done with the aim of reaching an improved accessibility to information during hazardous events by all the stakeholders involved both in the Early Warning and Emergency and Response phases.

The activities of this task, during this reporting period, were devoted to:

1. Maintain the **A4Lig** prototype ensuring its 24/7 use at the CDG Headquarters. This activity was done by CIMA.
2. Test the **A4Lig** prototype for 12 months in the Liguria pilot site (CDG Headquarters) and provide monthly feedback about its operational use. This activity was done by the pilot site stakeholders (CDG, ARPAL).
3. Support the pilot site stakeholders in running 24/7 the **A4Lig** prototype. This activity was done by the pilot site research institution (CIMA).
4. Prepare and compile a checklist for evaluating the **A4Lig** operational period (all the partners).

This task, with 12 months of operational activities in the Liguria pilot site, contributed to deliverables **D6.4** and **D6.5** by providing detailed evaluation, strong points and drawbacks related to the operational activities with (and of) the **A4Lig** system both from a first responders' and from a technological point of view.

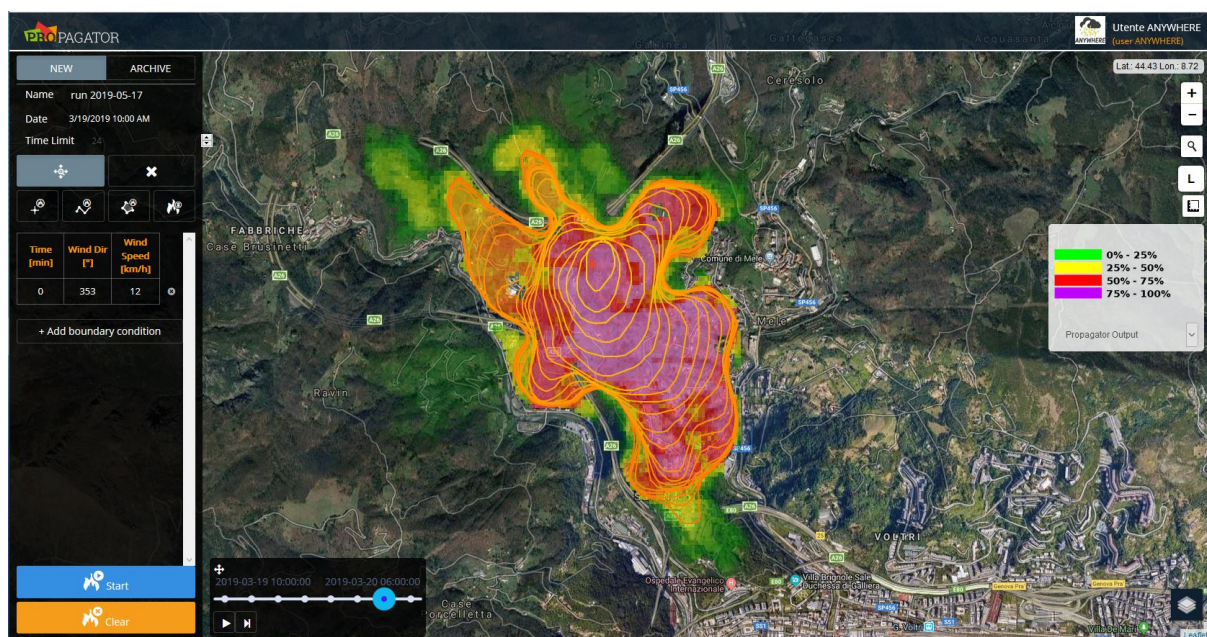


Figure 22: Example of forest fires hazard forecast using PROPAGATOR service visualized through **A4Lig** for the fire on 19th of March 2019 event in Liguria.



2.6.3.2 Summary Tasks of T6.3: A4EU Demonstration on the Catalonia pilot site (ES)

The **A4EU** version for the Catalan pilot site (**A4Cat**) has been extensively tested and demonstrated in Catalonia (Spain) during the RP3. In fact, this is the **A4EU** prototype that has been more extensively used both by an Emergency Management Centre during actual emergencies in real time, and by the **3 ANYWHERE trainings and hands-on demonstrations**.

The General Directorate of Civil Protection of the Catalan Department of Interior (INTC) and the Catalan Water Agency (ACA) were the users of the **A4Cat** prototype, developed, implemented by HYDS with the support of the researchers of UPC-CRAHI. Wageningen University (WUR) supported the use of the drought products in close collaboration with ACA.

The objective of this pilot in Catalonia (ES) was to use 24/7 the platform **A4Cat** to evaluate its performance to support coordination at multiple scales. The region is an area prone to different weather-induced hazards, with a huge presence of tourists and temporary visitors, and a high variety of climatic and socio-environmental areas from high mountains (Pyrenees), rural-agricultural areas prone to forest fires and droughts, to populated cities (Barcelona) and coastal touristic areas prone to flash floods due to heavy rainfall.

Successful results have been obtained in a number of events occurred during the demonstration period (and the following months since the operation did not stop at the end of the project) and the **ANYWHERE** tools, products and services have been intensively tested and validated, **leading to a paradigm change in the way of how Civil protection is acting during climate induced emergencies**.

In particular in the emergency events of the Francolí river (22-23 October 2019) and of the Storm Gloria (19-23 January 2020), **both with return periods over 50 years**, Civil Protection of Catalonia initiated the emergency response **BEFORE THE EVENT OCCURRED** based on the **ANYWHERE** impact forecast products provided by the **A4Cat** platform.

Particularly, storm Gloria in January 2020, with snowfall up to 500 m of altitude, strong winds, the major storm surge ever recorded in the Catalan coast (waves up to 8 m height in the Mediterranean) and severe heavy rainfalls covering a surface of 20.000 km² (over 200 mm in 24 h and over 400 mm in 96 h, with a maximum over 500 mm), is a major catastrophic in which **ANYWHERE** was exhaustively tested for more than 3 continuous days at the Centre of Emergencies of Catalonia (CECAT).

During this Gloria storm several response actions (including the management of the river Ter dams, and the confinement of tens of thousands of affected inhabitants of different cities) **were taken FOR THE FIRST TIME IN EUROPE based on impact forecasting early warnings without waiting for the observations** (saving over 6 hours for the operation).

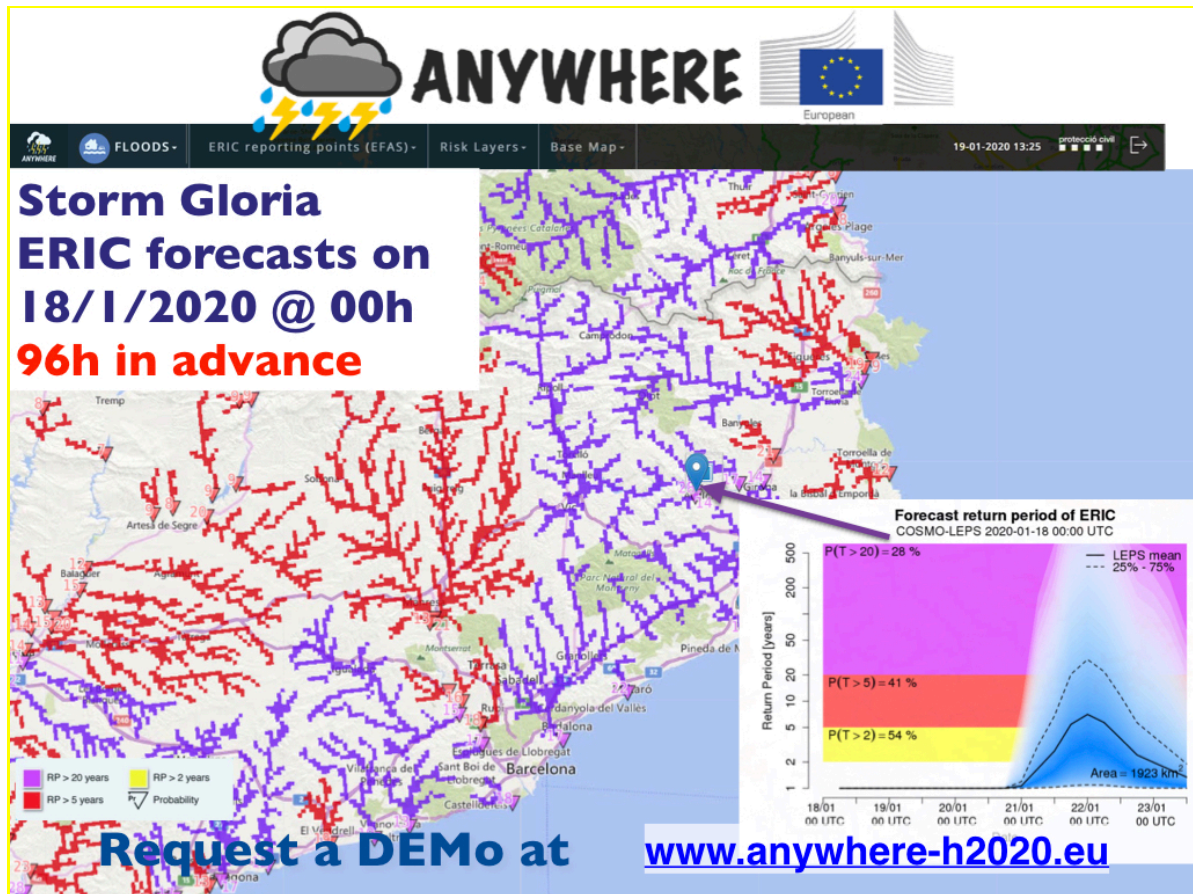


Figure 23: **A4Cat** screenshot showing the flash-flood forecasts using **ERIC** product on the 18/01/2020 at 00h during the Storm Gloria event in Catalonia. 96h in advance (see small graphic) ERIC was capable to announce the raising of river Ter that forced the dam releases on the night of 22 to 23 January and the confinement of tens of thousands of affected inhabitants in Girona city. The system forecasted 28% chances of being in a significant flood 4 days in advance (over 20 years return-period with some of the scenarios raising up to 200 years return period. Finally, the real event 4 days later was over 50 years return period.

This success, already explained in several presentations (as in the **ANYWHERE** Final Workshop), has led the Department of Interior of Catalonia (INTC) to announce a procurement based on the experiences collected during the **ANYWHERE** demonstration in Catalonia that will be published mid 2020 (see Figure 41).

On the other hand, in the framework of this task a huge additional effort was done to develop and test the exchange of information among institutions at different levels. In particular, to support coordination between national, regional and local levels (including the dissemination of information to local responders such as local police brigades and fire brigades or the regional Drought Management Table).

To that end, HYDS developed an additional version of the prototype, called **A4Cenem** (see sections 2.4.3.7 and 2.6.3.7), that has been implemented at National Centre of Emergencies Management (CENEM) of the Spanish Civil Protection (DGPCE), being the **first A4EU prototype adapted, implemented and tested on a EU member state**.

Finally, the self-protection services **A4Snow** and **A4Campsites** developed in **T5.4** and **T5.5 (WP5)** and the Crowdsourcing tools developed in **WP4 T4.10** (see section 2.4.3.9) have been also demonstrated.



This task contributed to deliverables **D6.4** and **D6.5**, and has contributed remarkably to the organisation of **the 3 ANYWHERE trainings and hands-on demonstrations**.

2.6.3.3 Summary Tasks of T6.4: A4EU Demonstration on the South Savo pilot site (FI)

The **A4EU** prototype adapted to the pilot site of South Savo (**A4Finn**) has been developed, implemented and run by AIRBUS, and operated by ISTIKE with the support of Ministry of the Interior (FMol) and Finnish Meteorological Institute (FMI). FMol and FMI were guiding the implementation to ensure that the developed system fulfils their needs.

ISTIKE has followed and monitored changes in the operating environment that enable it to respond quickly and with the field units to changing situations. ISTIKE does not replace the own management organizations of the four rescue services, but it supports them. ISTIKE can provide information to municipalities in the regions, cooperative authorities and other actors in various situations of disruption and forward various notifications to responsible persons. The main functions of ISTIKE are to monitor the current security and safety situation status in the Rescue Services of Eastern Finland and to communicate the changes to the competent rescue services, municipalities and other authorities.

Other key tasks of ISTIKE include:

- Supporting the Rescue Commander on duty and obtaining information in accordance with the Rules of Procedure
- Accident communication to support the Rescue Commander in charge
- Active monitoring and evaluation of the situation disturbances (Rapid Risk Assessment)
- Documentation
- Supporting the operation of the Regional Command Centers
- Communicating information to municipal management teams
- Other duties assigned by the Rescue officer on duty

FMI due to its operational role in producing the national forecast had also the role of supervision and control to ensure a seamless integration of the forecast products available at regional level.

The pilot included selected relevant hazard products, which are made available for regional civil protection organizations (rescue centres of ISTIKE) and FMI operational weather forecasters in Finland. FMol was the operational partner responsible for running it operationally and for evaluating its usefulness in the daily operations of Civil Protection in Finland. AIRBUS was responsible for technical implementation and FMI was ensuring 24/7 availability of the local forecast products. Additionally, during the demonstration period the specific tools for reducing storm-driven impacts on electricity transmission grids during high-impact weather events developed in Task **T5.3 (WP5)**



were tested in this pilot site, involving Järvi-Suomen Energia as stakeholder member of the **ANYWHERE** Stakeholders Board.

The activities of this task were devoted to:

1. Maintain the **A4Finn** prototype ensuring its 24/7 use at the FMol Headquarters and ISTIKE rescue centre. This activity was done by AIRBUS.
2. Test the **A4Finn** prototype for 12 months in the Finland pilot site and provide monthly feedback about its operational use. This activity was done by the pilot site stakeholders (FMol, FMI).
3. Support the pilot site stakeholders in running 24/7 the **A4Finn** prototype. This activity was done by the pilot site research institution (FMI).
4. Prepare and compile a checklist for evaluating the **A4Finn** operational period (all the partners).

This task completed 12 months of operational activities in the South Savo pilot site and contributed to deliverables **D6.4** and **D6.5**.

2.6.3.4 Summary Tasks of T6.5: A4EU Demonstration on the Canton of Bern pilot site (CH)

A4EU system for Canton Bern pilot site (**A4Alps**) has been developed and implemented by AIRBUS. The operational activity was driven with the aim of managing the uncertainties in risk assessments derived from the inclusion of long-term process knowledge and uncertain climate forecasts in managed mountain environments. The pilot study site was chosen because it represents a paradigm of co-occurrence of multi hazards in alpine areas (most notably flash floods, landslides, avalanches and debris flows, with minor importance also forest fires) with multiple infrastructure and inhabitants on risk, but also because ample baseline data is readily available from long term systematic records and detailed archival data.

Initially it was planned that the Canton of Bern (local organizations, regional and cantonal experts) will be the user of the platform. However, **A4Alps** prototype never reached the maturity status where the rollout to the local level was possible. Thus, **ANYWHERE** partners were the only users of **A4Alps** up until the end of the project in Fall 2019.

The roles within **A4Alps** were defined as follows:

- The Canton of Bern guided the development and the implementation to ensure that the developed platform fulfils their needs.
- AIRBUS supported it during all demonstration and use the continuous feedback to improve the **A4Alps** platform iteratively.
- Four different institutions represented the Swiss pilot site: The University of Geneva was the formal lead, representing the scientific community; the two SMEs Meteodat and Geo7 were covering the private sector; while VOLBE represented the end-users.

The activities of this task were devoted to:



1. Maintain the **A4Alps** prototype ensuring its 24/7 use at the VOLBE Headquarters. This activity was done by the technological partners (AIRBUS).
2. Test the **A4Alps** prototype for 12 months in the Switzerland pilot site and provide monthly feedback about its operational use. This activity was done by the pilot site involved partners (VOLBE with the support of GEO7 and METEODAT).
3. Support the pilot site stakeholders in running 24/7 the **A4Alps** prototype. This activity was done by the pilot site research institution (UNIGE).
4. Prepare and compile a checklist for evaluating the **A4Alps** operational period (all the partners).

This task includes 12 months of operational activities in the Canton Bern pilot site and contributed to deliverables **D6.4** and **D6.5**.

2.6.3.5 Summary Tasks of T6.6: A4EU Demonstration on the Rogaland pilot site (NO)

A4EU system for Rogaland region pilot site in Norway (**A4Nor**) has been developed and implemented by AIRBUS. The pilot site was led by Stavanger University Hospital (HSUH), represented by RAKOS (The Regional Centre for Emergency Medical Development and Research). RAKOS has the role to ensure common guidelines for actions in the acute medicine field and to oversee education and development in prehospital services. RAKOS is therefore very close to the action part of a crisis intervention and thanks to the connection with the police and fire department; it represents the natural link between the different services that are involved during a major crisis. SINTEF partner developed and implemented the local toolkit for the Rogaland Pilot site, called **ARA** (Risk-Assessment tool), connected to **A4Nor**.

This task was devoted to the operational deployment use of the **A4Nor** prototype in the Rogaland region pilot site. The operational activity was driven with the aim of giving support to the rescue operations managed in the region by the HSUH and to the civil protections responsible of the cities of Stavanger and Sauda. The pilot study site has been chosen because it represents the North Atlantic climate, with severe exposition to storm surges areas, being the key pilot site for this hazard.

The activities of this task were devoted to:

1. Maintain the **A4Nor** prototype ensuring its 24/7 operation at the HSUH emergency centre as well as in the cities of Stavanger and Sauda. This activity was done by AIRBUS.
2. Test the **A4Nor** prototype for 12 months in the Rogaland pilot site and provide monthly feedback about its operational use. This activity was done by the pilot site stakeholder (HSUH).
3. Support the pilot site stakeholders in running 24/7 the **A4Nor** prototype. This activity was done by the pilot site research institutions (SINTEF and CFR for the storm surge hazard).



4. Prepare and compile a checklist for evaluating the **A4Nor** operational period (all the partners).

This task included 12 months of operational activities in the Rogaland pilot site and contributed to deliverables **D6.4** and **D6.5**.

2.6.3.6 Summary Tasks of T6.7: A4EU Demonstration on the Corsica pilot site (FR)

The **A4EU** version for the Corsica pilot site (**A4Cor**) has been extensively tested and demonstrated by the *Service d'Incendie et de Secours de la Haute-Corse* (SIS2B) as end user with the support of Predict-Services, developer of the **A4Cor** platform during the RP3.

The activities of this task were devoted to

1. Maintain the **A4Cor** prototype ensuring its 24/7 operation at the SIS2B emergency management. This activity was done by the technological partners (PREDICT).
2. Test the **A4Cor** prototype for 12 months in the Corsica pilot site and provide monthly feedback about its operational use. This activity was done by the pilot site stakeholder (SIS2B).
3. Support the pilot site stakeholder in running 24/7 the **A4Cor** prototype. This activity was done by the pilot site research institutions (UNS, UPC for flash floods and CIMA for the forest fire hazard).
4. Prepare and compile a checklist for evaluating the **A4Cor** operational period (all the partners).

This task included 12 months of operational activities in the Corsica pilot site and contributed to deliverables **D6.4** and **D6.5**.

This task contributed to deliverables **D6.4** and **D6.5**, and has contributed remarkably to the organisation of **the 2 ANYWHERE hands-on demonstrations** organised during RP3.

2.6.3.7 Summary Tasks of T6.8: A4EU Demonstration on the Spain national pilot site (ES)

During the implementation of the **A4EU** prototypes in 2018, DGPCE tested **A4Cat** prototype and identified its huge potential, what led them to propose to the Consortium to develop an **adapted version for the national scale covering the peninsular Spain territory**. The agreement between DGPCE and HYDS to redistribute their budget share allowed **ANYWHERE** to implement and test a National scale **A4EU** prototype called **A4Cenem**, designed to support the Emergency Management Centre of the Spanish Civil Protection (CENEM), which became operational in October 2018 and have been added as **ANYWHERE** 7th pilot site for the demonstrations (see details also in section 2.4.3.7).

Due to the fact that this pilot site was not foreseen initially, no specific training was made while deploying the platform, just at the beginning of the demonstration period.



A quick start guide and advice were provided by HYDS and a latter training was held in March 2019 at the ENPC (Spanish National Civil Protection School) open to all pilot site partners and to **ANYWHERE** stakeholder institutions.

The development of a national system as **A4Cenem** was also aiming at supporting other regional Civil Protections that were requesting help and advice from the national level. Thus, **A4Cenem** has been operationally tested at the National Emergency Management Centre (CENEM) but has also been used and tested during the demonstration period by other regional civil protections and institutions (112 and firefighters services) involved as stakeholders in the development of the **ANYWHERE** project.

This task contributed to deliverables **D6.4** and **D6.5**, and has contributed remarkably to the organisation of **the 3 ANYWHERE trainings and hands-on demonstrations**.

2.6.3.8 Summary task of T6.9: Feedback of the operators, first responders and stakeholders recommendations

This task was devoted to present the feedback and the recommendations from the operators, first responders and stakeholders, active in each pilot site, based on the experiences collected during the demonstration period.

The activities done so far in **T6.9** are related to the sharing of experiences between the project partners operating in the different pilot sites. The activities are also devoted to report to the technical developers on the strengths and weaknesses of the **A4EU** operational implementations in the different pilot sites. The aim is to support the improvement of the local **A4EU** systems by the developers and implementers.

The final aim of this task is to collect feedbacks for improving the platform and to provide inputs to **WP7**. At the end of the operational demonstration activities, the operational partners have produced **D6.4** providing their recommendations resulting from the use of **A4EU** in the different pilot sites. Complementarily, **D6.5** has provided an overall description and the results of **WP6** activities in each pilot site, including an evaluation of the quality of the A4EU prototypes from the point of view of the users.

The work was carried out in parallel with the external evaluation performed in **Task T1.6 (WP1)** and was focused on supporting the improvement of the tools and local systems by the developers and implementers.

A final presentation of the conclusions and the recommendations of operators, first responders and stakeholders involved in the pilot sites included in the public deliverable **D6.4 has been presented in a specific session during the project Final Conference, held in Brussels on 30 October 2019.**

In this task were active 2 groups of partners with different roles:

1. **Pilot site stakeholders:** (e.g. INTC, ACA, DGCPE, AMAYA, CDG, ARPAL, SIS2B, FMoI, HSUH, VOLBE), who were in charge of providing feedbacks, suggestions and recommendations related to the operational test of the **A4EU** prototypes implemented and tested in the pilot sites during the demonstration period (see results in **D6.4**). The aim was to report from each pilot site strong points and drawbacks of the operational period from an end-user perspective.



The pilot site stakeholders were also requested to contribute to **D6.5** by reporting the main events that happened in their pilot sites during the demonstration period.

2. **Technological and Scientific partners:** (e.g. AIRBUS, CIMA, HYDS, PREDICT, UPC-CRAHI, UNIGE, FMI, SINTEF, CFR, UPB, UNS, WUR GEO7 and METEODAT), who were in charge of contributing to the final report about the different **A4EU** implementation and activities done in the different pilot sites during the demonstration period (**D6.5**).

2.6.4 Identification of difficulties and delays and actions foreseen

No relevant difficulties have been encountered during RP3.

Deliverable D6.5 was submitted with a slight delay, December 2019 (**M43**), but to include feedback collected during the Hands-on demonstration and Final Workshop on 29-30 October 2019 (**M42**).

2.6.5 Deviations from DoA and updates of the Implementation Plan

Although the significant delays that **WP6** has experienced during RP2, the efforts done through the **Recovery Plan**, the incorporation of PREDICT Services as a new partner and the re-assignment of tasks and efforts as reformulated in the **DoA of the GA Amendment** (November 2018, **M30**) have allowed the Consortium to recuperate the delays and achieve all the initial objectives during RP3.

Therefore, there are no deviations from DoA at the end of the project.



2.7 WP7: Innovation Exploitation, Business Models and Market Development (Leader: UPC)

The main aim of **WP7** is to prepare the Market Uptake and the Commercialization of the **ANYWHERE Key Exploitable Results** through the proposition of an **Innovation and Exploitation Plan** which considers the identification of appropriate **Business models**, the appropriate **IPR protection strategies** and the added value of the results. This reflection has been done in collaboration with the enterprises involved in the **Network of Associated Enterprises** all along the life of the project to propose a realistic roadmap to exploit the **ANYWHERE** proposed solutions beyond the end of the project.

2.7.1 Main advancements and achievements during the RP3

During the RP3, **WP7** has advanced in the work foreseen to achieve the following goals:

- Identification of the Project's **Key Exploitable Results (KER)**, done in **D7.4**.
- Definition of the **Business Models** for each Market Segment and the creation of their corresponding **Business Plans**, done in **D7.2**.
- Definition of the **Revenue Sharing System** of profits and costs from Product Exploitation through the Consortium (Milestone **M7.7** and **D7.4**)
- Creation of a comprehensive and practical **Innovation Exploitation Plan**, done in **D7.4**.

The main efforts have been devoted to define the Innovation and Exploitation Plan (described in **D7.4**) and in initiating the reflection about how to make possible the continuity of the operation of the **ANYWHERE** developed systems, algorithms and services through a realistic roadmap that includes the proposition of the creation of a non-profit Foundation (see section 2.7.3.4).

On the other hand, a significant effort has been devoted to present the capabilities of the **ANYWHERE** platforms and DSS tools, as well as the usefulness of the impact forecasting products included in the MH-EWS to external stakeholders that may become customers during the first year after the end of the project (the most critical period for the continuity of the operational tools).

A number of pre-commercial visits have been made during RP3 when the developments were mature and under operational validation test at the pilot sites, among which:

- February 2019: presentation of the **A4EU** tool to the ZAMG (Austrian Central Institution for Meteorology and Geodynamics, Vienna) and the SMHU (Slovak Hydro-meteorological Institute, Bratislava), stakeholders of the project.
- February 2019: visit to the Júcar river basin managers (CHJ, Confederación Hidrográfica del Júcar), Stakeholders of the project. It was discussed the use of the **A4Cenem** tool how it helped in the decision-making during the DANA episode of October 2018 (they already had access to the **A4Cenem** platform in collaboration with the Spanish Civil Protection Directorate).

- March – April 2019: different visits to the **112 Service** of the Balearic Islands, with the main aim of studying the local data and sensors to be added to the **A4Cenem** platform and to arrange their access to the DSS tool.
- April 2019: visit to Portuguese Stakeholders to gather the needs from the Civil Protection Services of the Setúbal municipality and the Mafra municipality, and discussion about their participation in the **A4Cities** prototype (functionalities and local data to be incorporated to the tool). Visit to the electricity supplier company EDP (*Electricidade de Portugal*) to present the capabilities of the different impact forecasting products and their convenience for preventing damages to the power lines.
- May 2019: visits to the Segura river basing managers (CHS, *Confederación Hidrográfica del Segura*) to present the developed DSS tools. Visit to the 112 Service of Murcia to study the integration to the **A4Cenem** DSS.
- June 2019: visits to the Guadalquivir river basing managers (CHG, *Confederación Hidrográfica del Guadalquivir*) and to the **112 Service** of Andalusia to discuss and arrange their integration to the **A4Cenem** DSS.
- June 2019: visit to the **112 Service** of *Comunitat Valenciana* to discuss and arrange their integration to the **A4Cenem** DSS.
- July 2019: visit to the Environmental Agency of Navarra (GAN-NIK). Presentation of the **ANYWHERE** tools and study the feasibility of a future implementation, as well as their incorporation to the Stakeholder's Board.
- August 2019: visit to the **112 Service** of the Balearic Islands, to discuss their experience with the **A4Cenem** platform.
- October 2019: visit to the Ebro river basin managers (CHE, *Confederación Hidrográfica del Ebro*). Presentation of the **ANYWHERE** tools and impact forecasting products.
- November 2019: visit to the **European Response Coordination Centre** (ERCC - DG-ECHO), to present the **A4Cenem** platform.

2.7.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP7** at the end of the project (**M43**) is:

Table 10: Status of the advancements in the WP7 Deliverables at the end of the project (**M43**).

Deliverable	Title	Submission date	Progress status (in %)
D7.1	IPR Protection Plan (Leader: UPC)	M14 (originally M12)	100%
D7.2	Business Plan Report by Market Segment (B2G, B2B, B2B2C) (Leader: UPC)	M40 (originally M34)	100%



D7.3	Final report on the Business Hub development, validation and tests (Leader: AIRBUS)	M43 (originally M38)	100%
D7.4	Innovation Exploitation Plan (Leader: RINA)	M43 (originally M41)	100%

Deliverable **D7.1**, was already completed by the beginning of the RP3. Deliverables **D7.2, D7.3 and D7.4** have been completed and submitted during RP3.

Milestone M7.7 (Presentation of the Revenue Sharing System on the 8th Project Meeting in Leipzig) has been achieved in **M36**.

2.7.3 Advancements per Task

Tasks **T7.4** and **T7.5** were completed during the previous RPs.

2.7.3.1 Summary of Task 7.1: Business Hub Development and Operation

The objective of this task **T7.1** is to develop and deploy the Business Hub prototype platform, which is a web-based communication system and repository that has been successfully implemented and launched during RP2.

The Business Hub includes direct links to the Product Catalogue, deliverables as well as information that is useful for the coordination and decision making of Market and Business-related issues.

The system, fully developed and rolled out by partner AIRBUS and will be running operationally until the end of the project, being its main objective to support the communication leading towards the execution of the Innovation Exploitation Plan.

AIRBUS defined the different functionalities provided by the tool, its architecture, including the roles and accesses. The sections of the Business Hub are the following:

- Market Assessment
 - Market segments
 - Market analysis
- Innovation (invention to commercialize / innovative products / value of the results)
 - Innovation management
 - Industrial Innovations
- Exploitation:
 - Business Plans
 - Business Models
 - Project Exploitable Results
 - Procurement and funding models
 - Map of Ownership
 - IPR (Intellectual Property Rights)



- Network of Associated Enterprises (formerly SICN: SME and Industry Collaborative Network) forum.
- MEC (Marketing and Exploitation Committee) forum.

AIRBUS prepared the infrastructure (servers) to host the website and the configuration parameters including secured accesses.

The main input of **T7.1** is **Deliverable D7.3**.

It should be noted that, unfortunately the content of **D7.3** is not related with the project's Innovation and exploitation plan (**D7.4**) nor with the work done in **D7.2** "Business Plan Report by Market Segment (B2G, B2B, B2B2C)". In fact, **as it is mentioned in D7.3 (page 3): "The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under Grant Agreement no. 313077", project EDEN (see <https://cordis.europa.eu/project/id/313077>).**

2.7.3.2 Business Model and Business Plan Development by Market Segment (B2G, B2B, B2B2C)

This task compiles the comments and feedback from the different participant actors within the Consortium, as well as Stakeholders and enterprises participating in the Network of Associated Enterprises, in order to have a clear picture of the feasible ways to be able to take the Exploitable Production successfully into market.

In parallel, three business models have been prepared as follows:

- **T7.2.2: B2G Business Model Report.** Focus on the scenarios of the Public Protection and Disaster Relief (PPDR) Users, including Civil Protection command centres, First Responders and Government agencies involved on attention to Extreme Weather and Climate events. Led by AIRBUS.
- **T7.2.3: B2B Business Model Report.** Concentrates on the vast array of SME and Industrial collaborators that can integrate the **ANYWHERE** Products, mainly the MH-EWS, into solutions that can be used to improve or secure their own operations, or as integrator for 3rd Parties, that would make use of these innovations. Led by HYDS.
- **T7.2.4: B2B2C Business Model Report.** Identifies and develop the scenarios with direct contact to the Civil Population as End-Users, but also including Enterprises, Foundations and NGOs that create or operate platforms and tools of Self-Preparedness and Self-Protection. Led by RINA.

The Business Model Reports are described in **Deliverable D7.2** ("Business Plan Report").

From the discussions held during the elaboration of the proposed Business Models it appeared that a suitable way to prepare the commercialization of the **Key Exploitable Results** of the **ANYWHERE** project would be the creation of a non-profit Foundation that would include several partners of the consortium and would take care of the continuity of the developments and services, commercially or subsidized, after the end of the life



of the project. This idea has been discussed and formalized in **Deliverable D7.4: Innovation and Exploitation Plan**.

2.7.3.3 Summary of Task 7.3: Commercial Associates: collaborative Network of Associated Enterprises (NAE)

The Network of Associated Enterprises has reached at the end of the project **40 enterprises**, from 16 different countries (14 EU countries and 2 non-EU countries), the majority of them with interests to explore the possibility of collaborating with **ANYWHERE** partners in the market uptake of the Exploitable Results.

This effort has been extremely important to make possible the discussion held during the four **ANYWHERE** workshops and to prepare the commercial uptake of the **ANYWHERE** results, that is now an ongoing process.

2.7.3.4 Summary of Task 7.6: Innovation Exploitation Plan

The main achievement of **T7.6** during RP3 has been to compile the required information and produce **Deliverable D7.4: Innovation and Exploitation Plan**.

The proposed **Innovation and Exploitation Plan** considers the complexity of the several types of participants in the project, including the developers of background and of the unique innovations that constitute the exploitable results, as well as the stakeholders participation on the definition and validation of the results on the pilot sites, that are a main asset to showcase and push the market uptake of the **ANYWHERE Key Exploitable Results (KER)**.

The deliverable includes:

- the description of the exploitation methodology (Section 3)
- the identification and characterization of Exploitable Results and their prioritization (Section 4)
- the exploitation perspective per partner and the identification of background/foreground for each result and the exploitation claims of each partner (Section 5)
- the description of the IPR protection management (Section 6)
- insights from the business model and business plan activities from the deliverable **D7.2 Business Plan Report by Market Segment (B2G,B2B, B2B2C)** (Section 7)
- the last section briefly outlines the conclusions (Section 8).

D7.4 describes and analyses the **value added beyond the state of the art** of the different solutions proposed in **ANYWHERE**, algorithms, tools, and systems, and **identifies up to 48 Key Exploitable Results (KER)** for which it provides a first analysis of possible protection tools applicable for each identified exploitable result. Moreover **D7.4** compile the information and characterize these 48 KER through a systematic format of synthetic information, providing estimates of the selling price and of the maintenance cost. The results of the analysis of the Business Models done in



D7.2 are also integrated in **D7.4** to **ANYWHERE** Unique Value Proposition and the market segment value proposition.

Finally, **D7.4** describes the present ideas about the proposed non-profit **ANYWHERE Foundation**. The Foundation's mission would be to ensure the development of high-end scientific solutions and technologies for forecasting weather-induced and climate emergencies and minimizing their impacts, focusing on public security and civil protection and including their environmental effects. This mission is to be achieved through scientific research, technology development and licensing plus customization of tools and expert consultancy, including:

- Development of scientific knowledge from the Research Organizations partners of the project, including external collaborations and participation in other European Projects.
- Provide consultancy on IT development, research, leverage of institutional qualifications on meteorology, hydrology, hydrogeology, atmosphere and ocean dynamics, hydro-meteorology and climatology, earth observation, evaluation of weather-induced hazards, evaluation of the impact of climate events, and security and operational support.
- Facilitate the technology transfer of top-tier scientific knowledge into operational products, to be readily available for PPDR entities and institutions.
- Promotion of self-protection awareness culture and best practices towards the Civil Protection and Security areas, focusing on prevention and preservation of terrestrial and water-related ecosystems by scientific applications with a social impact.

The main characteristics and steps to be done to constitute this foundation are identified, and a first reflection of models for the management of the IPR Royalties, the incorporation of other implementing third parties, and how to facilitate commercialisation through distributors have been also included.

2.7.4 Identification of difficulties and delays and actions foreseen

Once **WP7** has been reformulated in the amendment of the GA and the leadership changed, no major difficulties have been experienced.

2.7.5 Deviations from DoA and updates of the Implementation Plan

Although the critical situation that **WP7** has experienced during RP2, the efforts done through the **Recovery Plan**, including the change of **WP7** leader and the re-assignment of tasks and efforts as reformulated in the **DoA of the GA Amendment** (November 2018, **M30**) have allowed the Consortium to recuperate the delays and achieve all the initial objectives during RP3.

Therefore, there are no deviations from DoA at the end of the project.



2.8 WP8: Dissemination, communication, training and stakeholder engagement (Leader: UPC)

WP8 comprises all aspects related to the dissemination of results, the communication about the **ANYWHERE** project to the general public, the stakeholder engagement as well as the training activities to be carried out.

The objectives to be achieved are:

- Ensure the visibility of the project by providing appropriate communication materials and channels.
- Disseminate and share the project outcomes at European, national and regional levels.
- Support all stakeholders in maintaining an open debate & organise meeting points and stakeholders gathering events.
- Support the exploitation of project outcomes by the partners.
- Promote the significance of **ANYWHERE** results and activities, in particular to policy makers.
- Facilitating the replication of the resulting tools and approaches by other external stakeholders.

Throughout the whole **ANYWHERE** project lifespan numerous communication and dissemination actions have been carried out with a great commitment of project partners in order to spread the word about the objectives pursued and the advancements towards its achievement.

A variety of activities (organisation of conferences and workshops, participation to international meetings and forums, videos, interaction via Social media, among others) have been held to maximise the impact of the communication focusing both in the target collectives (PPDR & civil protection staff, first responders, scientists, technological companies, policy-makers, etc.) as well as in the society in general.

Project partners have been committed to the task during the whole project execution period. The intensity in the development of communication campaigns and its impact has increased during the operational demonstration phase of the developed tools at the Pilot Sites, when the project results got more solid and appealing to the potential audience.

During the RP3, a total of **335 dissemination / communication activities** have been carried out by the project partners, involving a variety of actions performed. The **face-to-face communication and dissemination activities promoted** (without considering Social media, visits to the website nor press broadcastings) by the **ANYWHERE** project **reached an audience of 7,399 people**. This figure does not consider the Social media and website visits, nor the mass media broadcasting. Thus, the impact of the **ANYWHERE** communication and dissemination actions **increase to 150,570 during the RP3** when **taking into consideration mass and social media and website visits**.



For the whole project lifecycle, the project achievements, results and impacts have been covered and broadcasted by the media through more than **150 pieces of news released** in a variety of channels such as **TV, radio, newspapers and magazines** (reaching **686 different media, including local, regional, national and international agencies**). Those articles are available in the Press Clippings section (see Figure 28) of the **ANYWHERE** website (<http://anywhere-h2020.eu/news/press-clipping-page-1>). These communication and dissemination actions have led to an impact of **ANYWHERE** beyond the initial expectations, **reaching a face-to-face audience of 33,641 people, increasing to 232,548 people** when **taking into account the social media and website visits**, and up to **862,110 people when considering the mass media**.

A comprehensive description of the communication and dissemination activities held during the whole project lifecycle is available in the **Deliverable D8.4**, including the most relevant pieces of news related to the project showcased in mass media.

2.8.1 Main advancements and achievements during the RP3

During the RP3 the different tasks associated to **WP8** have advanced significantly, reaching the following achievements:

- **A brand new ANYWHERE website** (www.anywhere-h2020.eu) was released in July 2019, having a more appealing design and contents specifically oriented towards the market uptake phase.
- During the RP3, 115 tweets and 14 Facebook posts have been released by the **ANYWHERE** project social media accounts, figure that increase beyond 200 releases when taking into consideration all consortium partners. In addition, Social Media campaigns were performed to communicate the **ANYWHERE** participation at remarkable forums and events, such as the **Security Research Event (SRE2019, November 2019 in Helsinki)** and at the **European Climate Change Adaptation Conference (ECCA 2019 in Lisbon, March 2019)**. Twitter and Facebook channels were also used to expand the impact of the **Hands-on training in Madrid** (March 2019) and the **ANYCaRE session at PROCIV workshop in Helsinki** (July 2019).
- **A Citizen Science campaign** ("*Carretera Nevada*", in English: "Snowed road", <http://crahi.upc.edu/carreteranevada>) was promoted to both communicate the project developments to a wider audience and at the same time to involve the population, encouraging people to collect data and provide feedback for improving the impact model of snow-on-the-roads integrated in the **ANYWHERE MH-EWS**.
- **Two newsletter releases** were sent during the 3rd reporting period: on May 2019 and on November 2019, reaching an audience of 460 subscribers.
- **Six pieces of news** have been published in the corresponding section of the project website (<http://anywhere-h2020.eu/news>).
- **Two press releases** were launched: on the occasion of the Citizen Science campaign "*Carretera Nevada*" (Snowed road) in March 2019; and the **ANYWHERE Final Conference** (October 2019).



- **A set of six ANYWHERE videos** have been sketched and produced (<http://anywhere-h2020.eu/videos-page-1>, and <https://www.youtube.com/channel/UCx4MC8ypodvKMT-NU2D1Xg/videos>).
- **Two training activities** (2nd and 3rd) were held. The **ANYWHERE Hands-on Training Activity** (March 2019) was organised by the Spanish Civil Protection General Directorate (DGPCE) at the Spanish National Civil Protection School (ENPC, Madrid), with an audience of 70 attendees. The 3rd training activity consisted in a **ANYWHERE Hands-on demonstration** and was held on the 29th of October 2019 (SQUARE Brussels Convention Centre, Brussels) on the occasion of the **ANYWHERE Final Conference**, gathering **157 attendees** from different organisations around Europe (85 externals and 72 partners).
- The **ANYWHERE Final Conference** was held at the SQUARE Brussels Convention Centre (Brussels, Belgium) on the 29th-30th October 2019 and **included both the 4th Project Workshop plus and a Hands-on demonstration**. The **4th Project Workshop** gathered **214 participants** (128 externals and 86 partners), involving **ANYWHERE** Project Partners, members of the Stakeholders' Board, private companies belonging to the Commercial Associates' Board, as well as other external organisations from various fields of civil protection and emergency management services.
- **ANYWHERE** continued participating actively in the existing forums within the field of interest of the project, which gathered policymakers and other relevant players. In this case, the **13th CoU meeting** (March 2019, Brussels, Belgium) and the **Security Research Event (SRE2019, Nov 2019, Helsinki)** and the **PROCIV Workshop** (Working Party on Civil Protection organised in the framework of the **Finnish Presidency of the Council of the European Union**, July 2019, Helsinki). A specific video on the utilisation of the **ANYCaRE serious game at this PROCIV workshop** was produced to show the relevance of the **ANYWHERE** project among the delegates of the member states (see <https://www.youtube.com/watch?v=u0seTyP5jZA>).
- At the end of the project, the **Stakeholder's Board has reached 70 organisations** (<http://anywhere-h2020.eu/who-we-are/stakeholders-board>) from 21 different countries, from which 5 non-EU countries, including Environmental Protection Agencies, Municipalities, Meteorological Agencies, Risk Prevention Centres, public / private companies managing critical facilities and first responders activities.
- At the end of the project, the Network of Associated Enterprises (NAE) **has reached 40 enterprises** (<http://anywhere-h2020.eu/who-we-are/associated-enterprises>) from 16 different countries, from which 2 non-EU countries. These enterprises have been following the developments of **ANYWHERE** and can help us to reach different market segments in the commercial phase that is starting after the final review of the project.



2.8.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP8** at the end of the project (**M43**) is:

Table 11: Revised table of WP8 Deliverables at the end of the project (**M43**).

Deliverable	Title	Submission date	Progress status (in %)
D8.1	Communication, Dissemination and Training Plan and material.	M04	100%
D8.2	Project Web-site and project-site.	M06	100%
D8.3	DVD with the produced videos.	M43	100%
D8.4	Final report on Dissemination and Communication activities.	M43	100%

D8.3 was completed with a slight delay, because some of the videos produced were modified to include images from the final Workshop held in Brussels in November 2019 (**M42**). A part of being available at the project website and in the YouTube channel, the videos have been distributed in a promotional Pen-drive, instead of on a DVD (as initially foreseen).

Milestones achieved during RP3 (M33-M43):

- **M8.5**: Training School at ENPC in Madrid. **Leader: DGPCE (M34)**.
- **M8.6**: Final conference in Brussels. **Leader: UPC (M42)**.

2.8.3 Advancements per Task

2.8.3.1 Summary of Task 8.1: Dissemination and Communication Plan (Leader: UPC, M01-M04)

Completed during RP1. **D8.1** was submitted in **M04**.

2.8.3.2 Summary of Task 8.2: Project website and external communication tools, including social networks (Leader: UPC, Contributors: all): M01-M43

The project website is available at the address <http://www.anywhere-h2020.eu> and it represents the main tool for dissemination, communication and internal coordination of **ANYWHERE**, including a public area as well as a private area (coordination tool reserved for consortium members).

The project website has evolved periodically to adapt itself to the momentum of the project to fulfil the communication needs according to the project evolution.

A brand new **ANYWHERE** website was released on July 2019, having a more appealing design and contents specifically oriented towards the market uptake phase (see Figure 24). It also includes enhanced explanations of the challenge being faced by the project (extreme high-impact weather hazards in detail) and the tools / services developed to tackle them, in order to make it more appealing with a focus for potential interested end-users. Details about the **ANYWHERE** approach based on impact forecasting, which represents a disruptive innovation in the field of weather-induced emergency management, are also conveniently highlighted.

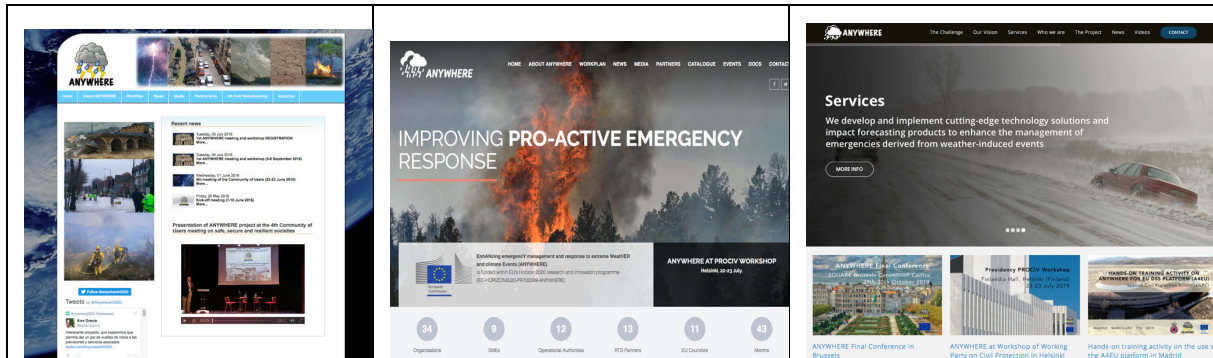


Figure 24. **ANYWHERE** website versions, from initial (left) to final (right) version.

Despite that a contact form has always been present at the project website, a specific section for “Requesting a demo” has been enabled in the new **ANYWHERE** website (See Figure 25), where Stakeholders and potential future end-users are able to indicate their needs and ask for a test account to check the capabilities of the developments held within the **ANYWHERE** project. This functionality has of course contributed to raise awareness among potential Stakeholders about the innovative paradigm in the management of the weather-induced emergencies based on impact forecasting capabilities provided by the **ANYWHERE** project and towards the market uptake.

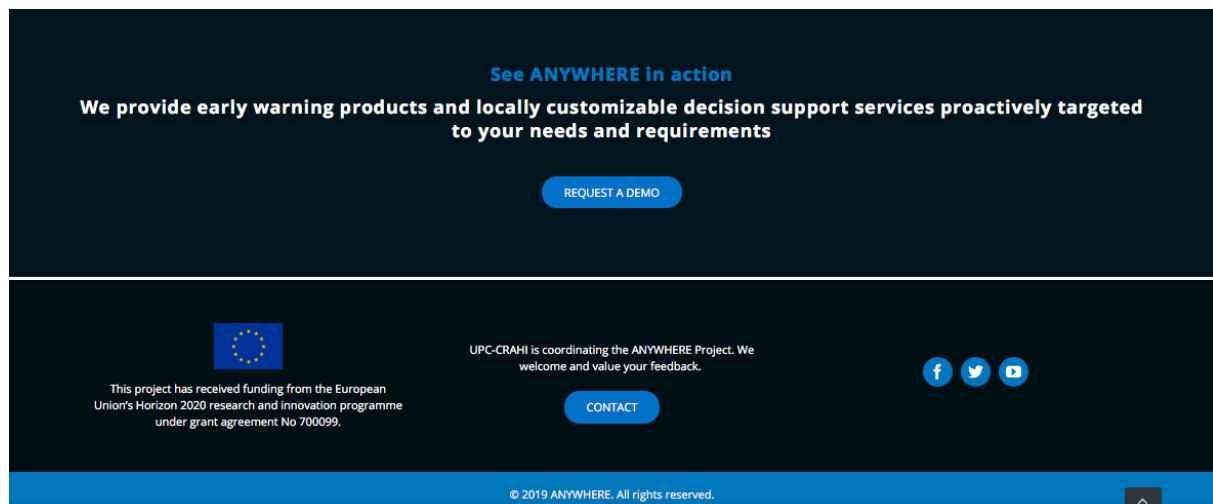


Figure 25. “Request a Demo” section in the **ANYWHERE** website

After the latest update of the **ANYWHERE** website in July 2019, the previous project website was not abandoned. Instead, it was decided to keep it active as a sub-section of the main website in order to take advantage of the work carried out previously and



for documents repository. The previous website represents a useful section to store the public project documents (such as deliverables, presentations, scientific publications, among others) and other additional information, is still available through the link “The Project” in the top menu and the following URL: <http://gebrada.upc.es/anywhere/the-project/>

Being this project an innovation action, the **ANYWHERE** website will be maintained online beyond the project lifetime in order to promote the market uptake of the tools and services developed within the project execution.

Thus, the project website is regularly updated with the most recent news and project results, including as well links to the **ANYWHERE social network** sites (Facebook, Twitter). During the RP3, 115 tweets and 14 Facebook posts have been released by the **ANYWHERE** project social media accounts, figure that increase beyond 200 releases when taking into consideration all consortium partners. The overall figures regarding Social media for the whole project lifecycle:

- **ANYWHERE Twitter account** (@AnywhereH2020; created on June 2016), has engaged **722 followers** and released **965 tweets** that achieved **171,928 impressions**. At the same time, in order to strengthen ties and build community, **683 accounts** related to the different fields of interest of the project have been **followed-up**. The on-line twitter messages posted are available at the following link: <https://twitter.com/AnywhereH2020>
- **ANYWHERE Facebook page** (created on November 2016) has reached **173 followers**, **170 posts** and **4,633 visualisations**. The **ANYWHERE** Facebook wall and messages posted are available at the following link: <https://www.facebook.com/AnywhereH2020/>

It shall be remarked some specific **Social Media campaigns** were performed to **communicate** the **ANYWHERE** participation at remarkable forums and events, such as (for RP3) the **Security Research Event** (November 2019 in Helsinki) and at the **ECCA 2019** in Lisbon (March 2019). Twitter and Facebook channels were also used to expand the impact of the **Hands-on training in Madrid** (March 2019) and the **ANYCaRE session at PROCIV** workshop in Helsinki (July 2019).

ANYWHERE has also promoted a **Citizen Science campaign** (“*Carretera Nevada*”, “Snowed road”, see Figure 26) to both communicate the project developments to a wider audience and at the same time to involve the population, encouraging people to collect data and provide feedback for improving the impact model of snow-on-the-roads (product developed by UPC-CRAHI) integrated in the **ANYWHERE MH-EWS**.

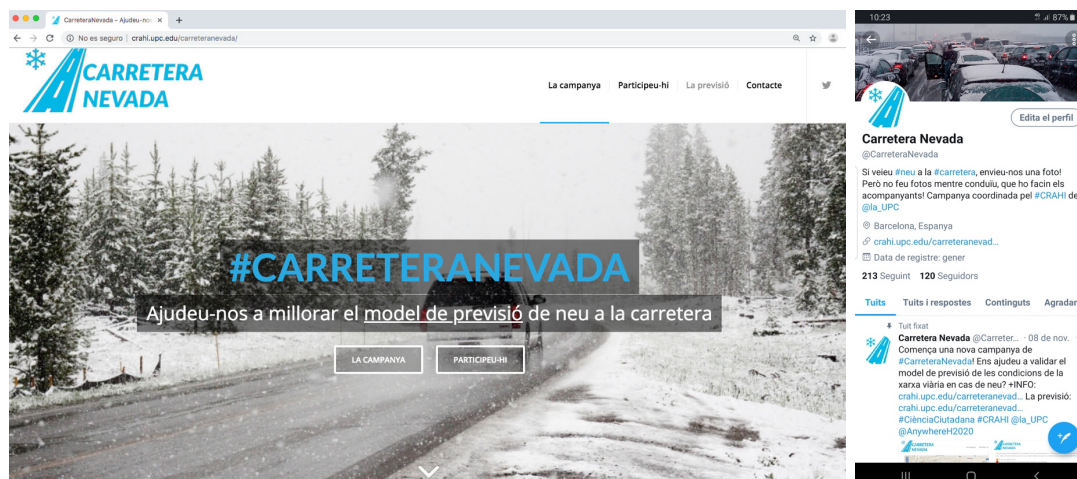


Figure 26. “Carretera Nevada” (snowed road) campaign website and Twitter account.

The “**Carretera Nevada**” campaign (Snowed road, see <http://crahi.upc.edu/carreteranevada/>) has been carried out during two periods in a year having potential snow falls: from **February to April** and from **November to December 2019**.

As a part of the communication strategy, **E-mail Newsletters** have been sent to subscribed project contacts as used in order to keep them informed about the upcoming workshops, meetings and events/activities organised by the Consortium and maximize the impact of **ANYWHERE**. This communication channel has also been used to share the latest news about the project and its progress, redirecting their attention to the published contents available at the **ANYWHERE** website. **Two newsletter releases** were sent during the 2nd reporting period: on **May 2019** and on **November 2019**.

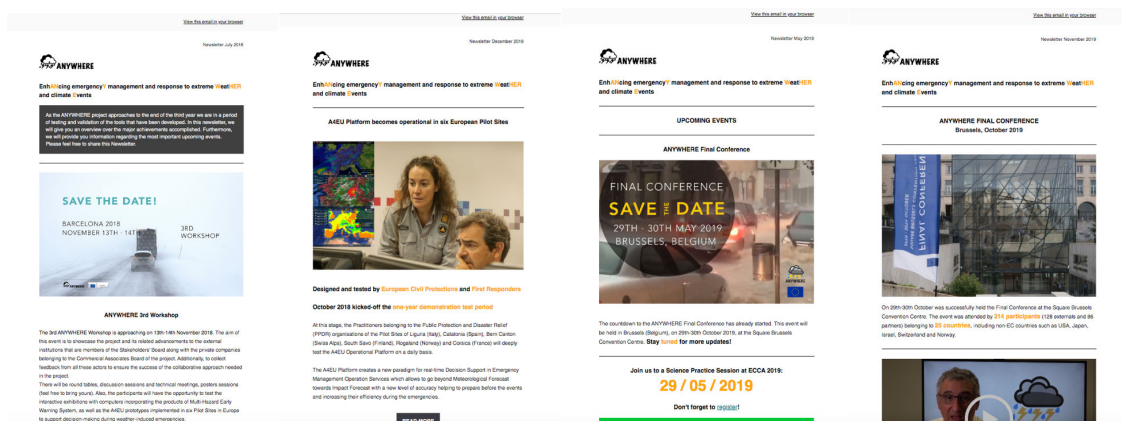


Figure 27. **ANYWHERE** Newsletters (samples).

The newsletter reached an audience of **460 subscribers**, including **Stakeholders**, members of the **Network of Associated Enterprises**, the **Advisory Board** as well as external organisations (besides participant contacts belonging to partner organisations).

In addition, during the course of the project, **short news, press releases** and **media kits** have been prepared on the occasion of relevant events or some achievements associated to the project, based on information provided by partners.



The **News section** (see Figure 28) has been regularly updated with the latest information on the project and its progress, as well as any initiative organised by the **ANYWHERE Consortium**. During the RP3, **six pieces of news** have been published in the corresponding section of the project: <http://anywhere-h2020.eu/news/>

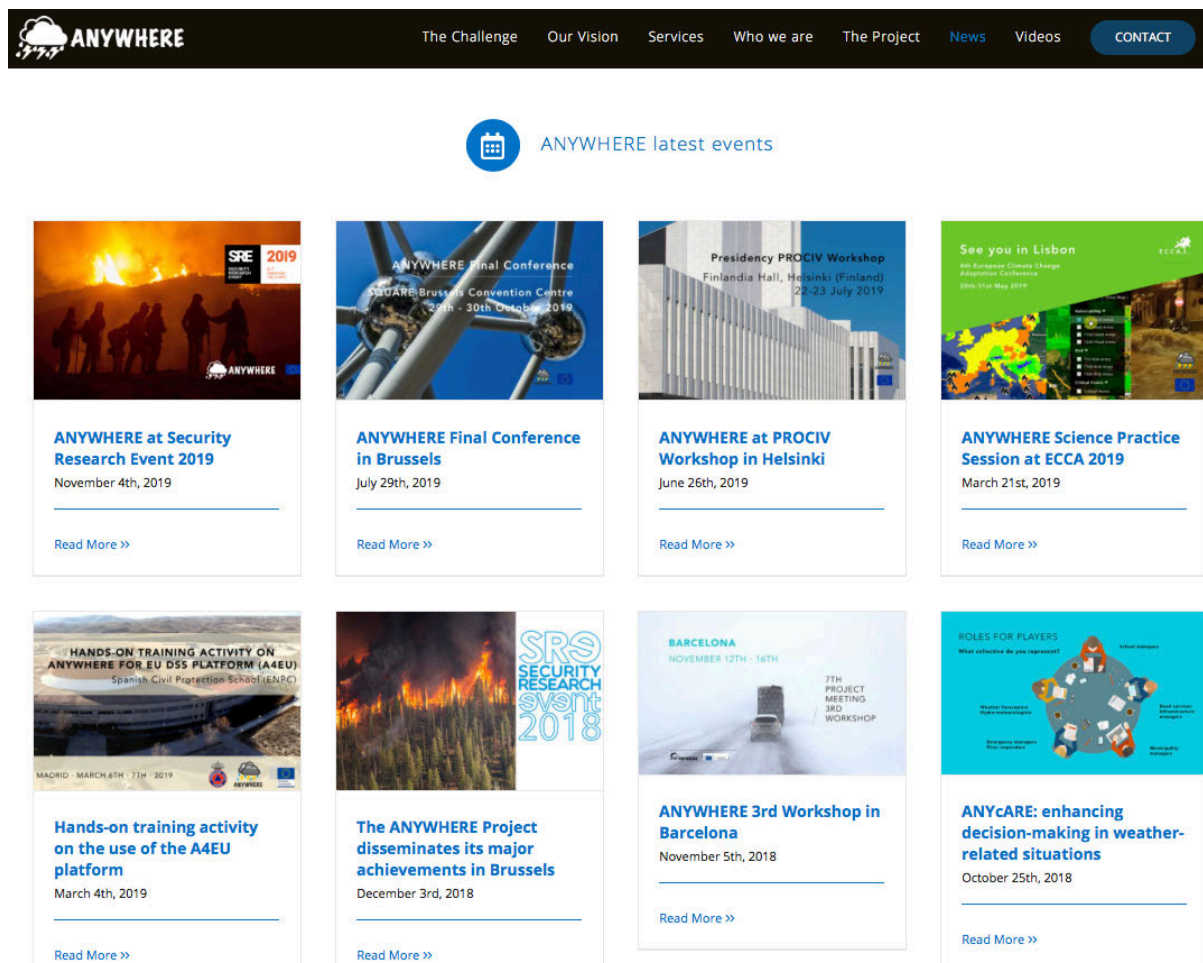


Figure 28. News section of the **ANYWHERE** project website.

Apart from the news section of the website, **press releases** have demonstrated to be a very efficient communication tool to get media coverage and communicate/disseminate the project achievements and milestones at different scopes (local, regional, national and European level).

During the RP3, **two press releases** (out a total of five) were launched:

- On **12 March 2019**. Focused in the launch of a **Citizen Science campaign** “*Carretera Nevada*” (Snowed road) in Catalonia to improve the impact model of snow-on-the-roads with the feedback of the population. (<https://www.upc.edu/es/sala-de-prensa/noticias/la-upc-pone-en-marcha-una-campana-de-seguimiento-de-nieve-en-las-carreteras>).
- On **28 October 2019**. Focused in the announcement of the **ANYWHERE Final Conference** and summarizing the results achieved, and targeting not the media belonging to the whole **European Union media**. (<http://anywhere-h2020.eu/final-conference/press-release>; <https://www.upc.edu/es/sala-de-prensa/noticias/la-upc-anuncia-la-conferencia-final-del-proyecto-anywhere>).

[prensa/noticias/desarrollados-con-exito-las-herramientas-y-servicios-para-hacer-frente-a-la-emergencia-climatica-en-el-marco-de-un-proyecto-liderado-por-la-upc\).](http://anywhere-h2020.eu/news/press-clipping-page-1)

The materials provided together with the mentioned previous actions contributed to the fact that many press and media released news related to the project to a broad audience. Some requests from TV and radio channels were also received requesting the Coordinator / project researchers to perform live interviews that were broadcasted. A total of 46 indirect communication actions performed by the media / press about the **ANYWHERE** project was released during the RP3. The list of the media and press clips is available at the website: <http://anywhere-h2020.eu/news/press-clipping-page-1>

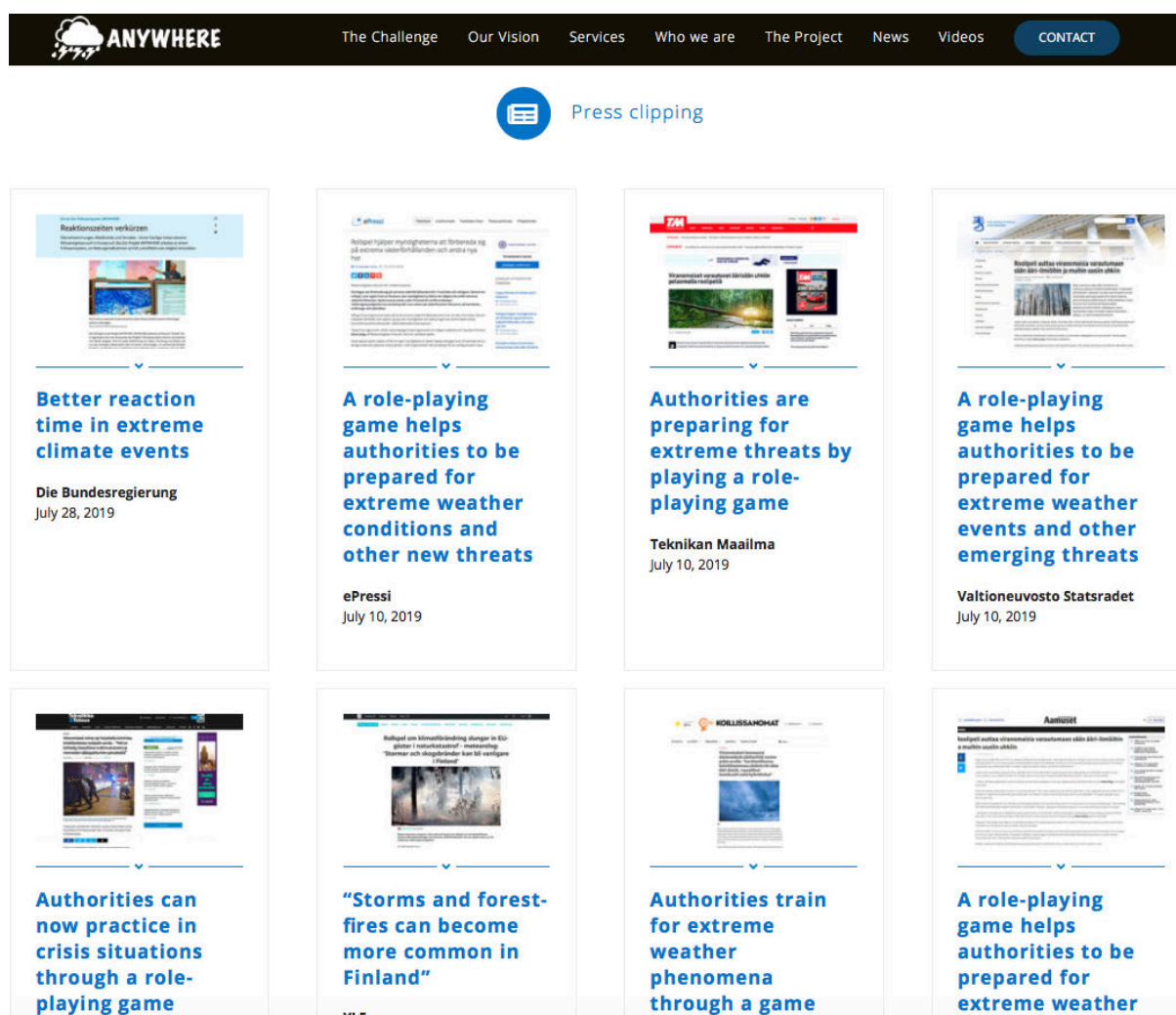


Figure 29. Press clipping section of the **ANYWHERE** project website.

For the whole project lifecycle, the **ANYWHERE** project achievements, results and impacts have been covered and broadcasted by the media through more than **150 pieces of news released** in a variety of channels such as **TVs, newspapers and magazines, radios and blogs**. Those articles are available in the Press Clippings section (see Figure 29) of the **ANYWHERE** website (<http://anywhere-h2020.eu/news/press-clipping-page-1>). The coverage raised **686 different media, including local, regional, national and international agencies**. News related to the



campaigns were released to an **online audience of 6,561,378 people**. They were also covered by Newspapers having a **press run of 28,741 copies**.

2.8.3.3 Summary Task of 8.3: Project videos (Leader: UPC, M06-M43)

A set of **six new ANYWHERE videos** have been sketched and produced during this reporting period, which are available at the Videos section of the **ANYWHERE website** (<http://anywhere-h2020.eu/videos-page-1/>) and are also hosted at the **CRAHI YouTube Channel**.

Also, an announce of the different press/media events has been posted in Twitter and Facebook. In addition, some of the videos have been displayed at events and conferences organized and attended by the Consortium partners, as well as in other meetings attended by interested audiences. A detailed list is included below:

- April 2019: **ANYWHERE Project: innovating the management of weather emergencies** (for showcase the project advancements to EC, including external organisations testimonies gathered at the hands-on training performed on March in Madrid). URL: <https://youtu.be/HITutHS83i0>
- July 2019: **ANYCaRE serious game at PROCIV workshop** (for the workshop of Working Party on Civil Protection organised in the framework of the Finnish Presidency of the Council of the European Union). URL: <https://youtu.be/u0seTyP5jZA>
- October 2019: **A4Cor: ANYWHERE operational demonstration in Corsica Pilot Site** (for showcase the implementation of the **A4EU** platform for Corsica platform on the website project). URL: <https://youtu.be/myP8YnalHGY>
- October 2019: **A4Campsite: increasing self-protection at campsites located in flood-prone areas in Catalonia** (for showcase the **A4Campsite** flood-oriented Early Warning System on the website project). URL: https://youtu.be/jnQ_6hw9d8Q
- October 2019: **ANYWHERE for CENEM (A4Cenem)** (for showcase the implementation of the **A4EU** platform for Spain on the website project). URL: <https://youtu.be/hzCIUvcrNWk>
- October 2019: **ANYWHERE: a user's driven project** (for the Final Conference in Brussels, Belgium, and the Security Research Event SRE2019 held in November in Helsinki, Finland). URL: <https://youtu.be/E451l4fLSjg>

The plenary sessions of the **ANYWHERE** Final Conference held in Brussels on the 29th-30th of October 2019 were **live streamed** on YouTube (https://youtu.be/i3NiiDW_4IU) to the concerned community that was unable to attend the event. All recorded contents are currently available on the website project (<http://anywhere-h2020.eu/final-conference/video-recording>), where the different lectures can be selected to be visualized.

During the project lifecycle, a total of **21 project videos** have been produced with communication and dissemination purposes (reproduced more than 10,000 times), presenting the most relevant aspects of the **ANYWHERE** project to different profiles of

audiences: overall explanation of the project and its expected outcomes for the general public; talks of the improvements introduced by the project on the field, oriented to specialised audience, such as the CoU and SRE, as well as videos of the Workshops including representative clips of the events.

2.8.3.4 Summary task of 8.4: Organization of project workshops and final Conference (Leader: UPC, M02-M42)

A series of **ANYWHERE** Workshops have been organised in order to showcase the developments and results gathered in the pilot sites and disseminate the progress of the project to the stakeholders and end users. This has been carried out with particular emphasis on national, regional and local civil protection agencies, practitioners and first responders, as well as companies that are member of the **ANYWHERE** Stakeholders Board (<http://anywhere-h2020.eu/who-we-are/stakeholders-board/>) and the Network of Associated Enterprises (NAE, <http://anywhere-h2020.eu/who-we-are/associated-enterprises/>).

The **ANYWHERE Final Conference** was held at the SQUARE Brussels Convention Centre (Brussels, Belgium) on the 29th-30th October 2019 and **included a Hands-on demonstration and the final Workshop**. The **Final Project Workshop** gathered **214 participants from 25 different countries**, involving **ANYWHERE** Project Partners, members of the Stakeholders' Board, private companies belonging to the Commercial Associates' Board, as well as other external organisations from various fields of civil protection and emergency management services.

The main aim of the **ANYWHERE** Final Workshop was to showcase the latest project advancements and to discuss them with the external institutions members of the Stakeholders' Board along with the Network of Associated Enterprises of the project, as well as with the Advisory Board members and representatives from the EC. Plenary sessions and round tables were held (see Figure 30) for engaging the discussion, plus parallel live exhibits (see Figure 31) showing the **ANYWHERE** developments on wide screens, as well as a space dedicated to posters.



Figure 30. Final Conference, pictures of the Plenary sessions and Roundtables.

During the event (both the live hands-on exhibits and the round tables), operational staff involved in the Pilot Sites explained their experience with the use of the **ANYWHERE** DSS **A4EU** platforms and tools towards enhancing the preparedness and

management of high-impact weather-induced hazards. Representative recent episodes were detailed, highlighting how the use of the developed tools were useful from an operational point of view for reducing the damages.

Discussions on the technological developments as well as operational procedures employed were held among the interveners and attendees. Participants could also get first-hand knowledge about the capabilities of the **ANYWHERE** tools, having direct contact with the developers and exploring the tools available at the Exhibition showroom.



Figure 31. Final Conference, pictures of the Exhibition showroom

Representatives from the EC belonging to the DH-HOME (Directorate General for Migration and Home Affairs), DG-ECHO (Directorate General - European Civil Protection and Humanitarian Aid Operations) and REA (Research Executive Agency) were also invited and attended the event to allow them getting first-hand knowledge about the outcomes and results achieved within the project.

The plenary sessions of the **ANYWHERE** Final Conference were **live streamed** on YouTube (https://youtu.be/i3NiiDW_4IU) to the concerned community that was unable to attend the event. All recorded contents are currently available on the website project (<http://anywhere-h2020.eu/final-conference/video-recording>).

In order to promote the event, the Coordination team managed to include it in the **Events Calendar** of the **European Commission** (<https://ec.europa.eu/research/index.cfm?eventcode=5E433FA1-C95A-B6BA-DDF8EB1679496981&pg=events>) and also shared it through the project Social Media Channels.

In total, 4 workshops have been held in different locations, each one under the responsibility of the local partner in charge of it, working in very close collaboration with the WP leader. The first three workshops were already held during previous reporting periods and were already reported in previous Technical Reports.

2.8.3.5 Task 8.5: Training activities for external stakeholders (Leader: DGPCE, M30-M41)

During the RP3, two training activities (2nd and 3rd) were held. The 2nd **ANYWHERE** Training Activity (6th-7th March 2019) was organised by the Spanish Civil Protection

General Directorate (DGPCE) at the Spanish National Civil Protection School (ENPC, Madrid): <http://anywhere-h2020.eu/hands-on-training-activity-on-the-use-of-the-a4eu-platform/> . This activity was aimed to present and interact with the A4EU platform developed by **ANYWHERE** to provide impact forecasting for weather-induced hazards in Europe and to support the operational emergency response (see Figure 32).

An audience of **70 attendees** (belonging to different selected Stakeholders organisations around Europe) participated to the training, including technical and operational personnel from Public Protection and Disaster Relief (PPDR), national and regional Civil Protections, First Responders institutions, Law Enforcement Agencies, Rescue services, and other response managers belonging to institutions involved in dealing with weather-induced risks.

Lectures on basic aspects of the impact forecasting products included for a variety of potential weather-induced hazards were complemented with practical sessions, allowing participants getting first-hand knowledge of the tools applied to case studies derived from real emergency situations. The participants were able to interact with professional meteorological forecasters, as well as with the operational staff belonging to the existing **ANYWHERE** Pilot Sites that are using their specific prototypes of the **A4EU** platform in their emergency control centres, as well as the technological developers who deployed the prototypes.



Figure 32. Hands-on training activity at the Spanish National Civil Protection School (Madrid)

The activity also included a visit to the Spanish National Centre for Emergency Monitoring and Coordination (CENEM), where participants were able to check the **A4Cenem** DSS platform deployed at the Centre. In addition, a comprehensive explanation regarding the coordination tasks carried out at the centre on a daily basis was held, complemented with a video-conference with the European Emergency Response Coordination Centre (ERCC).

The 3rd training activity consisted in a Hands-on demonstration and was held on 29th October 2019 (Brussels), on the occasion of the **ANYWHERE** Final Conference. The activity allowed members of the Stakeholders and NAE boards exploring the **A4EU** operational platforms developed for decision-support running in real-time in the existing 7 pilot sites across Europe, and on selected pre-recorded case-studies (relevant emergency events). The Hands-on demonstration activity was organised by the ANYWHERE partner *Consorzio Futuro in Ricerca* (CFR) and took place at the SQUARE Brussels Conference Centre. The hands-on lasted **8 hours** and gathered **157 attendees** from different organisations around Europe (and beyond), including

PPDR staff, national and regional Civil Protections, First Responders institutions, technological companies, among others (see Figure 33).



Figure 33. Hands-on training demonstration activity during the **ANYWHERE** Final Conference (Brussels)

During the activity, participants got the chance to explore and use state-of-the-art forecasting products for a variety of hazards (floods, flash-floods, snowfall, forest wildfires, droughts, marine storms, among others), based on relevant case studies and conducted by the operational staff involved in the Pilot Sites and with the support of the technological partners implementing the different **A4EU** prototypes. In addition, self-protection tools for improving population and communities' resilience towards high-impact extreme weather episodes. More information on the agenda of the event is available in the following link: http://anywhere-h2020.eu/wp-content/uploads/2019/11/29th-OCT_Agenda-ANYWHERE-HANDS-ON-v4.5.pdf

Thus, during the project lifecycle **three training activities have been held** (despite that only two were foreseen initially). The first training was held on 12th November 2018, organised by the Catalan Civil Protection at the CECAT (Emergency Management Centre), under the auspices of the **ANYWHERE** 3rd Workshop celebrated in Barcelona. This activity has been already explained in detail in the previous technical reports.

2.8.3.6 Task 8.6: Maximizing the impact on the EU directives and policies (Leader: UPC, Contributors: ECMWF, JRC): M15 – M43

During the project execution, **ANYWHERE** partners periodically monitored the relevant events held at European level related to the project area and studied together feasible options for dissemination of the project results. In principle, the events attracting researchers, technicians, first responders, stakeholders and policymakers were taken into consideration, but also other discussion forums involving the general public. Partners also linked to national / regional public and private organizations promoting / debating or that are regularly active in the area of the project and its subject.

As a result, the **ANYWHERE** project partners and the Coordination team have participated actively in the existing forums in the field of interest of the project, which gathered policymakers and other relevant players such as industry, practitioners, etc. Partners made a great deal of efforts to participate as speakers to deliver presentations focused on the results already achieved by the project and those expected, based on the communication materials available.

It shall be remarked the participation of a variety of consortium members to different meetings of the **DG-HOME Community of Users on Disaster Resilient Societies (CoU)**. The CoU meetings aim to promote research results, identify promising technologies that have the potential to be taken up by practitioners, enhance market opportunities for research results, and ensure that the expertise of practitioners is available to policy-makers.

During RP3, the **ANYWHERE** project participated in the Event Policy Research Dialogue Roundtables, organized by H2020 project DRIVER+ (Brussels. 28/02/2019), and in the **13th CoU meeting** (25th–29th March 2019. Brussels, Belgium). A number of **ANYWHERE** partners were present and the Coordinator gave a talk in the Thematic Group 1 – Disaster Risk Reduction and Resilience: <https://www.securityresearch-cou.eu/13th-Meeting-CoU>.

A session of the **ANYCaRE** serious game was organized by **ANYWHERE** in the **PROCIW Workshop** (Working Party on Civil Protection organised in the framework of the **Finnish Presidency of the Council of the European Union**, July 2019, Helsinki).

The **ANYWHERE** project was also present at the **Security Research Event (SRE2019)**, 6-7 Nov 2019, Helsinki), the annual meeting gathering a wide range of security stakeholders: researchers, industry representatives, public security providers and practitioners (i.e. fire departments, police, border guards, intelligence agencies, etc.), as well as a wide number of policymakers from across Europe. **ANYWHERE** project had a booth in the event in the exhibitor area: <https://www.sre2019.eu/exhibition#category-16> (see Figure 34) and the Coordinator intervened as a speaker giving a speech in the Disaster Risk Management section: <https://www.sre2019.eu/speakers>.



Figure 34. Booth of the **ANYWHERE** project to the SRE 2019 meeting

These dissemination activities have continued beyond the duration of the project and the main results of **ANYWHERE** have been presented and are planned to be presented in the following workshops and conferences:

- January 2020: **ANYWHERE** presentation at OECD Conference on Adapting to a changing climate in the management of wildfires. Paris. 16-17/01/2020.
- February 2020: **ANYWHERE** presentation at the **8th EU-Japan Workshop on Climate Change Research**. Brussels. 06-07/02/2020.



- February 2020: **ANYWHERE** presentation at the **Kick-off meeting of the RECIPE UCPM prevention project**. Barcelona. 20/02/2020.
- February 2020: **ANYWHERE** representation at the **Scope Group Meeting of the DG-HOME CoU. Brussels**. 25/02/2020.
- March 2020: **ANYWHERE** presentation at the Final workshop of the HEIMDALL H2020 project. Girona. 25/03/2020.
- June 2020: **ANYWHERE** demonstration at the **INTERSCHUTZ event invited by EC-REA**. Hannover 15-20/06/2020.

2.8.4 Identification of difficulties and delays and actions foreseen

No major difficulties have been experienced during the RP3.

2.8.5 Deviations from DoA and updates of the Implementation Plan

There are no deviations from DoA of the Amendment.



2.9 WP9: Project Management (Leader: UPC)

The main objective of **WP9** is to manage the activities ensuring the proper implementation of the work plan and a smooth advancement of the project towards its final goals. Specifically:

- Technical, financial and administrative management and reporting of the project.
- To organize the internal communication and evaluation actions, and to fulfil all contractual requirements.

2.9.1 Main advancements and achievements during the RP3

During this 3rd reporting period the **efforts related to the management** and proper implementation of the project work plan **have been kept bigger than expected**.

Beyond on the normal tasks of preparation and supervision of the reports for the periodic review meetings that has requested a full resubmission in June 2019, and the demanding period related to the preparation of the final deliverables and reports, an unexpected problem with the financial statement of partner AIRBUS has required to lead corrective actions (see details in section 1.4.3 of the final version of the 2RP technical report).

After trying to fix the situation through a number of emails exchanged with AIRBUS, and after several discussions with the project officer, an Extraordinary Non-Conformity report has been prepared and submitted in August 2019 requesting an extraordinary evaluation of the Eligible Costs reported by AIRBUS

Beyond this extra effort, the **WP9** main achievements during the RP3 have been:

- Preparation of the **RP2 review meeting at REA** (Brussels) in April 2019.
- Organization of **2 Project meetings**: May 2019 in Leipzig (Germany), October 2019 in Brussels (Belgium).
- Organization of **three Executive Board meetings**: April 2019 in Brussels (Belgium), May 2019 in Leipzig (Germany) and October 2019 in Brussels (Belgium).
- Organization of meeting in the premises of the EC - Joint Research Centre on June 2020 to coordinate the works to respond to the requests on including vulnerability and exposure information at UE scale in the **ANYWHERE** platforms.
- Organization of the final Expert Advisory Board supervision and evaluation session (October 2019).
- Organization of the RP3 review meeting on March 2020.

2.9.2 Advancement in the Deliverables

The status of the advancement in the Deliverables of **WP9** at the end of the reporting time of the project (**M45**) is:



Table 12: Revised table of WP9 Deliverables at the end of the reporting time of the project (M45).

Deliverable	Title	Submission date	Progress status (in %)
D9.1	1 st reporting period technical report.	M20	100%
D9.2	2 nd reporting period technical report.	M35	100%
D9.3	Final supervision report from the Advisory Board and final recommendations.	M42	100%
D9.4	Final technical report.	M45	100%

Deliverable D9.3 has been submitted in **M42**.

Deliverable D9.4 has been started before the end of the period and will be submitted in **M45** (two months after the end of the third report period).

2.9.3 Identification of difficulties and delays and actions foreseen

No major difficulties have been experienced during the RP3.

2.9.4 Deviations from DoA and updates of the Implementation Plan

No major deviations from DoA have been experienced in **WP9**.

The extra effort on management required during 3rd RP has been again bigger than expected, so the use of resources in terms of PMs is higher than expected, and globally has overpassed the efforts foreseen in the DoA of the Amendment.

3 Impact

During the 3rd RP, the work of the WPs has been strongly focused on completing the **operational demonstrations of the A4EU prototypes in the ANYWHERE 7 Pilot Sites** (see Figure 35), that will be extended during the next 6 months after the end of the project to ensure the real-time availability needed to impulse the market uptake of the exploitable results.

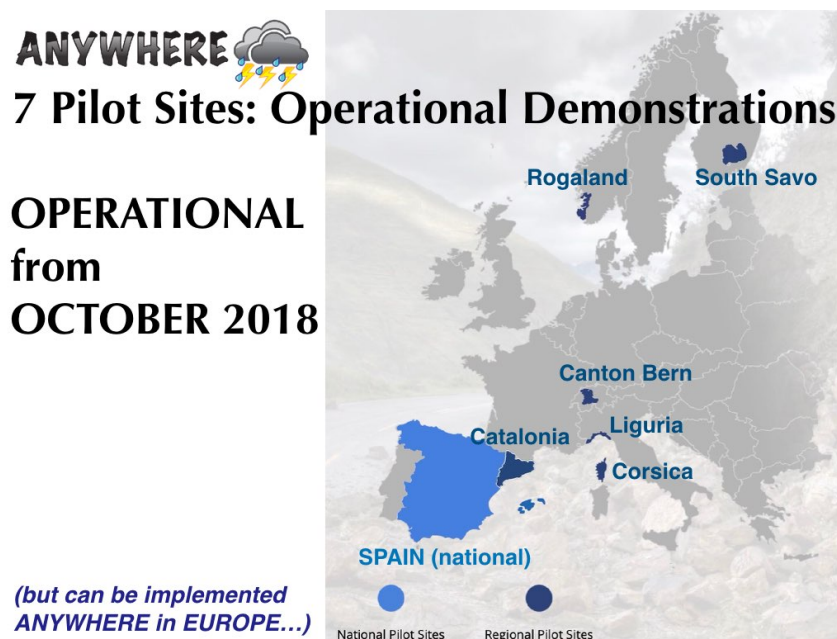


Figure 35: **ANYWHERE** pilot sites operational demonstrations that have run from October 2018 to October 2019. The operation of the MH-EWS and of the A4EU systems will continue for 6 extra months to guarantee the real-time availability needed to impulse the market uptake of the exploitable results.

These efforts have included the integration of local high-resolution data, specifically the vulnerability and risk cartographies, to **achieve the full Impact forecasting capabilities of ANYWHERE.**

This **impact forecasting concept** of **ANYWHERE** (see Figure 36) is an **innovation disruption in the field of Civil Protection and Emergency Management**. Thus, **Artificial Intelligence** is used to integrate the **hazard impact forecasting products** served by the **MH-EWS** with **high resolution local impact models** (such a PROPAGATOR in the case of wildfire propagation, the FF-EWS flash-flood impact indicator or the snow traffic impact on roads for instance) combining them with the **regional layers of exposure and vulnerability in the emergency command centres.**

All this information, usually available but not interconnected, is now processed in the single platform **A4EU**, to **automatically identify the affected critical points**, including their characteristics and location, and other advanced services designed to allow the emergency response specialist to **focus on local IMPACTS**, without the necessity to look in detail on the meteorological forecasts and triggers, **and on a narrow set of vulnerable locations** (i.e. Schools, Train Stations, Hospitals, Seveso

facilities, among others) instead of vast regions, supporting them to magnify their response capabilities.

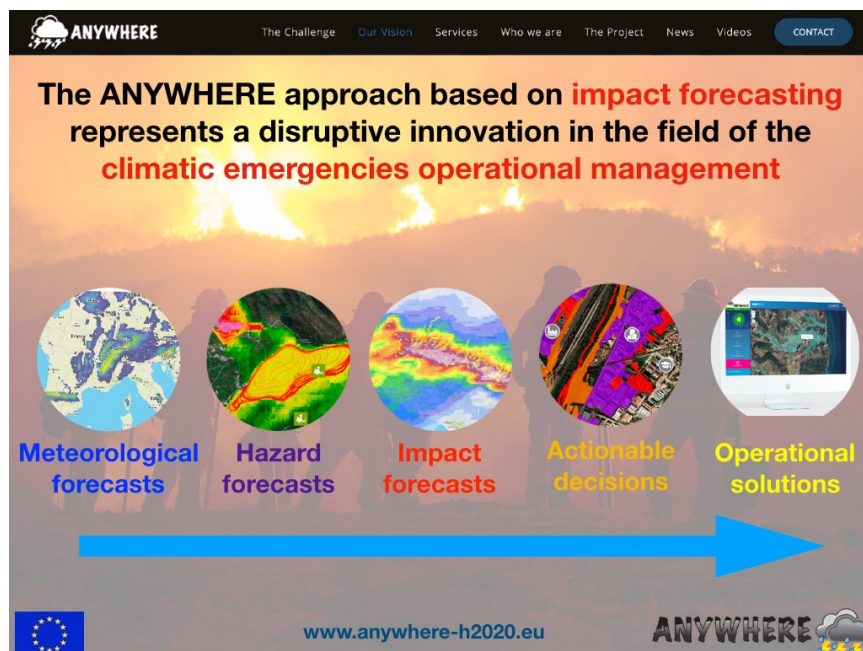


Figure 36: **ANYWHERE** impact forecasting concept: advanced meteorological forecasts are translated into hazard forecasts, and using HR local information about vulnerability and exposure, transformed into Impact forecasts. AI is used by the A4EU platforms to link these impact forecasts to **automatically identify the affected critical points**, including their characteristics and location, to allow to convert them into actionable decisions supporting the emergency response specialists to **focus on local IMPACTS**.

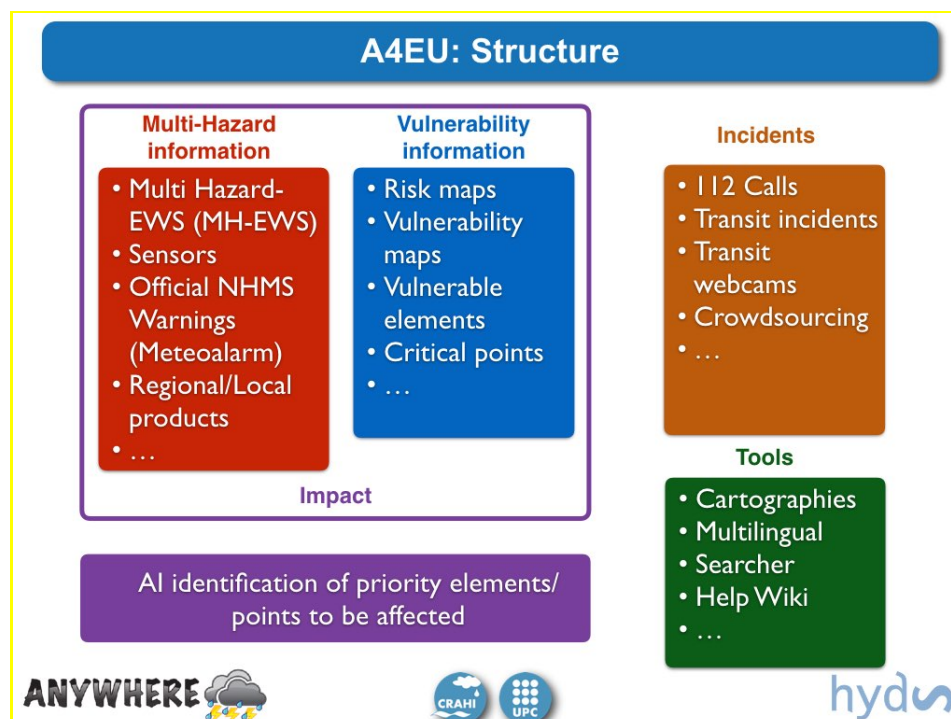


Figure 37: **A4EU** platform Impact Forecasting scheme: Artificial Intelligence is used to integrate the hazard impact forecasting products served by the **MH-EWS** with high-resolution local impact models and local layers of exposure and vulnerability in the emergency command centres.

The collected experiences have been presented as success stories by the Pilot Site Practitioners in the **ANYWHERE Hands-on demonstration** and in the **Final Workshop** held in Brussels (October 2019) showing the **huge innovative potential of the ANYWHERE real-time implementations**.

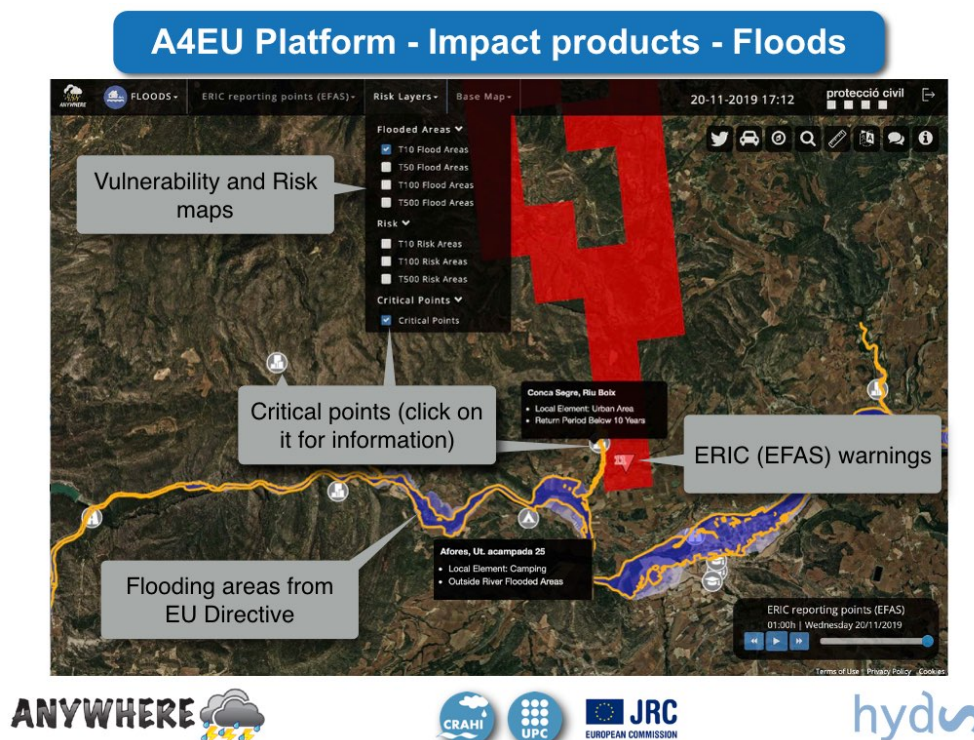


Figure 38: Impact Forecasting implemented on the **A4EU** platform, showing critical points that are at risk, by automatic integration of the **Multi Hazard Early Warning System** forecasts with high-resolution impact models and the local vulnerability and exposure cartographies. The figure shows how the flash-flood early warning product ERIC can be used to trigger an automatic warn to the predefined critical points potentially affected using the risk flood maps prepared under the Flood Directive.

The interest received during the final workshop has been experienced again during the **ANYWHERE** exhibit at the **Security Research Event 2019 (SRE2019)** held in Helsinki in November 2019, where participants from different sectors, were extremely interested on the operational **A4EU** prototypes running live on the 7 Pilot Sites.

The success stories have been completed by the operational implementation of the four **ANYWHERE** tools to trigger automatic warnings **to activate self-protection plans** that have been developed in the four case studies of **WP5**. They include the **A4Campsites** and **A4Snow** applications in the Pilot site of Catalonia, the **A4Schools** tool in Liguria and the **A4Grids** forecasting tool for electricity transmission grid operators in Finland. These experiences clearly open a different strategy to reach a market of activities and industries complementary to the public PPDR sector extremely important for the **ANYWHERE** market uptake.

Moreover, a **new line of services for municipalities** has been also started, and the new **A4Cities** platform have been tested in collaboration with the municipality of **Blanes** (Catalonia), **Mafra** and **Setúbal** in Portugal.



Figure 39: The **A4Campsites** application is currently operating in 13 campsites and can be extended to demonstrate the **ANYWHERE** impact forecasting capabilities to facilities and activities at risk, such as schools, factories, train stations and similar critical points with interest in having an automatic warning system able to activate their self-protection plans.

All these advancements have **multiplied the impact of ANYWHERE**, and currently there is an ongoing huge effort to attract, negotiate and engage potential participants on the exploitation phase, **that will continue after the end of the project along all 2020.**



Figure 40: The **ANYWHERE** pilot site demonstrations have generated a very strong positive feedback based on the experienced success stories.

The most important impact already noted is the new way in which the Pilot Sites are operating, showing the capacity to **move towards a “new paradigm”: transforming the emergency response from reactive to proactive** (starting before that the emergency occur), based on the **ANYWHERE high-resolution impact forecasting** integrated in the **A4EU** platform that allows a **better management of the emergency and a significant reduction of damages** (see Figure 40).

This is seen as a major impact, even at prototype and pilot site stage, showing in real events how the implemented tools support a new concept of emergency management able to enhance the response capacity of the Civil Protections through Europe, and beyond.

In particular during the recent **Storm Gloria (19-23 January 2020)**, affecting the east coast of Spain, and in particular Catalonia in a severe way (see section 2.6.3.2), several response actions (including the management of the river Ter dams, and the confinement of tens of thousands of affected inhabitants of different cities) **were taken FOR THE FIRST TIME IN EUROPE based on impact forecasting early warnings without waiting for the observations** (saving over 6 hours for the operation).

This success, already explained in several presentations (as in the **ANYWHERE Final Workshop**) has led the Department of Interior of Catalonia (INTC) to announce a procurement based on the experiences collected during the **ANYWHERE** demonstration in Catalonia that will be published mid 2020 (see Figure 41).

However, the critical element to convert these potentialities into real innovations, and overpass the planned impacts of the project, is the **constant interaction and feedback between scientists, IT developers, the emergency managers and first responders**.

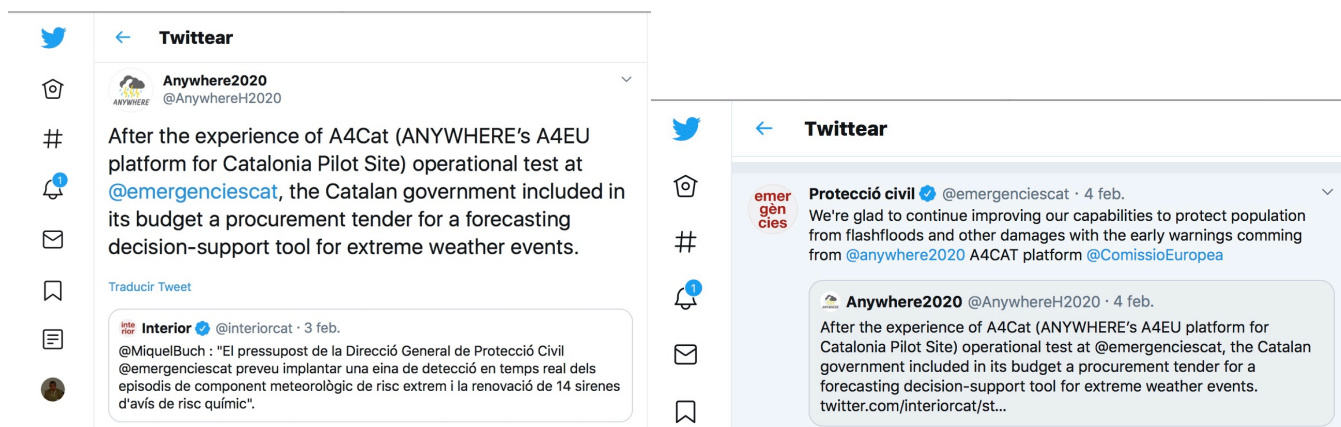


Figure 41: Tweets from the **ANYWHERE** account (left) retweeting the original one from the Catalonia regional Minister of Interior announcing a public tender for a forecasting decision-support system for extrem weather events; and from Civil Protection Catalonia (right) explicitly mentioning the experience with **A4Cat** in **ANYWHERE** and the European Commission.

This crucial work, that of **co-creation and co-ownership**, plays a central role in **ANYWHERE** from the very beginning, and it is the foundation on which the full project is built. The keystone to allow that the **Users’ needs and expertise guide the entire innovative process, from the design to the implementation and the operation**.

This is why the 12 operational authorities that are **ANYWHERE** partners are the compass of the project, aligning the objectives and the developments to the goal of making a true step forward towards innovation in emergency response during weather-induced emergencies.

This is why **ANYWHERE** has been really a **Users' driven innovation action**.



Figure 42: Uncountable working sessions have been conducted on the pilot sites in order to work along with the practitioners in the co-creation framework required for the adoption of the new concepts and at the same time get direct feedback from the users to advance in the co-development of the **A4EU** platform.



4 Update of the plan for exploitation and dissemination of results (if applicable)

4.1 Innovation Exploitation Plan

The Innovation Exploitation Plan has been developed in **WP7** (see section 2.7) and it is described in **Deliverable D7.4: Innovation Exploitation Plan (M43)**.

During the RP3 different partners have participated in a number of actions and meetings to progress in its definition, and also to explore with potential customers their interest and the conditions in which the products of **ANYWHERE** could be realistically commercialised after the end of the project.

During the **ANYWHERE** Final Workshop held in Brussels in October 2019, the idea of constituting an **ANYWHERE Foundation** with the objective to centralise the negotiation of the IPR licenses in a single institution and to promote the commercialisation activities was presented in public. The basic ideas are described also in **Deliverable D7.4**.

As a first step the Coordinator has negotiated with the main data providers (COPERNICUS, ECMWF, OPERA) the extension of the agreements to use their data up to July 2020, and with the main operating Partners the continuity of the MH-EWS and the major A4EU prototypes to ensure the continuity of the operation beyond the end of the project.

A meeting with the partners that have shown their interest to commercialise the results is called for the second half of March (once the reporting efforts will be finalised), in which the first actions to start the follow up and to decide the constitution of the **ANYWHERE Foundation**.

4.2 Identification of exploitable results

Deliverable D7.4 (M43) presents in detail the Key Exploitable Results (KER) derived from the **ANYWHERE** project. The list of the 48 KER identified, described and characterized in **D7.4** is given in Table 13. The item code number follows **D7.4**.

Table 13: Key Exploitable Results (KER) of the **ANYWHERE** project.

#	Key Exploitable Results	Responsible Partner(s)
1	Standardized Drought Indices	WUR
2	Threshold Drought Indices	WUR
3	MH-EWS	HYDS
4	A4FINN	AIRBUS
5	A4LPS	AIRBUS
6	A4NOR	AIRBUS
7	A4CAT	HYDS
8	A4LIG	CIMA
9	Rainbow risk-based decision machine	SINTEF
10	Decision support Tool on logistic aspects and crisis management	RINA



11	A4CAMPSITE	HYDS
12	Social network & broadcasting tool	KAJO
13	Weather-based Macroscale transport chain planner	RINA
14	Nowcasting of snowfall limit	METEODAT/UNIGE
15	Optimal convective index for heavy precipitation	METEODAT/UNIGE
16	Downscaling of numerical forecast models for mountainous regions	METEODAT/UNIGE
17	Disposition model for shallow land slides	GEO7
18	Permafrost degradation disposition model	GEO7
19	PREDICT Support decision making services	PREDICT Services
20	Resilience tool ORI (DSS)	UNS
21	RISICO & Propagator (fire danger rating system)	CIMA
22	FloodPROOF algorithm	CIMA
23	Nowcast model - PhaSt	CIMA
24	A4SCHOOLS	CIMA
25	RIVERTRACK	RAB Consultants, RIVERTRACK, WATERNUMBERS
26	Convective cell classification algorithm for electricity providers	FMI
27	Scenario technique (ST) tool	UPB
28	European storm surge model	CFR
29	Local inundation-erosion model	CFR
30	Regional storm surge model algorithm	CFR
31	Fire danger: reanalysis + forecast (ECMWF more detail)	ECMWF
32	Ptype: Probability of precipitation type	ECMWF
33	Heatwave index (UTCI) forecasts	UOR
34	Site specific database flood forecast	WATERNUMBERS
35	Calibrated meteorological forecast	WATERNUMBERS
36	Common information space (CIS)	UPB
37	WP5 guidelines, good practices and recommendations	UPB, SSSA, CNRS
38	Rainfall nowcasting algorithm	UPC-CRAHI
39	Flash flood algorithm - FF-EWS	UPC-CRAHI
40	Flash flood impact estimation algorithm	UPC-CRAHI
41	Landslide nowcasting algorithm	UPC-CRAHI
42	Road conditions forecasting module	UPC-CRAHI
43	Performance assessment of the meteorological forecasts and nowcasts products	ECMWF
44	Flood products (EFAS-ERIC Model)	JRC
45	Air quality and health products	UOR
46	Debris flows and landslide algorithm	UPC-CRAHI
47	A4CENEM	HYDS
48	A4COR	PREDICT Services



4.3 Dissemination Communication and Training Plan

The **ANYWHERE** Dissemination, Communication and Training Plan was developed in Deliverable **D8.1** and submitted in **M04**.

The **ANYWHERE** Project Web-site and project-site (Deliverable **D8.2**) was released initially by **M06**. The **website was restructured on March 2018** following the recommendations gathered by the reviewers during the 1st Project Review meeting at the REA on the 6th February of 2018 in Brussels, and it has been updated periodically to include new sections with the latest information available.

A brand-new website essentially designed to promote the **market uptake** of the **ANYWHERE** results is operational from July 2019.

In parallel a number of dissemination activities have been done, including press releases and project videos (see details in Section 2.8) and an important effort have been made to be present in social networks.

Finally, a part of the internal trainings required to the start of the demonstrations, 3 **ANYWHERE** trainings for partners and stakeholders were successfully held in Barcelona Madrid and Brussels following the concept of Hands-on training activities and demonstrations.

5 Update of the data management plan (if applicable)

There is not a data management plan in **ANYWHERE**.

6 Follow-up of recommendations and comments from previous review(s) (if applicable)

Several recommendations were provided during the RP2 review meeting of the project, held in Brussels on April 2019.

The response to the recommendations and requests provided as well as the details about the resubmitted Deliverables are presented in the **ANNEX I: Response to the RP2 review comments**.

Beyond the clarifications and the corrective actions applied to improve the re-submitted Deliverables, some of the recommendations required to set up specific corrective actions. Table 14 summarizes the recommendations together with the actions taken to fulfil them.

Table 14: Recommendations from 2RP review.

Rec. No.	Description of the recommendation
Recommendations concerning the RP2	
Rec. 1	<i>The different development level of each of the algorithms used in the project's products should be highlighted. This differentiation should also be present in the catalogue on the web</i>

Action 1	To properly assess and describe the level of maturity of the different algorithms included in the ANYWHERE MH-EWS a specific section has been added to the Deliverable D2.5: Final report describing: (i) robustness of algorithms under worst-case climate projections, and (ii) methods implemented to characterize the uncertainty inherent in the hazard and impact forecasting algorithms. To complete this additional work, the Consortium requested an extension of 4 months to the deadline of D2.5 (foreseen to be delivered in June 2019-M37) up to October 2019 (M41). The results of the development level assessment have been also included in the web catalogue.
Rec. 2	<i>The dissemination/communication products should be updated and revised. There is lack of consistency among some videos. Likewise, the information provided on the catalogue on the webpage for the various hazards, should be double-checked for correctness.</i>
Action 2	The video on health impacts during weather and climate emergency events have been reformulated and produced again. The new one is available through the website of the project or through the YouTube Channel https://youtu.be/2P0htHa5g4Q. Webpage have been entirely reformulated and the catalogue page revised.
Rec. 3	<i>The exploitation plans need to be more specific about commercialisation strategy and potential end users of the project products, who would they be, and what would the who would they be, and what would the conditions to use the products</i>
Action 3	The definition of a commercialisation strategy and the search of new users/customers of the project products have been started during the RP3 (a number of commercial actions have been performed). In particular, the responses have been included in the following Deliverables submitted in RP3: -D7.2: Business Plan Report by Market Segment (B2G, B2B, B2B2C). -D7.3: Final report on the Business Hub development, validation and tests. -D7.4: Innovation Exploitation Plan.
Recommendations concerning future work	
Rec. 1	<i>The balance between the end-user requests and the requirements of a pan-European perspective needs to be reinforced, including a deeper connection between the local users and the European view.</i> <i>Also, the access to exposure and vulnerability data for different scales and the possible challenges related to their use shall also be clarified, in order to reduce eventual gaps in product development, specifically with regard to impact forecasts. It is recommended to consider the use of data on population density, number of buildings and location of sensitive buildings (hospitals, nursery homes, schools...) from National Statistics, which are freely available in Europe, although they may need some prior harmonisation.</i>
Action 1	To clarify and extend the access to exposure and vulnerability data for different scales and the possible challenges related to their use, an additional new task has been developed by UPC-CRAHI in collaboration with the EC Joint Research Centre (partner of the project). To complete this task (initially not foreseen in the DoA) a PhD researcher from CRAHI-UPC was received as visiting researcher at JRC for a 4-month secondment (August-November 2019). The work carried out has allowed us to include available cartographies about population density, number of buildings and location of sensitive buildings (hospitals, nursery homes, schools, ...) at EU scale and explore procedures to incorporate vulnerability and exposure assessment based on them to improve the impact assessment regarding weather-induced emergencies at EU scale in the A4EU platform.
Rec. 1	<i>Whenever possible, the project should report on the performance of the tools deployed with regard to high-profile events (e.g., the Cogoletto wildfire and evacuation on 26 March 2019).</i>



Action 1	The Cogoleto wildfire and evacuation event has been studied and analysed as requested, and this case-study has been presented in the ANYWHERE final workshop held on the 29-30 October in Brussels. Other major events have been studied and some of them have been object of publications in scientific journals. The most recent and relevant events were also presented during the sessions of the ANYWHERE final workshop in Brussels. The major event linked to the storm Gloria occurred in Spain in January 2020 is still under research and will be a specific case study that will generate some scientific publications in the next future.
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Specific details about the actions done by the different WPs follow in the next sections.

6.1 Results of the secondment of PhD student Secondment of Josias Ritter (CRAHI-UPC) at the Joint Research Centre in Ispra, Italy (19.08.2019 – 29.11.2019)

The principal objective of the secondment has been to reinforce the European perspective of the impact forecasting tools of the **ANYWHERE** project. As a first step towards this goal, several vulnerability datasets with pan-European coverage have been collected from various sources. The second step consisted in an exploratory study, in which some of the vulnerability datasets have been combined with weather hazard forecasts from the **ANYWHERE** catalogue to illustrate their usefulness for the development of pan-European impact models.

6.1.1 Pan-European vulnerability information

In recent years, several research groups at the Joint Research Centre (JRC) developed vulnerability datasets with pan-European coverage. The secondment enabled to assess the availability of the layers for their use within the **ANYWHERE** project, and directly discuss with the developers the technical specifications and possible limitations of the datasets. Apart from the vulnerability layers provided by JRC, additional vulnerability information has been collected from OpenStreetMaps.

The datasets are readily available for the development of pan-European impact forecasts, or for transferring regional impact models to new spatial domains (where regional vulnerability information is unavailable). Besides, some of the data has been included as static vulnerability layers in the **A4EU** platform, allowing to display them together with weather and hazard forecasts. This section gives a brief overview of the gathered vulnerability datasets. A more detailed description can be found in the **ANYWHERE Deliverable D2.5**, Section 7.1.

6.1.1.1 Population density maps

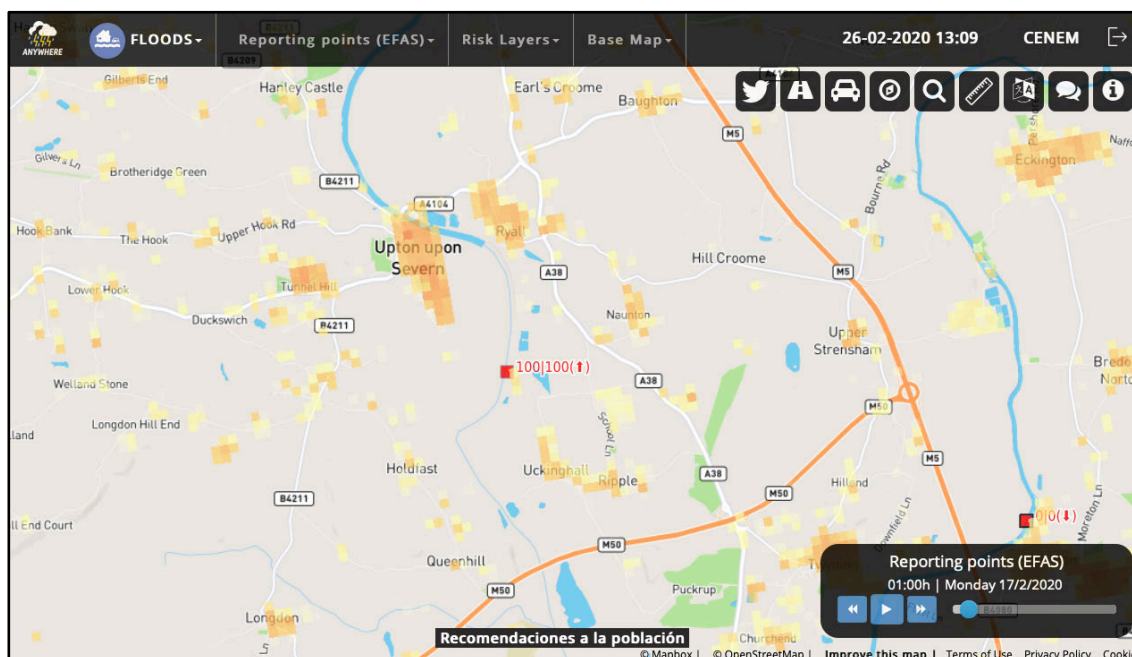


Figure 43: Population density map with pan-European coverage in 100 m resolution, zoomed to Upton upon Severn (UK). Overlay with the EFAS reporting points on 17 February 2020, i.e. one day before the town was flooded during Storm Dennis (<http://floodlist.com/europe/united-kingdom/1600-homes-flooded-storm-dennis-february-2020>).

To estimate the number of people potentially affected by a weather event, it has been found valuable to overlay the hazard forecast with a population density map of the affected area. We have identified two sources with European coverage:

- The Global Human Settlement Layer (GHSL; Freire et al., 2016) is a static population density map showing the number of people per hectare over Europe in a resolution of 100 m. The map has been added as risk layer in the A4EU platform (Figure 43).
- Within the H2020 ENACT project (<https://ghsl.jrc.ec.europa.eu/enact.php>), JRC recently developed a new set of population density maps. These maps have a lower resolution (1 km) than the static GHSL population density map described above, but the maps account for day/night dynamics (e.g. due to commuting) and monthly variations (e.g. due to tourism). The maps are not yet officially published and will meanwhile not be displayed on the A4EU platform. However, we have received permission to use them for the development of impact models within the ANYWHERE project.

6.1.1.2 Population exposure to specific hazards

For a refined perspective of the population potentially at risk, JRC assessed the amounts of people exposed to specific weather-related hazards (i.e. river floods, coastal floods, landslides, and forest fires; https://drmkc.jrc.ec.europa.eu/risk-data-hub/risks/data_extraction/). These layers were generated by combining the static GHSL population density map (section 6.1.1.1) with the areas potentially affected by

the individual hazards. The resulting amounts of population potentially at risk are aggregated over the administrative regions (NUTS), as illustrated for forest fires in Figure 44.

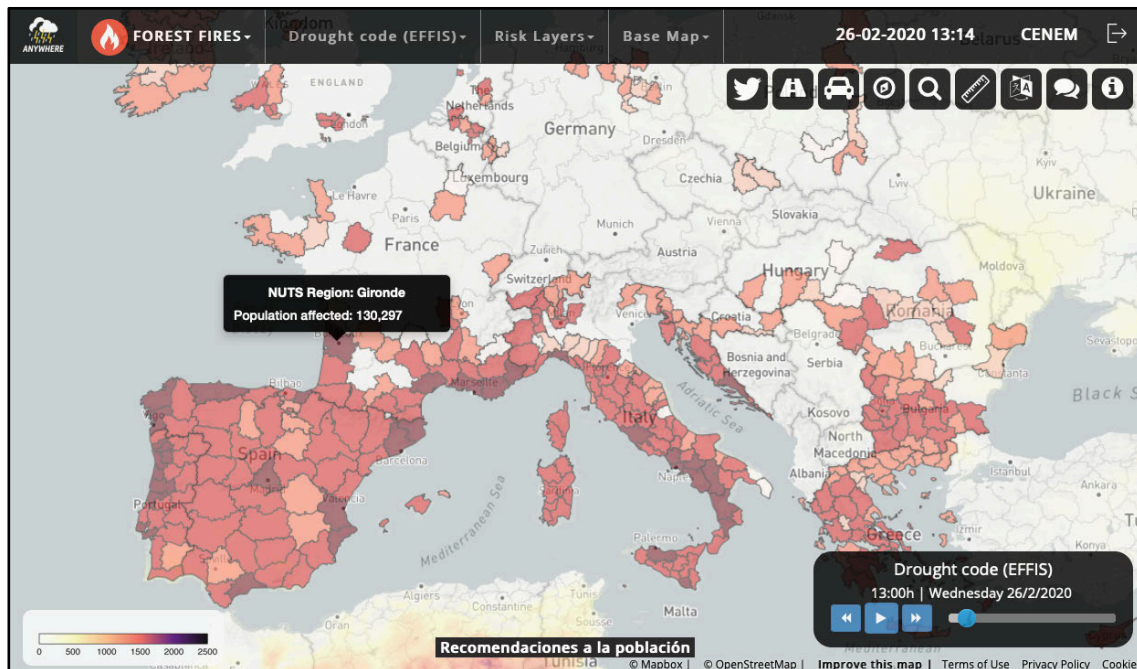


Figure 44: Population potentially exposed to forest fires, aggregated at the level of NUTS regions.

6.1.1.3 Critical infrastructures

The locations of hospitals (<https://healthsites.io/>) and education facilities (OpenStreetMaps; <https://mapcruzin.com/free-europe-arcgis-maps-shapefiles.htm>) have been collected and harmonised at pan-European scale. The resulting datasets can directly be employed for the development of impact models and have been included as static risk layers in the **A4EU** platform (see Figure 45).

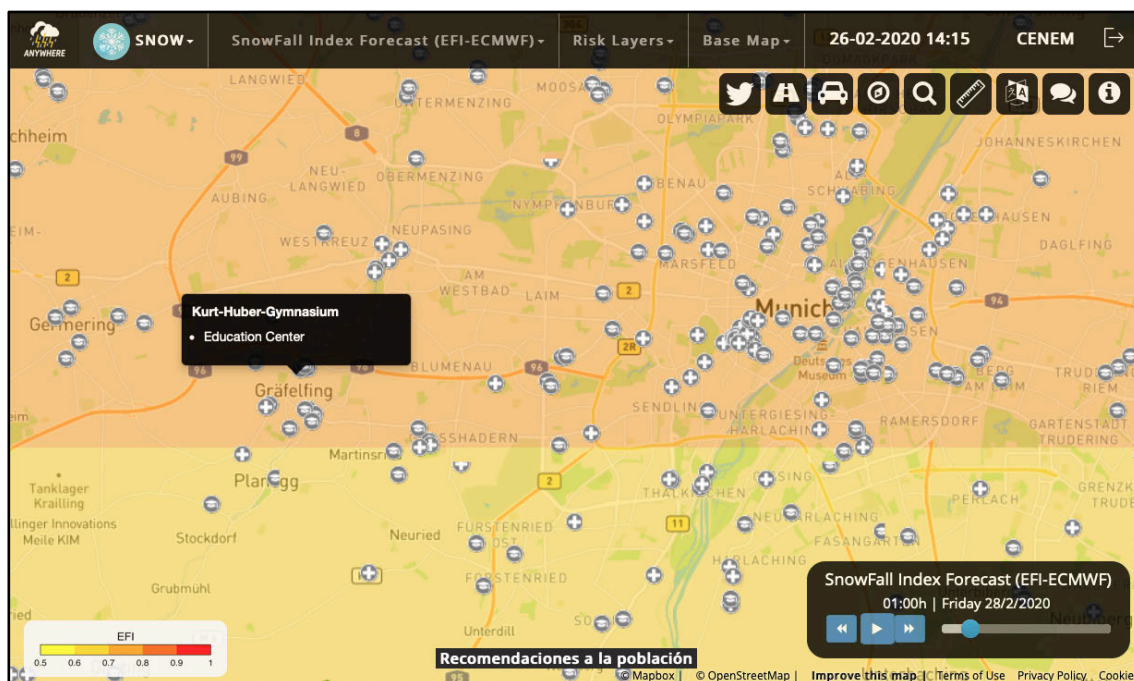


Figure 45: European critical infrastructures (hospitals and education facilities) in the area around Munich (Germany).

6.1.2 Pan-European impact modelling – Air quality impact on population

A first exploratory study has been carried out to illustrate how the described vulnerability data can be used to model the impacts of weather events at pan-European scale. Already many years ago, the World Health Organization suggested the potential of combining air quality estimates with population density information to map the impacts on the health of the population (WHO, 1999). Following this idea, we have explored the possibility to forecast the impact of air quality on the population across Europe.

The hazard component of the proposed approach is based on the forecasts of particle concentrations [$\mu\text{g}/\text{m}^3$] of five individual pollutants available in the **ANYWHERE MH-EWS** (originally provided by Copernicus; <http://www.regional.atmosphere.copernicus.eu>). To make these pollutant forecasts more interpretable for the end-users, we have employed the European Air Quality Index (EAQI) of the European Environment Agency (<https://www.eea.europa.eu/themes/air/air-quality-index/index>). The EAQI summarises the five pollutant forecasts and returns an overall air quality index ranging from good (dark green) to very poor (red), as illustrated in Figure 46.

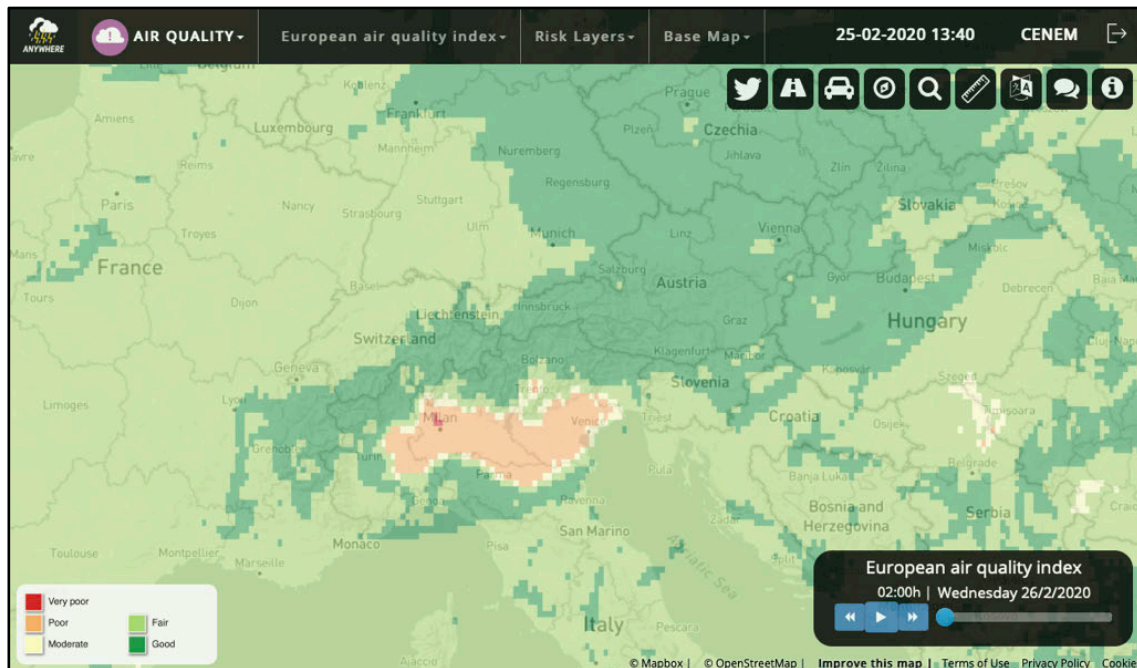


Figure 46: The European Air Quality Index (EAQI) forecast for 26 February 2020 0200UTC.

While poor air quality may have only limited consequences in areas with low population densities, the impacts can become very significant when more densely populated areas are affected. To take this into account, the proposed approach combines the EAQI forecast with population density maps. For this task, we have selected the population density maps developed in the ENACT project (section 6.1.1.1) that account for some of the dynamics that inherently affect population exposure. At each forecast time step, the population density map of the corresponding month and time of day is used.

The presented approach is based on an impact matrix (see Figure 47) that combines in each cell the hazard (as described by the EAQI forecasts; Figure 46) with the vulnerability (as characterised by the population density map). The result is a map showing three impact levels at 1 km resolution: low (yellow), medium (orange) and high impact (red). Figure 48 shows an example of the impact map, zoomed to Northern Italy.

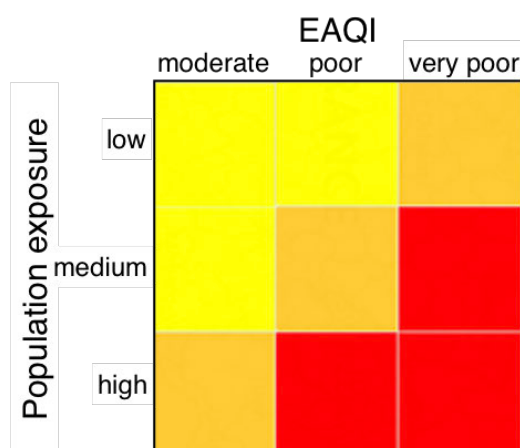


Figure 47: The Impact matrix that estimates the air quality impact on population by combining in each cell the European Air Quality Index (EAQI) with the population density.

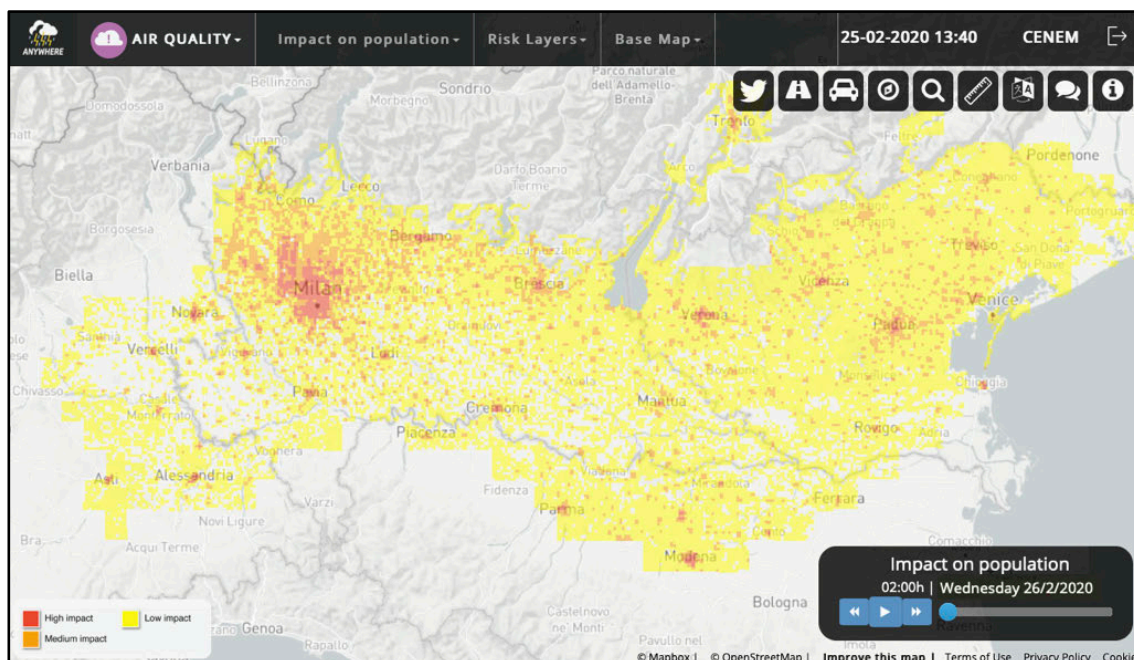


Figure 48: Air quality impact on population at 1 km resolution in Northern Italy (corresponding to the situation in Figure 3).

When monitoring the air quality impact forecast with a resolution of 1 km (Figure 48) at European scale, it can be difficult to identify the locations with forecasted impacts. To point out more clearly the potentially affected areas, the estimated impacts can be aggregated over the administrative regions (NUTS). For each region, an overall impact level is estimated as well as the population totals affected by moderate, poor, and very poor air quality (Figure 49).

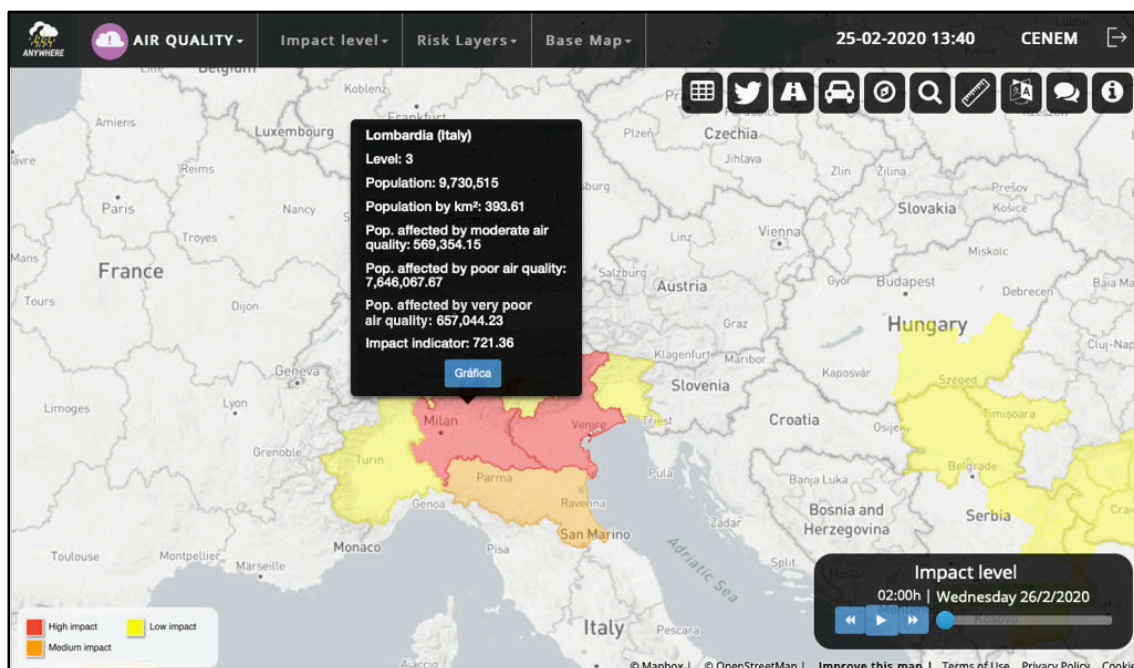


Figure 49: Air quality impact on population at the level of NUTS regions (corresponding to the situation in Figures 3 and 5).

For a more detailed description of the air quality impact model, we kindly refer to the **ANYWHERE Deliverable D2.5**, Section 7.2.1.1. An additional, very similar approach has been designed to estimate the impact of heatwaves on population at pan-European scale. The approach is based on the Universal Thermal Climate Index (UTCI; see e.g. Di Napoli et al., 2018) and it has also been implemented in the **A4EU** platform. A detailed description of the heatwave impact model is provided in the **ANYWHERE Deliverable D2.5**, Section 7.2.1.2.

6.1.3 References

- Di Napoli, C., Pappenberger, F., Cloke, H.L., 2018. Assessing heat-related health risk in Europe via the Universal Thermal Climate Index (UTCI). *Int. J. Biometeorol.* 62, 1155–1165. <https://doi.org/10.1007/s00484-018-1518-2>
- Freire, S., MacManus, K., Pesaresi, M., Doxsey-Whitfield, E., Mills, J., 2016: Development of new open and free multi-temporal global population grids at 250 m resolution. *Proceedings of the 19th AGILE Conference on Geographic Information Science*. Helsinki, Finland.
- WHO, 1999. *Monitoring Ambient Air Quality for Health Impact Assessment*. Edited by D. Breuer and J. Bower. World Health Organization Regional Office Europe.

6.2 Comments from WP2

WP2 has been working on the recommendations provided by the reviewers after the RP2 Review meeting. The online catalogue with the description of the algorithms and products has been improved. Specifically, text on heatwaves and health in the catalogue has been revised.

Also, more information on which algorithms and tools are more developed than others is provided. Moreover, we mapped in **Deliverable D2.5**, operationalizability of each of the platforms/algorithms/tools in terms of development stage, uses and what resources are required. Deviations from what originally has been agreed (DoA) are also given for each product, when relevant.

The Technology Readiness Level (TRL) of the **ANYWHERE** algorithms and tools has reached generally at least TRL=6 (technology demonstrated in relevant environment), with a number of them reaching TRL=9 (Actual system proven in operational environment). More details about the operationalizability and maturity of the exploitable results are provided in **Table 10** of **D2.5** and in the **Deliverable D7.4** for a more exhaustive description. This information is also included in the pages of the **ALGORITHMS on the ANYWHERE website catalogue** (see example in Figure 50).

Description

Flash flood hazard assessment algorithm based on radar observations and nowcasts.

Technical information

Category	Floods, flash-floods, debris flow and landslides
References	Berenguer, M., D. Sempere-Torres, G. S. Pegram, 2011: SBMcst - An ensemble nowcasting technique to assess the uncertainty in rainfall forecasts by Lagrangian extrapolation. <i>J. Hydrol</i> , 404, 226-240.
Developer	UPC-CRAHI
External link	-
Development Stage	TRL=9

Products

Flash flood impact forecast

Read more

Flash flood hazard forecasts

Read more

Figure 50: Description of the **FF-EWS algorithm** including **TRL** information in the page of the algorithm in the **ANYWHERE** website catalogue (<http://aqua.upc.es/anywhere-catalogue-v2/?product=flash-flood-hazard-and-impact-assessment-algorithm-ff-ews-upc-crahi>).

Additionally, **D2.5** describes how specific algorithms/tools were combined to investigate compound natural hazards (coinciding, cascading events). Coincidence of storm surges and river mouth flooding was investigated as coastal flooding (example of wet hazard). Coincidence of heatwaves and weather-induces fires was studied at the pan-European scale, including an example from the dramatic fires in Portugal during 2017. Furthermore, coincidence and cascading characteristics of drought,



heatwaves and weather-induced fires were investigated also at the pan-European scale.

In **D2.5** we also responded to the reviewer's comments that although impact forecasting at the pan-European scale in the wider sense still is impossible, impact prediction in a narrower sense can already be done. Examples of how impacts due to weather-related hazards (e.g. floods, fires, drought) can be forecasted at a larger scale (pan-European, regional) are shown to make the procedure transparent. Two different approaches were presented, i.e. the conventional bottom-up approach and the alternative top-down approach. Some pan-European maps that address vulnerability and exposure and which illustrate how to address this impact assessment, are also presented.

6.3 Comments from WP3

Common Alerting Protocol (CAP) standard alerts have been included in the **MH-EWS** (issue raised in the expert review report). Currently implemented for flooding "river warnings" and "rainfall warnings" forecasting products and have already been used to connect the **MH-EWS** with the crowdsourcing module and trigger / focus it. This capability is now core in the system and could be easily extended to other products contained in the **MH-EWS** under demand.

The time window of data availability has been improved in the **MH-EWS** (issue raised in the expert review report). Not only real-time data is available but also a buffer window of past data which size depends on the product. A full "historical" mode with capability of storing all data past events is not yet ready; despite the efforts devoted to developing it. Performance issues are still blocking its use smoothly in the different applications of the **MH-EWS**, and will be solved as part of the second generation of the system to be released in the next future.

6.4 Comments from WP4

- Please report in detail on how the issues of different scales of maps available across the pilot sites will be solved when bringing the information together for **A4EU**, and how these issues will be addressed when it is required to down - or upscale the maps for the respective portals.

Global map providers are being used for the pan-European view (such as Google maps, Mapbox, Openstreetmaps). For specific regional and local visualisation, Pilot Sites include additional maps with higher detail (provided by cartographic and geographical institutes in many cases), which are automatically scaled to fit the region of interest in the respective platforms. The base map can be easily swapped by means of the existing base layer selector.

- Define more clearly how the same tool can be customized at different levels with varying contributions. Identify and document which layers are included for impact forecast to each product/service.



A clear definition of how the same tool can be customized at different levels, as well as the detail of impact forecasting products included and its main features are included in the **Deliverable D4.5**: *“A4EU systems final versions and performance assessment with focus on the comparison between the different A4EU systems’ capabilities and functionalities”*. In addition, detailed information about the impact forecasting products and associated layers is included in the documentation associated to the **A4EU** prototypes (see sample in the following link): <http://confluence.hyds.es/display/A4CATDOC/Floods>

- In relation to crowdsourcing information, please use the users’ feedback (demonstration sites) to validate tweets and the application itself. Define possible data export, with feedback from users, and data standards to be provided by communities when adapting the system to their local context.

This feature is fully implemented in the API, allowing user to post us feedback which is associated with the specific Tweet. Operational end-users can report if a tweet is relevant and leave a feedback note, which will be used to train the SMAT classifier based on neural networks. Additionally, while providing feedback the end-users are able to post some extra data related classes that can be identified afterwards to use them to train the multiclass classifier (e.g. tweet is relevant and also mentions impact on education). Besides, the selection of keywords and fine tuning of the algorithms and also the integration of the social media analytics and crowd-sourcing products within the different platforms has been revised and tuned based on the users’ feedback. This process has been carried out collaborating with virtual volunteer communities (e.g. VOST) to tailor the system even further towards their specific needs.

- [PROPAGATOR]: The information that local north European vegetation is not yet covered by Propagator raises the question if sufficient effort has been devoted to adopt and/or define any standard format and interface to adapt and import vegetation fuel models. Such an activity could greatly increase the potential adoption of such tool and as a consequence its impact.

During the RP3, this issue has been properly addressed. The vegetation data required for the use in northern Europe has been incorporated and the PROPAGATOR tool has been adapted to use land cover information available at local scale. Applications in the pilot sites of Rogaland (Norway) and South Savo (Finland) have been completed and tested during RP3.

In addition, the comments gathered on the CROWDSOURCING tools have been addressed to improve the following features:

- The Crowdsourcing (KAJO) First version of the toolkit is considered a minor toolkit by some project users as it does not address local language tweets. To reduce this gap in the future, the project should agree on a feasible strategy to address the language issue. Further on, some products should provide more detailed information to correctly interpret the tool outcomes, as is the case with

the hazard values classes, displayed in case of flood hazard, which report flood height in metres, failing to provide clear examples on the baseline used in urban areas. In fact, the novelty of the products imposes higher effort in clarifying their correct interpretation to ensure trust in them.

- The language issues are fairly common in the community of Social Media analytics and language processing in general. For instance, KAJO is participating in a project funded by Facebook where the main goal is to investigate the possible use of multi-lingual embedding to minimise the manual training. This approach will open the usability of the tool to 90 languages and 28 different alphabets. Since the multilingual language tool are only becoming available in recent months, it was not possible to complete the testing of this new capability within the **ANYWHERE** project.
- In order to quantify the signal coming from the social media, various methods were/are being tested. Within the project, it was decided to provide the API which allows various aggregation of the results. This mostly relates to different ways users intend to use the products. We have to note that some visualisations need longer periods of data to be collected (few months) to establish reference traffic (similar to the standard computation of the hazard thresholds) and this still ongoing. Question of trust has also risen during the testing period. KAJO is further collaborating with the volunteers NGO VOST to follow up on the experience gathered within **ANYWHERE** and address the issues of trust and interpretation with more "human-in -the-loop" kind of approach. This will require more efforts since there are some very sensitive issues like data protection, privacy, fake-news, panic spreading.
- Further interest is raised by the **ANYWHERE** SMAT automated classifier based on convolutional neural networks. The training data collected to be used for supervised binary classification is quite extensive, covering floods (IT, ENG, FR, DE, ES, CA), wind (IT, DE), heatwave (ENG), cold wave (IT), storm surge (IT) and forest fires (IT, ENG). The project could explore the feasibility of using data sets collected by other EU projects to increase such data and improve the tool, in particular if targeted to better solve the location fix and enlarge the language coverage.
- KAJO is putting strong emphasis on the use of standard libraries and the best practices for training the language models. This was done specially to increase the interoperability of the collected training data. The possibility of sharing models which are already pre-trained is rather complicated and not very effective since the technological development in text mining and machine learning is extremely fast and tools and methods become obsolete very soon.

6.5 Comments from WP5

During the RP2 Review meeting two main comments have been raised: Legal constraints, for instance, regarding the Single Official Voice Principle (SOVP) would not allow self-p* tools and services, and markets would not be realistic.



The first comment was addressed by considering the initial legal and ethical studies again, documented under the umbrella of **WP1** and reported briefly in **D5.1**. While tools/services are focused on situational awareness there is no legal conflict with the SOVP. In some case studies, coordinated risk communication was specifically focused on including links to public warning channels (especially **T5.6**). Discussions were raised by engaging more intensely with the European Emergency Number Association, providing a talk at their annual conference in 2019 again. Market opportunities are different regarding size, willingness to pay etc. This was part of the initial setup of the **WP5**, when complementary setups were chosen (like strong players in the energy sector in Finland with visible economic impact by self-p*, being highly engaged within the project, and small camp sites with customers not focusing on self-p* during vacations, trying to find a solution for continuous uptake of tools/services). Additionally, several new application cases and sectors were approached to confirm the relevancy and potential of self-p* tools/services.

Additionally, the recommendation to make information available to a wider community was addressed by bringing CIS concepts (**Task T5.1**) into the **ANYWHERE** web page. The recommendation to further utilize the potential of the ANYCaRE serious game was addressed at several occasions, especially a large European scale session at PROCIV workshop in July 2019.

6.1 Comments from WP8

The following actions have been done in **WP8** to follow the suggested recommendations in the RP2 Review:

Recommendation 1:

- *The list of publications available in the management system needs revision, to ensure that only publications that acknowledge the ANYWHERE project and that were developed along the project's timeframe (e.g. publications nr. 36, 38, 40, 41 do not follow the requirements).*

Measures taken to address the recommendation:

The list has been revised and updated accordingly. The list of project publications is also publicly available at the corresponding section of the **ANYWHERE** website: <http://anywhere-h2020.eu/docs/scientific-publications/>

Recommendation 2:

The information provided on the respective first pages of the catalogue on the webpage for the various hazards/types of extreme events needs, should be double-checked for correctness and English edited (e.g., the page on heat and health effects, or the short text on floods). The related videos should be of equal length and quality. The video on heat and health should be removed and uploaded again when it actually contains information on the health effects of heat and heat waves, heat wave forecasts and measures to be taken for heat protection and adaptation (for video example please consider: WHO Regional Office for Europe webpage and heat & health related documents).

Measures taken to address the recommendation:



The information included in the descriptive pages for the Catalogue has been revised and updated. The video related to “Heatwaves and weather-induced health impacts” has been sketched and filmed again to match the quality of the rest of videos related to other hazards.



7 Deviations from GA Annex 1 and Annex 2 (if applicable)

With the approval of the **GA amendment by the EC in November 2018 (M30)** the major deviations of the execution from GA Annex1 and 2 have been corrected, including the solution of the non-recoverable delays that have led to the 4-month extension of the duration of the project. After this, no major deviations are detected at the moment.

From this date the project has not experienced significant deviations from the amended GA Annex 1 and Annex 2.

7.1 Tasks

No significant deviations in the progress of the Tasks from the amended GA have been experienced. **The project has ended in December (M43) with all Deliverables and Milestones successfully achieved.**

The slight delays in the submission of some of the Deliverables during RP3 are related to the willingness of include the last results compiled in the Pilot Sites (finalised in October 2019, **M41**) or to include the feedback gathered during the discussions at the **ANYWHERE** Final Workshop held at the end of October 2019 (**M41**) in Brussels. With this purpose, the submission of the final version of the majority of these Deliverables have been delayed up to December 2019 (**M43**), see Section 1.3.

7.2 Use of resources

As described in the RP2 Technical Report, **a significant extra effort that have been done by some partners during the RP2 and RP3 in several WPs to recover the delays accumulated.**

These extra efforts have been assumed by the majority of those partners with the objective of keeping untouched the total EC grant (partially incorporating junior researchers and developers with lower PM cost, partially renouncing to claim the total eligible costs justified).

Only partner AIRBUS presented a declaration of resources that showed an unacceptable overestimation of the eligible costs that was not proportional to the efforts that the partners having developed similar prototypes declared for a supposed similar work. Overestimation that has not been justified in the RP2 technical report either.

This unreasonable overestimation was not accepted, and an Extraordinary Report on the Non-conformity of the Eligible costs declared by partner AIRBUS in RP2 was sent to REA on 25 August 2019 (**M39**).

After evaluation by external experts, REA has notified on 19 September 2019 (**M40**) the details of the accepted eligible costs as well as the costs rejected in RP2 providing 30 days to request a payment review procedure, if applicable, period that was expired without any request.

In particular, the FINANCIAL STATEMENT ASSESSMENT SHEET FOR PARTNER AIRBUS (included in the ANNEX II: RP2 Financial Statement Assessment for partner

AIRBUS accepted by the EC) includes the following statement explaining the rejection of costs for RP2:

Direct personnel costs declared as actual costs :

AIRBUS had a disagreement with the coordinator regarding its submitted personnel costs. Following a complaint by the Coordinator, REA B4 assigned experts to evaluate the person month effort claimed by AIRBUS. According to the independent experts' conclusions below, a number of person months should be rejected thus leading to a reduction of the claimed personnel costs: "In conclusion, the number of PM that reasonably and justifiably comply with the workload of AIRBUS regarding the second reporting period, as verified with the documents and information available, are 15.57 (WP4) + 9.99 (WP6) + 3.89 (WP7) + 0 (WP8) = 29.45 PM, which corresponds to a reduction of 37.79 PM in relation to the total reported by AIRBUS in the 2RP (67.24)". The revised personnel costs are calculated as follows:

(a) Person Months claimed by AIRBUS for RP1 and RP2: 92.55 (RP1: 25.31 and RP2: 67.24);

(b) Total personnel costs claimed by AIRBUS for RP1 and RP2 are 818.029,43 € (RP1: 230.492,21 € and RP2: 587.537,19 €);

(c) Average cost per PM for RP1 and RP2: 8.838,78 €;

(d) Revised Person Months according to experts' opinion: 29.45;

(e) Revised accepted personnel costs (Average cost per PM X PMs according to the experts' report): 260.302,17 € (i.e. 29.45 PMs X 8.838,78 €).

For your information the rejected personnel costs are equal to 327.235,02 €.

Unfortunately, this issue seems to be reopened again, and at the moment of the submission of this report **AIRBUS has presented a RP3 financial statement in which it includes largely overestimated adjustments for the RP1 and RP2 (209.2733,51 € for RP1 and 589.134,27 € for RP2).** These are unjustified adjustments that seem like a trial to find a back-door to supersede the decision of the European Commission regarding the rejection of part of their declared eligible costs in RP2.

At the time of elaborating this report we are still evaluating all the available information, that will be presented to the next meeting of the Executive Board next 4 March 2020.

In case that the overspending may be again confirmed, the Coordinator will present a new claim to REA regarding the financial statement of AIRBUS for RP3.

7.3 Unforeseen subcontracting

There has not been unforeseen subcontracting during this 1st reporting period.

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

There has not been unforeseen use of in kind contribution from third party against payment during this 1st reporting period.



ANNEX I: Response to the RP2 review comments



Centre de Recerca Aplicada
en Hidrometeorologia
UNIVERSITAT POLITÈCNICA DE CATALUNYA



Grant Agreement number: 700099 — ANYWHERE — H2020-DRS-2014-2015/H2020-DRS-2015

Prof. Daniel SEMPERE TORRES

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Research Executive Agency
Safeguarding Secure Society B-1049
Brussels Belgium

**SUBJECT: H2020 project 700099 — ANYWHERE: Comments to the result of the
Review of the 2RP**

Barcelona, 21 June 2019

Dear Madam/Sir,

Regarding the comments and requests received during the review of the 2RP of the **ANYWHERE** project, you will find below the responses as well as details about the resubmitted deliverables and financial reports, that have already been uploaded through the SyGMA website.

Yours faithfully,

Prof. Daniel Sempere Torres
Coordinator of ANYWHERE
Director of CRAHI-UPC



1) FINANCIAL REPORTS:

The requested changes and additional explanations to the financial reports have been included in the resubmitted reports. A complementary document explaining in detail the changes is included in ANNEX 1 at the end of the document.

However, not all financial reports have been successfully uploaded in time and the report of partners AIRBUS is unfortunately not included in the resubmitted session.

The reason is that AIRBUS sent a financial statement including **proposed eligible costs much higher than expected, and not consistent with their contribution to the efforts reported in the 2RP Technical Report** (particularly in WP4 where the proposed personnel costs were doubling any sensible estimate of personnel costs for the work actually delivered). Additionally, summing what they have been declared as PMs in the 1RP and what was proposed for the 2RP, the **personnel resources proposed to be declared (94,21 PMs) are already a 146% of the TOTAL PMs for the full project (64,5 PMs)**, see above. And this 11 months before the end of the project, when the pilot sites are still running and AIRBUS have still significant achievements to complete.

WPs	PMs BUDGET	PMs 1RP	DRAFT PMs 2RP	PMs 1RP + 2RP	PMs AVAILABLE 3RP
WP4	34	14,43	48,2	62,63	-28,63
WP6	13	2,27	10	12,27	0,73
WP7	14,5	7,82	9,5	17,32	-2,82
WP8	2	0,3	1,2	1,5	0,5
WP9	1	0,49	0	0,49	0,51
TOTAL	64,5	25,31	68,9	94,21	-29,71

Two emails were sent noticing that the pretended financial report was overestimating eligible costs beyond of what is consistent with the work delivered (included in ANNEX VI of the Technical Report). And that this overestimation was **inducing a lack of resources to support the expected activities during the 3RP which will put in serious risk the project during the critical period of the maximum interest of the operational demonstrations**.

For these reasons the Coordinator has not been able to accept the proposed draft of eligible costs as it has been presented, and have required AIRBUS to provide a detailed explanation of these costs to perform a careful assessment to avoid any potential errors

In the meanwhile, the financial report presented is not accepted and has not been included in the resubmission of the 2RP session. Once the eligible costs of the 2RP will be clarified and assessed in relation with to the real work done and achieved, they will included in the next financial report.

A new section 1.4.3 has been added to the Technical Report (already updated in the websystem)



2) **REVISED DELIVERABLES:**

The Deliverables rejected have been revised and resubmitted through SyGMA. A complementary document explaining the changes is included in Annex 2.

3) **TECHNICAL REPORT:**

The Technical Report has been revised to include the details of the problems that didn't allow all the partners to present their financial report, and the revised version has been uploaded through SyGMA.

4) **COMMENTS ABOUT THE ISSUES IDENTIFIED IN THE REVIEW LETTER:**

Regarding the issues identified in the review letter you will find herein below the comments about how the Consortium is proposing to address them.

- a) *The different development level of each of the algorithms used in the project's products should be highlighted. This differentiation should also be present in the catalogue on the web.*

To properly assess and describe the level of maturity of the different algorithms included in the ANYWHERE MH-EWS is an effort that overpasses the 30 days of time we have been given in the letter. Thus, the consortium has agreed (and approved) in the General Assembly held in Leipzig on the 24th May to propose that this effort should be done thoroughly and consistently and that the best option is to **add a specific section to the Deliverable 2.5: Final report describing: (i) robustness of algorithms under worst-case climate projections, and (ii) methods implemented to characterize the uncertainty inherent in the hazard and impact forecasting algorithms.**

To complete this additional work, **the Consortium requests an extension of 4 months to the deadline of D2.5 (foreseen to be delivered in June 2019-M37) up to October 2019 (M41)**, what takes into account the summer holiday period and the interest of analyzing all the registered events during the demonstration period (finishing on September 2019, M40).

The results of the maturity development assessment will be also included in the web catalogue.

- b) *The dissemination/communication products should be updated and revised. There is lack of consistency among some videos. Likewise, the information provided on the catalogue on the webpage for the various hazards, should be double-checked for correctness.*

All the project videos and dissemination/communication products are under revision.

In particular the video on health impacts during weather and climate emergency events will be reformulated and produced again.

Of course this cannot be done in the 30-day window proposed, so the Consortium requests to have an additional time to do it, with the compromise that **the new set of videos (and**



particular the one on Health impacts) will be available in September 2019 and that will be presented in the exhibitions during the final Workshop of the project (to be held on 29 and 30 October in Brussels).

c) The exploitation plans need to be more specific about commercialisation strategy and potential end users of the project products, who would they be, and what would the who would they be, and what would the conditions to use the products? How has the consortium foreseen the maintenance of the system?

The main effort during 2RP has been to set up and run the operational demonstration on the pilot sites (now extended to 7 pilot sites, including the full Spain).

In this framework the effort to develop the exploitation plans to ensure the sustainability of the **ANYWHERE** developments after the end of the project have been partially postponed.

The definition of a commercialisation strategy and the search of new users/customers of the project products have been started during the 3RP (a number of commercial visits have been already performed up to now and a bigger number is planned from now to the end of the year).

The questions of the reviewers are thus anticipating the work that is now under development on the 3RP, and that clearly was not achieved during the 2RP.

In particular, the responses will be provided in the following Deliverables, still to be presented:

-D7.2: Business Plan Report by Market Segment (B2G, B2B, B2B2C) (foreseen in M37).

-D7.3: Final report on the Business Hub development, validation and tests (foreseen in M38).

-D7.4: Innovation Exploitation Plan (foreseen in M41).

We consider that the strategic decisions related to these questions were planned to be addressed specifically in D7.4, so we prefer to postpone the discussion of these aspects to this Deliverable. However, we want to ensure that a huge effort on these goals is already in progress.

d) Deliverables to be resubmitted.

As already said, all rejected Deliverables have been revised and resubmitted through SyGMA. However we consider important to make a particular statement regarding **Deliverable 2.4**.

D2.4: Final version of the code of the algorithms to be implemented in the MH-EWS, **is NOT a report but a restricted compilation of the code of the algorithms specifically oriented to the internal use in the project to build the operational system to run them** (Multi Hazard Early Warning System, MH-EWS).

As the SyGMA system only accepts to upload a PDF file as prove of the Deliverable submission, the Consortium decided to prepare a short document compiling the list of the programs/codes made available in the IT repository of the project (the real deliverable).

In our opinion, it is difficult to understand that this “accompanying document”, that was not



foreseen in the GA, could be “rejected” by formal concerns about how the list of the available codes is summarized.

However, and understanding the interest in making it easier to read (even if it is a restricted and confidential document) the essential of the requests have been addressed and the sections have been improved following the comments of the reviewers (see more details in Annex 2).

e) Recommendations concerning future work:

A huge effort to ensure **flexibility in the customisation of the ANYWHERE platform and the balance between the end-user requests and the requirements of a pan-European perspective** have been done during the 2RP and continues over the 3RP. The fact of having **extended the number of developers to 4** (having developed 4 different prototypes) and to have **extended the number of pilot sites to 7** (including the full Spain country) are achievements that prove that these efforts have been effectively successful.

During the 3RP the capacity to ensure flexibility in the customisation through the extension of the operational use of A4EU in new locations (and countries) in Europe, will certainly allow us to close the debate about this unfounded fear.

To **clarify and extend the access to exposure and vulnerability data for different scales** and the possible challenges related to their use, an additional new task will be developed in collaboration with the EC Joint Research Centre (partner of the project). To complete this task (initially not foreseen in the DoA) a **PhD researcher from CRAHI-UPC will be sent to the JRC for a 4-month secondment stay starting in July 2019**. The purpose is to prepare an appropriate response to the request of the reviewers and include vulnerability, exposure and other cartographies that can be linked to a better impact assessment regarding weather-induced emergencies at EU scale (and not just at regional/national levels) in the A4EU platform. A specific email requesting the permission of the Project Officer to authorize that the travel costs of this secondment stay of the PhD researcher Josias Ritter at the JRC (Ispra, Italy) could be covered under the travel budget of the project has been already sent in parallel.

A clear definition of **how the same tool can be customized at different levels with varying contributions as well as more details about the data export capabilities**, with feedback from users, and data standards to be provided by communities when adapting the system to their local context, **will be included in the Deliverable D4.5: A4EU systems final versions and performance assessment with focus on the comparison between the different A4EU systems' capabilities and functionalities to be submitted in M40**.

The creation of the **ANYWHERE Foundation** has been advanced during the review meeting, but all the details are under definition during the 3RP. The compromise is that its definition will be fully detailed in **D7.4: Innovation Exploitation Plan (foreseen in M41)**, and that it will be presented to the society during the **ANYWHERE Workshop** to be held in Brussels next 30 October 2019.

Of course IPR issues will be dealt by the Foundation, as well as the establishment of mechanisms to maintain and update the **ANYWHERE** developments and services (included the web catalogue and the ANYCaRE game).



5) RESPONSE TO OTHER COMENTS INCLUDED IN THE REVIEW REPORT:

You will find below the response to the comments of the reviewers included in the review report.

a) Resources (last paragraph of Recommendations concerning the period covered by the report).

The reviewers are noticing that the present budget of partner AIRBUS is clearly overestimated given the amount of real work they are providing in the project, and they recommend to reduce their share and redistribute a portion of it among the partners that have contributed with larger efforts than anticipated in the amended GA.

The underperformance of partner AIRBUS, which has led to declare their DEFAULT during 2RP, has been largely discussed and documented by the Coordinator in the Technical Report of the 2RP. Also the “gentle” reduction of their initial budget approved by the Consortium was already justified in the amendment request letter in October 2018. The reason to this moderate reduction was essentially related to the desire to complete the recovery plan avoiding major further fights with this underperforming partner, and by the hope they might appreciate the effort done by the Consortium and commit themselves in a stronger way for the remaining time.

Unfortunately it's now clear that they didn't appreciate this effort and that they have adopted a strategy of the minimal effort to justify the minimum to not be declared in default again. Therefore, their underperformance has required an extra effort to some other partners in order to complete the tasks that they have just simulated to complete. And as the reviewers state, it's a pain for the Coordinator that these other partners cannot be funded at the level of their effort, when AIRBUS is claiming eligible costs that are clearly not related to their delivered work in the project.

So, following the suggestion of the reviewers would be extremely positive for the entire project, and specifically to impulse an extra motivation in the last months of the project, helping those who are really committed with and making possible the achievement of the market uptake of the results.

Unfortunately, this is out of the reach of the Coordinator at the moment since, as the default status of AIRBUS has been finalised, there is no hope that this suggestion can overpass the VETO of AIRBUS (that tried to use its veto even during the period they were in default).

On the other hand, as the procedure to declare them in default again will consume too much precious energy, needed to complete the achievements foreseen during the 3RP, this option is out of scope.

The only action we can do as Coordinators is that as they insisted in declaring exaggerated eligible costs (in comparison with the work really delivered) for the 2RP, **we have not accepted their financial statement and we have resubmitted the 2RP session without their financial report approved.** Particularly, the main reason for this has been the fact that they pretended not to reserve enough funds to cover the work they need to ensure during the 3RP, **inducing a**



serious risk for the project (in fact they have already told the pilot sites months ago that they cannot do any more work because they have already finished their funds).

However, REA should have in mind that this situation will generate a conflict that will escape from the hands of the Coordinator, and that soon or later it will be a matter of the Commission to decide what to do with this underperforming partner. In this moment the recommendation of the reviewers in this review report would be of precious support.

b) Reviewers introduced a number of paragraphs related to the general request of ensuring access to European-wide high-resolution vulnerability data, i.e.: “It is recommended to consider the use of data on population density, number of buildings and location of sensitive buildings (hospitals, nursery homes, schools...) from National Statistics, which are freely available in Europe, although they may need some prior harmonization”

As said in section 4), to respond this request (which wasn't foreseen in the DoA) **a PhD researcher from CRAHI-UPC will be sent to the JRC for a 4-month secondment stay starting in July 2019.** The purpose being to include vulnerability, exposure and other cartographies that can be linked to a better impact assessment at EU scale in the A4EU platform.

The authorization of the Project Officer for this secondment stay has been already requested.

c) Whenever possible, the project should report on the performance of the tools deployed with regard to high-profile events (e.g., the Cogoletto wildfire and evacuation on 26 March 2019).

The Cogoletto wildfire and evacuation event will be studied and analysed as requested, and this case-study will be presented in the **ANYWHERE** workshop to be held on the 30 October in Brussels. Reviewers are invited to attend and see how the results on this particular event will be showed illustrating the capacities of the **ANYWHERE** platform to provide support during emergencies like this one.



ANNEX 1: ANYWHERE Project – 2nd reporting period, Financial issues requested to be addressed



ANNEX 1: ANYWHERE Project – 2nd reporting period, Financial issues requested to be addressed

Financial report:

Please find below the clarifications and comments in regard of the issues detected by the EC:

Partner	Issue indicated by EC	Comments to address the issue
WUR	The beneficiary is kindly requested to provide more information for the various other direct costs encoded. For travel items please provide the date, location and number of participants. For "Other goods and services", please provide further details (i.e. catering services, IT services etc.). For items in the category "equipment", please provide more information about them (also make sure that your internal depreciation rules are respected when submitting the cost for payment).	The partner organisation provided the required details for the different items included in the "other costs" category. The depreciation rules have been applied to the items in the "equipment" category, and the necessary explanations were given in the SyGMA platform.
UNS	The beneficiary is kindly requested to add the number of people participating to the meetings for all the travel items encoded in the section of "Other direct costs". Moreover the item titled "Workshop reading Anywhere H2020 14-17 March 2017" for 500.80 euro falls in RP1. Therefore the beneficiary should encode an adjustment for RP1 (the item should not be linked for payment to RP2).	The partner organisation provided the corresponding details regarding to the travel expenses declared in the field intended for explanations in the SyGMA platform. Additionally, an adjustment for the mentioned expense executed within RP1 has been declared (it was wrongly declared in RP2 by error).
KAJO	The beneficiary is kindly requested to include the dates for the meetings attended as well as the number of people attending. This information is partially missing from the table that was submitted.	The partner organisation provided the corresponding details regarding to the travel expenses declared in the field intended for explanations in the SyGMA platform.
INTC	The beneficiary is requested to provide a more detailed breakdown of the sub-costs for the item titled "Renting venue for 300 people, technological support ... etc." for a total cost of 23.752.99 euro.	The partner organisation provided a detailed breakdown of the sub-costs for the mentioned expense item.
DGPCE	For the item titled "Flight BCN-Bastia R. Torres ... etc." there is a clerical error as the total of the individual sub-items is less than the amount indicated of 1,000.91 euro (total of sub-items is 980.28 euro). The beneficiary should also clarify if the cancellation costs are included or not with the item. Moreover, the	The partner organisation corrected the error and provided the corresponding details regarding to the travel expenses declared in the field intended for explanations in the SyGMA platform.

ANYWHERE 2nd RP – Review Comments



	total of the individual sub-items is 405.22 euro and not 291.52 euro for the item titled "Train Castellon-BCN-Castellon Rosa Torres ... etc.". Please check and correct accordingly if needed.		
AMAYA	Please confirm that the cancellation costs are not included in the total for the item titled "Vuelo vuelta Bastia 6th Meeting in Bastia (Corsica) etc." for 1,170.00 euro.	The partner organisation provided the necessary explanations associated to the mentioned travel expenses in the SyGMA platform.	
CDG	The beneficiary is kindly requested to encode an adjustment for RP1 where the item titled "Ms Irene Marras and Mr Corrado ... etc." for 1,086.12 euro will be included. The date of this item (20/22 November 2016) falls in RP1.	The partner organisation declared an adjustment for the mentioned expense executed within RP1 (it was wrongly declared in RP2 by error).	
		The partner organisation included a detailed breakdown of the sub-costs for the mentioned expense item. However, this expense was erroneously declared in the initial financial statement (April 2019) as "NOT foreseen in Annex I". While modifying the statement to deal with the requirements indicated by the Financial Officers, SIS2B tried to correct this defect indicating that the expense was "Foreseen in Annex I" but when doing so then the SyGMA platform did not allow to include explanations in the corresponding field (an error message was got). Consequently, SIS2B included a detailed breakdown of the sub-costs for the mentioned expense item, but it was left encoded as "NOT foreseen in Annex I" in order to be able to provide the required explanations and to complete the submission of the statement.	
SIS2B	The beneficiary is kindly requested to confirm that the amount encoded refers to actual and not budgeted costs. Moreover a more detailed breakdown of the costs incurred is needed.	The partner organisation proceeded to correct the mentioned one-euro rounding error declared in the SyGMA platform.	
HSUH	There is a one euro rounding for the encoded other direct costs of 8,499 euro (individual items add up to 8,498 euro).		



ANNEX 2: ANYWHERE Project – 2nd reporting period, Summary of Revisions included in the resubmitted Deliverables

D2.4. Final version of the code of the algorithms to be implemented in the MH-EWS	
Comments	Actions
The listing of products provided is very complete but a sub-division by type of hazards is advised.	Chapter 3 has been subdivided. There are 8 Sections now in the revised D2.4 report; one section for each hazard, which are preceded by two sections for the forecasting platforms.
The details of the algorithms are presented elsewhere and this report presents the access links. Nevertheless, the information contained in this document is difficult to follow, mainly because it is not divided by group of hazards (floods, storm, heatwaves, etc.). With such a long list of algorithms, a more categorised structure will improve its readability and a better understanding of the different types of products available.	Headings are added to Table 1 in Chapter 2 to improve the readability. Chapter 3 has now a structure in the revised report that makes it easier to find the products associated with a certain hazard. The big table (Table 2) in the previous version of D2.4 (v3_1) has been broken down in 8 separate tables.
Table of contents shall be revised accordingly.	Table of Contents has been revised. It clearly shows the breakdown of Chapter 3 in 8 different sections.
It is also suggested to include a brief introduction to each group of hazards listed and describe briefly the improvements made to the algorithms, regarding the previous versions (if any).	The section of each forecasting platform and each natural hazard has a 1 page brief introduction, incl. changes implemented in the first 18 months.

D4.1. A4DEMOS interfaces, processes, tools, RI design report (Internal to Consortium)	
Comments	Actions
Please revise language and figure captions: search for “plug- is”, “theA4Demos”, missing spaces, caption of figure 21.	A revision of language thorough the whole document has been performed. The mentioned typos have been corrected.
Please amend Annex 2, some responses are given in Italian, harmonise to English accordingly.	The contents of the annex have been harmonised to include only English language.

D4.2. Report describing the operational A4EU systems (A4Finn, A4Alps, A4Cat, A4Lig, A4Nor and A4Cor) ready for the demonstrations, including the recommendations for improvement provided by the users after the beta tests	
Comments	Actions
The requests for improvement provided by users are very practical and detailed (information links to D 6.3). The information on deployment and maturity of toolkits could be used on the portal to give differential information on the status of development of the different tools of the prototype in use.	No direct impact in the report. Information about the different toolkits implemented in the different pilots, as well as their level of development will be included in the website.
Please revise the deliverable to detect some clerical errors, as the following ones, which makes difficult to understand it: Search for: “Functionalities description of user interface functionalities and their and ability of the prototype to perform its required tasks.”	The report has been revised to correct syntax and grammatical errors.



D4.4. Report describing the Crowdsourcing and social media communication report tools, including the recommendations for improvement provided by the users during the 5 first months of demonstrations.	
Comments	Actions
The deliverable describes the use of crowdsourcing and social media to collect and disseminate information in different stages of the disaster management cycle. Considering the A4Cat portal, it did not become entirely clear to what extent and for what purpose the Twitter messages were used and how they were validated.	During the available period of the demonstrations (up to October 2019), KAJO will work closely with the A4Cat team to improve the informativeness of the product especially in the response phase, where these products are primarily targeting to improve the situational awareness. KAJO is planning to release tailored maid product for the end-users which will provide the aggregated anomalies of the hazard related twitter communication over certain administrative units in user defined time range (e.g. last 30 minutes). This product should provide early alert on the situation as well as could serve as confirmation of the signal provided by early warning systems where no other data are available. KAJO have already released a new functionality where A4EU users can provide feedback on each tweet. The feedback can contain simple relevancy tag, or could contain multiple classes (e.g. related to different hazards, impacts, etc.). This feedback from the end-users is systematically stored and will be used in the further training of the machine learning algorithms. The details are further described in the revised deliverable text (see section 4.7).
In the course of the review discussion, it was considered the importance to take into consideration that a possible majority of most vulnerable population groups are possibly not well versed in using social media, in particular if they are used to distribute warning alerts.	The energy and telecommunication interruptions during the disasters will remain the main limitation on the use of social media and the crowdsourcing in the crisis management. One of the reasons why the USHAHDI platform was selected for the ANYWHERE project is the possibility to collect user feedback via SMS and also to push the notifications via SMS.
As reported, in the following phases, improvements with regard to operational capacity, scalability and transferability of the system exploitation are expected.	KAJO has also implemented a new functionality which allows aggregation of the tweets based on their geographic position. Tweets can be aggregated on a user defined time frame. The tweets counts are normalized with the longer term moving window average counts to highlight the locations where more tweet mention the hazardous phenomenon. The sudden increase in normalized tweet count is expected during the event onset, thus can serve end-users to identify locations where new emerging events may require their attention and could serve as a trigger to visualize/highlight additional/complementary information available in the platform. The final implementation in the platform will be consulted with the end-users. KAJO is currently migrating the whole infrastructure on the cloud platform and redesigning the architecture to improve and stream line scalability of the entire system. The updated version of the system will be based on the latest state-of-the-art cutting edge technologies (e.g. Kubernetes container orchestration with load balancing).
Some of the provided URLs are not operational, e.g., At page 9: "The crowdsourcing platform is in semi-operational mode and can be accessed on http://ushahidi.kajoservices.com " At page 33: "The results are visualised at http://crowd4lig.kajoservices.com/ " Please provide the correct URLs.	URLs provided will be fixed and maintained. The interruptions are caused/related to the continuous development and ongoing migration of the system to the new infrastructure.



D5.1. Report describing communication and crowd-based approaches supporting self-preparedness and self-protection	
Comments	Actions
The section dedicated to ANYCARE is clear and complete. However, the rest of the deliverable is based on weakly supported assumptions. E.g., “The work in WP5 is structured based on two major assumptions: a) Enterprises invest into business continuity and intend to adapt their existing tools and communication channels also for that purpose, b) Citizens are intrinsically motivated for self-preparedness and -protection and spend money for that as long as there is intuitive access to tools and there is an obvious added value.” Please provide evidence of such assumptions.	D5.1 document has been revised and an extended motivation including reasons for the assumptions have been included (p.1).
The analysis of the standards is not complete: e.g., no mention is provided of widely adopted suite of standards as the NFPA ones.	New structure of section 2.1 and two-page explanations regarding the SOVP (pp.8-9).
When researching apps that can be used on mobile devices, no mention is made of existing initiatives as “Pan-European Mobile Emergency App”, nor the possible impact of the regulatory framework of the 112 European emergency number.	A brief section for references to standards (p.10) has been included in the revised version. Please note that standards and frameworks for 112 are not included as there are not 112 services provided in WP5. In any case the regulatory framework was discussed in a specific Deliverable of WP1 (D1.2: <i>Report on needs and requirements from the users, society and how to address ethical, legal and environmental issues</i>).
The ANYWHERE Scenario Data Model section is quite generic and obscure, and fails to clarify the related impact on the project objectives and users. The answers provided in figure 8 “Social Impact” at page 16 to the question “1.1.2 Safe life of employee: What is the impact?” are not acceptable: the impact of experiencing the death of a family member or an employee can be manifold, however, goes beyond financial losses and the problem of recruiting new manpower (e.g. mental health effects, PTSD...). Also, the actions to take to minimise impact seem rather superficial. Please amend.	This section has been revised in the new D5.1, and the mentioned impacts have been modified accordingly.
Please revise the deliverable to detect several clerical errors, as the following ones, which makes difficult to understand it: search for: “The CRITIS project employs deals with the critical infrastructures which triggers a variety group of persons in case of a blackout”; “in an easily accessible.” (text seems missing); “effected area”, “lost of pet”.	The report has been revised to correct syntax and grammatical inconsistencies, as well as clerical errors.

D6.1. Detailed planning of A4DEMOS implementation specifications in each pilot site (Internal to Consortium)	
Comments	Actions
Please revise the deliverable to detect some clerical errors, as the following ones: page 9: “In Figure 3;Error! No se encuentra el origen de la referencia.”, fig. 17, 20, caption of figure 9 out of	The report has been revised to correct clerical errors and missing references to captions and figures.



place, caption of figure 13, 28, and tables with no caption or title.	
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D6.2. Detailed planning of the A4DEMOS training of local operators and first responders in each pilot site	
Comments	Actions
General formatting should be revised: please verify footer format and language overall.	The general formatting has been revised with a specific focus on footer format and language with the help of a native English speaker.
Please consider that the stakeholders selected for the training session should be taken into account for the definition of the target audiences to bring the product to the market.	Feedback from Stakeholders (especially the ones involved in the training sessions) will be gathered regarding the market uptake strategy and segmentation.

D6.3. Report compiling the evaluation and recommendations for improvements provided by the users after the beta tests of the A4EU prototypes implemented in each pilot site, ready for the demonstrations	
Comments	Actions
The deliverable did not report how the requests of the users were fulfilled. It should report a brief description, or even just an added column on the tables, with some information on the (technical) solution that was applied.	The technical solutions of each platform to answer the requests raised on D6.1 are described in Deliverable 4.2. Although we cannot include this information in D6.3 (to avoid duplication of information) the connection between both deliverables has been reinforced in the report.
General formatting should be revised: please verify footer format and language overall.	The report has been revised to correct syntax and grammatical errors, as well as to improve the use of language.
In the final version of the web catalogue and on the regional and European portals should be included information on the maturity status of the different products.	The catalogue will be updated accordingly (this task is part of WP2) with the maturity status of the products and this information will be also available in the developed platforms for the information of operational end-users.

ANNEX II: RP2 Financial Statement Assessment for partner AIRBUS accepted by the EC

FINANCIAL STATEMENT ASSESSMENT SHEET (H2020 GENERAL)

Call ID: H2020-DRS-2014-2015

Project: 700099 - ANYWHERE
Participant: 3 - BEN - 999809265 - AIRBUS DEFENCE AND SPACE SAS (AIRBUS)

Reimbursement rate: 70 %

Reporting Period: 2 (from: 01/12/2017 to 31/01/2019)

Adjustment to previous period: NO

Certificate LRI: N/A

Certificate on financial statements (CFS): N/A

Assessment CFS: n/a

FINANCIAL STATEMENT ASSESSMENT																												
Eligible costs (per budget category)																												
A. Direct personnel costs				B. Direct costs of subcontracting	[C. Direct costs of fin. support]	D. Other direct costs		E. Indirect costs		Total costs (RP)	Receipts (RP)	EU contribution																
A.1 Employees (or equivalent)		A.2 Natural persons under direct contract		A.3 Seconded persons		A.4 SME owners without salary		A.5 Beneficiaries that are natural persons without salary		[C.1 Financial support]		D.1 Travel		D.2 Equipment		D.3 Other goods and services		D.5 Cost of internally invoiced goods and services		Receipts of the action, to be reported in the last reporting period, according to Article 5.3.3		Reimbursement rate %		Maximum EU contribution (k€)	Requested EU contribution (k€)			
Costs of in-kind contributions not used on premises				[A.6 Personnel for providing access to research infrastructure]						[C.2 Prizes]		D.3 Other goods and services																
				Total b		No hours		Total c		d		[e]		f		Total h		i = 0.25 x (a + b + c + f + h - p)		k = a + b + c + d + [e] + f + h + i		l		m		n		o
				a																								p
Declared				587,537.19		-		-		-		85,455.08		-		168,248.07		841,240.34		-		70%		588,868.24		588,868.24		
Rejected				-327,235.02		-		-		-		-		-		-81,808.76		-409,043.78		-		70%		-286,330.65		-286,330.65		
CFS capping				N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		
Total Accepted				260,302.17		-		-		-		85,455.08		-		86,439.31		432,196.56		-		70%		302,537.59		302,537.59		

REMARKS:

Direct personnel costs declared as actual costs : AIRBUS had a disagreement with the coordinator regarding its submitted personnel costs. Following a complaint by the Coordinator, REA B4 assigned experts to evaluate the person month effort claimed by AIRBUS. According to the independent experts' conclusions below, a number of person months should be rejected thus leading to a reduction of the claimed personnel costs: "In the previous report, the number of PM that reasonably and justifiably comply with the workload of AIRBUS regarding the second reporting period, as verified with the documents and information available, are 15.57 (WP4) + 19.99 (WP6) + 3.89 (WP7) + 0 (WP8) = 29.45 PM, which corresponds to a reduction of 37.79 PM in relation to the total reported by AIRBUS in the 2RP (67.24)". The revised personnel costs are calculated as follows: (a) Person Months claimed by AIRBUS for RP1 and RP2: 92.55 (RP1, 25.31 and RP2: 67.24); (b) Total personnel costs claimed by AIRBUS for RP1 and RP2 are €18,029,43 (€ RP1: 230,492.21 € and RP2: 587,537.19 €); (c) Average cost per PM for RP1 and RP2: € 8,338.78 €; (d) Revised Person Months according to experts' opinion: 29.45; (e) Revised accepted personnel costs (Average cost per PM X PMs according to the experts' report): 260,302.17 € (i.e. 29.45 PMs X € 8,338.78 €). For your information the rejected personnel costs are equal to 327,235.02 €.



ANNEX III: RP3 Financial Statement for partner AIRBUS as it is uploaded at SyGMA website including adjustments for RP1 and RP2

700099 (ANYWHERE) IA  Period No: 3 Duration (months): 11 Reporting Period : [01 Feb 2019 - 31 Dec 2019]	Beneficiary 3: AIRBUS Legal Name: AIRBUS DEFENCE AND SPACE SAS PIC: 999809265 Status: VALIDATED Legal Address: 31 RUE DES COSMONAUTES ZI DU PALAYS 000 , 31402 , TOULOUSE CEDEX France	Financial Statement 
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Financial Statement

Financial Statements

Period	Adjustment	Requested Contribution
01 Feb 2019 - 31 Dec 2019 (Period No. 3)	No	295,079.34 €
01 Dec 2017 - 31 Jan 2019 (Period No. 2)	Yes	589,134.27 €
01 Jun 2016 - 30 Nov 2017 (Period No. 1)	Yes	209,733.51 €

Financial Statement for period '3' - (01 Feb 2019 - 31 Dec 2019)

Eligible costs:

Cost Category	Total	Actions
a) Direct personnel costs declared as actual costs	285,830.10 €	
b) Direct personnel costs declared as unit costs (average costs)	0.00 €	
d) Direct costs of subcontracting	0.00 €	
e) Direct costs of providing financial support to third parties	0.00 €	
f) Other direct costs	51,403.43 €	
h) Costs of internally invoiced goods and services	0.00 €	
i) Indirect costs (= 0.25 * (a + b + f + h - p))	84,308.38 €	
k) Total costs (= a + b + d + e + f + h + i)	421,541.91 €	
l) Receipts	0.00 €	
n) Maximum EU contribution (= 70% * k)	295,079.34 €	
o) Requested EU contribution	295,079.34 €	

Additional Information for indirect costs:

Use of 'costs of in-kind contributions not used on premises?' (p) ☐ Yes ☒ No

Validate



Grant Agreement number: 700099 — ANYWHERE — Disaster-resilience: safeguarding and securing society, including adapting to climate change

FINANCIAL STATEMENT FOR BENEFICIARY AIRBUS DEFENCE AND SPACE SAS FOR THE REPORTING PERIOD 3

Eligible ¹ costs (per budget category)																Receipts	EU contribution		Additional information				
A. Direct personnel costs				B. Direct costs of subcontracting	C. Direct costs of fin. support	D. Other direct costs		E. Indirect costs ²			Total costs	Reimbursement rate %	Maximum EU contribution ³	Requested EU contribution	Information for indirect costs								
Form of costs ⁴	A.1 Employees (or equivalent)		A.2 Natural persons under direct contract	A.3 Seconded persons [A.6 Personnel for providing access to research infrastructure]	Unit	Actual	Unit	Actual	Unit	D.1 Travel Equipment D.3 Other goods and services	D.5 Cost of internally invoiced goods and services	Flat-rate ⁵			Receipts of the action, to be reported in the last reporting period, according to Article 5.3.3			Costs of in-kind contributions not used on premises					
	a	Total b										No hours	Total c	d					e	f	Total h	i = 0.25* (a+b+c+f+g+h-p)	25%
	285.830.10	0.00				0.00		0.00	51,403.43	0.00			84,308.38	421,541.91	0.00	70	295,079.34	295,079.34	0.00				

The beneficiary/linked third party hereby confirms that:

The information provided is complete, reliable and true.
The costs declared are eligible (see Article 6).
The costs can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 17, 18 and 22).
For the last reporting period: that all the receipts have been declared (see Article 5.3.3).

(i) Please declare all eligible costs, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account lateron, in order to replace other costs that are found to be ineligible.

(1) See Article 6 for the eligibility conditions

(2) The indirect costs claimed must be free of any amounts covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.2.E). If you have received an operating grant during this reporting period, you cannot claim any indirect costs unless you can demonstrate that the operating grant does not cover any costs of the action.

(3) This is the theoretical amount of EU contribution that the system calculates automatically (by multiplying the reimbursement rate by the total costs declared). The amount you request (in the column 'requested EU contribution') may be less.

(4) See Article 5 for the form of costs

(5) Flat rate: 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category F if they include indirect costs (see Article 6.2.E)

Grant Agreement number: 700099 — ANYWHERE — Disaster-resilience: safeguarding and securing society, including adapting to climate change

FINANCIAL STATEMENT FOR BENEFICIARY AIRBUS DEFENCE AND SPACE SAS FOR THE REPORTING PERIOD 3 ADJUSTMENT TO PERIOD 2

Eligible ¹ costs (per budget category)															Receipts	EU contribution		Additional information
A. Direct personnel costs					B. Direct costs of subcontracting	C. Direct costs of fin. support	D. Other direct costs		E. Indirect costs ²		Total costs	Receipts	Reimbursement rate %	Maximum EU contribution ³	Requested EU contribution	Information for indirect costs		
A.1 Employees (or equivalent)		A.4 SME owners without salary			A.5 Beneficiaries that are natural persons without salary		D.1 Travel D.2 Equipment D.3 Other goods and services	D.5 Cost of internally invoiced goods and services	Flat-rate ⁵			Receipts of the action, to be reported in the last reporting period, according to Article 5.3.3				Costs of in-kind contributions not used on premises		
A.2 Natural persons under direct contract		A.3 Seconded persons [A.6 Personnel for providing access to research infrastructure]							25%									
Actual	Unit	Unit							Unit									
Form of costs ⁴	a	Total b	No hours	Total c	d	e	f	Actual	Unit	i = 0.25* (a+b+c+f+g)+h -p)	k = a+b+c+d +e)+f)+g)+h+i	l	m	n	o	p		
ARRUS	588,851.24	0.00			0.00	0.00	84,445.06			168,324.08	841,620.38		70	589,134.27	589,134.27	0.00		

The beneficiary/linked third party hereby confirms that:

The information provided is complete, reliable and true.
The costs declared are eligible (see Article 6).

The costs incurred are eligible (see Article 6).
The costs can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 17, 18 and 22).
For the last reporting period: that all the receipts have been declared (see Article 5.3.3).

(i) Please declare all eligible costs, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account later on, in order to replace other costs that are found to be ineligible.

(1) See Article 6 for the eligibility conditions

(1) See Article 6 for the eligibility conditions
(2) The indirect costs claimed must be free of any amounts covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.2 E). If you have received an operating grant during this reporting period, you cannot claim any indirect costs unless you can demonstrate that the operating grant does not cover any costs of the action.

(3) This is the theoretical amount of EU to cover any costs of the action.

(3) This is the theoretical amount of EU contribution that the system calculates automatically (by multiplying the reimbursement rate by the total costs declared). The amount you request (in the column requested EU contribution) may be less.

(4) See Article 5 for the form of costs

(5) Flat rate : 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category "i" if they include indirect costs (see Article 6.2.E)



Grant Agreement number: 700099 — ANYWHERE — Disaster-resilience: safeguarding and securing society, including adapting to climate change

FINANCIAL STATEMENT FOR BENEFICIARY AIRBUS DEFENCE AND SPACE SAS FOR THE REPORTING PERIOD 3 ADJUSTMENT TO PERIOD 1

Eligible ¹ costs (per budget category)														Receipts	EU contribution			Additional information				
A. Direct personnel costs				B. Direct costs of subcontracting	C. Direct costs of fin. support	D. Other direct costs		E. Indirect costs ²			Total costs	Reimbursement rate %	Maximum EU contribution ³		Requested EU contribution							
A.1 Employees (or equivalent)		A.2 Natural persons under direct contract				A.3 Seconded persons		A.4 Personnel for providing access to research infrastructure		A.5 SME owners without salary				A.6 Beneficiaries that are natural persons without salary		D.1 Travel Equipment and services	D.2 Cost of internally invoiced goods and services	D.3 Other goods and services	D.4 Cost of internally invoiced goods and services	D.5 Cost of internally invoiced goods and services		
Form of costs ⁴	Actual	Unit	No hours	Total b	a	Total c	d	e	f	Actual	Unit	Flat-rate ⁵	25%	i = 0.25* (a+b+c+f+g)+h -p)	k = a+b+c+d +e)+f+g)+h+i						l	m
AIRBUS	207,324.53	0.00					0.00	0.00	32,370.91	0.00	59,923.86	299,619.30	70	209,733.51	209,733.51							0.00

The beneficiary/linked third party hereby confirms that:

The information provided is complete, reliable and true.

The costs declared are eligible (see Article 6).

The costs can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 17, 18 and 22).

For the last reporting period, that all the receipts have been declared (see Article 5.3.3).

(i) Please declare all eligible costs, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account later on, in order to replace other costs that are found to be ineligible.

(1) See Article 6 for the eligibility conditions

(2) The indirect costs claimed must be free of any amounts covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.2.E). If you have received an operating grant during this reporting period, you cannot claim any indirect costs unless you can demonstrate that the operating grant does not cover any costs of the action.

(3) This is the estimated amount of EU contribution that the system calculates automatically (by multiplying the reimbursement rate by the total costs declared). The amount you request (in the column 'requested EU contribution') may be less.

(4) See Article 5 for the calculation of costs

(5) Flat rate: 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category F if they include indirect costs (see Article 6.2.E)

Emmanuelle PAIN with ECAS id r001yuv signed in the Participant Portal on 28/02/2020 at 08:33:13 (transaction id Sigd-pJZsgsw0K5S9wVzF4-VcsVjp11084tE2g5tZzG3VJ4HWq3h2ckEG06YK0A0B). Timestamp by third party at

Fri Feb 28 08:33:18 CET 2020