

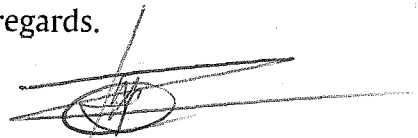
meteogrid

Dear Mr. Afentoulidis,

Please, find attached the requested documents regarding the Final Report of the project ECHO/SUB/2014/694556 WUIWATCH, corresponding to the whole project lifecycle, from 01/01/2015 to 31/03/2017.

An electronic copy of the financial forms has been sent to you by email.

With my best regards.

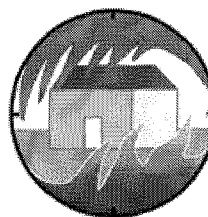


David Caballero  
WUIWATCH project co-ordinator  
[david@meteogrid.com](mailto:david@meteogrid.com)  
Phone: +34 627 014 317

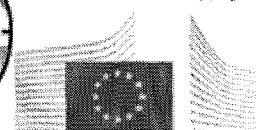
Madrid, 20<sup>th</sup> of June 2017.

**Wildland-Urban Interface Forest Fire Risk Observatory  
and Interest Group in Europe  
WUIWATCH**

Agreement N° ECHO/SUB/2014/694556



Directorate General of  
Humanitarian Aid and  
Civil Protection - ECHO



## Deliverable D9.9 Project Final Technical Implementation Report

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<b>Document coordinator</b>	David Caballero(MTO)
<b>Contact</b>	MeteoGrid, Forest Fire Department. david@meteogrid.com. Ph. +34 627 014 317. Gran Via 22dup, 28013 Madrid, Spain.
<b>Authors</b>	Luis Mario Ribeiro (ADAI), Jordi Vendrell (FPC), Costantino Sirca (UNISS), Frédérique Giroud (CEREN)
<b>Reviewed by</b>	Luis Torres, Jaime Ribalaygua (MTO)

<b>Abstract</b>	The final technical implementation report includes a general overview of the project implementation process, referring to the technical activities and the management. A short description of the content and results of deliverables is presented, and a final evaluation of the project outcome and implementation. A short note on follow-up activities is also included. This deliverable complies with the document structure as indicated in Annex V, Part B of the Grant Agreement.
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<sup>(1)</sup>Draft / Final

<sup>(2)</sup>Public / Restricted / Internal

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## 1. Introduction

### 1.1. Background

WUIWATCH project is the European observatory on fire risk affecting communities living in forested areas in the so-called wildland-urban interface (WUI). WUIWATCH project aims at creating a number of tools and services for information experience interchange among affected homeowners, local and regional administrations, firefighting and civil protection agencies, research entities and private firms offering products and services for fire protection. To achieve this, a permanent discussion forum and several databases for knowledge capitalization, are developed and implemented in a common, web-based platform to which this document refers.

### 1.2. Objective

This document corresponds to the Final Technical Implementation Report in accordance with the content and structure to what is stated in the Grant Agreement, Annex V and as a complement to the Financial Statement Forms which are delivered separately.

### 1.3. Overview

This document provides an insight of the implementation of the project, the results and the analysis of performance and measurable results. As requested by the European Commission, the structure of the document is divided into seven sections, namely:

1. Table of contents
2. General reminder
3. General summary of the project implementation process
4. Evaluation of project management and implementation process
5. Activities
6. Presentation of the technical results and deliverables
7. Evaluation of the technical results and deliverables
8. Follow-up

To these, complementary information has been provided to help evaluators to have a full view of the actions implemented, particularly those not explicitly stated in the technical annex of the Grant Agreement.

## 2. General reminder

WUIWATCH project aims at the creation of a permanent observatory and interest group in Europe on the wildfire risk affecting communities in the so called wildland-urban interface (WUI). In these areas houses, infrastructures and businesses enter in contact or intermingle with undeveloped lands, such as forests, shrublands or grasslands. This term is commonly extended to the housing areas and installations in the rural grounds and their relationship with the vegetation mosaics, including forests and agricultural crops, which are commonplace in Europe.

WUIWATCH project objectives are 1. To gather information, knowledge and lessons learnt for prevention, operation and recovery of and from forest fires affecting the WUI. 2. To disseminate, discuss and teach such knowledge and lessons learnt among main actors affected. 3. To provide tools and training material for the capitalisation of experience and lessons learnt. 4. To promote the networking among the involved

actors, including operational entities, administrations, stakeholders, home owners and general public, to have a better understanding and awareness of the factors, processes and effects of wildfires in the WUI.

To achieve this, WUIWATCH project includes the celebration of periodic, thematic workshops, the development of a permanent forum, the performance of research essays and experiments, the creation of a knowledge database, the elaboration of dissemination and educational material and the elaboration of guides for good practices on prevention and operations.

The project results are gathered in 33 deliverables organised in 6 groups. The first group are preliminary studies, state of the art and the development of information infrastructure for the permanent forum and the knowledge database (D1.1, D2.1, D3.1, D4.1, D4.2). The second group are reports on the performed research activities, regarding house vulnerability and fire safety (D5.1 and D5.2). The third group includes the proceeding of four thematic workshops celebrated in different countries (D6.1, D6.2, D6.3 and D6.4). The fourth group include the development of guides and the white book on prevention, safety and operation in the WUI (D7.1, D7.2 and D7.3). The dissemination material, three brochures and four videos, and a report on dissemination activities comprise the next group (D8.1, D8.2, D8.3, D8.4, D8.5, D8.6, D8.7, D8.8). Finally, eleven deliverables have been programmed for the development of the project coordination (D9.1, D9.2, D9.3, D9.4, D9.5, D9.6, D9.7, D9.8, D9.9, D9.10, D9.11), including the creation of the management mechanisms and structure, the progress reporting, the monitoring and the final evaluation.

### **3. General summary of project implementation process**

#### **3.1. General overview of the process**

The creation of this WUIWATCH observatory is founded on a set of preliminary studies, information survey and review on operations, regulations and risk mapping of WUI in Europe. Following, the development of Web services and their integration in the WUIWATCH website ([www.wuiwatch.org](http://www.wuiwatch.org)) include a permanent discussion forum, an online application and knowledge base for experience capitalisation, several complementary databases, a number of tools for fire risk assessment in the WUI and a virtual library containing technical documents, scientific publications. The identified Special Interest Group on WUI (SGI-WUI) is compound of EU operational organisations dealing with fire emergencies in the WUI. This includes national civil protection authorities, fire fighters, administrations at regional and local level, planners, stakeholders and home owners. A set of essays and laboratory experiments on house vulnerability and personal safety essays have been performed in dedicated research facilities. For the knowledge and experience interchange, and for the dissemination of WUIWATCH activities, four international thematic workshops have been celebrated in Italy, Portugal, France and Spain.

#### **3.2. Comparative analysis**

##### **3.2.1. Initial and actual time schedule**

The project duration was initially programmed as 24 months. An extension of 3 months was requested to the European Commission, thus the total project duration was 27 months. Within this period, two fire campaigns -2015 and 2016- were covered, which were a valuable source of information and a good opportunity for the implementation and dissemination of WUIWATCH project activities.

The initial planning of activities is presented in the following timetable:

	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<b>WUIWATCH Timetable</b>																								
<b>T01. Preliminary studies, survey and review</b>																								
A.1.1. Review on fire prevention and fire emergency management protocols for WUI areas in Europe																								
A.1.2. Review and discussion on Civil Protection legislation and regulations																								
A.1.3. Review on risk mapping, operational cartography, symbology and communications																								
<b>T02. WUIWATCH Interest Group network management</b>																								
A.2.1. Survey and identification of existing groups/actors in Europe																								
A.2.2. WUIWATCH community and network management																								
<b>T03. WUIWATCH Interest Group platform development</b>																								
A.3.1. WUIWATCH Forum development																								
A.3.2. Databases infrastructure development																								
A.3.3. WUIWATCH Toolbox																								
A.3.4. Documents repository																								
<b>T04. Capitalisation of experience database design, development and implementation</b>																								
A.4.1. Knowledge Database design																								
A.4.2. Knowledge base search and retrieval tool development																								
A.4.3. Knowledge Database population with historical data																								
<b>T05. Laboratory essays, experiments and testing on safety and house vulnerability</b>																								
A.5.1. Essays on firebrands and house vulnerability																								
A.5.2. Essays on firefighting safety in the WUI																								
<b>T06. International workshops for experience interchange</b>																								
A.6.1. First WUIWATCH International workshop. The WUI problem in Europe. Prevention and self-protection (Italy)																								
A.6.2. Second WUIWATCH International workshop. Vulnerability and structures protection (Portugal)																								
A.6.3. Third WUIWATCH International workshop (France). Ground and aerial operations in the WUI																								
A.6.4. Fourth WUIWATCH International workshop (Spain). The human factor and Social skills																								
<b>T07. Whitebook on prevention and defence of WUI against forest fires</b>																								
A.7.1. Definitions. Factors identification and assessment.																								
A.7.2. Good practices and recommendations for prevention and self-protection																								
A.7.3. Operations in the WUI																								
<b>T08. Dissemination activities</b>																								
A.8.1. Mass-media task force																								
A.8.2. Edition and publication of dissemination material																								
A.8.3. Interaction with scientific community, papers and communications																								
<b>T09. Project coordination</b>																								
A.9.1. Setup of management structure																								
A.9.2. Monitoring																								
A.9.3. Financial control of the programme																								
A.9.4. Quality control and backstopping																								
A.9.5. Project closure and final evaluation																								

The actual implementation calendar is presented below:

	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
<b>WUIWATCH Timetable</b>																													
<b>T01. Preliminary studies, survey and review</b>																													
A.1.1. Review on fire prevention and fire emergency management protocols for WUI areas in Europe																													
A.1.2. Review and discussion on Civil Protection legislation and regulations																													
A.1.3. Review on risk mapping, operational cartography, symbology and communications																													
<b>T02. WUIWATCH Interest Group network management</b>																													
A.2.1. Survey and identification of existing groups/actors in Europe																													
A.2.2. WUIWATCH community and network management																													
<b>T03. WUIWATCH Interest Group platform development</b>																													
A.3.1. WUIWATCH Forum development																													
A.3.2. Databases infrastructure development																													
A.3.3. WUIWATCH Toolbox																													
A.3.4. Documents repository																													
<b>T04. Capitalisation of experience database design, development and implementation</b>																													
A.4.1. Knowledge Database design																													
A.4.2. Knowledge base search and retrieval tool development																													
A.4.3. Knowledge Database population with historical data																													
<b>T05. Laboratory essays, experiments and testing on safety and house vulnerability</b>																													
A.5.1. Essays on firebrands and house vulnerability & GESTOSA 2015 field experiments																													
A.5.2. Essays on firefighting safety in the WUI																													
A.5.3. Second battery of essays in Portugal-GESTOSA 2016																													
<b>T06. International workshops for experience interchange</b>																													
A.6.1. First WUIWATCH International workshop. Prevention and self-protection (Italy)																													
A.6.2. Second WUIWATCH International workshop. Vulnerability and structures protection (Portugal)																													
A.6.3. Third WUIWATCH International workshop. The human factor and Social skills (France)																													
A.6.4. Fourth WUIWATCH International workshop. Operations in the WUI (Spain)																													
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A.9.3. Financial control of the programme																													
A.9.4. Quality control and backstopping																													
A.9.5. Project closure and final evaluation																													

The preliminary activities, included in the task T01, have been extended two months, giving the opportunity to gather information from other countries, complete the corresponding deliverables and include the results and conclusions of the first workshop (held in May 2015 in Italy). Actions A1.2 and A1.3 suffered a delay of two months.

The survey and identification of existing groups in Europe (action A2.1) has been extended 4 months, in order to perform three surveys, namely a questionnaire to a selected group of experts, a survey over the European Civil Protection Vademecum and a survey on the international community. The management of the WUIWATCH network (action A2.2) suffered an initial delay of 3 months, which is equivalent to the extension period.

The development of the WUIWATCH forum (action A3.1) suffered a delay of three months, and was ready after the 2015 fire campaign. The development of the database infrastructure (activity A3.2) suffered a delay of three months and took place just after the ending of the forum development. The action was extended and extra of two months over the programmed period. The action A3.3 corresponding to the toolbox development was delayed 11 months; given that this was not in the critical path of the project, it entailed no delay in other actions. The development of the documents repository had a delay of 7 months and was performed in parallel with the previous action.

Although the design of the knowledge database started in time (month 6), the full design was delayed two months, and the action (A4.1) extended 3 months of the initially programmed period. Also, the development of the search and retrieval tool was extended two months. The development took this delay period due to the decision of integrating all databases in a single platform and the consequent programming. Nevertheless the above, this entailed a significant advance for the progress of the remaining activities and improved the overall performance of the knowledge database. The delays and extensions of the previous activities entailed in an accumulated delay of 6 months over the scheduled beginning of the action A4.3, population of the knowledge database. Given the importance of this activity, an extension of 6 months was programmed over the actual starting date, so to compensate the accumulated delay. This positioned the final date of the activity in the very end of the project at month 27.

The writing and edition of the first document on definitions, factors and risk assessment was delayed two months, which were finally compensated with an extension of the same length. The same principle was applied to the second document, action A7.2, with a delay of a month, and the complete version of the white book, action A7.3, with a delay of 3 months, precisely coinciding with the end of the project at month 27.

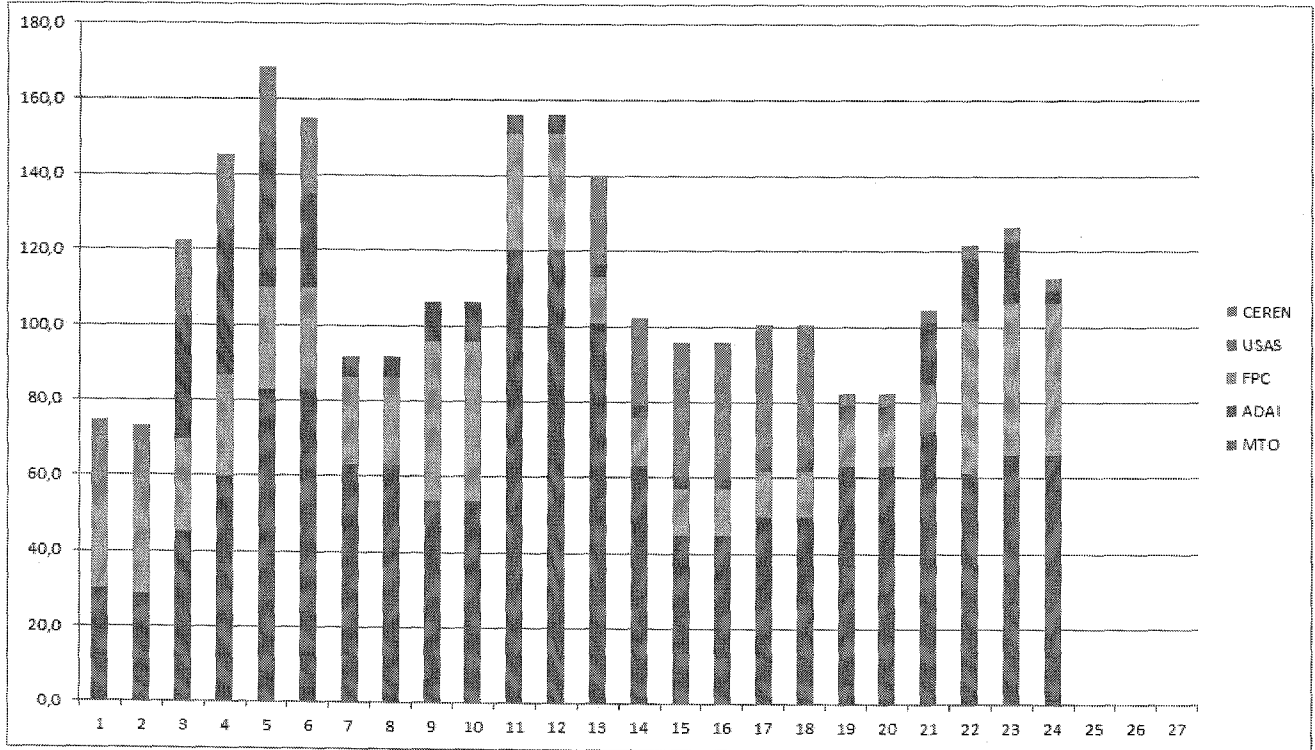
Dissemination activities were extended three months beyond the initially scheduled project end date. The same principle applied to the coordination activities of monitoring (A9.2), financial control (9.3) and quality control and backstopping (A9.4), which were accordingly extended 3 months. The project closure and the final evaluation took place in the two months following the project extension date in order to sum up all activities and resources allocated to the project.

Despite of the several delays and extensions, all the activities programmed in the technical annex were addressed and performed. However the above, a delay in the delivery of many of project documents was observed.

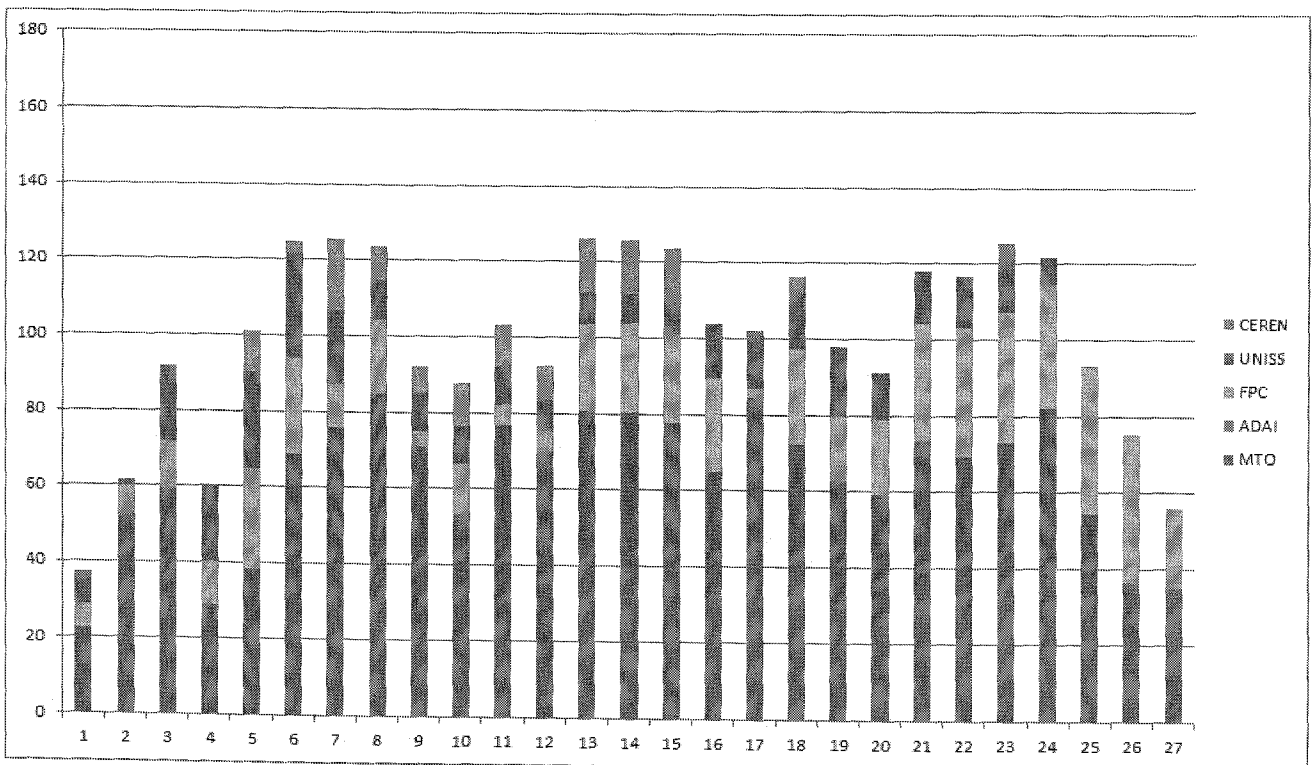
### 3.2.2. Planned and used resources

#### Workload

The planned workload monthly distribution amongst partners is reflected in the following table (expressed in person-days):



The reported monthly workload invested in the project is presented below (expressed in person-days):





As outlined in the graphics provided, some movement of the workload has happened across the project lifecycle and amongst partners. The first overall comment is that the expected workload maximum level (see months 3 to 6) has been distributed more evenly across the project and extended three months at the end of the cycle. Besides to this, all consortium members have expended, proportionally, the planned workload for their assigned activities, saving the first month which clearly shows less activity than expected. In general, a slight increase in workload is observed, mostly given the extra activities carried out, particularly in regards to the visits to the real fires in the fire campaigns, except CEREN which has ended with a slight lower workload. It is remarkable the workload offered and allocated by ADAI supporting other activities for which they were not allocated; this has resulted in a great help to the project overall.

## Budget

The planned budget of the action, as reflected in the Grant Agreement, was:

PLANNED					
Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
A: Personnel		516.964	EC contribution*	493.188	75,00
B: Travel and subsistence		38.600	Contribution of the coordinating beneficiary	48.056	7,31
C: Equipment		2.500	Contribution of the associated beneficiary/ies	116.340	17,69
D: Sub-contracting		24.500	Other sources of funding	0	0,00
E: Other direct costs		32.000	Direct revenues	0	0,00
Indirect costs / overheads	7,00	43.019			
<b>TOTAL ELIGIBLE COSTS</b>		<b>657.583</b>	<b>TOTAL</b>	<b>657.583</b>	

The actual reported costs table, as reflected in the Financial Forms of the Final Report, is:

REPORTED					
Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
A: Personnel		550.645	EC contribution*	491.997	72,50
B: Travel and subsistence		33.961	Contribution of the coordinating beneficiary	60.492	8,91
C: Equipment		1.224	Contribution of the associated beneficiary/ies	126.162	18,59
D: Sub-contracting		25.111	Other sources of funding	0	0,00
E: Other direct costs		24.607	Direct revenues	0	0,00
Indirect costs / overheads	6,78	43.104			
<b>TOTAL ELIGIBLE COSTS</b>		<b>678.652</b>	<b>TOTAL</b>	<b>678.652</b>	

The observed difference between the planned and the actual budget is:

DIFFERENCE					
Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
A: Personnel		-33.681	EC contribution*	1.191	2,50
B: Travel and subsistence		4.639	Contribution of the coordinating beneficiary	-12.436	-1,60
C: Equipment		1.276	Contribution of the associated beneficiary/ies	-9.822	-0,90
D: Sub-contracting		-611	Other sources of funding	0	0,00
E: Other direct costs		7.393	Direct revenues	0	0,00
Indirect costs / overheads	0,22	-85			
<b>TOTAL ELIGIBLE COSTS</b>		<b>-21.069</b>	<b>TOTAL</b>	<b>-21.069</b>	
Difference percentage		-3,10			

As a first general comment, budget allocated for the project activities has been enough and balanced, as observed in the tables provided. However some fine tuning has been applied by moving money allocated from one type of cost to other, as the project activities have been developed. An increase of costs in personnel has been observed. At the same time, travel and subsistence costs have resulted to be lower than expected, particularly due to the lower air ticket rates. A lower expenditure on equipment has been reported. On the contrary, subcontracting expenses have increased slightly while other direct costs resulted in rather less costs than programmed.

## Deviations and movements in the budget

**CO - METEOGRID**

- Personnel: Transfer 3,311.42 from subcontracting to cover the assessment services
- Travel & subsistence: Transfer of 1,677.12€ from subcontracting
- Other costs: Transfer 1,790.00€ initially allocated to FPC (travel & subsistence) for the translation services in the WS4 in Spain.
- Other costs: Transfer 829.64€ from subcontracting to cover costs in the WS4 in Spain.

Comparison	Contract	Actual	Deviation	Movement	Balance
Personnel	147.646,00	160.792,19	-13.146,19	3.311,42	-9.834,77
Travel & Subsistence	8.000,00	9.677,12	-1.677,12	1.677,12	0,00
Subcontracting	20.000,00	14.181,82	5.818,18	-5.818,18	0,00
Equipment	0,00	0,00	0,00	0,00	0,00
Other costs	4.000,00	6.619,64	-2.619,64	2.619,64	0,00
<b>Total direct costs</b>	<b>179.646,00</b>	<b>191.270,77</b>			
Overheads	12.575,22	13.388,95			
<b>TOTAL</b>	<b>192.221,22</b>	<b>204.659,73</b>			

## Outline per reporting period:

- Period 1 Subcontracting: Subcontracting of external assessor (Luis Esteire) for this period, a total of 6,000€.
- Period 1 Subcontracting: Transfer of 8,181.82 from personnel to subcontracting to cover Luis Torres activity.

WUIWATCH - MTO	Period 1	Period 2	Period 3	Period 4	TOTAL
Personnel	46.591,38	46.443,48	49.285,45	18.471,89	160.792,19
Travel & Subsistence	1.571,76	683,46	7.211,37	210,53	9.677,12
Subcontracting	14.181,82	0,00	0,00	0,00	14.181,82
Equipment	0,00	0,00	0,00	0,00	0,00
Other costs	823,90	109,99	5.374,36	311,39	6.619,64
<b>Total Direct Costs</b>	<b>63.168,86</b>	<b>47.236,93</b>	<b>61.871,18</b>	<b>18.993,81</b>	<b>191.270,77</b>
Indirect costs 7%	4.421,82	3.306,59	4.330,98	1.329,57	13.388,95
<b>TOTAL</b>	<b>67.590,68</b>	<b>50.543,52</b>	<b>66.202,16</b>	<b>20.323,37</b>	<b>204.659,73</b>

**AB1 - ADAI**

- An increment in personnel costs of 3,308.60€
- An increment in subcontracting from 2,000€ to 3,849.08€
- Both increments were compensated with lower costs in travel, equipment and other costs. Indirect costs were also lower than specified in the contract, which helped to utterly balance the final budget.

<b>ADAI</b>	<b>Contract</b>	<b>Actual</b>	<b>Deviation</b>
Personnel	76.958,00	80.266,60	3.308,60
Travel & Subsistence	8.900,00	8.862,03	-37,97
Subcontracting	2.000,00	5.849,08	3.849,08
Equipment	2.500,00	1.224,15	-1.275,85
Other costs	18.000,00	13.356,70	-4.643,30
<b>Total Direct Costs</b>	<b>108.358,00</b>	<b>109.558,56</b>	<b>1.200,56</b>
Indirect costs 7%	7.585,06	6.384,50	-1.200,56
<b>TOTAL</b>	<b>115.943,06</b>	<b>115.943,06</b>	<b>0,00</b>

**AB2 - FPC**

- Travel & subsistence: 1,790€ were transferred from AB2-FPC travel & subsistence to the coordinator (MeteoGrid) to cover translation services in the WS4 workshop in Spain. Thus, actual total costs for AB2-FPC are 118,245.63€.

<b>FPC</b>	<b>Contract</b>	<b>Actual</b>	<b>Deviation</b>
Personnel	100.916,00	101.054,49	138,49
Travel & Subsistence	9.400,00	7.636,55	-1.763,45
Subcontracting	0,00	146,00	146,00
Equipment	0,00	0,00	0,00
Other costs	0,00	0,00	0,00
<b>Total Direct Costs</b>	<b>110.316,00</b>	<b>108.837,04</b>	<b>-1.478,96</b>
Indirect costs 7%	7.722,12	7.618,59	-103,53
<b>TOTAL</b>	<b>118.038,12</b>	<b>116.455,63</b>	<b>-1.582,49</b>
		<b>118.245,63</b>	

**AB3 - UNISS**

	<b>Planned</b>	<b>Actual</b>
(1) Travel and subsistence	8,780.00	6,128.99
(2) Sub-contracting, external assistance	2,500.00	4,934.49
(3) Other direct costs	0.00	1,210.57

The higher (2) and (3) costs were mostly due to unexpected costs for the Italian project meeting, in particular for the instantaneous translation service. The travelling (1) allowed to save part of the expected budget due to the lower ticket prices than planned.

<b>UNISS - AB3</b>	<b>Contract</b>	<b>Actual</b>	<b>Deviation</b>
Personnel	88.203,82	88.772,05	568,23
Travel & Subsistence	8.780,00	6.128,99	-2.651,01
Subcontracting	2.500,00	4.934,49	2.434,49
Equipment	0,00	0,00	0,00
Other costs	0,00	1.210,57	1.210,57
<b>Total Direct Costs</b>	<b>99.483,82</b>	<b>101.046,10</b>	<b>1.562,28</b>
Indirect costs 7%	6.960,00	7.073,23	113,23
<b>TOTAL</b>	<b>106.443,82</b>	<b>108.119,32</b>	<b>1.675,50</b>

#### **AB4 – CEREN**

An increment of 16,713.89€ in personnel, which was partially compensated with the remaining budget, due to lower costs, of travel & subsistence (1,864.14€) and other costs (6,580€).

<b>CEREN - AB4</b>	<b>Contract</b>	<b>Actual</b>	<b>Deviation</b>
Personnel	103.241,00	119.954,89	16.713,89
Travel & Subsistence	3.520,00	1.655,86	-1.864,14
Subcontracting	0,00	0,00	0,00
Equipment	0,00	0,00	0,00
Other costs	10.000,00	3.420,00	-6.580,00
<b>Total Direct Costs</b>	<b>116.761,00</b>	<b>125.030,75</b>	<b>8.269,75</b>
Indirect costs 7%	8.173,27	8.752,15	578,88
<b>TOTAL</b>	<b>124.934,27</b>	<b>133.782,90</b>	<b>8.848,63</b>

#### **3.2.3. Expected and actual results**

Expected results, as stated in the technical annex (Form T1) of the Grant Agreement:

1. Enhanced cooperation and exchange of good practices between Member States on prevention and defence against forest fires affecting urban areas and communities in the WUI.
2. Improved links between relevant actors and policies throughout the disaster management cycle in the WUI.
3. Better understanding of the factors and processes involved in vulnerability, safety and risks in the WUI.
4. A white book on WUI gathering common prevention best practices and Civil Protection operations guidelines across Europe.

The obtained results in the project lifecycle are:

## **4. Evaluation of project management and implementation process**

### **4.1. Positive aspects and opportunities**

The WUIWATCH consortium has benefited from previous work done in other projects. In this sense the WUIWATCH consortium has performed in harmony as a group, with very positive and enriching bi-lateral interactions to solve specific technical aspects, as well as in general meetings.

### **4.2. Internal and external difficulties encountered**

There has been certain degree of disconnection with EC desk officers, particularly in communicating the project progress and results. A delay in providing on-time deliverables is observed. Although a number of them are workshops, experiments, software or databases which have been duly completed, some other documents are not finished nor delivered essentially due to their 'open' nature. These have been considered as 'living documents' which have kept on incorporating new information. A better deliverable schedule should have been designed for these documents, including several versions along project life cycle. Nevertheless this aspect has not affected the appropriate and timely execution of main project's activities as programmed.

It has been agreed to terminate the contract with the previous external assessor and continue with a private firm with the same budget (subcontracting) and duties allocation. This change has been performed seamlessly and has not entailed any significant effect in the accomplishment of project's tasks.

In regard to the financial aspects, no main difficulties have been found, other than minor changes between cost categories. In regards to coordinator Farisa Asesores y Consultores S.L. (MeteoGrid), as properly stated in the Second Progress Report, which were communicated to the EC Desk Officers.

### **4.3. Partnership cooperation**

A good and solid understanding amongst consortium members has been in place for the whole project lifecycle, which has continued beyond its duration and it is expected to render remarkable results in future collaborations. Thanks to the teleconferences ('telcos') and the physical meetings, a common view and approach to the problems in the project have been achieved. The consortium has worked as a whole unit. Communication between partners and coordinator has been frequent and fluent, contribution to the project objectives progressed as planned and bi-lateral collaboration has been frequent and fruitful. Partners in their own countries have taken care of managing contact and collaborate with administrations and entities. This has facilitated noticeably the work of coordinator. No conflicts or difficulties have arisen.

### **4.4. Cooperation with the EC**

EC Desk Officers have responded very positively to the questions and demands from the consortium through the coordinating entity (MTO), as demonstrated in several issues regarding VAT accounting of CEREN (beneficiary BE4), the correction of some errors in personnel types from the coordinating entity (MTO), the movement of certain quantities of budget from one type to other or the request to a project duration extension. Desk Officers have shown a good degree of comprehension and provided help to the consortium to ensure project progress, particularly in regard to the several delays in reporting and deliverables.

#### 4.5. Comments on European added value

Given the latest events of forest fires affecting the communities in Europe (fire campaigns of 2015, 2016 and 2017) the response of both, the civil protection community has shown a genuine and growing interest in the subject of forest fires in a changing environment and climate, particularly in regards to the protection of people and communities. This has been reflected in all of the four WUIWATCH international workshops (in Italy, Portugal, France and Spain), with a high degree of interaction and rates of attendance. Proper invitations to join WUIWATCH network have been delivered to authorities within and outside the EU, forming an international group of entities which regularly contributes to the knowledge sharing. Real fire events affecting settlements, towns and cities are a good triggering factor in regards to new regulations and design of good practices for prevention and emergency management. In this sense WUIWATCH has provided an international platform for experiences interchange and communication which will lead into common approaches. A particular example is the French approach and regulation for prevention which is actually being studied and eventually adopted in Spain and other countries.

#### 4.6. Lessons learnt and possible improvements

While the consortium members have kept a regular and fluent communication, better and more frequent communication with the EC Desk Officers must be improved in future actions. In order to have richer and more focused interactions between groups, stakeholders and civil protection actors in the workshops, it has been demonstrated that limiting the number of participants to a maximum of 1000, selected and invited purposely from the different domains of knowledge, render better results in terms of discussion and interchange of experience. This must be coupled with the celebration of complementary workshops aimed at a general public, homeowners, citizens and other non-technical staff, in order to transfer the lessons learnt, particularly through field trips and demonstrations. Some of the tasks, particularly those involving a research on the state of the art and the involved actors and communities in the WUI, should provide periodic reports along project's lifecycle, instead of having a unique report at the beginning of the project. This has been observed as new information has been flowing and interactions took place, particularly in the workshops. Relationship with mass-media could be more effective through press conferences and taking advantage of the celebration of workshops. This lesson should be applied in future workshops of this kind. Given the complexity and extension of content, the edition of the final book should have been programmed earlier. Visiting real forest fires affecting communities and interacting with the operational entities and the stakeholders have provided a direct, valuable and transferable amount of information and lessons learnt, while at the same time providing knowledge and disseminating project's activities and results. In the future these kind of activities should be particularly programmed in the time schedule and considered in the budget, to avoid delays and over-spending of resources.

## 5. 5. Activities

### 5.1. Comparison between initially planned and actually implemented activities

#### T0.1 Preliminary studies, survey and review

##### Planned activities

Review of fire prevention and fire emergency management in the WUI areas in Europe. Review and discussion of legislation and regulations. Review of risk mapping, operational cartography and communications.

##### Implemented activities

A review of the current situation of WUI risk, emergency management structure and methods, general approaches and gaps and future trends has been done. The survey has continued along the project lifecycle, as new inputs have been identified in the workshops and other interactions. Legislation in the most affected countries has been gathered and discussed. Special interest and focus has been given to particular aspects such as LGP tanks in forested areas. Interaction with Spanish Parliament, official professional associations and colleges, and industrial associations has taken place. Specific seminars on legislation and regulations have been celebrated, inviting policy makers and representatives of the parliament. Some regional regulations have been changed. Interaction with the national civil protection directorate general has taken place, and new approaches for legislation modifications will take place in the next years. A new approach for a complete and systematic mapping of fire risk factors identification has been proposed based in the identified and reported mapping procedures. A mapping tool aimed at local administrations has been implemented in Spain, including normalised symbology and extended to other vulnerable infrastructures other than houses. In this survey, an interaction with FIREWISE (USA) and FIRESMART (Canada) programs has taken place. The results of this task have been gathered in deliverable D1.1.

#### T0.2 WUIWATCH Interest Group network management.

##### Planned activities

A survey and identification of all the implied actors in fire protection in WUI areas. Particular focus will be given at Civil Protection Authorities in Portugal, Spain, France, Italy and Greece. Regional services will be explored. Other agents such as fire fighting bodies, administrations, owners, insurance companies and industrial consultancy firms will be considered. The creation of tools for networking and manage the presence and activity of WUIWATCH project in the social networks. Constitute the knowledge domain groups and implement them in the tools designed.

##### Implemented activities

For the identification of the potential members of the WUIWATCH network, three surveys have been performed. The first survey aimed at gathering information systematically by crossing four different geographical scopes and eleven domains of activity. This has been achieved through the elaboration of a short questionnaire. The countries selected have been Spain, Italy, France, Ireland, United Kingdom, Germany and Denmark for which previous contact points were well established in a framework of collaboration. The results have been classified into domains of activity, particularly fire services, civil protection, medical services, police, land management, administrations, research centres, forest services, forest owners associations, neighbourhood associations, insurance firms, technological companies, army and volunteer-

ing groups. This survey has been performed at four scales, European, national, regional and local. A second survey has included the compilation of the information of civil protection of all countries in the European Union affected by forest fires. The gathering of information has been completed at national and regional level; in some particular cases local (municipalities) level has been included as well. A third survey, embracing the international community, has been performed to include entities outside the EU and all across the world of countries affected by forest fires in the WUI and/or implementing programmes for their protection. These include USA, Canada, Australia, Chile, South Africa and South Korea amongst others. This has been possible thanks to the previous relationship of WUIWATCH beneficiaries with entities in the academic, operational or scientific domains. Besides WUIWATCH consortium has frequently interacted with such actors and participated in events (which are part of the dissemination activities) creating, reinforcing or promoting relationships with the identified members. A WUIWATCH web site has been created in which the forum, the databases, the tools and the news on the subject have been implemented. Besides WUIWATCH has been pretty active in the social networks; seldom accounts have been created in Facebook, Twitter, LinkedIn and YouTube amongst others. Promotional activities on specific relevant posts have been performed, reaching communities across EU and the world. WUIWATCH events have been broadcasted through streaming video for both registered and non-registered users of the network. However the above, the management of the special interest group and the networking resources have gravitated mostly towards the social networks, leaving the proprietary WUIWATCH networking tools in a second plane. The methods followed and the results of the surveys are gathered in the deliverable D2.1.

### **T03. WUIWATCH Platform development.**

#### **Planned activities**

Development of a forum for permanent discussion, aiming at serving as focal point for experiences and information capitalisation and exchange. The forum will be divided in thematic areas of interest. Special focus will be given to historical and current fire events and its link to lessons learnt. A register of users will be implemented and linked to the database in the previous task. A dedicated database structure will be designed to accommodate complementary databases. A self-evaluation tool will be designed and implemented for the assessment of risk at the settlement and house scales. A repository of documents will be designed and developed to include scientific and technical publications, legislation documents, brochures on materials, devices and services, and guidelines for best practices. In this repository the produced documents in WUIWATCH project will be also included.

#### **Implemented activities**

The WUIWATCH platform has been implemented in the project web portal ([www.wuiwatch.org](http://www.wuiwatch.org)). A dedicated forum has been designed, developed and integrated in the WUIWATCH web portal. The WUIWATCH Forum is available to registered users, who are included in the network. The forum is divided into eight topics, namely fire events, prevention measures, operations and safety, experience and lessons learnt, geospatial analysis and data gathering, research and technological development, the science corner, and a topic dedicated to the WUIWATCH project for the consortium members only. Besides, specific language-oriented discussion sub-forums have been implemented, to provide floor for local interchange of experiences and information. Each user has access and control of the threads open by him/herself. Historic fires and current fire events topics are directly connected to the lessons learnt database. All the information regarding these events, particularly photos, videos and documents, is stored in complementary but relational databases. The documents repository has been designed and developed, also connected to the fire events and discussion forum. This includes an initial 59 publications of different authors, which will be extended to more than 300 thus completing the full collection of papers collected in the project. All databases count with a search and retrieval functionality implementing filters by the different information



fields included. The evaluation tool has been implemented in a specific service for the management and planning of defence and prevention in the WUI at the local scale. A specific service, named SAVER, has been already used in some study cases in Spain. The evaluation tool includes a test version, to be used by owners so to evaluate the factors of risk, and a professional version which is used by fire fighters and risk assessors. A more detailed description of the WUIWATCH forum and other developed tools are given in deliverable D3.1.

#### **T04. Capitalisation of experience, database design, development and implementation.**

##### *Planned activities*

The design, development and population of a dedicated database for the knowledge capitalisation. This will include specific databases of fire events, lessons learnt and associated documents and media (pictures and videos). The database will be designed for scalability and portability. A search and retrieval tool will be designed and developed, allowing the use of the information stored in a practical way for debriefing and training based on the lessons learned. A population of the database will be done with the existing, relevant historical records of fires affecting the WUI. A selection of fires will be performed in each of the participating countries.

##### *Implemented activities*

A set of online tools and knowledge database services have been designed and developed for gathering the experience in terms of fire severity, vulnerability, operations and prevention measures effectiveness in a systematic way, using simplified forms and geo-referenced media. A key component is the **Knowledge base & Lessons Learnt management sYstem (KELLY)**. This system was developed to work as a database to store all knowledge gathered regarding fires, prevention, and lessons learnt. The database is capable of holding information in several formats: images, videos (links), and documents. The key components of the database are both fires and lessons learnt. These two elements can be linked so a fire may have a set of lessons learnt attached to it, but can also be linked to other elements (images, videos, documents). In this sense, the KELLY system is relational to the other databases, particularly the users, the library, the media repository and the lessons learnt. In this sense all information items are connected and no duplicating is required. The graphical user interface has been designed in such a way to be scalable and portable to other devices (particularly smart phones and tablets) and implemented in other languages (through look-up tables). A more detailed description is given in deliverable D4.1. In order to proceed in a consistent way, the same search and retrieve engine for data recovery has been implemented for each of the existing databases. In this sense users can reach a piece of information through different paths (from fire events to lessons learnt to pictures; from pictures to fire events to documents, etc.). This flexibility increases usability of information for these complex subjects based in relationships.

#### **T05. Laboratory essays, experiments and testing.**

##### *Planned activities*

To perform essays and laboratory experiments in order to explore some of the key factors driving to house destruction, particularly the role of firebrands entering the houses through the openings, doors and windows; also to identify the protection role of shutters and blinds in the house's windows when exposed to radiation and firebrands in real conditions. To carry out essays on fire safety in the WUI scenarios, particularly the effect of radiation on firefighters exposed to burning materials found in the WUI areas. Comparing different equipment and assessing their adequacy for operations in the WUI, particularly personal vests. Characterise the importance of effects of burning vegetation in the vicinity of LPG tanks in the WUI

## Implemented activities

A set of essays on the generation, transport and entrance of firebrands and their relationship to internal ignition of fires in houses has been carried out in the ad hoc facilities and installations built in ADAI premises. These have included the study of geometry of potential entrances to firebrands and smoke, focusing on the importance of external winds and internal doors in the general inflow of air transporting such particles. These studies have been extended to an initial study on smoke transportation inside the houses, in a preliminary exploration. Further research may be required, although the interaction performed with the Centre of Super computation of Catalonia (CERTEC, University of Barcelona) will provide a good baseline given their experience in gases and smoke diffusion modelling. A set of field tests using real fire, under controlled conditions in GESTOSA installations (Portugal), have been conducted in order to test the efficiency of wind shutters and other protection measures against fire radiation and flame contact. All findings and conclusions of these experiments have been included in the D5.1 deliverable. A set of experiments on firefighter's safety operating in the WUI areas and exposed to radiant fire have been performed in the facilities and installations of CEREN (Valabre, France). To achieve this, the regular equipment used by firefighters has been tested in the open fire tunnel exposed to a constant radiation source in a wired dummy with temperature sensors. The conclusions and findings of these experiments are available in the deliverable D5.2. An extra third experimentation activity (initially not programmed in the technical annex) in the field with real fire was performed in May 2016 on house vulnerability and protection. This has been carried out in real controlled fires in GESTOSA 2016 (Portugal), in the framework of scientific research activities organised and managed by ADAI and the appropriate use of project budget for essays in WUIWATCH project. A complete survey and assessment on the regulations and technical specifications of the protection of LPG tanks has been carried out, and an open discussion in the participating countries has been initiated. Out of this discussion, and particularly for the Spanish case, a set of recommendations to the existing regulation (UNE 60250), clearly defective, has been proposed taking as example what has been implemented in Italy and France.

## **T06. International workshops for experience interchange**

### Planned activities

It is expected to celebrate four international workshops for the interchange of knowledge and experience and provide a platform for cross-training and demonstration activities on specific topics. The first workshop, to be celebrated in Italy, will be devoted to prevention planning and risk assessment. The second workshop, in Portugal, will be devoted to house vulnerability. The third workshop, in France, will be devoted to fire fighting and protection operations and safety. Finally, the fourth workshop, to be celebrated in Spain, will be devoted to the human factor. All workshops will count with experts, stakeholders, scientists, operational entities, administrations and citizens' representatives. A round table is expected to take place after the technical presentations. Proceedings with the main conclusions and findings will be produced.

### Implemented activities

The First WUIWATCH Workshop on Prevention and Risk Mapping took place on 25<sup>th</sup> May 2015 in Alghero, Sardinia, Italy. This workshop was organised by University of Sassari (DIPNET) and chaired by Costantino Sirca. Several Italian entities participated very actively in the workshop, amongst them Corpo Regionale Volontari del Fuoco, Municipality of Alghero, Sardinia Forestry Corps, Porto Conte Regional Park Alghero, Civil Protection Sardinia, Ente Foreste della Sardegna and Nucleo Operativo Soccorsi. Besides two distinguished international speakers were invited, Gavriil Xanthopoulos (DEMETER, Greece) and Christophe

Bouillon (IRSTEA, France) who gave interesting lectures on current state of the art on protocols, prevention, risk mapping and modelling in WUI areas in Europe. WUIWATCH project was introduced by David Caballero, who presented also some unsolved questions and subjects about fire prevention in the WUI. An intense round table was conducted in which discussions were carried out on several subjects, particularly the role of agricultural lands in prevention.

The second WUIWATCH workshop on houses vulnerability was celebrated in Lousa, Portugal. In it authorities of the national, regional and local administrations participated and presented their concerns and challenges. WUIWATCH consortium members presented findings and solutions on house vulnerability. A round table was performed and a visit to the research facilities was conducted. Conclusions are included in deliverable D6.2. The presentations were recorded, translated and uploaded to WUIWATCH YouTube channel. The opening ceremony had the presence of a member of the “Order of Engineers” (a regulatory and licensing body for the engineer profession in Portugal) from Portugal Centre Region, Mr Fernando Cacia (5th from left in Figure 2), who said a few words about the importance of a project such as WUIWATCH to society. More than one hundred people (110) attended the workshop (Figure 5) and the demonstrations at LEIF (Figure 6 and Figure 7). The vast majority were from Portugal, but some came from Spain and Italy (Figure 3). There was a broad range of professional activities represented, as seen in Figure 4, but most were from the Technical Offices of the Municipalities and from Firefighter Brigades. A significant number of researchers and students was also present. All presentations were recorded and are public in the Wuiwatch EC ECHO Youtube channel, both in their original language and translated to English. At end of the workshop presentations a visit to ADAI’s Laboratory (LEIF) was conducted.

The third workshop took place in Valabre (France) the 24<sup>th</sup> of May 2016, dealing with human factors and Safety. This workshop has gathered attendees from several countries in Europe (Croatia, Serbia, Hungary, UK, Greece, Portugal, Spain, France, Greece, Italy and Switzerland). This has been possible due to the presence of IGNIS project members and CTIF representatives (International Association of Fire and Rescue Service). The workshop was celebrated in the auditorium of the European Centre for Risk Simulation (CESIR) located in Valabre. A demonstration of the thermal performance tests carried out by CEREN on personal protective equipments took place as programmed. After the demonstration was programmed the visit of the Risk Simulation centre (CESIR) used for the training of fire fighters and civil protection interveners in the fields of forest fires. The workshop ended with a round table to discuss the different themes. This workshop allowed highlighting the various issues encountered during a Wildland-Urban fire management and mainly the difficulties coming from human factor and population management.

The fourth WUIWATCH workshop took place in Cheste, Valencia (Spain), the 12<sup>th</sup> and 13<sup>th</sup> of December 2016. The first day was devoted to technical lectures, presenting the challenges, problems, approaches and solutions about fire fighting and civil protection operations in wildfires affecting WUI areas in Europe. The second day was devoted to a fieldtrip, visiting the most relevant fires of 2016 campaign affecting communities in Valencia and Alicante. Local and regional administrations and operational bodies joined the field trip and provided a highly valuable feedback on lessons learnt, explained on the spot. These had a remarkable impact in the Member States media, as many of the inhabitants in these settlements are residents from UK, Germany, Austria, France and Italy among others. Speakers represented a broad selection of actors involved in the management of emergencies and operations in the WUI. A total of 131 attendees were registered from 45 organisations in Spain, Italy, France and Portugal. Some demonstrations on self-defence techniques took place in a test field in the same venue surroundings. All sessions were duly recorded in Spanish and English and published in the YouTube WUIWATCH channel. Simultaneous translation was provided as to facilitate the interchange of experiences of operational people. To reach a maximum of audience, an online streaming service was set; according to the records, more than 600 connections the streaming were registered. Mass media was present in the event and provided coverage to

the technical sessions and the field trip. There was phenomenal coverage in the social networks, to the point of having WUIWATCH workshop as trending topic in Twitter.

### **T07. Whitebook on prevention and defence in the WUI against forest fires**

#### Planned activities

To gather information and lessons learnt obtained in project activities and produce a number of chapters of a white book on WUI in Europe, publicly available in the WUIWATCH repository.

#### Implemented activities

WUIWATCH consortium has performed a number of activities, meetings and celebrated workshops in order to gather valuable information and produce a series of chapters included in a final white book on forest fires in the wildland-urban interface in Europe. Beyond this, and as outcome of participating in research and scientific conferences and fora, WUIWATCH consortium has delineated and described a frame logic for the risk assessment in the WUI. Particularly, WUIWATCH has contributed to the analysis of risk at several scales (never addressed before), in the what has been called 'trans-scalar approach', which has been presented and described in the D7.1 deliverable. Also WUIWATCH consortium has proposed the use of the so called #PIESHVR approach for the risk assessment, and the incorporation of the idea of 'paths of fire', as gathered directly from the FIRESMART program in Canada. This idea and method has been extended to the 'paths of danger' approach. #PIESHVR (standing for probability, intensity, exposure, susceptibility, vulnerability, hazard and risk) is being adopted internationally, as learned in recent meetings with relevant institutions and programmes (NFPA, FIREWISE; FIRESMART), and outlines a rationale for a systematic approach to the risk assessment. WUIWATCH project has contributed in crossing this approach to the multi-scale analysis, providing a complete, comprehensive method for risk assessment in the WUI. This has been also disseminated and shared in the scientific forums and conferences and will be subject of further development. In the second chapter (deliverable D7.2) a concise yet complete review of the rationale for resources management and protocols in operations dealing with fire fighting and civil protection in the WUI is provided. This has been obtained through the interaction of operational staff from Spain (particularly as a result of the interaction in the WUIWATCH WS4 workshop in Spain), France and Portugal mainly. These two parts have been gathered in a single book including, as well, all the conclusions and findings from the workshops and lessons learnt gathered. As suggested, the book should be updated periodically according to the new findings and lessons learnt in the following fire campaigns.

### **T08. Dissemination activities**

#### Planned activities

To create a mass media taskforce in order to interact with the WUIWATCH projects and provide messages and outcome aimed at the population and homeowners. To produce dissemination material, both printed and digital, to transfer the knowledge and lessons learnt in the project focusing on the educational value of such material. Interact with the scientific community through the publication of papers and communications in conferences and workshops.

#### Implemented activities

Dissemination of WUIWATCH project has happened, mainly, through the internet and the social networks. All produced videos (a total of 48) have been published in the WUIWATCH YouTube channel and disseminated through the specific forum and social networks (Facebook, Unidad de Fuegos Forestales,

WUIWATCH, Twitter, LinkedIn etc.). Three brochures have been produced in English both, in digital and harcopy formats. Other extra brochures and reports have also been produced in digital format, dealing with specific aspects of the WUI protection at local scale (for certain municipalities and regions). The interaction with mass media has happened mostly in the events organised by WUIWATCH, particularly in the workshops. Otherwise, several appearances in TV and radio took place as well. All the dissemination activities in the media are gathered in the correspondent deliverable D8.8. Several scientific papers have been produced and presented in conferences in Spain, France, Italy and Portugal, in which the findings and research outcome (of the essays and experimentations but also about the methods and frame logic of risk analysis) have been put across. The WUIWATCH website has also included a 'news' and a 'events' sections in which a regular update of the project's activities have been disseminated. As a complement to the programmed dissemination activities, a number of webinars were programmed and carried out, with several specialist on the WUI matter. It is envisaged to continue, beyond the project lifecycle, with this program, extending to specialist of other countries outside the EU, given its value for the community and to reinforce the networking internationally.

### **T09. Project coordination**

#### Planned activities

To set up the management structure, to perform monitoring of the project activity and financial control of the programme, to provide quality assessment and to perform a final project closure and evaluation.

#### Implemented activities

WUIWATCH project consortium has established a Project Steering Committee composed by representatives of the coordinator and the beneficiaries. Periodical meetings took place and the main issues regarding the technical and managerial content and progress of the project have been discussed. Particularly, workload and budget deviations and transfer have been discussed and agreed. As requested by the EC, cooperation agreements have been duly signed with beneficiaries. An operation manual, reflecting the key aspects of management and project implementation, according to what is said in the Grant Agreement and the workplan, has been produced. However, every partner in the consortium had a clear idea of the project activities, responsables, actions to be taken and expected outcome in the first month of the project. This has given a certain degree of autonomy and flexibility in the performance and implementation of the action. Two annual year programmes have been produced, following what was stated and programmed in the technical annex of the Grant Agreement, but also reflecting the agreed deviations from plan and the execution of extra activities beyond it. A bi-monthly monitoring system has been established, through the bi-monthly reports; besides, six-monthly general meetings took place, one just before every of the celebrated workshops, and a number of general meetings through telematic channels (Skype). Two progress reports have been delivered to the European Commission with a certain delay. A final report has been completed and sent to the European Commission, gathering the main points of the implementation of the program. An exit and sustainability plan has been produced, in which the achievements in a longer term perspective are presented. For WUIWATCH this is a key aspect, basically because of the links created in the European Union and worldwide with the main programmes dealing with fire risk in the WUI. A final evaluation of the project has been carried out by an external advisory autonomous entity, in which the findings, recommendations and lessons learnt are presented.

## 5.2. Activities performed in the project extension period

As agreed by the WUIWATCH consortium members, and requested to the EC, a request for an extension of three months over the initially programmed project duration has been proposed and accepted. In this period, ranging from 01/01/2017 to 31/03/2017, a number of activities have been carried out, some of which are of specific relevance:

- Participation in the Wildfire Safety Summit IAWF, Barcelona 31st of January 2017. Presentation of WUIWATCH Lessons Learnt.
- Webinar, 14th of February 2017.
- Transfer of WUIWATCH lessons learnt in the Course on Safety and Operations in the WUI for Balearic Islands, 22-24th of February 2017.
- Participation in the MedWildFireLab of FORESTERRA project Seminar on WUI in the Mediterranean Countries, Madrid, 7th of March 2017. Presentation of WUIWATCH Lessons Learnt.

## 5.3. Future activities beyond WUIWATCH project duration

WUIWATCH project end date has been set to 31<sup>st</sup> of March 2017. Nevertheless, given the importance, relevance and interest of the subject, the WUIWATCH consortium agreed to continue project's activities beyond this date, at the expense of consortium own resources. This has been particularly useful and interesting given the fire campaigns and the relevant events on the subject, both in Europe and overseas. WUIWATCH consortium has very actively participated in the following events:

- Participation in the GEOSAFE Conference in Valabre, 6-7th of April 2017. Presentation of WUIWATCH Lessons Learnt.
- Interaction with the inter-ministerial group for forest fire defence in Spain, presenting WUIWATCH lessons learnt and participation in the design of new regulations and legislation.
- Transfer of WUIWATCH lessons learnt in the Seminar of Public Participation for Fire Prevention in the WUI, La Palma Island (Canary Islands), 19-21st of April 2017.
- Transfer of WUIWATCH lessons learnt in the Course of Safety and Operations in the WUI, National School of Civil Protection, Spain, 24-28th of April 2017.
- Transfer of WUIWATCH lessons learnt in the Seminar on Safety and Operations in the WUI of National School of Firefighters in Portugal, Leiria, 6th of May 2017.
- Participation in the MedWildFireLab/Foresterra project international workshop "Fire Risk at the Wildland-Urban Interface in the Mediterranean European Countries" in Madrid, 7th of March 2017. Presentation of WUIWATCH lessons learnt and implementation of them in the municipal scale in Spain.
- Participation in the national committee for forest fire fighting in Chile, 17-19th of May 2017. Presentation of WUIWATCH Lessons Learnt.
- Participation in the NFPA Exhibition and Conference in Boston, 4-7th of June 2017. Presentation of WUIWATCH Lessons Learnt.
- Participation in the International Wildfire Risk Reduction Workshop, Boston, June 2017. Contribution to future challenges and solutions for communities protection in the world. Interaction with international groups, namely Bushfire CRC and FPA (Australia), Wildfire Management Component (Lebanon), Kishugu (South Africa), Working on Fire (Chile), CFOA Wildfire Group NFCC/CFOA (UK), Firewise (USA), Firesmart (Canada), Pau Costa Foundation (Spain). In this case WUIWATCH representing the European reality.

- Participation in the AF3 project Workshop on Fire Modelling in Rome (Italy), as part of the activities of this EU-funded project (FP7). Presentation of the WUIWATCH lessons learnt and the role of fire modelling in the prevention planning in the WUI.

These extra activities provide exposure and increase networking worldwide to WUIWATCH project. In the following months, WUIWATCH consortium has agreed to continue the implementation of lessons learnt in the 2017 fire campaign and to contribute to the upcoming scientific and technical events on the subject.

#### 5.4. Qualitative evaluation of the activities

Nearly all of the activities proposed in the technical annex of the Grant Agreement have been completed with a high level of quality and commitment. However the above, some of the actions have just open doors for future work on the knowledge of factors and lessons learnt about forest fires in the wildland-urban interface. In this sense, a preliminary survey of the prevention and fire emergency management protocols has been completed, but need to be extended and regularly reviewed in the future. The time originally assigned to this task has been, according to the results, relatively short to what was expected as a complete outcome. Nevertheless this is pointing at future collaborations with the contacted entities, dealing with civil protection, across Europe. The information system and knowledge base developed is robust enough to hold much of the outcome from research activities and, more importantly, from lessons learnt in real fires. Although not reflected in the technical annex of the Grant Agreement, the WUIWATCH consortium considered important and valuable enough to visit real fires within the 2015 and 2016 campaigns, as it has been actually done. This type of actions it is recommended to continue in future fire campaigns. Research activities have been carried out as planned and beyond. Specific infrastructure has been designed and actually built to carry out essays and experiments in the laboratory. However this has been just a preliminary set of activities pointing out the need for future activities in this matter. Specific studies on forest fuels in the WUI, vulnerabilities of houses and the role of garden elements in this aspect, particular passive and active self-defence measures, methods and installations, all of them need to be systematically studies in future works. The outcome of WUIWATCH research activities has rendered scientific publications and results have been included in guides for prevention and house vulnerability reduction. WUIWATCH workshops have been celebrated as planned. In the first workshop, in Italy, it was expected to have a broader representation of attendees, both in terms of nationalities and domains of activity; nevertheless this was considered for the following three workshops which were progressively increasing the number of attendees and participating countries. Workshops have proven to be an irreplaceable tool for information and experience interchange, for the cost it represents. Besides, the use of a YouTube channel, the streaming of the speeches and the recording and translation of the sessions, so to be directly available to the international community, has represented an undisputed way of disseminating WUIWATCH and creating a network of interest. Participation in national and international meetings and conferences have provided an opportunity of sharing information, methods and experience with other communities, whether they are in the scientific or the operative domains, as well as disseminating the activities and results of WUIWATCH project. Mass media is a powerful tool so to channel messages and key information to the citizens, particularly home owners, planners and local administrations. However this has happened not in a sustained manner, mostly due to the seasonal interest paid by mass media to forest fires; hence, months just before, within and just after the fire seasons have been much more active than those in winter or fall. Dissemination material proves to be useful when and if it is tailored to the specific regions and language to which it is aimed. In this sense, general information (such as brochures) are just of relative interest by end users and homeowners. On the other side, videos, particularly all the footage gathered by WUIWATCH consortium in real fires (available in YouTube and social networks) are of tremendous value and impact. Today it is undeniable the value of visuals, whether they are videos, interactive programs or videogames. This has pointed very clearly where and how to proceed with future

dissemination and education activities, following what has been initiated in WUIWATCH project. In this sense, WUIWATCH project consortium continues to gathering footage, whether it is of real fires, laboratory experiments or interviews and testimonies of specialists and ordinary people who has suffered forest fires in their properties. In this sense, the collaboration with firefighting corps, as in Madrid, Catalonia in Spain, France and Italy, has been of a tremendous value for WUIWATCH objectives. As of the coordination and management of the project, the qualitative assessment points at the need of more dedicated, specialized personnel to carry out the managerial aspects of the project. Given the operational and scientific profile of the participants in the consortium, most of the effort has been devoted to the performance of activities and the commitment to the high quality of results, while at the same time some improvement in regards to the deliverable submission and in regards to the frequency of communication with the EC is needed. As for the general balance of resources usage, attention has been paid particularly on the usage of budget allocated to travel and subsistence; the efficient use of this budget, thanks to the low-cost flights mostly, has offered the opportunity of a larger number of travels and a more efficient use, and transfer, of other parts of the budget. As project activities unfolded, WUIWATCH consortium has been adjusting and fine tuning some parts of the budget in favour of others, particularly in regard to the translation services in the workshops. General assessment of the quality of the activities is very good.



## 6. 6. Presentation of the technical results and deliverables

### D1.1 Report on WUI fire prevention and emergency management in Europe: a state of the art and guidelines for improvement

#### *Purpose of this deliverable*

This document provides a state-of-the-art on regulations and legislations existing through European countries about forest fire at the wildland-urban interfaces (WUI), and on prevention measures and operational protocols applicable in the different European countries, mainly France, Italy, Portugal and Spain. Even if the problem of forest fires at wildland-urban interfaces is similar in all those countries, their approaches have not reached the same stage. French and Portuguese contexts are clear and usable (even if not always respected by the population) as well as in some regions in Spain, whereas Italian one for example is less complete. Prevention policies can emerge from different entities, from local municipalities to national levels, but also from European projects. In order to be as accurate as possible about forest fires at the wildland-urban interfaces, techniques and issues related to operational cartography, symbology and communications in those specific areas are also taken into account and risk mapping techniques are reported. On the whole, from an operational point of view, no specific protocol exists for the WUI whatever the considered country, and fire fighting in those areas rest on field knowledge, and incident commander expertise. Useful inputs from risk maps are considered, according to the new technical developments.

#### *Evaluation of the deliverable*

A review of the state of the art in prevention measures in Portugal, France, Italy and Spain has been fully completed. Some remarks have been included in regards to other affected countries in EU. Also, a review of the main strategies and programmes across the world has been completed. Operational protocols applied in Portugal, Spain and Italy have been gathered and served as a baseline for further discussion in the dedicated workshop. The legislation regarding fire protection in the WUI has been reviewed as planned, but focusing particularly in some of the aspects that still are not covered in all countries in the EU, such as the protection of LGP tanks in forested areas. This has been furtherly discussed with policy makers (particularly in the parliament of Spain) to be included in future regulations.

#### *Value added and transferability*

This is a useful document in which have a baseline for future improvements in the protection of WUI against fires. It is particularly transferable to policy makers, local and regional administrations in the process of implementing new regulations and measures in the prevention but also for the operational bodies in civil protection and fire fighting to have a overall idea of the commonalities and differences amongst several countries in the EU. This will help, certainly, to the development and adoption of a commonly agreed, harmonised set of operation protocols in EU.

#### *Dissemination*

The dissemination type of the produced document is PUBLIC and the format is PDF.

### D2.1 WUIWATCH community members database

#### *Purpose of this deliverable*

This deliverable regards to the identification of the main actors in the prevention and protection of communities against forest fires in Europe. The aim of this work is to establish a first version of a database which will be expanded and completed permanently. To achieve this, a methodology is presented which includes the performance of surveys at different geographical scopes and under different domains of activity.

#### *Evaluation of the deliverable*

The produced deliverable includes a preliminary, but rather complete, list of identified actors in Europe at the country and regional scales, and also outside EU border, dealing with the protection of WUI areas against forest fires. This has rendered a population in the database that will be extended and improved in future actions beyond project lifecycle. Yet the above, the database is not complete and needs to be periodically re-populated with data regarding the municipality and province scales.

#### *Value added and transferability*

The database itself is of a great value for exploitation of its content, particularly in creating networking amongst the entities of the same domain of activity, interest and geographical scope. As agreed, and never before to implementing an information disclosure and control service, this database will be kept under restricted access, but in a near future will be open and accessible through the WUIWATCH database infrastructure.

#### *Dissemination*

The dissemination type of the produced document is RESTRICTED and the format is PDF.

### D3.1 Permanent forum and special interest group platform

#### *Purpose of this deliverable*

This deliverable describes the user interface of the Web-based WUIWATCH platform including all of the WUIWATCH tools, forums and knowledge databases sitting in a common Internet domain ([www.wuiwatch.org](http://www.wuiwatch.org)). The platform is connected to the WUIWATCH databases, and includes applications for the vulnerability assessment of structures, houses and urban developments.

#### *Evaluation of the deliverable*

The forum, as programmed, has been developed but within the same data architecture and infrastructure as the WUIWATCH databases. This has provided an extra value, in particular in linking users to the database of identified actors in Europe; and in linking the existing pieces of information (documents, pictures, videos etc.) to lessons learnt and events of fires. In this sense, the developed forum is providing a consistent way of discussing on specific aspects of fire protection in the WUI, and a very appropriate channel of information and experience interchange of lessons learnt. However the above, the use of the forum has not been as intense as expected, basically because much of the discussion and information interchange has taken place in other forums linked to social networks (particularly Facebook).

#### *Value added and transferability*

For present and future actions, the developed forum is of great value for the discussion of specific matters on WUI defence against forest fires, particularly on the lessons learnt in real fires. At this moment the

forum is open for its use at European level and beyond (given the incorporation of our international group of participants).

#### *Dissemination*

The dissemination type of the produced document is PUBLIC and the format is PDF.

### D4.1 Online tool and database for experience capitalisation - KELLY

#### *Purpose of this deliverable*

This document describes the graphical user interface (GUI), functionalities and workflow of the Online Tool and Knowledge database services developed for gathering the experience in terms of fire severity, vulnerability, operations and prevention measures effectiveness in a systematic way, using simplified forms and geo-referenced media. The WUIWATCH web application has several sections that are described in detail in the document D3.1 WUIWATCH forum an special interest group. This document is devoted to the detailed description of the Knowledge base interface while the Knowledge base structure and design is described in D4.2 WUIWATCH Knowledge Base.

#### *Evaluation of the deliverable*

The developed architecture of the WUIWATCH databases and its implementation has proven to be robust but simple in its conception and design. Existing development libraries and solutions have been adopted to optimize the workload invested. Maintenance of such infrastructure is included in the budget of the yearly budget of the service provider (MeteoGrid), given the low cost rate and easiness of maintenance. However a migration to a larger infrastructure at European level (in some of the existing European institutions, such as the JRC) is envisaged.

#### *Value added and transferability*

The obtained design and development of the resulting infrastructure is eventually a valuable starting baseline for a larger, broader database including other risks in Europe.

#### *Dissemination*

The dissemination type of the produced document is RESTRICTED and the format is PDF.

### D4.2 WUIWATCH Knowledge base

#### *Purpose of this deliverable*

The objective of this document is the description of the data architecture, design and the relational geodatabase framework together with the search and retrieve engine, implemented through an online user interface into the WUIWATCH platform. The developed tool has been named internally with the name of KELLY (KnowlEdge base & Lessons Learnt management sYstem).

#### *Dissemination*

The dissemination type of the produced document is RESTRICTED and the format is PDF.

## D5.1 Report on houses fire vulnerability tests and experiments

### *Purpose of this deliverable*

The general objective of the presented work is to perform exploratory tests on different aspects of house vulnerability, namely the windows and their protective blinds. To achieve these four specific objectives were delineated:

- To assess the resistance of different kinds of window blinds to the impact of a fire front.
- To compare the effect of radiation and convection on the resistance of windows and window blinds.
- To assess the entrance of burning embers inside structures due to small gaps or openings in windows or doors.
- To assess the influence of open windows and interior doors on wind drafts and on the entrance of particles inside houses.

### *Dissemination*

The dissemination type of the produced document is RESTRICTED and the format is PDF. A publication has been produced, with the main methods, results and conclusions and the dissemination is PUBLIC.

## D5.2 Report on fire safety in the WUI tests and experiments

### *Purpose of this deliverable*

This document is dedicated to the safety of fire fighters intervening on wildland-urban interface fires. The first part of this document will identify the main risks they face. The second part will present the personal protective equipments (PPE) used to improve their safety. This part will focus on the normative context for fabrics and the required laboratory tests for each component. The third part will provide the results of the tests carried out by CEREN in a thermal unit in order to assess and compare the thermal performances of these personal protective equipments. The tests were calibrated according to a genuine accident and recreated an intense exposure during 30 seconds with a radiant panel (minimum 20 kW/m). After adjusting the protocol and method, a comparison of the thermal performances, dissociating the legs and upper body, is done. A multi-criteria evaluation and scoring is provided. The final discussion provides several recommendations for the selection of performing and well tolerated personal protective equipments.

### *Dissemination*

The dissemination type of the produced document is RESTRICTED and the format is PDF. A publication has been produced, with the main methods, results and conclusions and the dissemination is PUBLIC.

## D6.1 Proceedings and conclusions of the 1st WUIWATCH workshop (Italy)

### *Purpose of this deliverable*

This document is a report on the activities and results of the First WUIWATCH project, held in Alghero, Italy, the 25th of May 2015. The workshop was organised and chaired by the University of Sassari and versed on prevention in the WUI areas. The event invited several international attendees and speakers. The main entities dealing with protection against forest fires in Italy were also represented. This workshop was coupled with the international conference on forest fire behaviour and risk, which took place also in Alghero in the following days.

### *Dissemination*

The dissemination type of the produced document is PUBLIC, and format is PDF. All of the produced videos and presentations (in several languages) are publicly available in the WUIWATCH YouTube channel and the WUIWATCH document repository.

### D6.2 Proceedings and conclusions of the 2nd WUIWATCH workshop (Portugal)

#### *Purpose of this deliverable*

This document reports the Second WUIWATCH International workshop, entitled “Vulnerability and structures protection” that was held Portugal on November 20th 2015. The workshop took place in COTF (Centre for Operations and Forestry Techniques), a structure from the Portuguese Forestry Services, dedicated to training and formation. COTF was chosen due to the existence of an auditorium with sufficient capacity and to its proximity to ADAI’s Forest Fire Research Laboratory (LEIF) in the airfield of Lousã, a small village just 25km from Coimbra in Central Portugal. This facility, unique in Europe and one of the most important in the World, is especially dedicated to the applied research on forest fire behaviour and related phenomena

### *Dissemination*

The dissemination type of the produced document is PUBLIC, and format is PDF. All of the produced videos and presentations (in several languages) are publicly available in the WUIWATCH YouTube channel and the WUIWATCH document repository.

### D6.3 Proceedings and conclusions of the 3rd WUIWATCH workshop (France)

#### *Purpose of this deliverable*

The objective of the workshop has been to share experience between various EU countries and to discuss about problems and challenges on human factor and safety in forest fire emergencies affecting wildland–urban interface (WUI). Presentations were devoted, in one hand, to the organisation and challenges of the French fire fighting services (ground and aerial means); on the other hand, to the testimonies about the reality of human factor in WUI fires in Europe, the difficulties and challenges encountered in managing such scenarios. Afterwards a set of demonstrations in the wind tunnel were conducted showing the performance of Personal Protective Equipment (PPE) in WUI areas. The workshop ended with a visit to the European Risk Simulation Centre and the celebration of a round table on the subjects treated.

### *Dissemination*

The dissemination type of the produced document is PUBLIC, and format is PDF. All of the produced videos and presentations (in several languages) are publicly available in the WUIWATCH YouTube channel and the WUIWATCH document repository.

### D6.4 Proceedings and conclusions of the 4th WUIWATCH workshop (Spain)

#### *Purpose of this deliverable*

This deliverable gathers the content of the 4th WUIWATCH workshop which took place in Cheste, Valencia (Spain) the 12<sup>th</sup> and 13<sup>th</sup> of December 2016. Around 130 attendees of 45 organisations participated in this event, focusing on lessons learnt in the fire-fighting and emergency management in the WUI. Several fires of the 2016 campaign in Italy, Spain, France and Portugal were reviewed. All sessions were recorded and translated. This document gathers basic information on the main aspects, structure, participants and subjects treated in the 4th WUIWATCH workshop, providing an insight on the main conclusions of the round table and discussions that took place. In this sense, this document serves as a reference and baseline for the interest group and community to continue discussions in the forum.

#### *Dissemination*

The dissemination type of the produced document is PUBLIC, and format is PDF. All of the produced videos and presentations (in several languages) are publicly available in the WUIWATCH YouTube channel and the WUIWATCH document repository.

### D7.1 Guide of good practices for fire prevention and self-protection in the WUI

#### *Purpose of this deliverable*

This deliverable provides the guidelines for wildfire prevention planning in the WUI, according to the lessons learnt in the past fire events in Europe. A conceptual framework is suggested, for which three different scales of work are considered: the landscape, the community and the house levels. This approach ensures a systematic and complete approach to a full prevention strategy, helping to the involvement of owners and administrations. This document gathers the information, knowledge and lessons learnt in forest fires affecting WUI areas distilled into a set of good practices and recommendations for prevention planning. A conceptual framework is given, in order to identify and systematically approach the prevention considering all scales and levels of detail.

#### *Dissemination*

The dissemination type of the produced document is RESTRICTED, and format is PDF.

### D7.2 Report on defence operations and safety in WUI forest fire scenarios

#### *Purpose of this deliverable*

This deliverable includes a review of the strategy proposed in most of the forest fires is described, as an adaptation to the particularities of WUI areas. The approach focuses on the need of a previous analysis of WUI complexity, the establishment of a strategy, the design of a plan and the execution of tailored operations. The document gathers and resumes the knowledge acquired in the lessons learnt. This document is presenting a summary of the approaches, ideas and recommendations for fire fighting, defence and safety operations in the WUI areas, according to what has been gathered in the lessons learnt and discussed in the corresponding WUIWATCH workshop, held in Cheste (Spain) in December 2016. The document is divided into four main sections: the ideas driving the organisation of operations, the analysis, the planning and the operations. A number of references are given in the last part as an independent annex.

#### *Dissemination*

The dissemination type of the produced document is RESTRICTED, and format is PDF.

### D9.1 Establishment of Project Steering Committee

#### *Purpose of this deliverable*

This document includes the description of the roles and activities of Project Steering Committee as well as the nomination of senior representatives of each consortium partners which will compound this governing body. The Steering Committee (S) is established at the beginning of the project to ensure coordination amongst project's stakeholders. It is integrated by senior representatives of each consortium member.

#### *Value added and transferability*

This is an internal document, as part of the management structure and mechanisms with a limited transferability and intrinsic value added for the project management.

#### *Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

### D9.2 Cooperation agreements signed with beneficiaries

#### *Purpose of this deliverable*

In this document the content and signed copies of the internal agreements between the coordinator and consortium members are included. The internal cooperation agreement describes the technical and financial contribution of each consortium member.

#### *Value added and transferability*

This is an internal document, as part of the management structure and mechanisms with a limited transferability and intrinsic value added for the project management.

#### *Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

### D9.3 Operations Manual

#### *Purpose of this deliverable*

This deliverable includes the foundations of the project management approach and implementation system, providing practical guidelines and establishing procedures for the management, implementation and monitoring of project activities.

#### *Value added and transferability*

This is an internal document, as part of the management structure and mechanisms with a limited transferability and intrinsic value added for the project management.

#### *Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

#### D9.4 Annual Work Programme –Year No. 1

##### *Purpose of this deliverable*

This deliverable describes the tasks, activities and outcome regarding to the project development in the first year (01/01/2015 to 31/12/2015), according to what is programmed in the project technical annex (section T) of the Grant Agreement. This document has been elaborated jointly by the coordinator and the technical committee. Priorities, milestones and a timeline are also included.

##### *Value added and transferability*

This is an internal document, as part of the management and monitoring activities and mechanisms with a limited transferability and intrinsic value added for the project management.

##### *Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

#### D9.5 Establishment of monitoring and evaluation systems

##### *Purpose of this deliverable*

This deliverable includes the approach to project monitoring and supervision, project reporting and the review process is presented. In particular, deliverable it summarises the key provisions in the Consortium and ECHO contract, the procedures for periodic re-reporting, explanation of the consortium organisational structure and decision making procedures, roles and responsibilities and documents review process. The aim of these activities is to ensure high quality deliverables and management of the project and to have a clear periodic process for reporting on activities, effort expenditure, as well as having a clear review procedure with defined phases.

##### *Value added and transferability*

This is an internal document, as part of the management and monitoring activities and mechanisms with a limited transferability and intrinsic value added for the project management.

##### *Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

#### D9.7 Annual Work Programme –Year No. 2

##### *Purpose of this deliverable*

This deliverable describes the tasks, activities and outcome regarding to the project development in the second year (01/01/2016 to 31/12/2016), according to what is programmed in the project technical annex (section T) of the Grant Agreement and the activity carried out in the first year. This document has been elaborated jointly by the coordinator and the technical committee. Priorities, milestones and a timeline are also included.



*Value added and transferability*

This is an internal document, as part of the management and monitoring activities and mechanisms with a limited transferability and intrinsic value added for the project management.

*Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

D9.9 Final report submitted to the Commission

*Purpose of this deliverable*

The final technical implementation report includes a general overview of the project implementation process, referring to the technical activities and the management. A short description of the content and results of deliverables is presented, and a final evaluation of the project outcome and implementation. A short note on follow-up activities is also included. This deliverable complies with the document structure as indicated in Annex V, Part B of the Grant Agreement.

*Value added and transferability*

This is an internal document, as part of the management and monitoring activities and mechanisms with a limited transferability and intrinsic value added for the project management.

*Dissemination*

The dissemination type of the produced document is RESTRICTED and the format is PDF.

D9.10 Exit and Sustainability Plan

*Purpose of this deliverable*

This deliverable corresponds to a sustainability plan will drafted to ensure the sustainability of the achievements in a longer-term perspective. This deliverable sets the long-term goals of the project after-life we want to achieve and determining what interim-targets are needed to set to achieve the goals.

*Value added and transferability*

This is an internal document, as part of the management and monitoring activities and mechanisms with a limited transferability and intrinsic value added for the project management.

*Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

D9.11. Final evaluation (external)

*Purpose of this deliverable*

The objective of this deliverable is to carry out an external evaluation of the project in order to assess if the expected objectives and results were achieved and provide recommendations regarding improvement of project management, dissemination of main findings and promotion of learning processes.

*Value added and transferability*

This is an internal document, as part of the management and monitoring activities and mechanisms with a limited transferability and intrinsic value added for the project management.

*Dissemination*

The dissemination type of the produced document is INTERNAL and the format is PDF.

## 7. 7. Evaluation of the technical results and deliverables

### 7.1. General lessons learnt

Laboratory essays are a good approach to some of the unsolved questions on house vulnerability, such as fire embers passing through holes and breaks. However these are just preliminary activities which show a research line to be continued in the future, mostly given that the infrastructure is already in place.

Field experiments are very interesting as they show facts of house elements facing real (but controlled) fires. However some driving factors, such as wind, may entail heterogeneous results under uncontrollable conditions. Given that these are costly and of complex preparation, further research have to count on a specific experiments program with several burnings devoted to these subjects.

Database population with information in a systematic, usable way is time consuming but very valuable. In this sense WUIWATCH consortium has agreed to select less fire events but to analyse them in much more detail. In the future a wizard application may help in a quicker and more efficient way of integrating information.

Webinars are a relatively easy, cheap and powerful tool for the exposition of particular, focused subjects, provoke discussion and encapsulate relevant information from selected experts in EU and the world.

Workshops are a great tool for gathering together a rich group of actors and provide a common discussion floor on subjects. However they must be announced in advance and, when possible, couple them with large events such as conferences. This gives the opportunity of increasing the number, quality and heterogeneity of attendees.

Although WUIWATCH project has not budget allocated for large, national workshops, the experience in Spain shows that a good collaboration with administrations and research entities render very good results. Besides it is easier to organise such events by the hand of ministries and agencies which have stronger ability to convene in regions and local administrations.

Today social networks, such as Facebook, hijack much of the discussion and interaction activity on specific subjects. It is difficult and costly to attract attention towards a tailored forum unless something else is offered. WUIWATCH consortium has discussed about this and has agreed that including expert opinions, reports or articles in the forum should eventually re-focus audience attention and increase visits volume. Besides, a copy of the most relevant discussions developed in social networks should be included in WUIWATCH forum.

WUIWATCH dissemination depends largely on the evolution of fire campaigns. The occurrence of fire events affecting houses are of great interest by media; in parallel, the unfolding of fire events provide a wealth of images, videos and testimonies which enrich databases and dissemination material.

Liaisons with other EC-ECHO funding mechanism projects, such as eFirecom, provide a good framework to improve efficiency in resources use and to increase critical mass. Other relations with on-going or future projects are envisaged as well.

## 7.2. Strengths

WUIWATCH project has been supported by main authorities in the participating countries (i.e. ministries), which have shown a high degree of commitment and interest with the subject treated. WUIWATCH consortium has a solid, extensive and expanding list of contacts in the operational, research and commercial domains. This has facilitated the successful celebration of workshops and set-up WUIWATCH users database. Several strategic agreements have taken place to extend and improve WUIWATCH activities and results beyond the project lifecycle, more particularly the agreements with Pau Costa Foundation with NFPA and FIREWISE program or the collaboration with the International Association of Wildland Fire (IAWF). A clear and fruitful leverage of information and collaboration has taken place with other projects in the same or other EU-funded programmes. Besides, a stronger collaboration with the WUIWATCH consortium members ensure their collaboration in the future actions, beyond the project.

## 7.3. Possible challenges or improvements in further action

WUIWATCH knowledge base relies much on the experiences contributed by end-users, particularly personnel in the operational. Gathering in-time information of real fire events affecting significantly WUI areas will be a challenge but a required action to keep such data-bases alive and practical. To achieve this, and within project's life, WUIWATCH consortium members will visit and report on the fires happening in their countries, providing a set of lessons learnt to be included in the database. It is expected that in the future further information of new fire events should be included systematically in the databases by other users. The final WUIWATCH book include good practices and recommendations for the prevention and emergency management based on the obtained information and derived lessons learnt within the project life; however it is expected that new editions of the book will include new lessons and improve its content progressively. In this sense, WUIWATCH book will be a living document to be reviewed periodically.

## 7.4. Recommendations to stakeholders, partners, authorities and institutions

As stated above, future information input of new fire events will keep the knowledge base alive and updated. It is recommended to proceed with information gathering and systematic analysis of lessons learnt after a fire event affecting WUI areas which eventually will be included in the WUIWATCH knowledge base.

It is recommended to design a national strategy on fire prevention and emergency management for forest fires in the WUI, based on the acquired knowledge. This should include a research program on several aspects addressed (fuel management, house vulnerability and protection, fire fighting operations etc.). The initiated research activities in WUIWATCH should be continued and reinforced with such program. It is also recommended to hold at least a workshop per year to review the lessons learnt and to discuss and agree on new approaches and best practices for the prevention and emergency management of forest fires affecting the WUI.

The produced guidelines for good practices should be reviewed and improved periodically in a living document, in which new lessons learnt according to the information gathered in real fire events and in research essays and experiments should be included.

It is required to study the existing regulations in other countries to eventually adapt or adopt the solutions which prove to be practical and efficient. A common discussion platform (such as that provided by WUIWATCH) or the celebration of international workshops could be ways of fostering such interaction.

## 8.8. Follow-up

### 8.1. Comparison between initial and current follow-up measures

#### Programmed follow-up measures

Three actions have been designed for the follow-up of the project progress, namely:

- A9.2 Monitoring. Set up the monitoring and evaluation committee which will make assessment of the project progress in a quarterly basis.
- A9.3 Financial control. Set up and implement an adequate accountancy system, which enables extraction of tables and periodic analytical reports of disbursements and project commitments; a bi-monthly project report.
- A9.4 Quality control and backstopping. Including systematic monitoring and evaluation of the various aspects of the project to ensure quality standards.

#### Implemented follow-up measures

General meetings, teleconference ('telco') meetings and bi-monthly reports have proven to be the best tools in hand to perform follow-up and monitoring of project progress. financial monitoring and control of the project (activity A9.3) has been possible thanks to the help of the external assistance by F-Iniciativas.

General meetings have proven to be a valid and practical way of driving consortium member's activities and gather new concerns, approaches and extension to other activities beyond the Technical Annex. Besides, general meetings are the main mechanism for common agreements on relevant aspects of the project. Remote meetings (telcos) through Skype is and will be the easiest, fastest and cheapest way of communicating and interchange between partners for specific subjects. Eventually face-to-face meetings will take place when needed (i.e. collaborative work on reports, edition of the book etc.). Bi-monthly reports provide a good tracking of the project progress and resources usage.

#### Programmed continuation measures

According to the technical annex of the Grant Agreement, Form T4, the continuation of the project after the period is ending, reads as follows:

- Promote WUIWATCH in order to continue the consolidation and expansion of the interest group in Europe on the subject of forest fires affecting communities.
- To extend this promotion to other countries outside Europe, particularly USA, Chile, South Africa, Mexico etc.
- To establish, in a regular basis, a calendar of meetings and workshops in a yearly basis.
- Update and reviews of protocols on fire prevention and operations

#### Implemented continuation measures and activities

- Presenting WUIWATCH in the GEOSAFE workshop in France
- Transferring the lessons learnt in a dedicated 3-day workshop in Canary Islands
- Performing a one-week training course on WUIWATCH materials in the National School for Civil Protection in Spain

- Transferring the WUIWATCH lessons learnt and materials to the National School of Firefighters in Portugal
- Participating in the national meeting of fire dispatchers in Chile providing with a strategy based on the lessons learnt
- Conducting a dedicated workshop in Boston, USA, within the NFPA conference and exhibition based on the lessons learnt in Europe
- Participating in an international, world-wide meeting on new approaches and challenges for the protection of communities across the world, coordinated by NFPA and with the participation of South Africa, Chile, United Kingdom, Australia, USA; Canada and Lebanon.
- Incorporating lessons learnt from 2017 fire campaign in Portugal, Spain, Italy, Croatia, Greece, France and interacting with international contributors from USA, Canada, South Africa and Australia.

## **8.2. Additional follow-up approaches**

No further follow-up approaches have been applied.

## STANDARD PAYMENT REQUEST AND FINANCIAL STATEMENT

Grant agreement number	ECHO/SUB/2014/694556
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Legal name of the beneficiary	Farisa Asesores y Consultores S.L.
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Address	Almansa 88, 28040 Madrid, Spain
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Reference period	Eligibility	From: 01/01/2015	To: 31/03/2017
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<b>Banking details:</b>	Name and address of the bank	ING-DIRECT
	Bank account n°	6000095073
	I.B.A.N	ES11 1465 0100 9760 0009 5073
	Bank account holder	Jaime Ribalaygua Batalla
	Payment reference (if necessary)	WUIWATCH project final payment

EU contribution requested	<b>491.997,45</b> EUR
Pre-financing received	<b>295.912,58</b> EUR
Balance payment requested	<b>196.084,87</b> EUR

I certify on my honour that the information contained in this payment request is full, reliable and true. I also certify that the costs incurred can be considered eligible in accordance with the grant agreement and that this request for payment is substantiated by adequate supporting documents that can be checked.

Name of legal/statutory representative:	Jaime Ribalaygua Batalla
Title:	Mr.
Function:	CEO
Date:	31/05/2017
Signature:	 

C/ Almansa, 88 28040 MADRID  
 Tel. 91 450 33 93 - www.meteogrid.com  
 CIF: B-8398902C

**Enclosures:** (do not apply for the first installment of pre-financing)

- Excel Workbook either on a CD-Rom or sent by e-mail
- External audit report if appropriate

### Consolidated Cost Statement for the Action

*ATTENTION/ to be completed only if the project involves one or more associated beneficiaries*

Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
A: Personnel		550.644,52	EC contribution*	491.997,45	72,50%
B: Travel and subsistence		33.960,55	Contribution of the coordinating beneficiary	60.492,19	8,91%
C: Equipment		1.224,15	Contribution of the associated beneficiary/ies	126.162,05	18,59%
D: Sub-contracting		25.111,39	Other sources of funding	0,00	0,00%
E: Other direct costs		24.606,91	Direct revenues	0,00	0,00%
Indirect costs / overheads	6,78%	43.104,17			
<b>TOTAL ELIGIBLE COSTS</b>		<b>678.651,69</b>	<b>TOTAL</b>	<b>678.651,69</b>	

\* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower!

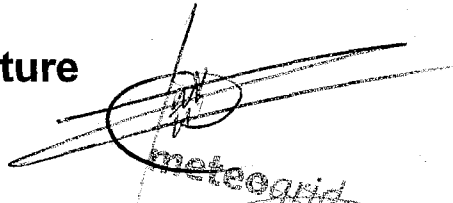
#### For information only

Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)

**Date and signature**

31/05/2017

David Caballero

  
 meteogrid  
 C/ Almansa, 88 28040 MADRID  
 Tel. 91 450 33 93 www.meteogrid.com  
 CIF: B-83989020



## Participant Cost Statement Summary

Name of participant reporting own costs:	Farisa Asesores y Consultores S.L. (MTO)
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Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		160.791,89	EC-contribution*	144.167,21	70,44%
Travel and subsistence		9.677,12	Contribution of the <b>Coordinating beneficiary**</b>	60.492,19	29,56%
Equipment		0,00	Contribution of the <b>Associated Beneficiary</b> reporting own costs		0,00%
Sub-contracting / External assistance		14.181,82	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		6.619,64	Other sources of funding	0,00	0,00%
Indirect costs / overheads	7,00%	13.388,93	Direct revenues	0,00	0,00%
<b>TOTAL ELIGIBLE COSTS</b>		<b>204.659,40</b>	<b>TOTAL</b>	<b>204.659,40</b>	

\* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower!

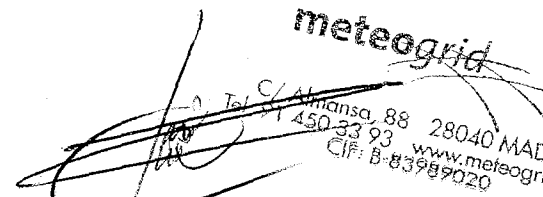
\*\*reporting own costs or contributing to Associated Beneficiary's costs

## For information only

Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0,00
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## VAT-status (please tick appropriate box)

- The reported costs are without VAT.
- VAT is not recoverable and is therefore included in the reported costs. (Proof of non-recoverability attached)


  
 meteogrid
   
 C/Almansa, 88 28040 MADRID
   
 Tel: 91 450 33 93 www.meteogrid.com
   
 CIF: B-83989020

Date and signature

31/05/2017  
David Caballero

## Participant Cost Statement Summary

Name of participant reporting own costs:	ADAI
--	------

Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		80 266,60	EC-contribution*	86 956,51	75,00%
Travel and subsistence		8 862,03	Contribution of the <b>Coordinating beneficiary**</b>		0,00%
Equipment		1 224,15	Contribution of the <b>Associated Beneficiary</b> reporting own costs	28 986,55	25,00%
Sub-contracting / External assistance		5 849,08	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		13 356,70	Other sources of funding	0,00	0,00%
Indirect costs / overheads	5,83%	6 384,50	Direct revenues	0,00	0,00%
<b>TOTAL ELIGIBLE COSTS</b>		<b>115 943,06</b>	<b>TOTAL</b>	<b>115 943,06</b>	

\* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower! \*\*reporting own costs or contributing to Associated Beneficiary's costs

<b>For information only</b>	
Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0,00

<b>VAT-status</b> (please tick appropriate box)
<input type="checkbox"/> The reported costs are without VAT.
<input checked="" type="checkbox"/> VAT is not recoverable and is therefore included in the reported costs. (Proof of non-recoverability attached)

**ADAI**  
Assoc.Desenv.Aerodinâmica Ind.

1 JUNE 2017

Date and signature



## DIRECÇÃO GERAL DOS IMPOSTOS

Serviço de Finanças de Coimbra 1

### Certidão

Fernando Manuel Pereira Pires, TATAjuncto do Quadro da Direcção Geral dos Impostos, a exercer funções no Serviço de Finanças de Coimbra 1.-----

Certifico, em cumprimento do despacho que antecede, de acordo com o requerido e em conformidade com os elementos existentes neste Serviço de Finanças, que *ADAI – Associação Desenvolvimento Aerodinâmico Industrial*, NIF: 502 550 554, se encontra colectada, enquadrada no regime normal trimestral de IVA (com operações que conferem o direito à dedução e operações isentas), desde 01 de Fevereiro de 1991.-----

Por ser verdade e para constar passei a presente certidão, que vai ser assinada e autenticada com selo branco em uso neste Serviço, aos 10 de Março de 2006.-----

O TATAjuncto

*Fernando Manuel Pereira Pires*

## Participant Cost Statement Summary

Name of participant reporting own costs:	PAU COSTA FOUNDATION
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Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		101.054,49	EC-contribution*	87.341,73	75,00%
Travel and subsistence		7.636,55	Contribution of the <b>Coordinating beneficiary**</b>		0,00%
Equipment		0,00	Contribution of the <b>Associated Beneficiary</b> reporting own costs	29.113,91	25,00%
Sub-contracting / External assistance		146,00	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		0,00	Other sources of funding	0,00	0,00%
Indirect costs / overheads	7,00%	7.618,59	Direct revenues	0,00	0,00%
<b>TOTAL ELIGIBLE COSTS</b>		<b>116.455,64</b>	<b>TOTAL</b>	<b>116.455,64</b>	

\* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower! \*\*reporting own costs or contributing to Associated Beneficiary's costs

For information only	
Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0,00

VAT-status (please tick appropriate box)
<input checked="" type="checkbox"/> The reported costs are without VAT.
<input type="checkbox"/> VAT is not recoverable and is therefore included in the reported costs. (Proof of non-recoverability attached)

1st Juin 2016

Oriol Vilalta Caellas



## FR03 - Participant Cost Statement

## Participant Cost Statement Summary

Name of participant reporting own costs:		UNIVERSITA' DI SASSARI (UNISS DIPNET)			
Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		88,576.65	EC-contribution*	79,832.00	74.05%
Travel and subsistence		6,128.99	Contribution of the <b>Coordinating beneficiary**</b>	0.00	0.00%
Equipment		0.00	Contribution of the <b>Associated Beneficiary</b> reporting own costs	27,978.70	25.95%
Sub-contracting / External assistance		4,934.49	Contribution of other associated beneficiary/ies	0.00	0.00%
Other direct costs		1,210.57	Other sources of funding	0.00	0.00%
Indirect costs / overheads	6.90%	6,960.00	Direct revenues	0.00	0.00%
<b>TOTAL ELIGIBLE COSTS</b>		<b>107,810.70</b>	<b>TOTAL</b>	<b>107,810.70</b>	

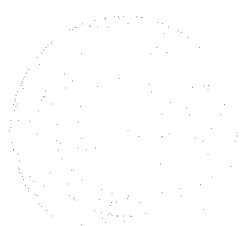
\* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower! \*\*reporting own costs or contributing to Associated Beneficiary's costs

<b>For information only</b>	
Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0.00

<b>VAT-status (please tick appropriate box)</b>
<input type="checkbox"/> The reported costs are without VAT.
<input type="checkbox"/> VAT is not recoverable and is therefore included in the reported costs. (Proof of non-recoverability attached)

Date and signature

May 15, 2017



**IL DIRETTORE**  
(Prof. BOBILKIN) FURESI

## FR03 - Participant Cost Statement

### Participant Cost Statement Summary

<b>Name of participant reporting own costs:</b>	CEREN
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Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		119 954,89	EC-contribution*	93 700,00	70,04%
Travel and subsistence		1 655,86	Contribution of the <b>Coordinating beneficiary**</b>		0,00%
Equipment		0,00	Contribution of the <b>Associated Beneficiary</b> reporting own costs	40 082,90	29,96%
Sub-contracting / External assistance		0,00	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		3 420,00	Other sources of funding	0,00	0,00%
Indirect costs / overheads	7,00%	8 752,15	Direct revenues	0,00	0,00%
<b>TOTAL ELIGIBLE COSTS</b>		<b>133 782,90</b>	<b>TOTAL</b>	<b>133 782,90</b>	

\* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower! \*\*reporting own costs or contributing to Associated Beneficiary's costs

#### For information only

Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0,00
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#### VAT-status (please tick appropriate box)

The reported costs are without VAT.

VAT is not recoverable and is therefore included in the reported costs. (Proof of non-recoverability attached)

POUR LE PRESIDENT DE L'ENTENTE  
Et par Délégation  
Le Directeur Général

**Date and signature**

29/05/2017

Colonel Jean-Marc BEDOGNÉ