



E-PreS: Monitoring and Evaluation of Natural Hazard Preparedness at School Environments

Project Acronym: E-PreS	
Contract Number: ECHO/SUB/2014/698447	
Starting date:	Jan 1st 2015
Ending date:	Dec 31^{2t}, 2016

Deliverable Number and Title	DA5: Final progress report		
Deliverable File	E_Pres_DA5	Deliverable type¹	R
Contact Person	Stathes Hadjiefthymiades	Date	April, 2 nd 2017
Organization	UoA	E-Mail	shadj@di.uoa.gr

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¹ Deliverable type: P(Prototype), R (Report), O (Other)



2. General Reminder

The E-PreS project (Monitoring and Evaluation of Natural Hazard Preparedness at School Environment) addressed the prevention phase against natural hazards. The main goal of E-PreS was the design and evaluation of drills and exercises that are an extremely important part of emergencies mitigation. It aimed to help school staff and students to understand any hazard effect and be prepared to react appropriately. The main objectives of the project were:

- (1) to identify, share and implement best practices and methodologies gained from previous EU projects and partners activities,
- (2) to create smart tools which define, simulate and evaluate all hazards emergency steps and be customized to the unique district, school, and campus,
- (3) to involve the collaboration of interested parties and (4) to include pupils with disabilities and special needs.

The E-PreS project comprised a partnership of six partners from four different countries. The project participants were the following organizations:

Coordinator (CO)	National and Kapodistrian University of Athens (UoA), Greece
Associated Beneficiary (AB1)	Earthquake Planning and Protection Organisation (EPPO), Greece
Associated beneficiary (AB2)	University of Crete-National History Museum of Crete (UoC-NHMC), Greece
Associated beneficiary (AB3)	Istituto Nazionale di Geofisica e Vulcanologia sezione di Napoli Osservatorio Vesuviano (Vesuvius Observatory), Italy
Associated beneficiary (AB4)	Center for Educational Initiatives Association (CEI), Bulgaria
Associated beneficiary (AB5)	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development, "URBAN-INCERC" (INCD-"URBAN INCERC"), Romania

The project came up with a holistic approach for the real-time evaluation of prevention measures involving different categories of actors, districts, steps and metrics. By providing a clear architecture, precisely defining the roles of actors and a common multi-language portal and in-field dynamic assessment module, E-PreS allows newcomers to add new steps during a drill or training wherever the necessary spatial and sensor information is available. This drastically facilitates value-addition to the knowledge extraction about the outcome of a drill and shortens the time to do so. The project has impact in terms of:

- Facilitating the drill preparations and checklist for developing an evacuation plan by determining what steps need to be taken and in what order. The aforementioned involves the insertion of the pre-defined evacuation guidelines that should be followed upon a hazard event occurrence, e.g., the residents of room X should move through the corridor K, proceed to gate L and use the external emergency stairway to the ground floor. Each plan is adaptable to the unique district and user requirements.
- Testing the total emergency response plan as a "simulated" exercise. When the drill is kick-started, the system monitors the flow of human subjects through predefined checkpoints and keeps detailed logs on the training activity.
- Increasing the effectiveness and functioning of prevention plan. A supervisor is able to specify a priori the metrics and the baseline figures for a successful exercise (e.g., the human flux through gate A should never reach the number of X persons/min, the time from room Y to mustering station W should be less than C min). After the performance of the drill the recorded activity is assessed against the adopted metrics/figures. The output of this activity serves as a scoreboard for the fulfillment of the drill objectives and can be used for evacuation procedure fine tuning.

3. General Summary of Project Implementation Process

The project was divided into 5 tasks with the following objectives:

	Task Name	Start date	End date	Action	Means Involved
A	Project management	01/01/2015	31/12/2016	Coordinating management activities , communicating with partners and the EC, ensuring quality, monitoring project status, financial administration.	Setting up project steering committee, establishing mailing lists, review processes, financial contact person.
B	User needs	01/01/2015	31/08/2015	Analysis of User Needs under which best practices and results of similar initiatives for disasters studied, evaluated and adapted to the needs of participating countries.	Analysis of the needs, intentions and goals of the participating institutions; definition of actors and roles; studies on the special needs for each participating country (e.g., legislation, language).
C	System design, implementation and testing	01/07/2015	30/06/2016	System Design and Development action focus on the design of the framework and tools that facilitate the setup, monitoring and assessment of hazard-related drills in buildings and open, confined areas.	System Design and Development in which the in-field dynamic assessment module and the evaluation web portal were implemented and tested.
D	Pilot demonstrations and system validation	01/05/2016	31/12/2016	Pilot Demonstration and System Validation monitored and evaluated E-PreS tools and activities during trials (involving school staff, students and experts).	Real trials for three types of hazard: <i>earthquake, flood and volcanic eruption</i> . Evaluation reports on tools and results gathered during all phases of project implementation.
E	Dissemination	01/01/2015	31/12/2016	Development of a Dissemination Strategy incorporated activities like publications, press releases, meetings and a web-site to host the outcomes of the project and to ensure the sharing of information.	Preparation of the Plan; Project web-page, brochure and newsletter; publications; press releases and announcements.

The project was executed according to the plan, with a minor delay of the demonstration drills. The drills were slightly delayed due to the fact that the schools were closed during the summer, making staff unreachable. However, all the drills were concluded by November 2016 and the project was essentially completed by December, 31st, 2106.

The project resources consumption ran according to the plan, as did the submission of the deliverables. The project team had some additions and modifications due to the technical qualifications the team needed. Some experts were added to provide insight into technical issues. The budget was mostly followed, with minor budget shifts between cost categories to facilitate the project needs.

4. Evaluation of Project Management/Implementation Process

All the project partners communicated for the project needs through the established mailing list, telephone conferences or video conferences whenever needed. Multiple iterations of the communication process were sometimes necessary to facilitate the necessary common understanding and enforce best practices. The project deliverables were evaluated through an internal process by multiple project partners before finalization. Comments were reviewed by the responsible partners and in most cases incorporated in the final deliverable.

There has been an influx of specific technical developers in the project team, with the necessary skills to support the highly technical scope of the project. Their incorporation in the project team was successful and the expertise they brought helped keeping the project on track. Some experts were also necessary for the final phase of the project, where highly specialized trials needed to be performed.

Cooperation/Interaction with the Commission ran smoothly.

5. Activities

The scheduled activities of the project were executed according to the plan. The website of the project is fully operational and maintained by NKUA. The project logo is used throughout the website, the user interface for the software developed in the project, and all the project deliverables. The twitter and the linkedin account are operational. NHMC presented the objectives of E-PreS project in a various reports and articles, emphasizing the impact in drill evaluation and preparedness at school environments. In addition, NHMC and EPPO communicated project’s activities through media reports, training seminars, educational projects (See Annex 2). Furthermore E-PreS project was demonstrated in PatrasIQ 2016 (<http://www.patrasiq.gr>) from April, 15th through April, 17th 2016 and drew the attention of the media and the newspapers. The participation was properly announced and covered in the project’s twitter account. E-PreS was presented at the “Euroinvent 2016” and was awarded the gold medal. Moreover, the project was presented at the ICT-DM 2016 and the paper was published at the ieeexplore digital library.

6. Presentation of the technical results and deliverables

The E-PreS project consisted of five tasks, namely A through E, each of which contained several actions and the resulting deliverables:

<u>Task</u>	<u>Action</u>	<u>Deliverable</u>
A: Project Management	A.1: Project steering committee board activities A.2: Project controlling and auditing A.3: End-user activities	DA.1: Risk analysis and prevention plan DA.2: Report on end-users and their activities DA.3: Intermediate progress report A DA.4: Intermediate progress report B DA.5: Final project report
B: User Needs	B.1: Refinement of the technological state-of-the-art B.2: User requirements specification and analysis B.3: Development of demonstration scenarios	DB.1: State-of-the-art technologies and refinements DB.2: Report on user needs and requirements DB.3: Proof-of-concept scenarios

<p>C: System design, implementation and testing</p>	<p>C.1: Detailed design of the E-PreS architecture C.2: Development of the E-PreS evaluation web portal C.3: Development of the E-PreS in- field dynamic assessment module C.4: E-PreS system integration and testing</p>	<p>DC.1: Detailed design of the E-PreS architecture. DC.2: Prototype implementation of the E-PreS evaluation web portal DC.3: Prototype implementation of the E-PreS in-field dynamic assessment module DC.4: E-PreS Integration report and testing</p>
<p>D: Pilot demonstration and system validation</p>	<p>D.1: Field Trials: Protection against earthquake hazard in the school environment D.2: Field Trials: Protection against flood hazard in the school environment D.3: Field Trials: Protection against volcanic hazard in the school environment D.4: Training courses D.5: System Validation</p>	<p>DD.1a/b/c: Report on E-PreS field trials DD.2: E-PreS training courses DD.3: System validation according to all trials</p>
<p>E: Dissemination</p>	<p>E.1: Dissemination strategy and plan E.2: Project web-site E.3: Corporate communication activities E.4: Publications and Press releases</p>	<p>DE.1: Dissemination Plan DE.2: E-PreS web-site DE.3: E-PreS brochures and e-Newsletter (6 issues) DE.4: Guidelines and training materials DE.5: Publications and press releases DE.6: Video-dossier</p>

Most of the deliverables were submitted in electronic form, apart from DE.6 which required a physical means (a DVD). Most of the deliverables were submitted in time with the exception of DD.1 and DD.2 as well as the current DA.5 which were delayed due to schools being on vacation during summer time.

7. Evaluation of the technical results and deliverables

UoA examined various solutions, in order to meet E-PreS requirements. Sample RFID equipment has been purchased and extensively tested to ensure that the final solution will satisfy all present and future user need combining ease of use, durability, reliability and rapid development of the antennas and related readers. After testing various configurations, the choice was made to use UHF RFID USB Module for EU-Band antenna-reader combined with a number of raspberry cards along with Wi-Fi modules and a laptop computer which acts as an access point and provides the necessary storage and computing resources to the system.

In addition, E-PreS sophisticated system architecture was designed, as part of deliverable C1. Based on the design, the system is capable of real time processing and evaluation of evacuation drills. After each drill execution, a detailed report with all the metrics can be presented to the designer of the drill for later investigation and fine tuning. The deliverable splits the whole system into components and provides comprehensive description for each. UML diagrams are extensively used to represent the architectural and functional design of the E-PreS system, the core and peripherals components as well as the interdependencies between them. Various solutions

from fields like big data analysis and real time processing were tested before the final decision. The architecture was implemented successfully in virtual environment with low specifications and the results were promising.

After extensive field testing, the robustness, ease of use and reliability of the system was proven and is now a vital tool in the hands of trained personnel to use and incorporate it in building evacuation procedures. Although the target of the project was the school community and three types of hazard (earthquake, flood and volcanic eruption), it soon became obvious that the developed system has a broader impact in all kinds of building evacuation planning.

8. Follow-up

The E-PreS project built a prototype system that can extract quite useful information from drill exercises. Its designed expendability can lead to more research and fine-tuning of evacuation guidelines, verification of simulations and drills, and finally to more effective evacuation procedures customized to individual buildings and building population.

STANDARD PAYMENT REQUEST AND FINANCIAL STATEMENT

Grant agreement number	ECHO/SUB/2014/693261
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Legal name of the beneficiary	National and Kapodistrian University of Athens
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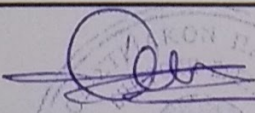
Address	Chr. Lada 6, 10561, Athens, Greece
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Reference period	Eligibility	From: 01/01/2015	To: 31/12/2016
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Banking details:	Name and address of the bank	ALPHA BANK AE
	Bank account n°	802002001000227
	I.B.A.N	GR0301408020802002001000227
	Bank account holder	Special Account for Research Grants of the National and Kapodistrian University of Athens
	Payment reference (if necessary)	

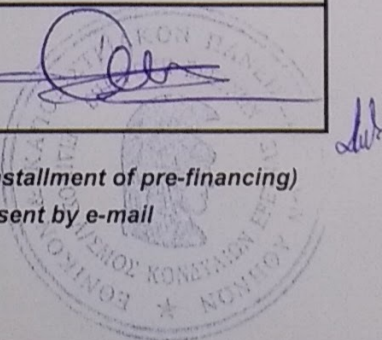
EU contribution requested	407329 EUR
Pre-financing received	271961 EUR
Balance payment requested	135368 EUR

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:	G. Kanelis
Title:	
Function:	Head of Supporting Programmes Department
Date:	11/4/2017
Signature:	

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		394.407,82	EC contribution*	407.329,05	74,99%
B: Travel and subsistence		25.523,55	Contribution of the coordinating beneficiary	54.884,71	10,10%
C: Equipment		83.722,12	Contribution of the associated beneficiary/ies	80.957,98	14,90%
D: Sub-contracting		0,00	Other sources of funding	0,00	0,00%
E: Other direct costs		3.983,68	Direct revenues	0,00	0,00%
Indirect costs / overheads	7,00%	35.534,57			
TOTAL ELIGIBLE COSTS		543.171,74	TOTAL	543.171,74	

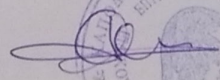

* eligible costs x EC-funding rate OR maximum EC-contribution, whatever is lower!

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

Date and signature

11/4/2017

Head of Supporting Programmes Department



 G. Kanelis

Participant Cost Statement Summary

Participant Cost Statement Summary					
Name of participant reporting own costs:					
Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		196.351,96	EC-contribution*	164.654,15	75,00%
Travel and subsistence		6.250,08	Contribution of the Coordinating beneficiary**	54.884,71	25,00%
Equipment		1.770,00	Contribution of the Associated Beneficiary reporting own costs	0,00	0,00%
Sub-contracting / External assistance		0,00	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		804,46	Other sources of funding	0,00	0,00%
Indirect costs / overheads	7,00%	14.362,36	Direct revenues	0,00	0,00%
TOTAL ELIGIBLE COSTS		219.538,86	TOTAL	219.538,86	

* 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

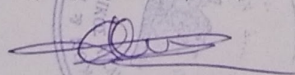
Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0,00
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VAT-status (please tick appropriate box)

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

Date and signature

11/4/2017
Head of Supporting Programmes Department.



G. Kanelis



Participant Cost Statement Summary

Name of participant reporting own costs:						
Part A: Eligible cost categories		Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel			66.568,43	EC-contribution*	84.331,06	74,96%
Travel and subsistence			12.817,34	Contribution of the Coordinating beneficiary**	0,00	0,00%
Equipment			23.598,10	Contribution of the Associated Beneficiary reporting own costs	28.168,43	25,04%
Sub-contracting / External assistance			0,00	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs			2.155,84	Other sources of funding	0,00	0,00%
Indirect costs / overheads		7,00%	7.359,78	Direct revenues	0,00	0,00%
TOTAL ELIGIBLE COSTS			112.499,49	TOTAL	112.499,49	

* 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)

Date and signature



TEIPAE EPEYAGIOΣ
Εργαστήρια ΕΛΚΕ

Participant Cost Statement Summary

Name of participant reporting own costs:	NHMC-UoC
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Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		30.151,49	EC-contribution*	38.876,24	74,99%
Travel and subsistence		1.627,49	Contribution of the Coordinating beneficiary**		0,00%
Equipment		15.674,31	Contribution of the Associated Beneficiary reporting own costs	12.967,02	25,01%
Sub-contracting / External assistance		0,00	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		998,38	Other sources of funding	0,00	0,00%
Indirect costs / overheads	7,00%	3.391,59	Direct revenues	0,00	0,00%
TOTAL ELIGIBLE COSTS		51.843,26	TOTAL	51.843,26	

* 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 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)

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΑΡΛΙΣ
ΑΟΕ ΠΡΑΞΙΝΟΣ
ΝΟΜΟΣ ΔΕΛΦΙΝΩΝ

Date and signature

Participant Cost Statement Summary					
Name of participant reporting own costs:			INCD		
Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		40,360.99	EC-contribution*	42,918.91	75.00%
Travel and subsistence		521.57	Contribution of the Coordinating beneficiary**		0.00%
Equipment		12,598.94	Contribution of the Associated Beneficiary reporting own costs	14,306.30	25.00%
Sub-contracting / External assistance		0.00	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%	3,743.71	Direct revenues	0.00	0.00%
TOTAL ELIGIBLE COSTS		57,225.21	TOTAL	57,225.21	

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

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Estimation of "in kind" contributions / costs not included in the budget (ineligible costs)	0.00

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)



Date and signature

Vasile MEITA

General Manager URBAN-INCERC

28-Mar-2017



Participant Cost Statement Summary

Name of participant reporting own costs: _____

Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		30,435.00	EC-contribution*	34,801.33	75.00%
Travel and subsistence		2,403.34	Contribution of the Coordinating beneficiary**		0.00%
Equipment		10,527.81	Contribution of the Associated Beneficiary reporting own costs	11,600.44	25.00%
Sub-contracting / External assistance		0.00	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%	3,035.63	Direct revenues	0.00	0.00%
TOTAL ELIGIBLE COSTS		46,401.78	TOTAL	46,401.78	

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

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Date and signature

17.03.2017



Participant Cost Statement Summary

Name of participant reporting own costs:	ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA - OSSERVATORIO VESUVIANO
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Part A: Eligible cost categories	Rate %	€	Part B: Financing Plan	€	% of eligible costs
Personnel		30.539,95	EC-contribution*	41.747,37	75,00%
Travel and subsistence		1.903,73	Contribution of the Coordinating beneficiary**		0,00%
Equipment		19.552,96	Contribution of the Associated Beneficiary reporting own costs	13.915,79	25,00%
Sub-contracting / External assistance		0,00	Contribution of other associated beneficiary/ies	0,00	0,00%
Other direct costs		25,00	Other sources of funding	0,00	0,00%
Indirect costs / overheads	7,00%	3.641,51	Direct revenues	0,00	0,00%
TOTAL ELIGIBLE COSTS		55.663,15	TOTAL	55.663,15	

* 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 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)

Date and signature

20.03.2017 *Paola Nove*