Project no. 607865

S-HELP: Securing Health.Emergency.Learning.Planning

Development of decision
support tools for improving preparedness
and response of Health Services
involved in emergency situations

Collaborative Project
FP7-SEC-2013-1

www.fp7-shelp.eu

Project Periodic Report

Period 1 – Publishable Summary

Period covered: from 01/02/2014 to 31/07/2015

Start date of project: 01/02/2014 Duration: 36 months

Panel	Partner		S-HELP Role		Submitted		Reviewed
Lead Authors	Sheila O'Riordan, Silvia Planell Conrado, UCC-BIS		Senior Researcher, Research Assistant		21/08/2015		
Reviewer	Maria Rochford, FAC		WP3 Leader				24/08/15
Approved	Karen Neville		S-HELP PI		24/08/15		
Check	Quality	/	Risk	/	Ethics	/	

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1 Summary Description of the S-HELP Project Context and Objectives

The central aim of *S-HELP* (**S**ecuring **H**ealth **E**mergency **L**earning and **P**lanning) project is to develop and deliver a holistic framed approach to healthcare preparedness, response and recovery. *S-HELP* is a people, process and technological solution to emergency situations.

Through **leveraging decision support (DS)**, the proposed *S-HELP* solution will extend beyond serving the requirements of the call "SEC-2013.4.1-4". It will advance the knowledge base required for the development of a range of Decision Support (DS) tools and a Decision Support System (DSS) for the management of all Emergency Medicine activities.

The objectives of the S-HELP project are the following:

- Develop a holistic and integrated framework to enable a phased approach to the development of training, performance and validation methods coupled with the development of a platform to host their application (WP2).
- Define an interoperability standard to enable communication and coordination across different geographical areas and cultural settings (WP2).
- Facilitate a collaborative end user and supporting partner driven solution to meet the needs of different users (emergency medicine, management, response and decision-makers) from 4 countries in Europe and beyond (WP3, WP6).
- Be conducive to complementarities with other EU FP7 projects, not least COBACORE, HARMONISE of which FAC is a partner) and CATO (in which Vector Command is involved) (WP3, WP4).
- Define and apply an interoperability standard for multiple agencies jointly responding to a disaster (WP2).
- Advance the design and application beyond the state-of-the-art of current available solutions, to improve preparedness, response and recovery in emergency situations (WP3, WP4, WP5, WP6).
- Deliver decision supporting tools for emergency preparedness, response and recovery, tested, evaluated and enhanced through quality, end user designed emergency scenarios (WP4, WP5).
- The tools will identify and incorporate ethical implications that may arise from quarantine, patient confidentiality, limited vaccine stocks, and limited access to high dependency or ventilation facilities (WP2).
- Advocate the dissemination of the project results to different stakeholders and promote significant exploitation programme to capitalise on marketing opportunities (WP7).

2 Summary of Work Performed during Period 1

The workplan to achieve the objectives of the project has been subdivided into 7 interlinked work packages (WP):

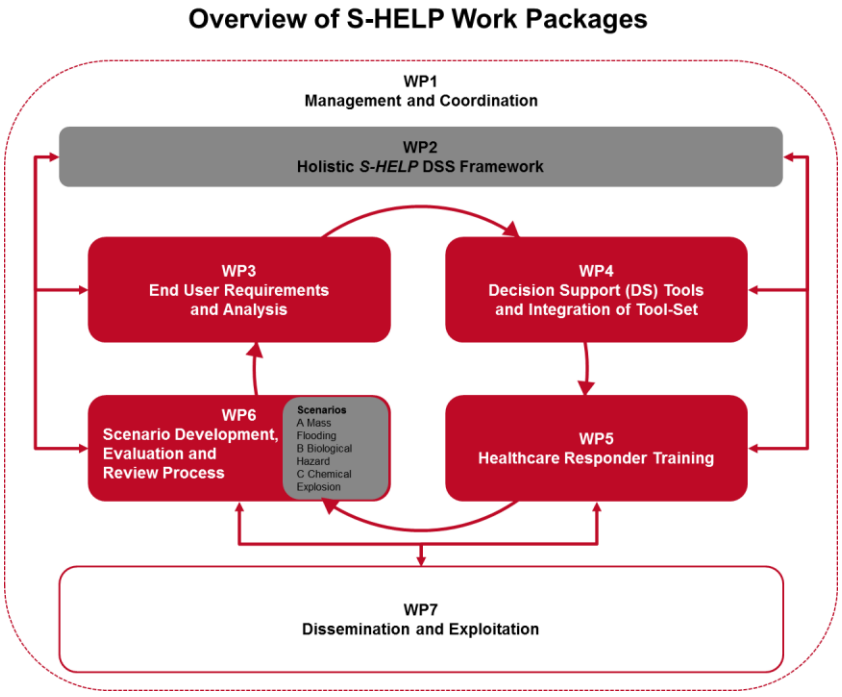


FIGURE 1: S-HELP WORK PACKAGE FRAMEWORK

Work package 1	**Management and Coordination**		
Leader:	UCC-BIS	Start month:	1
Participants:	FAC (M16 to M36) ACCEL (1-15)	End month:	36

The overall objective of WP1 is to manage the 3-year capability project effectively and to coordinate its multi-disciplinary and cross-sectoral consortium efficiently. The financial and administrative coordination of the project will be the responsibility of the coordinator (UCC-BIS) who will act as the legal entity responsible for all contractual arrangements and reporting to the EC.

Achieved M1-M18 Deliverables:

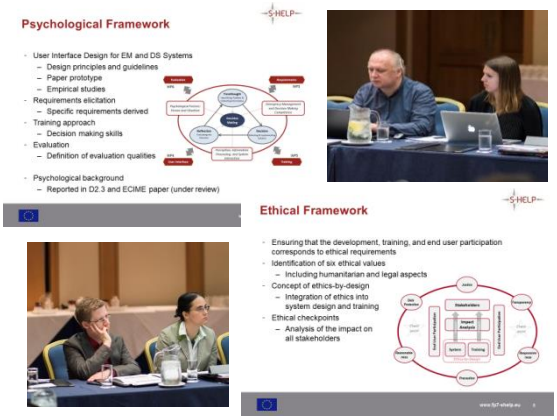
D1.1 - Kick-off meeting & minutes
D1.2 - Project handbook
D1.3 - S-HELP Ethics management
D1.4 - 1stConsortium meeting & minutes
D1.5 - 1st Progress and Project status information
D1.6 - Risk Assessment
D1.4. - 1st consortium meeting & minutes
D1.7 - 2nd consortium meeting & minutes
D1.8 - 3rd consortium meeting & minutes

Work package 2	**Holistic S-HELP Decision Support System (DSS) Framework**		
Leader:	UNIVIE	Start month:	1
Participants:	UCC-BIS, MDA, FAC, HSE, LU, PHA, TUGraz, UNIVIE, VCL	End month:	36

This WP will create a framework and common taxonomy to inform and guide the scope and delivery of all Work Packages within the S-HELP project, with particular reference to enhancing collaboration between the S-HELP consortium partners, development of the solution and a coordinated approach.

Achieved M1-M18 Deliverables:

D2.1 Glossary of terms and definitions & common grounds and standards for interoperability
D2.2 Spatial database management system
D2.3 - Draft paper prototype user interfaces for effective cognitive processing during an emergency
D2.4 - Draft skills taxonomy template
D2.5 - Initial S-HELP draft framework
D2.6 - Draft report of risk communication mechanisms and standard
D2.7 - Draft resources taxonomy template
D2.8 - Draft of the S-HELP interoperability model



Work package 3	**End User Requirements and Analysis**		
Leader:	FAC	Start month:	1
Participants:	UCC-BIS, MDA, FAC, HSE, LU, PHA, TUGraz, VCL	End month:	18

The activities of WP3 are critical to the further development of the S-HELP solution in order to ensure that end user requirements can be addressed appropriately by WP4. It will, among other things, undertake a comprehensive analysis of stakeholder and end user needs.

Achieved M1-M18 Deliverables:

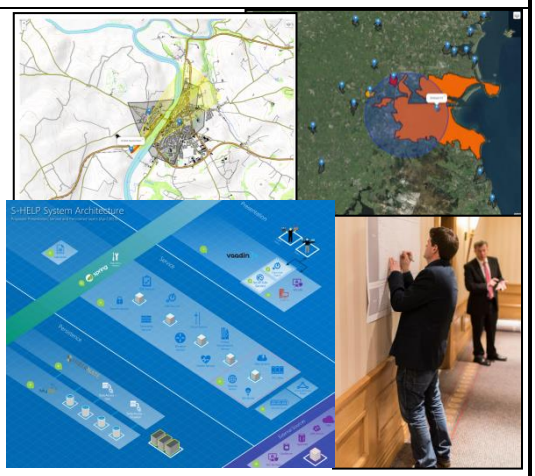
D3.1- End user requirements specifications
D3.2 - Commercially available tools and CSS software development specifications
D3.3 - Strategic, Tactical and Operational Matrix Prototype (STOMp)
D3.4 - Key Performance Indicators (KPIs)
D3.5 - Draft WP6 scenario plan

Work package 4	**Decision Support (DS) Tools and Integration of Tool-Set**		
Leader:	UCC-BIS	Start month:	6
Participants:	UCC-BIS, FAC, LU, TUGraz, VCL	End month:	36

The development of the S-HELP real-time dynamic Decision Support and collaboration tools for multi-factorial and multi-agency scenario building and incident response will enhance preparation, planning and response to emergencies. Decision-making will be enhanced, supported and evaluated to enable reuse and lessons-learned.
The innovative tool-box will facilitate the growth of the S-HELP solution. Use and reuse of S-HELP will increase the functionality and adaptability of the solution for cascading incidents and what-if preparation and practical planning.

Achieved M1-M18 Deliverables:

D4.1 Configured CSS software
D4.2 Repository for data-sets

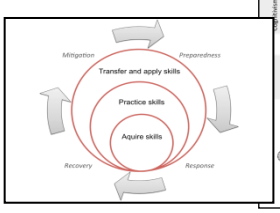


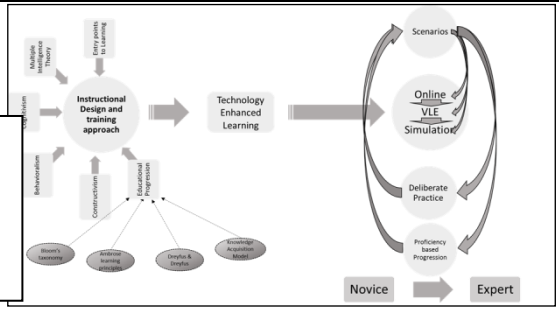
Work package 5	**Healthcare Responder Training**		
Leader:	UCC-ASSERT	Start month:	13
Participants:	UCC, MDA, FAC, HSE, LU, PHA, TUGraz, UNIVIE, VCL	End month:	36

This WP will design the training programme, develop training courses and their contents. It implements the training programme through different learning tools and assesses the skills gained based on an end user feedback and training evaluation.

Achieved M1-M18 Deliverables:

D5.1 - End user training programme concept





Work package 6	**Scenario Development, Evaluation and Review Process**		
Leader:	HSE	Start month:	19
Participants:	UCC-BIS, MDA, FAC, HSE, PHA, TUGraz, UNIVIE, VCL	End month:	36

WP 6 will use the S-HELP framework to design 4 scenarios. The DSS tool set and training modules will be tested and the performance and impact of the S-HELP solution will be assessed.

Ongoing M19-M36 Deliverables:

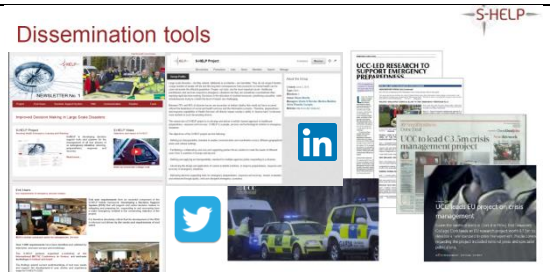
D6.1 Guidelines for scenario design, implementation and evaluation (M24) - building upon D3.5 Draft WP6 scenario plan

Work package 7	**Dissemination and Exploitation**		
Leader:	FAC (M16 to M36) ACCEL (1-15)	Start month:	1
Participants:	UCC-BIS, LU, TUGraz, UNIVIE	End month:	36

In this WP, the general communication tools will be developed, supporting a scientific dissemination of the S-HELP results as well as providing information for the wider public. Through a collaboration with EuSEM and other key players in the Emergency Medicine field; the capability of the S-HELP tools and DSS will be disseminated to end users and policy-makers.

Achieved M1-M18 Deliverables:

D7.1 - Website
D7.2 - Dissemination and Exploitation Plan
D7.3 - 1st dissemination activity review
D7.4 - 1st thematic electronic newsletter
D7.5 - 1st End-User Round Table (M19)



3 The expected final results and their potential impact and use

The *S-HELP* Decision Support System brings major benefits to emergency healthcare management, from learning and preparing for emergency incidents and analysing threats, to post evaluation, reporting and logistics management. It provides a unique mechanism to assist stakeholders and end users to work together for co-ordinated, effective, evidence based decisions at all stages of EM including before an incident takes place, during the incident, immediately following an incident, and later post incident stages involving evaluation and the communication of information to the public.

S-HELP will enhance the protection of public health and common grounds for interoperability by significantly advancing the existing knowledge base required for the development of next generation Decision Support (DS) tools and a user-centred Decision Support System (DSS) for better Preparedness, rapid Response and coordinated Re-covery in emergency situations.

It will offer evidence-based solutions to improve Health Services performance in emergency management, developing a holistic framework to guide stakeholder needs analysis, and integrating an advanced DS tool-set.

The project will execute multi-scenario based end user training, alongside 'what-if' analysis. It will simulate 3 multi-factorial and multi-agency scenarios (a chemical explosion; mass flooding; regional bio-hazard), and model the situational and projected evolution of the 3 emergencies to communicate coordinated and collaborative problem solving across agencies. S-HELP will manage end-user knowledge and validate performance in order to use project DS tools and solutions effectively in preparing for, responding to and recovering from an incident.

S-HELP will disseminate and exploit the DS tools and solution to complement the role of Health Services in emergency situations.

S-HELP will significantly advance the current state-of-the-art in decision support for Health Services, benefitting from an end-user driven consortium with leading health research, technology and commercial experts.

Deliverables Impacts Sample

- ✓ Identification of main emergency management (EM) stakeholder groups (donors, individuals, international organizations, media, military, non-governmental organizations, private sector, and public sector) including their common grounds.
- ✓ Classification of main groups of EM responders.
- ✓ Comprehensive analysis of key EM interventions/tasks based on the international literature and practice.
- ✓ Classification of the EM interventions/tasks in preparedness, response, and recovery activities.
- ✓ Investigation of EU disaster response tools regarding type, availability, start of operation, self-sufficiency, and operation time.
- ✓ Illustration of which EM interventions/tasks can be covered by EU disaster response tools.

- ✓ Development of a skill taxonomy template by interlinking EM interventions/tasks and EM responders/skills.
- ✓ Allows an iterative development process for the S-HELP DSS. An ethics-by-design methodological approach will be established within the S-HELP constrict including the DSS design component.
- ✓ Places the cognitive needs of stakeholders at the forefront of the development process to ensure that rapidly changing emergency situations will be analysed to determine the interface design.
- ✓ D3.5 is a crucial part of the S-HELP project The content of this deliverable will:
- ✓ Investigate and present aids and tools which will guide the process of scenario design.
- ✓ Uses the results of previous deliverables (D3.1, D2.3, D2.4, D2.7) to guide the scenario design process.
- ✓ Guide the scenario development process, the scenarios will be used to train potential users and test the effectiveness of the DSS tool itself.
- ✓ Ease the creation of realistic scenarios presenting different alternate futures in each of the reference scenarios.

4 Address of the Public Website

http://www.fp7-shelp.eu/

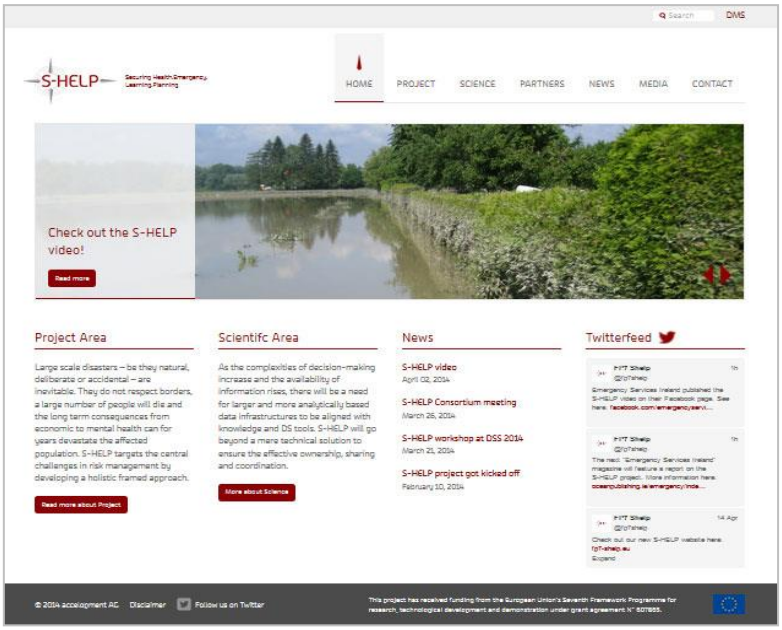
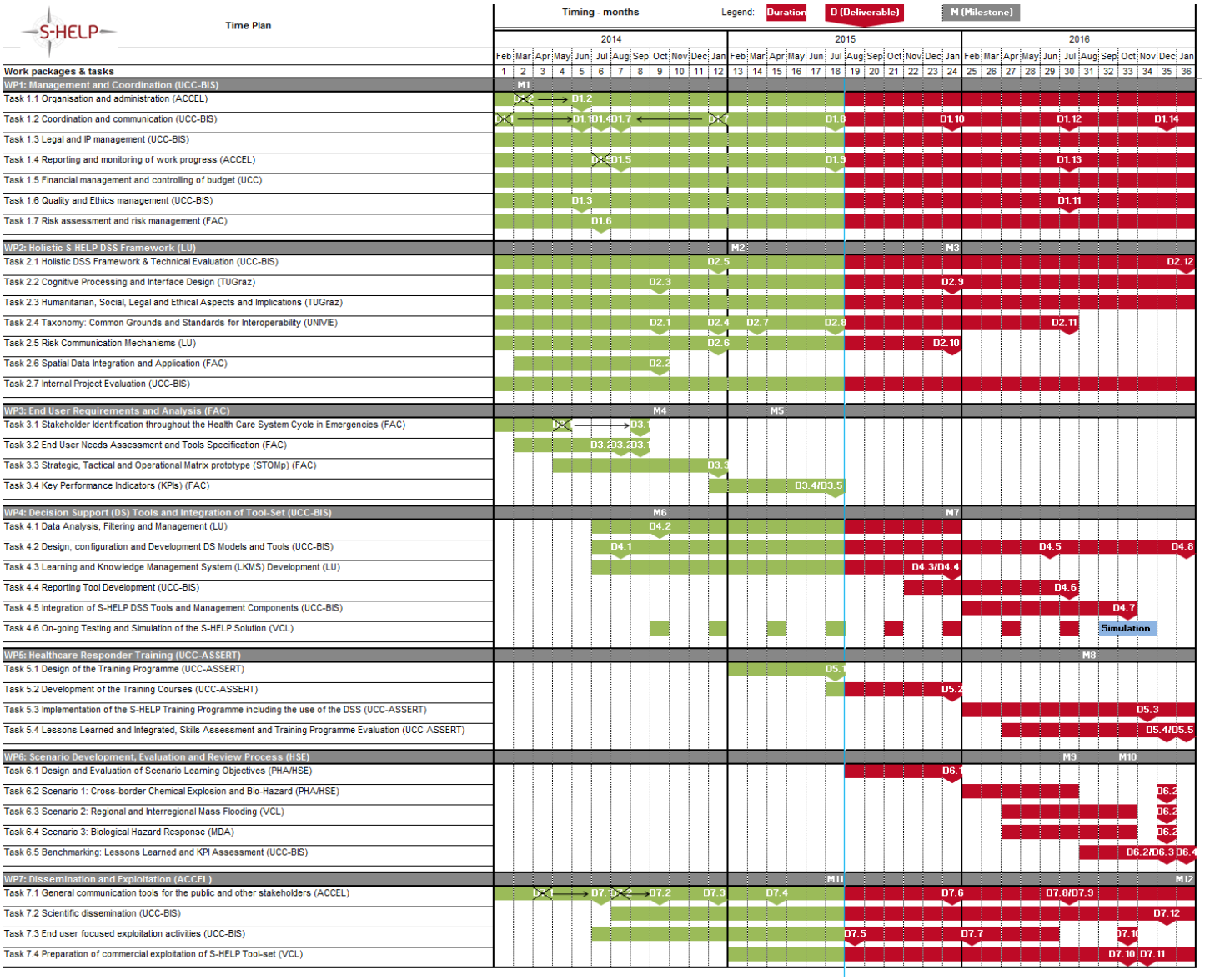


FIGURE 2 S-HELP WEBSITE

Annex 1 Project planning and status – GANTT chart



Annex 2: S-HELP Dissemination and External Feedback Activities

S-HELP project launch, 6 to 7 February 2014

For the first time the Consortium - consisting of 10 partners from 6 different countries - came together to get the S-HELP project started.

S-HELP Research Paper Wins 'Best Paper Award' at Top European Conference, June 2013

Dr Karen Neville, the S-HELP project coordinator and lead author of the paper titled: Supporting cross border emergency management decision-making received the Best Paper Award at the European Conference on Information Systems (ECIS 2013), in Utrecht, June 2013.

8th Irish Earth Observation Symposium, October 2014

On Friday 31 October, Dr. William Hynes (FAC) - one of our S-HELP partners - presented at the 8th Irish Earth Observation Symposium at National University of Ireland, Maynooth (NUIM). William's presentation explored "Real-time situational awareness for resource planning in disaster response and recovery" and discussed a range of European projects, emergency management and disaster-recovery research initiatives which could potentially benefit from the application of drones or Remotely Piloted Aircraft Systems (RPAS). Indeed, S-HELP (coordinated by Dr. Karen Neville of University College Cork) featured within the presentation and discussion, not least regarding the project's development of the Airborne Signal/satellite Utility Relay, Autonomous (ASURA) concept. ASURA is an open-source drone based communications solution that combines a satellite communications solution with an airborne wireless relay to provide reliable communications over a large area. The objective of ASURA is provide a capable platform using off the shelf materials and services at relatively low cost.

METSZ International Conference in Rhodes, Greece, October 2014

Project members presented an overview on the S-HELP project, as well as particular aspects which are the end user perspective, spatial information management, and the psychological framework. Additionally, a selection of requirements for various elements of the DST were presented to approximately 30 participants who then gave written feedback on them. This workshop was organised by the S-HELP project (under the lead of FAC).

Brussels Consortium Meeting, 4th and 5th November 2014

Tel Aviv Workshop and Knowledge Cafés: Isreal, 15th – 16th December 2014

S-HELP project partner Magen David Adom (MDA) hosted an end-user workshop in Tel Aviv, Israel from 15th – 16th December 2014. The workshop consisted of presentations on relevant project themes to familiarise workshop participants with the project's research areas, end-goals, and end-user requirements. Knowledge cafés were organised with about 30 participants from different health responders in Israel.

Matt Scott (UCC-BIS), Billy Hynes (FAC), and Tomer Kaplan (MDA) at the Tel Aviv Workshops in Isreal.

Partners from the S-HELP project facilitated the knowledge café discussions around topics such as end-user requirements for the development of decision support systems.

The 4th Annual Disaster Management and Human Health Conference, Istanbul, Turkey, 20th – 22nd May 2015

Alexis Amaye (UCC-BIS, Researcher), attended the 4th Annual Disaster Management and Human Health Conference in Istanbul, Turkey on the 20th – 22nd May 2015. A paper titled "Incorporating Mechanisms for Mindfulness in Designing Support Systems for Multiagency Interoperability in Emergency Management" was presented on the day. The paper outlines the theory of mindfulness and its application to the formation of emergency management preparedness processes which would support the development and design of information systems intended for obtaining and maintaining situational awareness. On the day, Alexis provided an overview of the S-HELP project identifying areas of potential intersection with research objectives

Round Table with Advisory Board: Dublin, Ireland, 6th May 2015.

The S-HELP consortium organised round table discussions with an advisory board on the 6th May in Dublin, Ireland. The round table discussions enabled S-HELP partners to share progress on work to date with consortium members and they facilitated the collection of expert feedback on the S-HELP project which enabled experience exchange and discussions on future development. External experts participated from areas such as standardisation, spatial mapping, real-time decision-making, scenario exercise design, risk communication and emergency management.

Dr Karen Neville introducing the round table sessions

Two sessions were also held with S-HELP developers and the end-users of the system. These sessions provided feedback on end-user user requirements and the development of an end-user scenario journey map.

Dr Andrew Pope and S-HELP developers in discussion with end-users

Screenshot during develop discussions

Business Continuity Institute Forum Meeting: Dublin, Ireland, 12th May 2015

Alexis Amaye (UCC-BIS Researcher) and John Kehoe (FAC) attended the semi-annual Business Continuity Institute (BCI) forum meeting on 12th May 2015 in The Printing House, Trinity College Dublin, Ireland. The meeting was co-hosted by Slándáil, an EU FP7 project, which provided S-Help an opportunity to engage with BCI members and project coordinator and principle investigator of the Slándáil project on topics such as: trust in emergency management, risk communication using social media, tools for use in data mining social media sources for disaster management purposes, and duty of care through ethical frameworks.

John Kehoe and Alexis Amaye at the BCI Forum Meeting in Dublin.

The forum is hosted quarterly by BCI and they expressed an interest with sponsoring future events with interested parties. In addition, another opportunity for dissemination and engagement was created through a second professional community in Ireland, namely, the Emergency Planning Society (EPS).

The European Conference on the Scholarship of Teaching and Learning (EuroSoTL), Cork, Ireland, 8th – 9th June 2015

The EuroSoTL conference was held at Brookfield Health Science Building, University College Cork, Cork, Ireland on 8th – 9th June, 2015. On the day, S-HELP partners, including Dr Nora McCarthy (WP5 Leader, ASSERT), Dr Karen Neville (S-HELP project coordinator, BIS), and Dr Andrew Pope (WP4 Leader, BIS) facilitated two expert 'training the trainers' sessions. The first session presented a paper titled the "Role of SoTL in Supporting Interdisciplinary Collaboration in EM Learning" and was led by Dr Karen Neville and Dr Andrew Pope. The second session presented a paper titled "A Cross Discipline Case Comparison in Designing Decision-making Training Models" and was led by Dr Nora McCarthy and Dr Karen Neville.

European Health Award, June 2015

S-HELP partners (UCC-BIS) applied to the EHA in June 2015 and received feedback from the award application that is being used to evaluate the S-HELP project and to make improvements for future work. The application to the EHA provided valuable feedback for the improvement of the S-HELP project based on the above criteria. Scores and brief comments were provided by the award evaluators and even though S-HELP was unsuccessful, the project did score very well in the evaluation. It was noted that S-HELP was in its early stages and due to a current lack of data could not meet some of the award criteria, however S-HELP was encouraged to reapply for future consideration.