



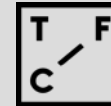
Supporting Cross Border Emergency Management Decision Making

Karen Neville

S-HELP Project Coordinator

Managing Director | Centre for Security & Emergency Management
Department of Business Information Systems | University College Cork

Organisation sponsors:





The S-HELP Project

- Creating and delivering a **holistic framed approach** to healthcare preparedness, response, and recovery
- Defining and applying an **interoperability standard** for multiple agencies jointly responding to a disaster
- Developing a user-centred **Decision Support (DS) tool and training system** for multi-agency decision making



Business Information Systems





Emergency Management Challenges

Volatile
events

Large
scale

High risk

Disasters

Natural/Planned



Emergency Management Challenges

Volatile
events

Large
scale

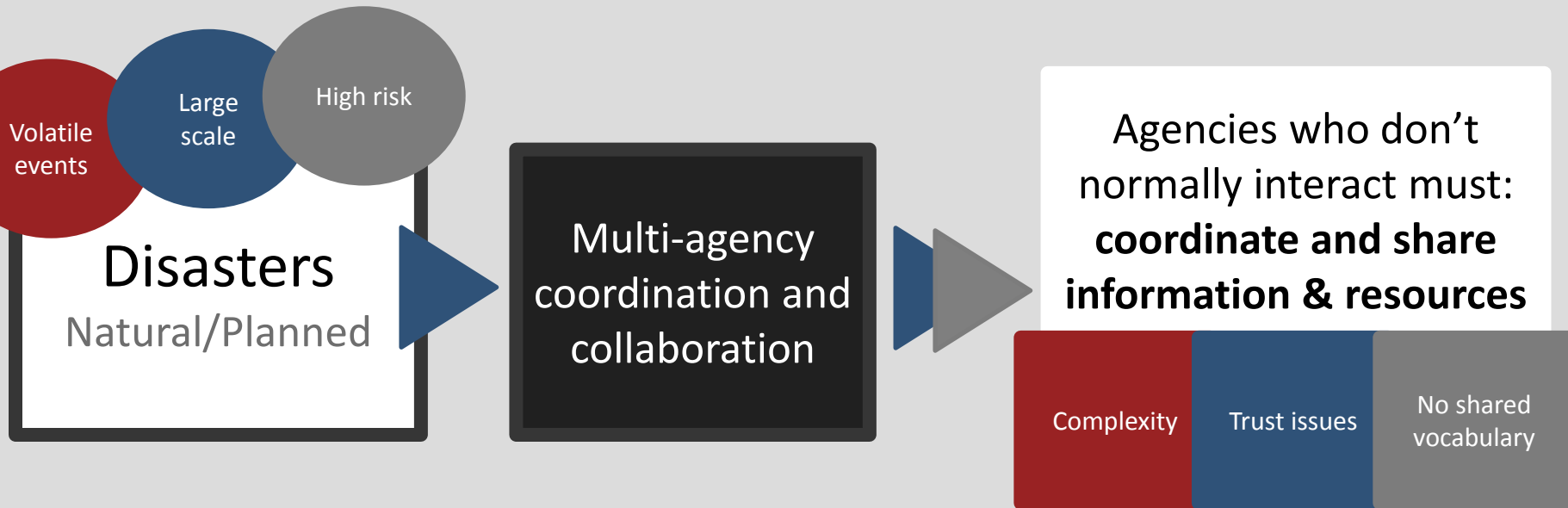
High risk

Disasters
Natural/Planned

Multi-agency
coordination and
collaboration



Emergency Management Challenges



Implementing S-HELP



Implementing S-HELP

WP2

Holistic *S-HELP* DSS Framework

Implementing S-HELP

WP2

Holistic *S-HELP* DSS Framework

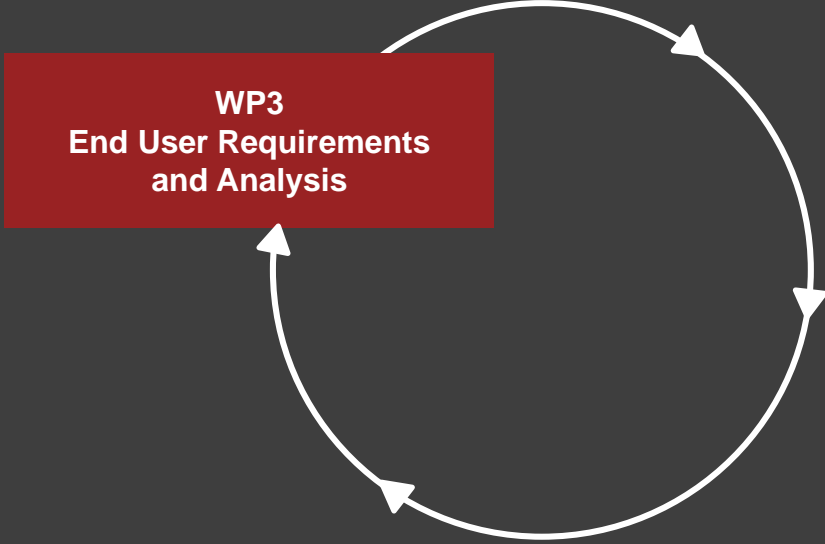
WP3

**End User Requirements
and Analysis**

Implementing S-HELP

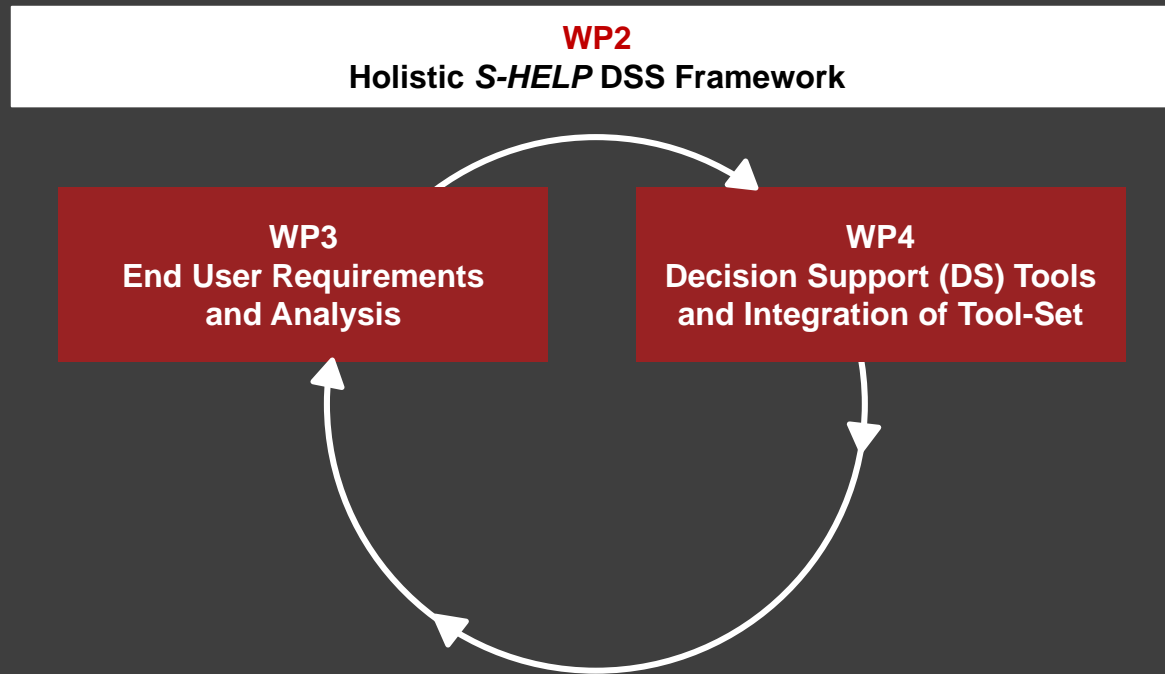
WP2
Holistic *S-HELP* DSS Framework

WP3
End User Requirements
and Analysis

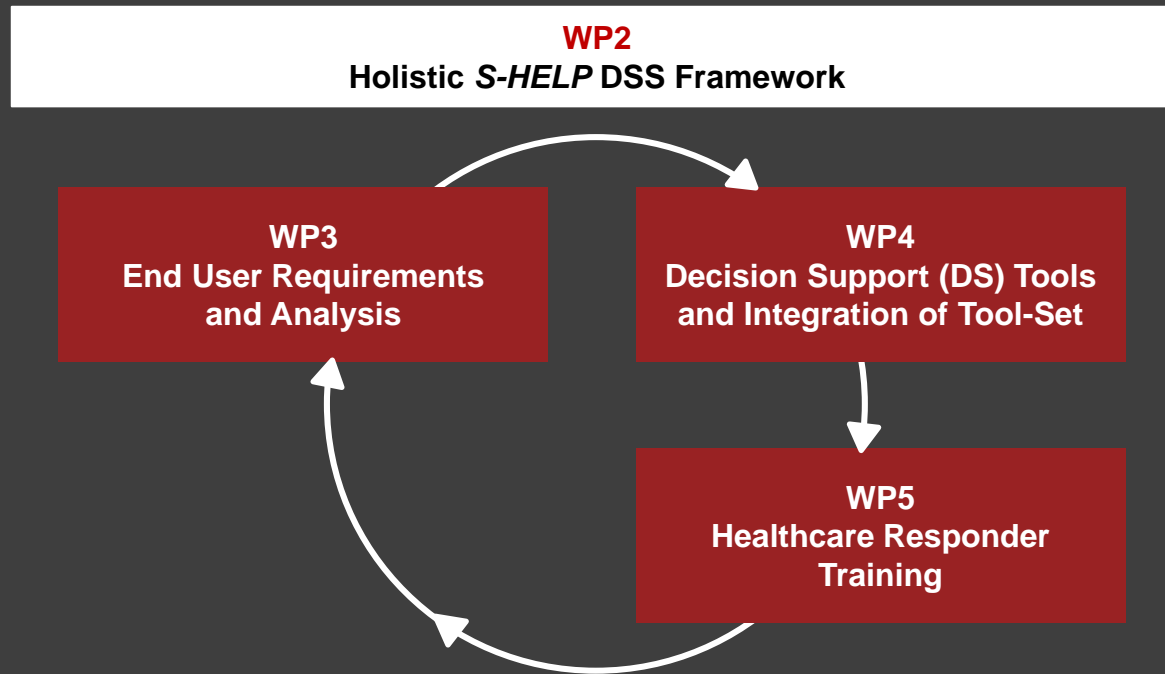


```
graph TD; WP2[WP2 Holistic S-HELP DSS Framework] --> WP3[WP3 End User Requirements and Analysis]; WP3 --> WP2;
```

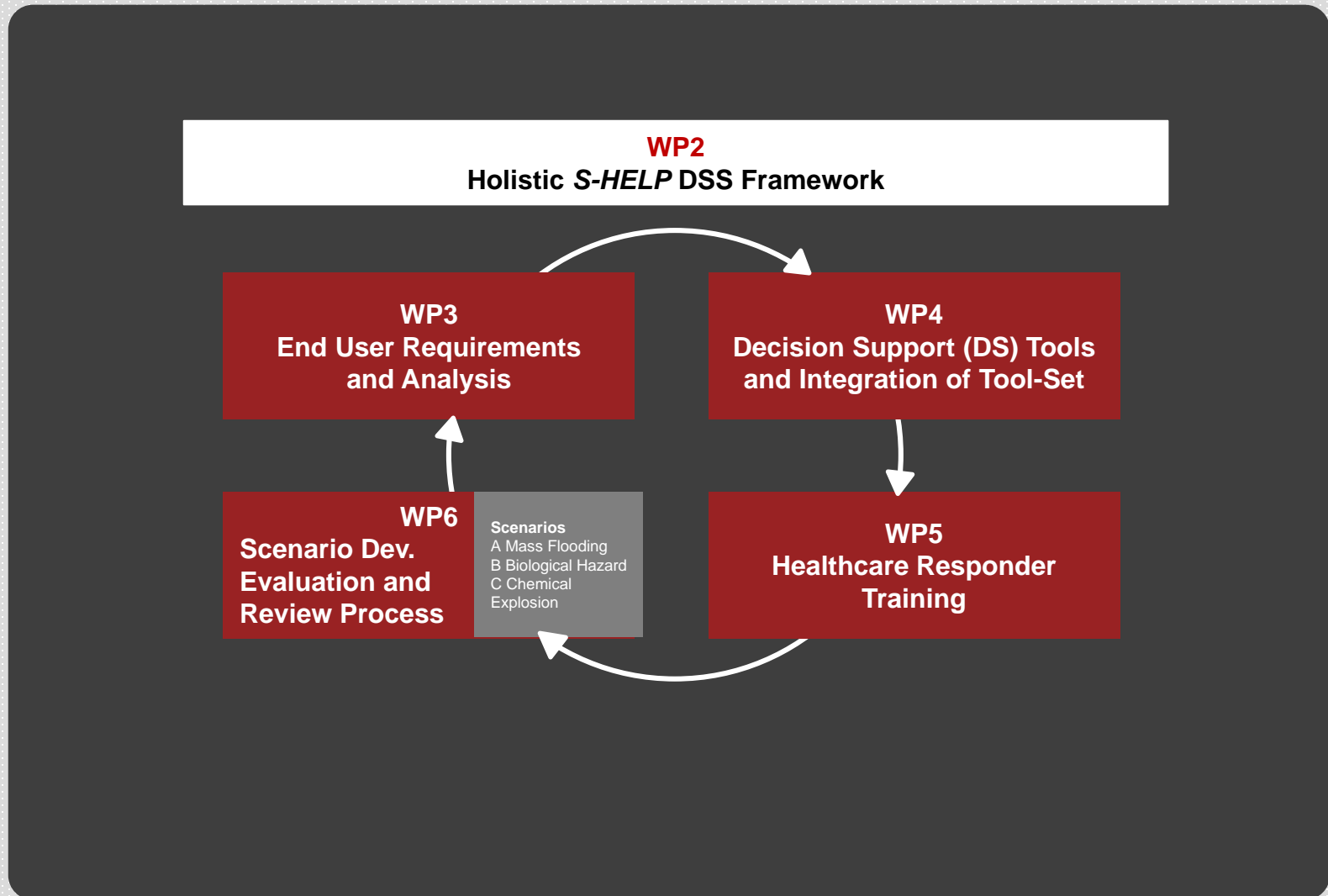
Implementing S-HELP



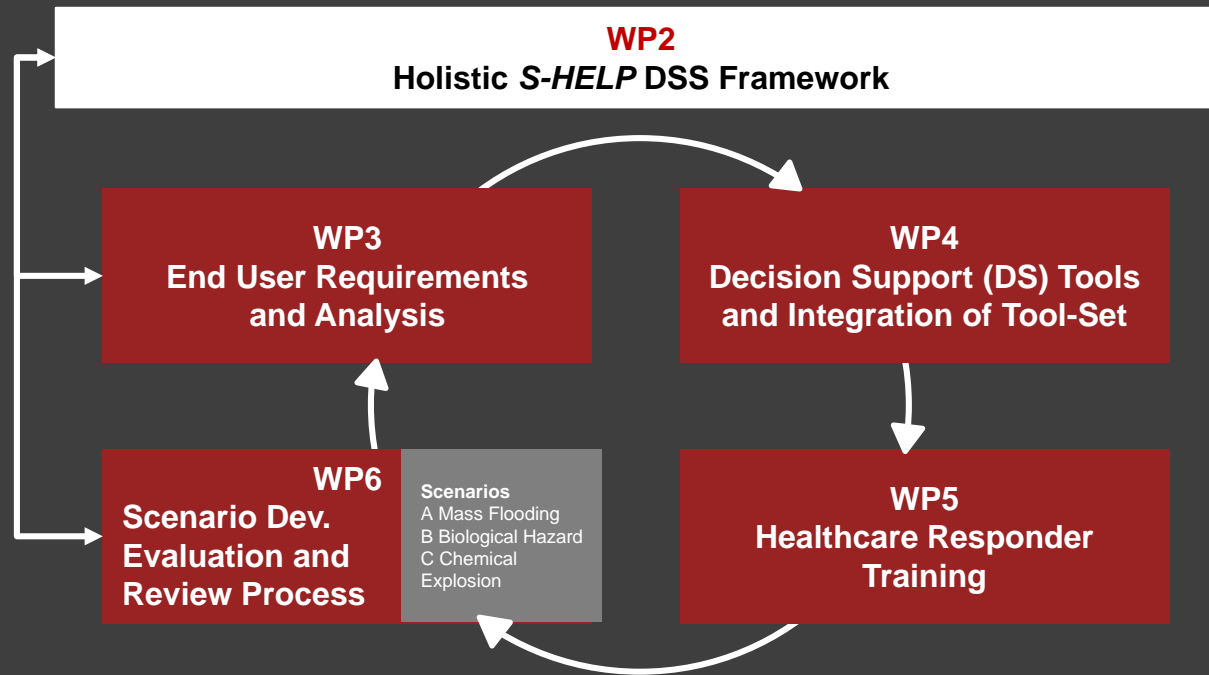
Implementing S-HELP



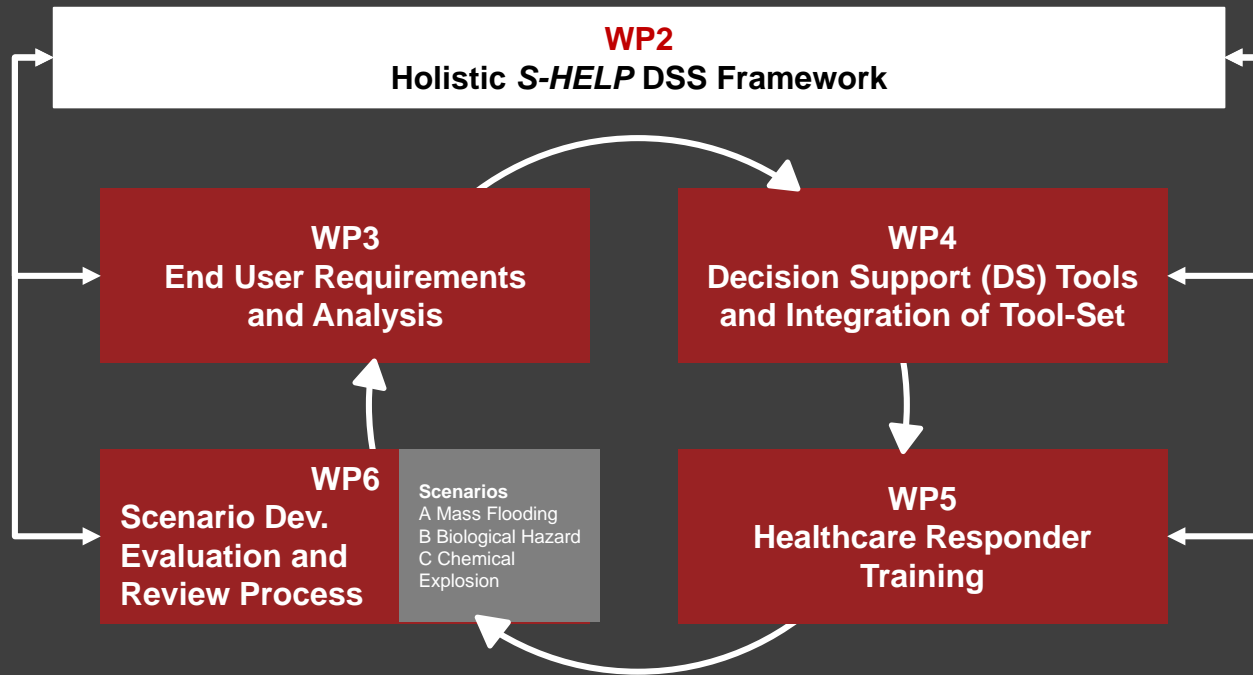
Implementing S-HELP



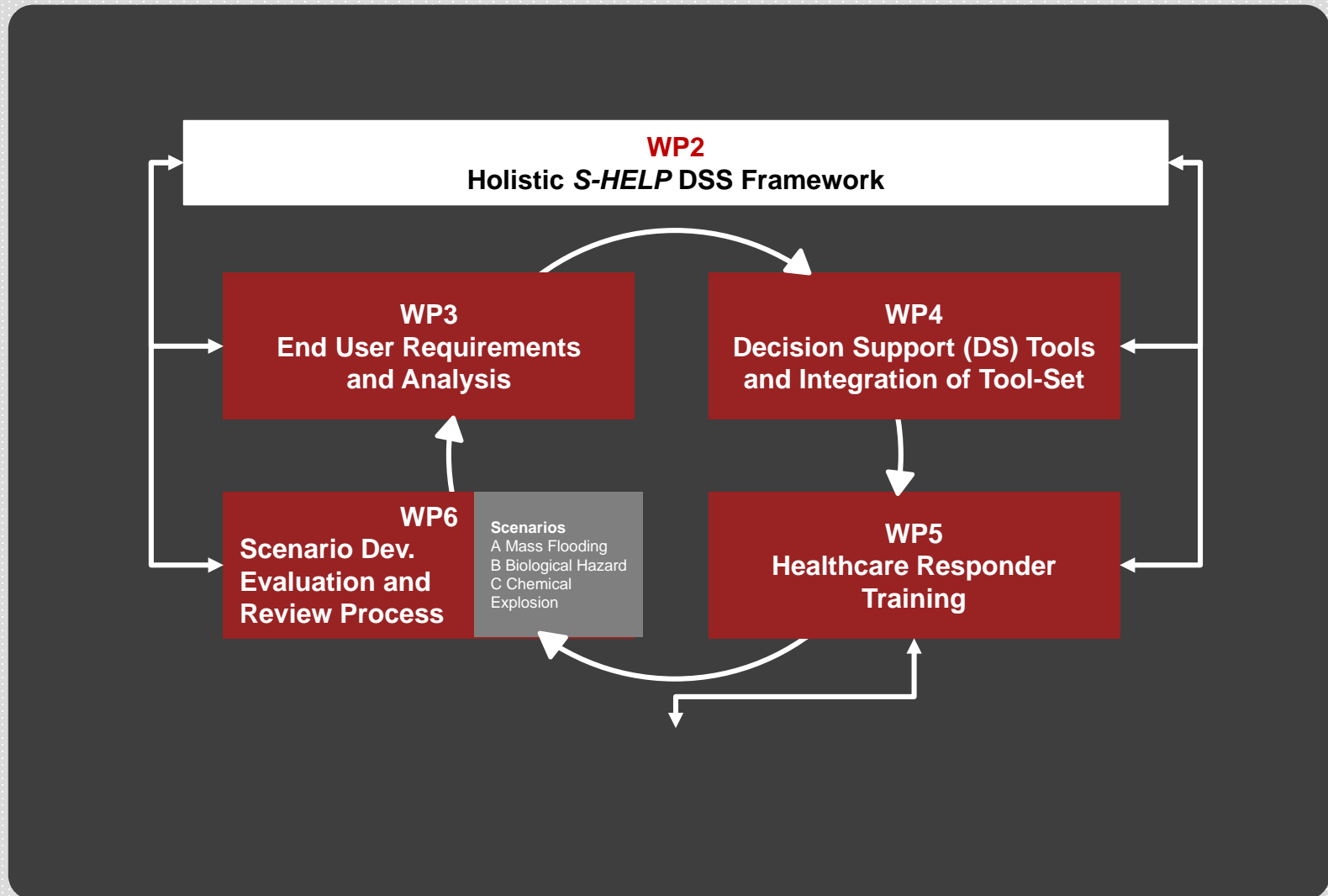
Implementing S-HELP



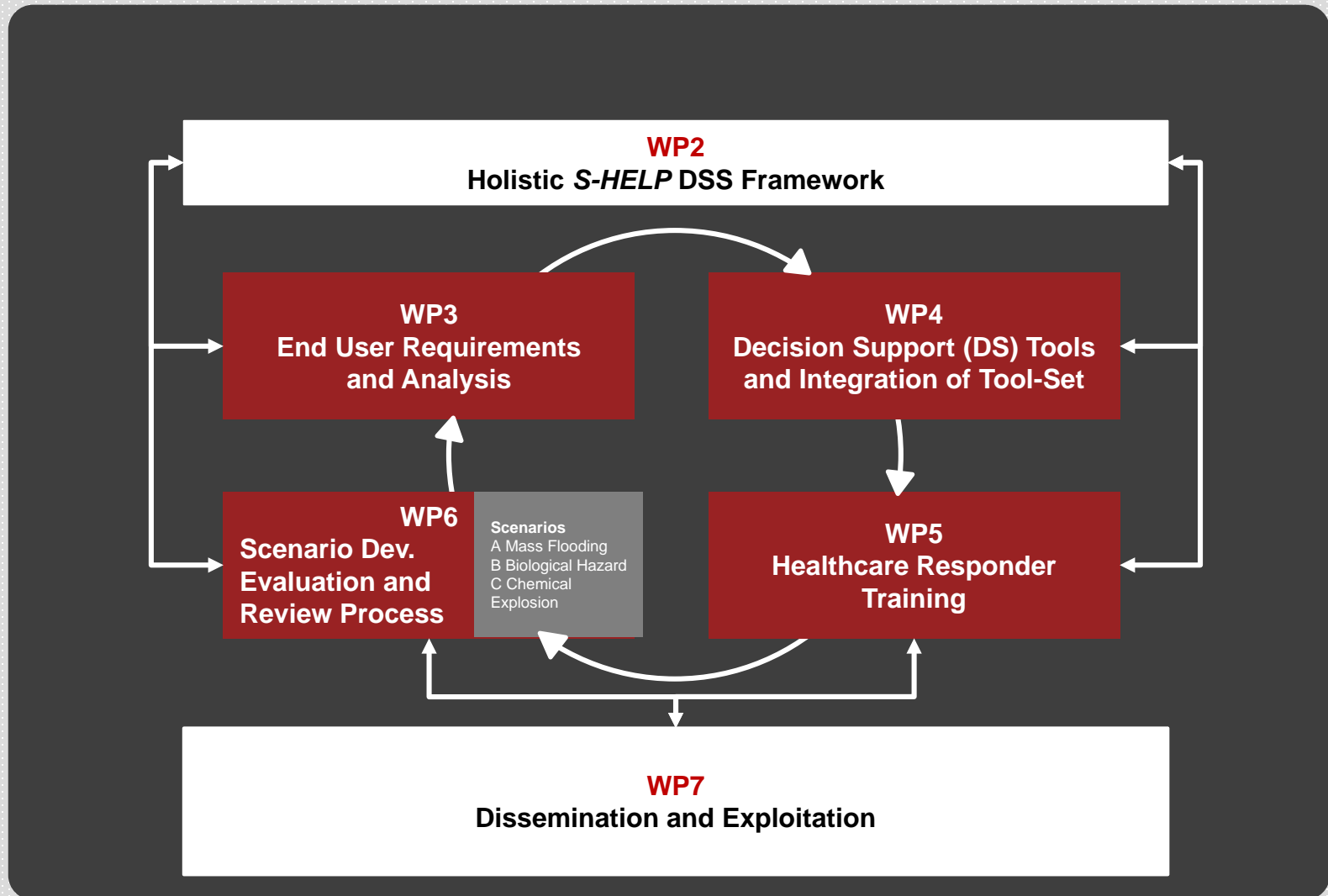
Implementing S-HELP



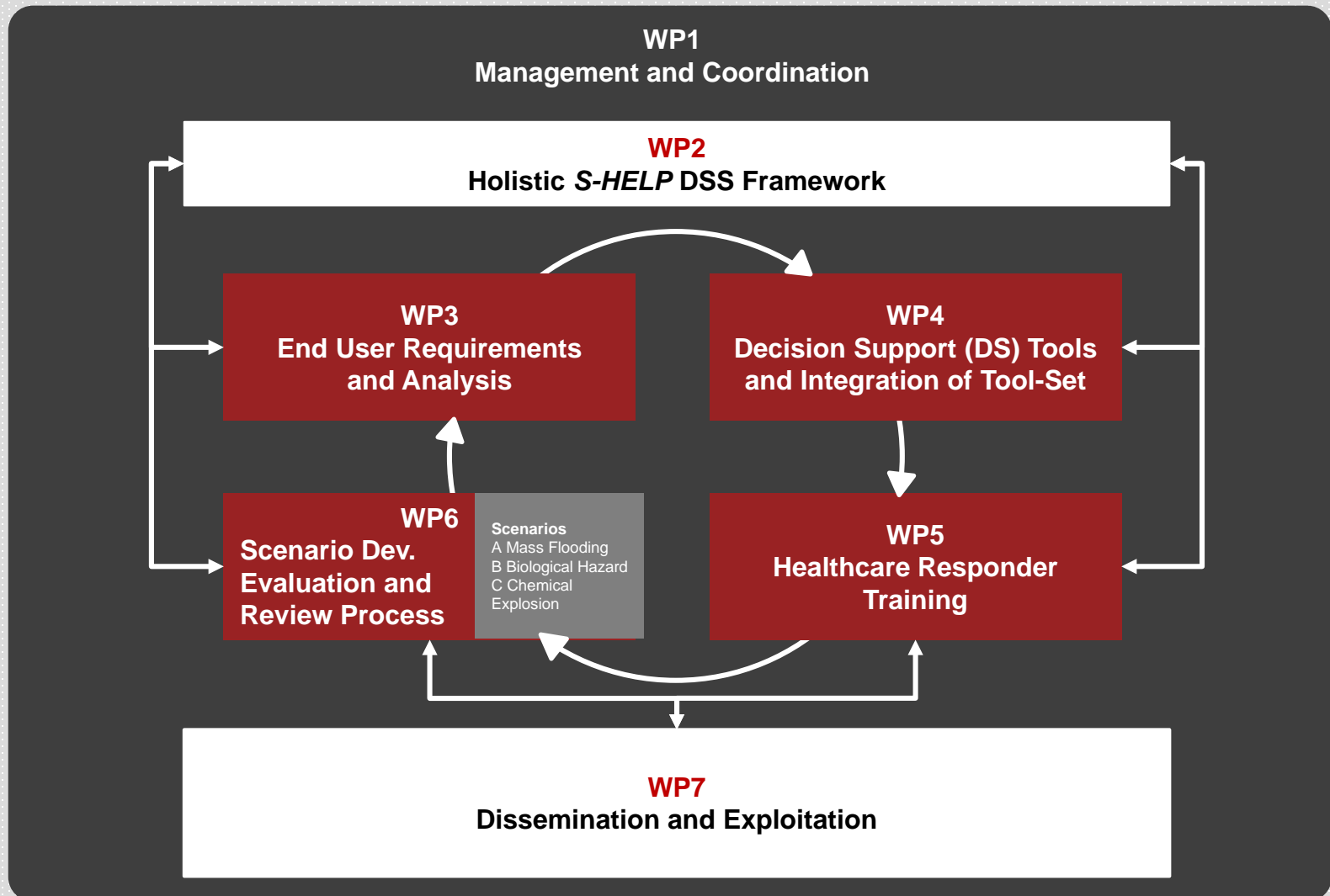
Implementing S-HELP



Implementing S-HELP



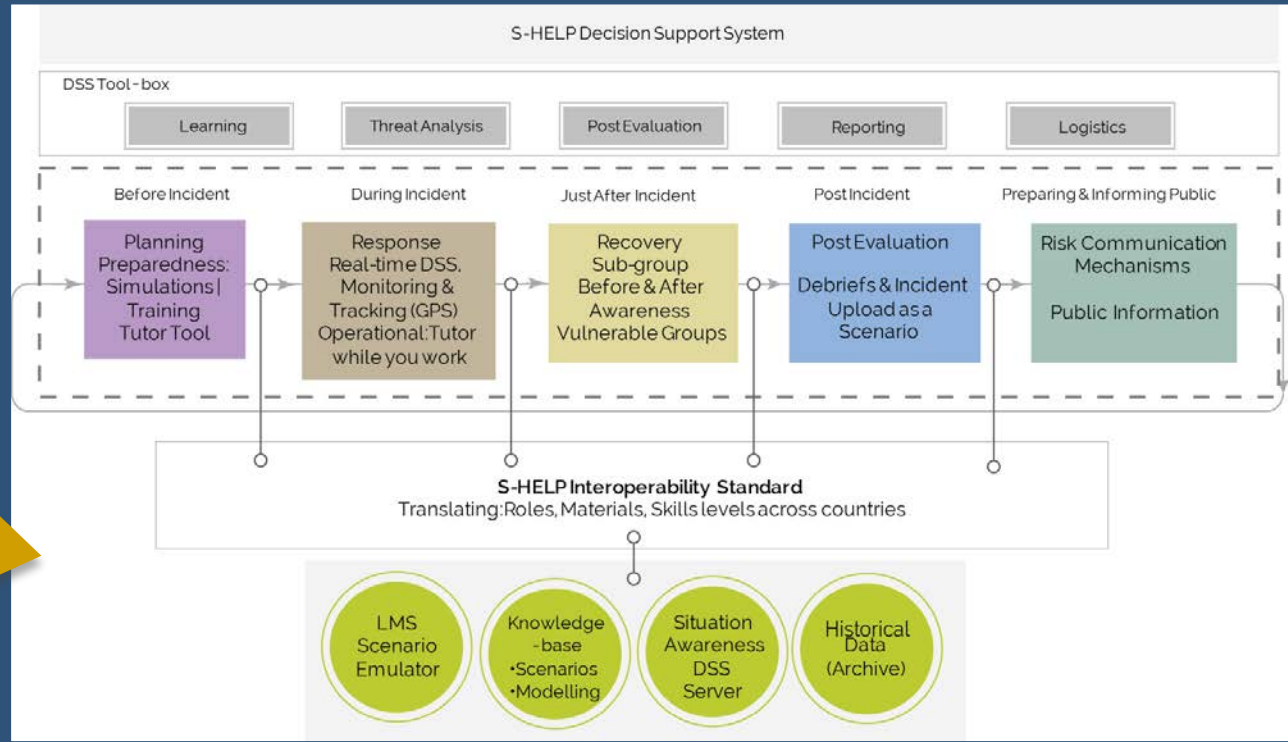
Implementing S-HELP



	Incident Mgr Vendors	Vector Command	Moppyx Ltd.	SAR Technology Inc.	ESRI	Firehose Software	Adashi	WebEOC	NEMESIS	NC4	D4H	Integratph	Foretek	Atlas Ops/AIMS	IMASS STEPS	National Extracm	DSS	
Multi-agency Requirements																		
1. Interoperability Across Agency (Taxonomy)																		✓
2. Threat Analysis	✓		✓	✓	✓			✓	✓	✓	✓							✓
3. Preparation Processes	✓		✓	✓	✓			✓	✓	✓	✓							✓
4. Validation of Preparation Processes				✓														✓
5. Intelligence of Analysis & Gathering Tools																		
-- 5.1 Alerts Unusual Event																		✓
-- 5.2 Predictions of Evolution																		✓
6. Resource Mangement Modelling	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7. Identification of Surge Capacity Tools					✓	✓												✓
8. Cross Agency Coordination/ Communication Tools																		
-- 8.1 General	✓		✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓
-- 8.2 Social Media				✓		✓												✓
9. Analysis Evaluation of Planned Measures																		
-- 9.1 Social Acceptance (Human Factors Analysis)																		✓
-- 9.2 Legal and Ethical (Data Protection Cross)																		✓
10. Training																		
-- 10.1 Training Methodologies	✓		✓	✓														
-- 10.2 Refresher Training (Tracking)																		
11. Post Crisis																		
-- 11.1 Evaluation of Crisis (Lessons Learned)	✓	✓																
-- 11.2 Documentation of Training																		
-- 11.3 Implementation of Changes																		

(1)
Vendor solutions fall short in meeting challenges of EM across multi-agencies

(2)
S-HELP DSS Solution to Support Decision-Making





Holistic Framed Approach





Holistic Framed Approach



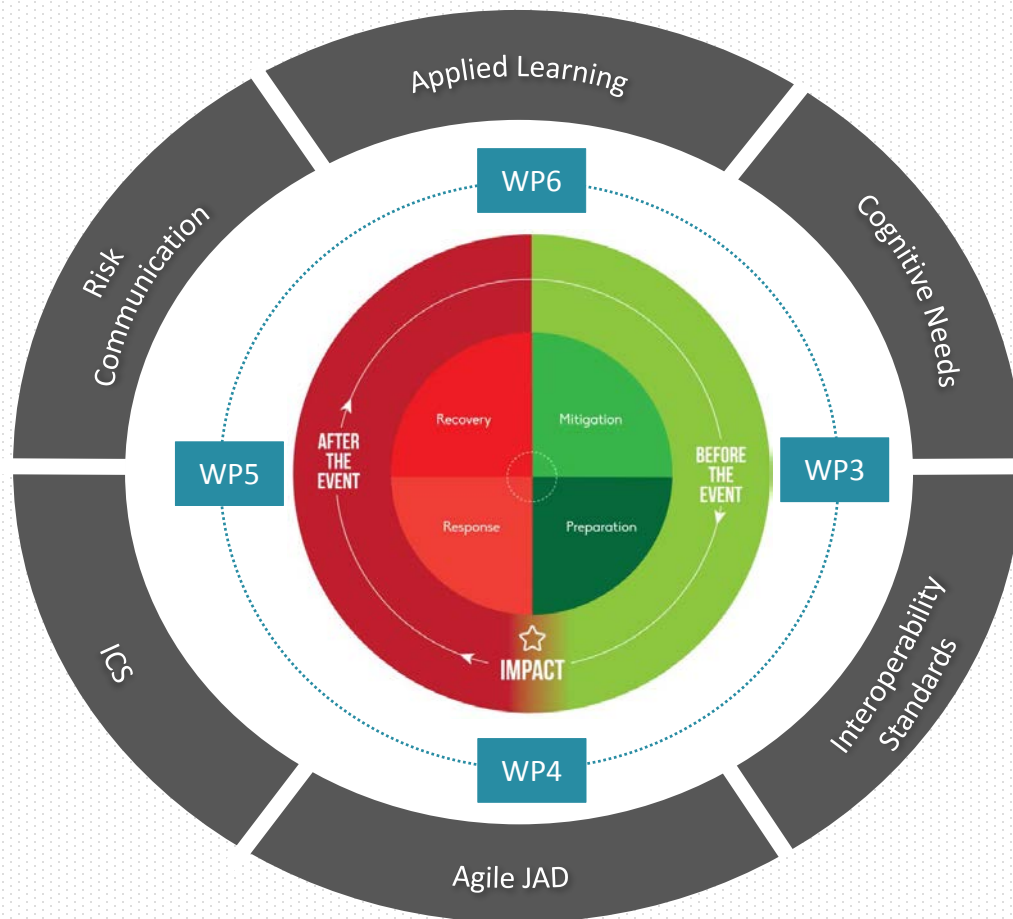


Holistic Framed Approach



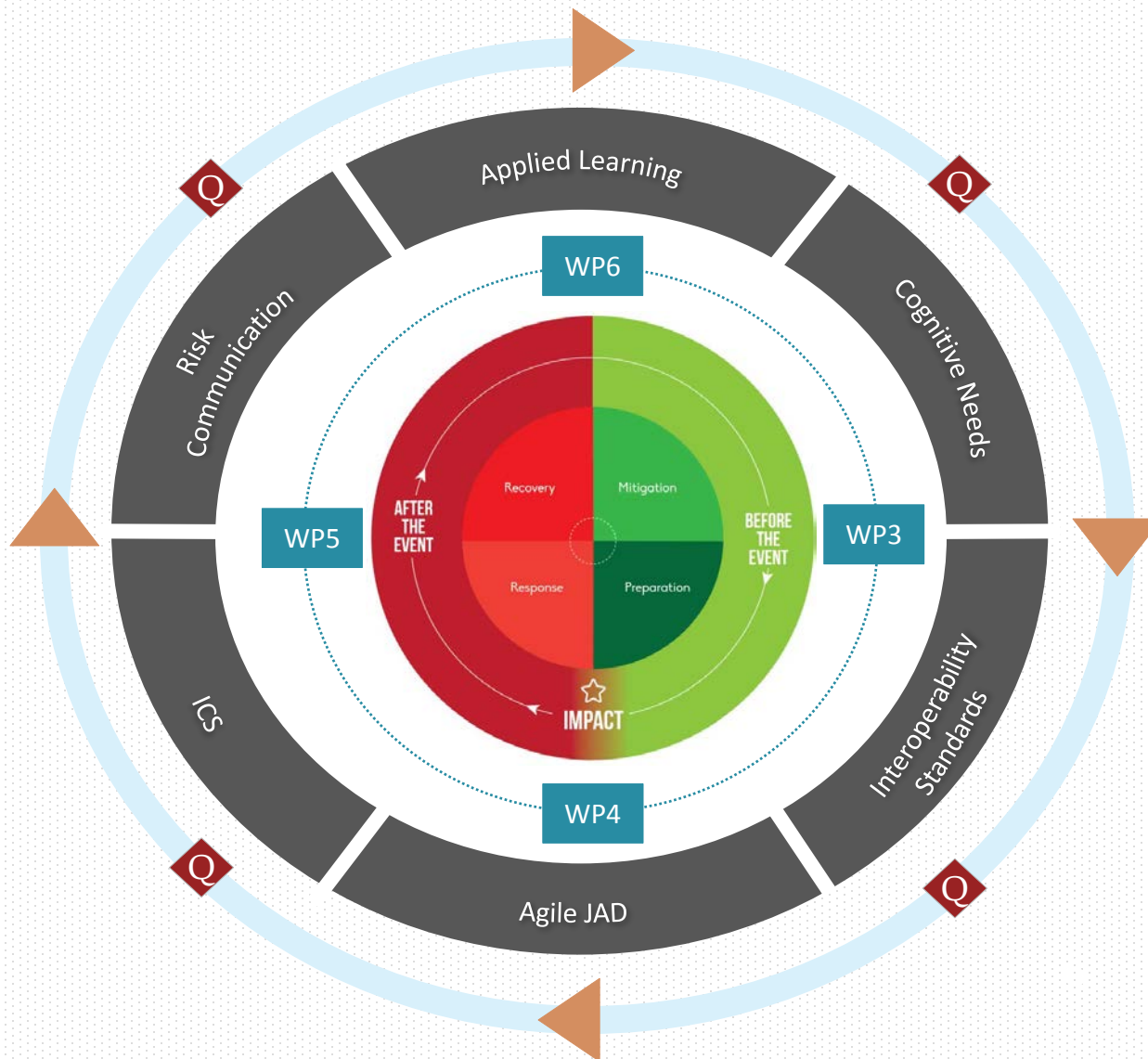


Holistic Framed Approach



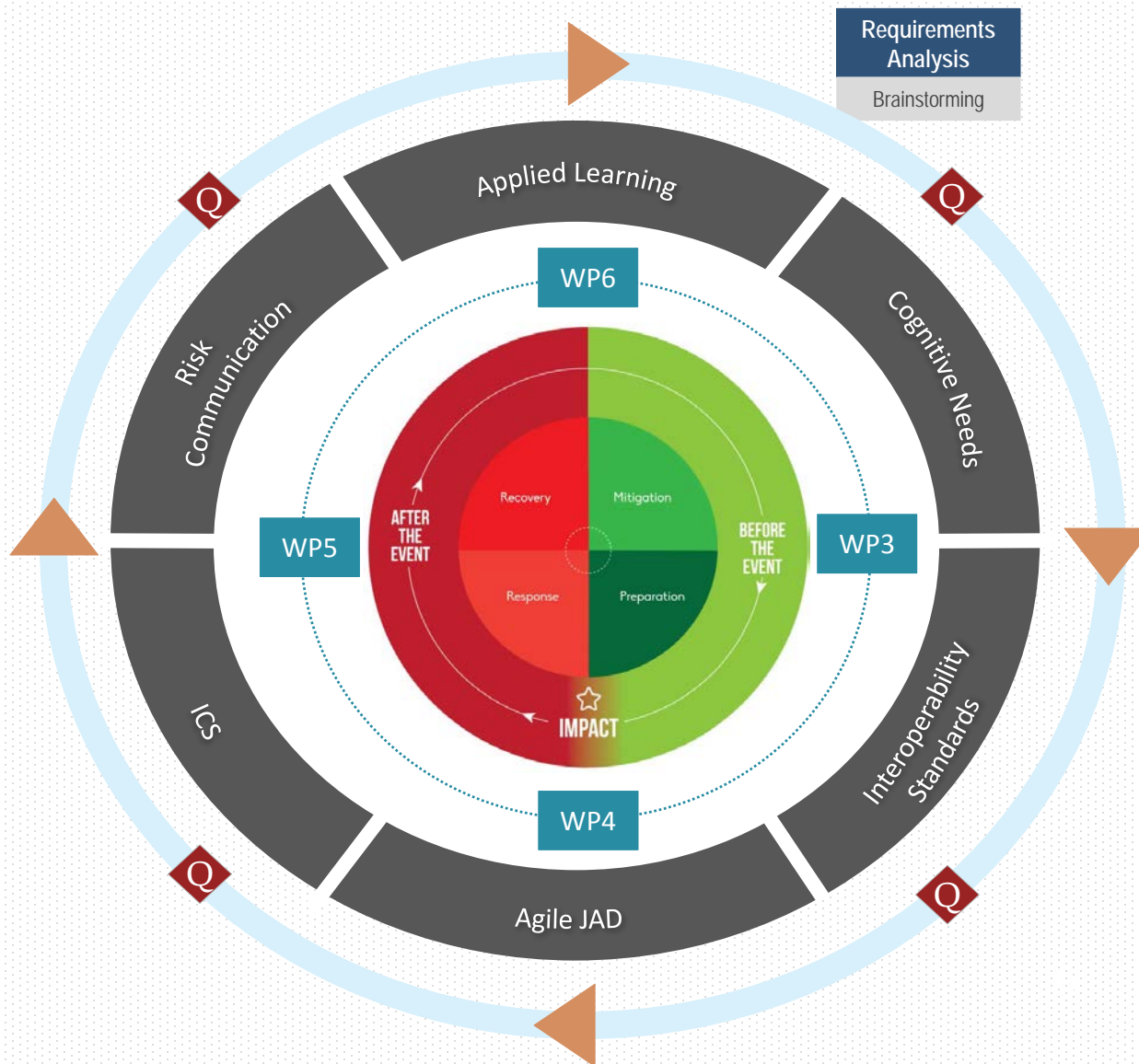


Holistic Framed Approach



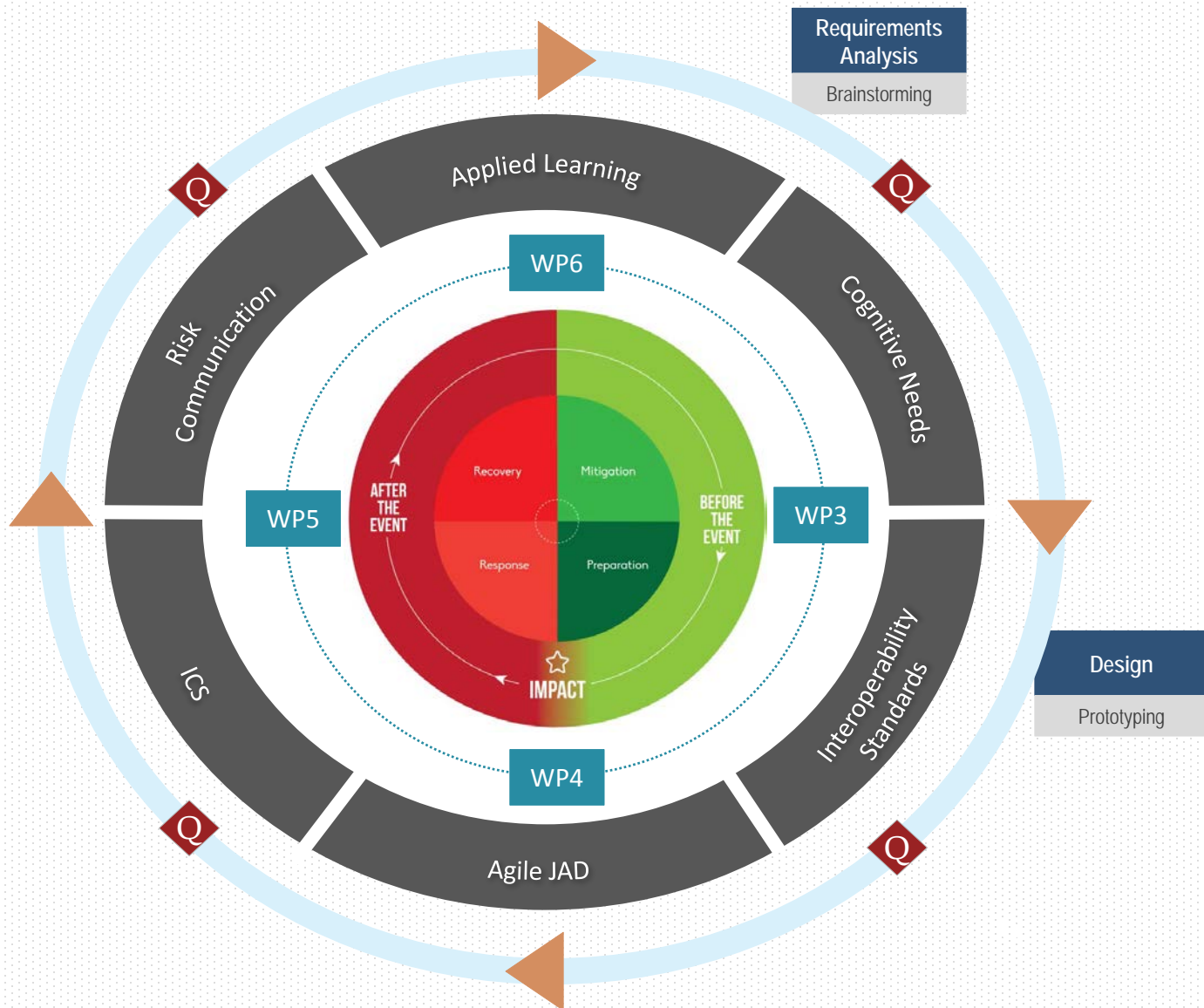


Holistic Framed Approach



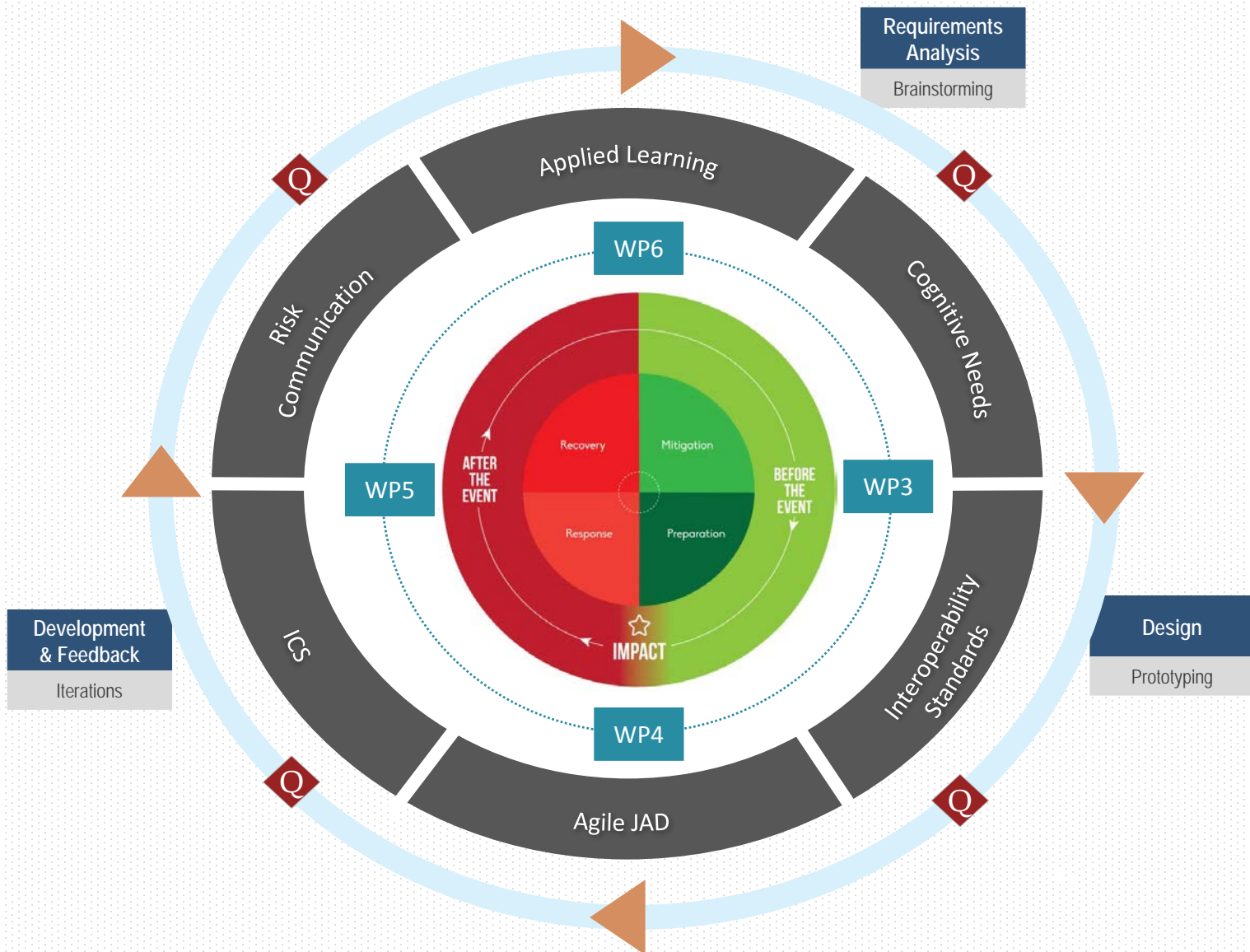


Holistic Framed Approach



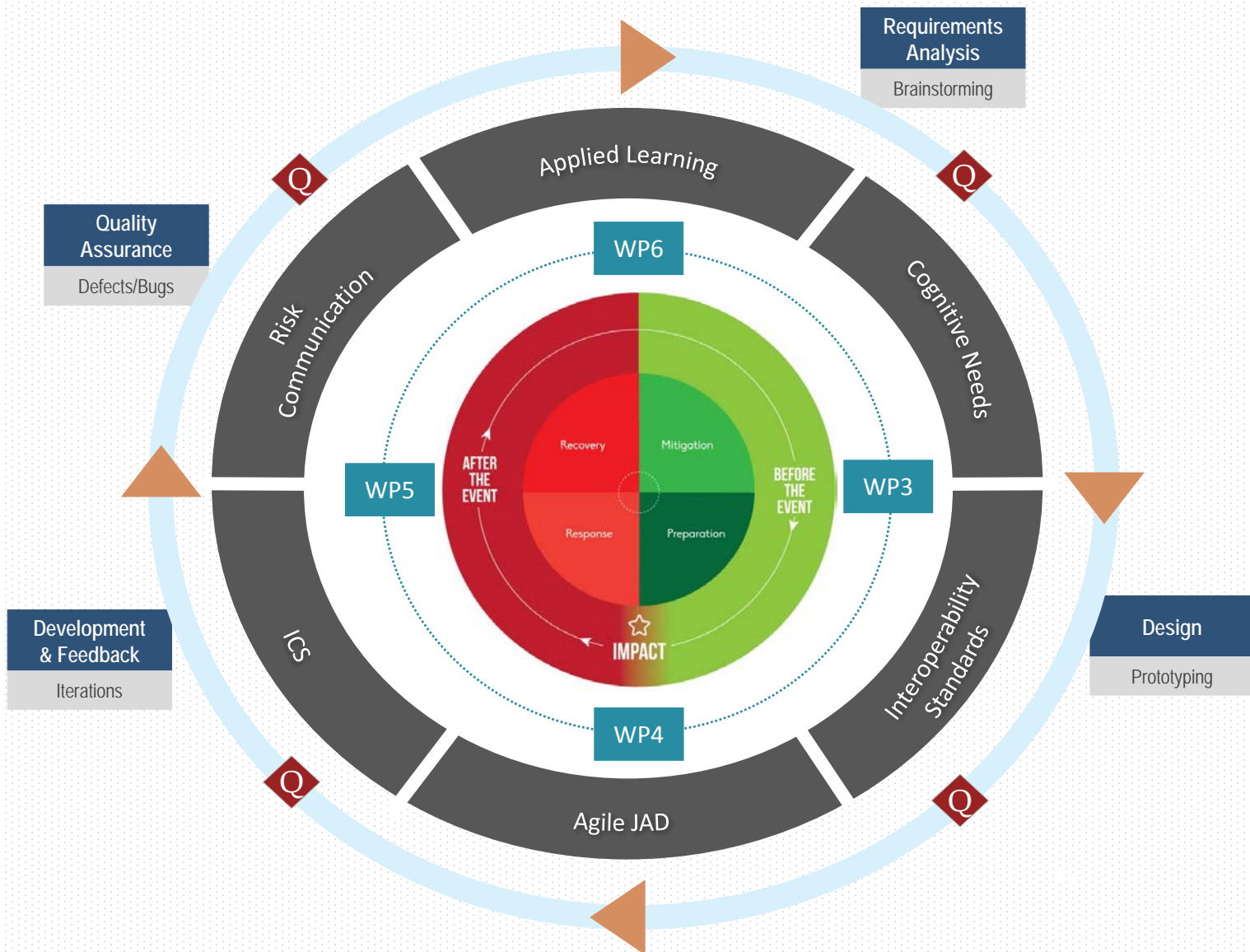


Holistic Framed Approach



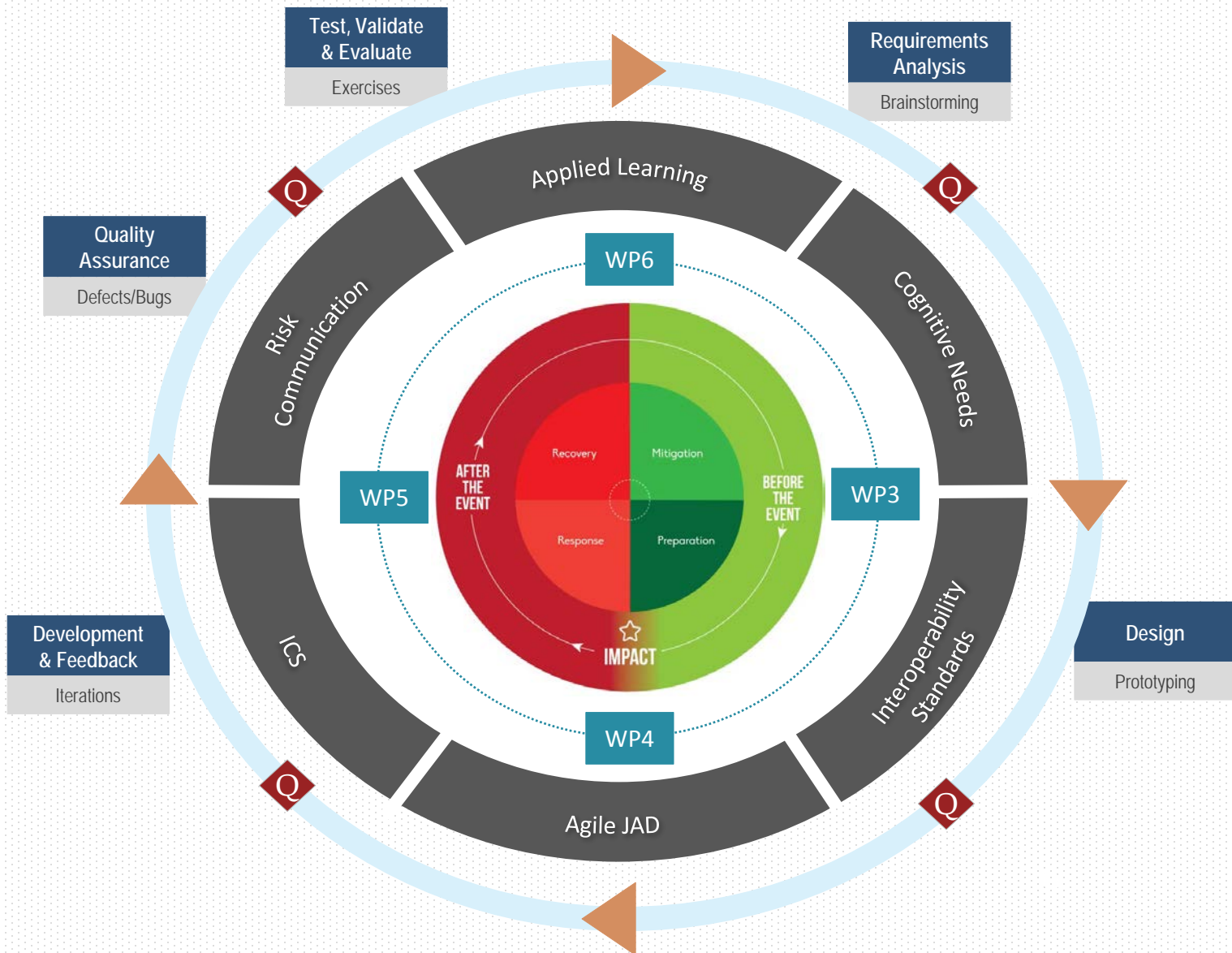


Holistic Framed Approach





Holistic Framed Approach



The S-HELP Solution



S-HELP Decision Support System

DSS Tool-box

Learning

Threat Analysis

Post Evaluation

Reporting

Logistics

Before Incident

During Incident

Just After Incident

Post Incident

Preparing & Informing Public

Planning
Preparedness:
Simulations |
Training
Tutor Tool

Response
Real-time DSS,
Monitoring &
Tracking (GPS)
Operational: Tutor
while you work

Recovery
Sub-group
Before & After
Awareness
Vulnerable Groups

Post Evaluation
Debriefs & Incident
Upload as a
Scenario

Risk Communication
Mechanisms
Public Information

S-HELP Interoperability Standard
Translating: Roles, Materials, Skills levels across countries

LMS
Scenario
Emulator

Knowledge
-base
• Scenarios
• Modelling

Situation
Awareness
DSS
Server

Historical
Data
(Archive)

The S-HELP Solution



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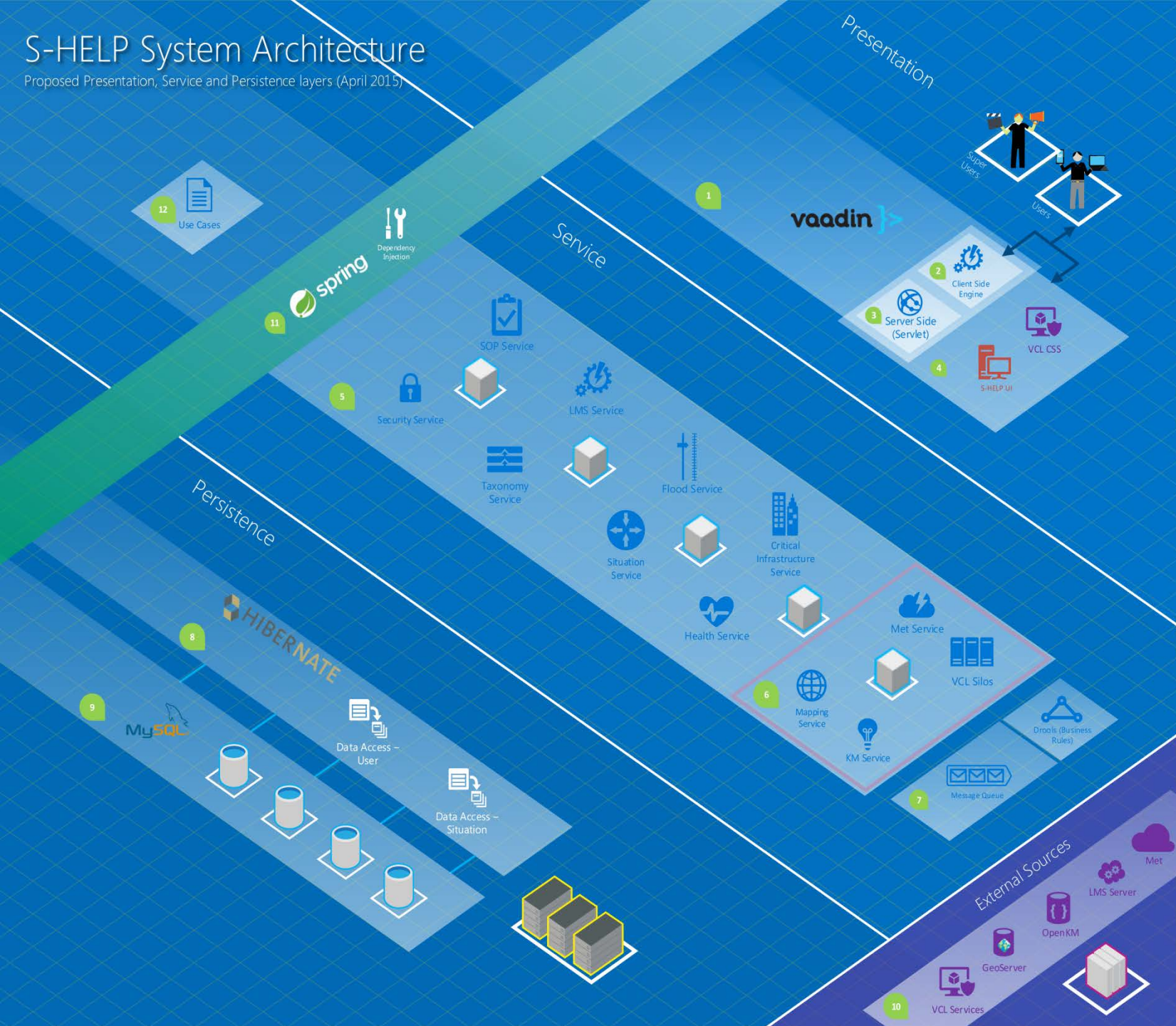
Knowledge
-base
• Scenarios
• Modelling

Situation
Awareness
DSS
Server

Historical
Data
(Archive)

S-HELP System Architecture

Proposed Presentation, Service and Persistence layers (April 2015)



Presentation

- 1 Web application framework
- 2 Javascript GUI components
- 3 Java server side components
- 4 Java implementation of the S-HELP and VCL GUI

Service

- 5 Service layer organised by broad function areas
- 6 Services that specifically interface with external sources
- 7 Supporting technologies

Persistence

- 8 Data access objects implemented with JPA/Hibernate
- 9 Relational databases

External Sources

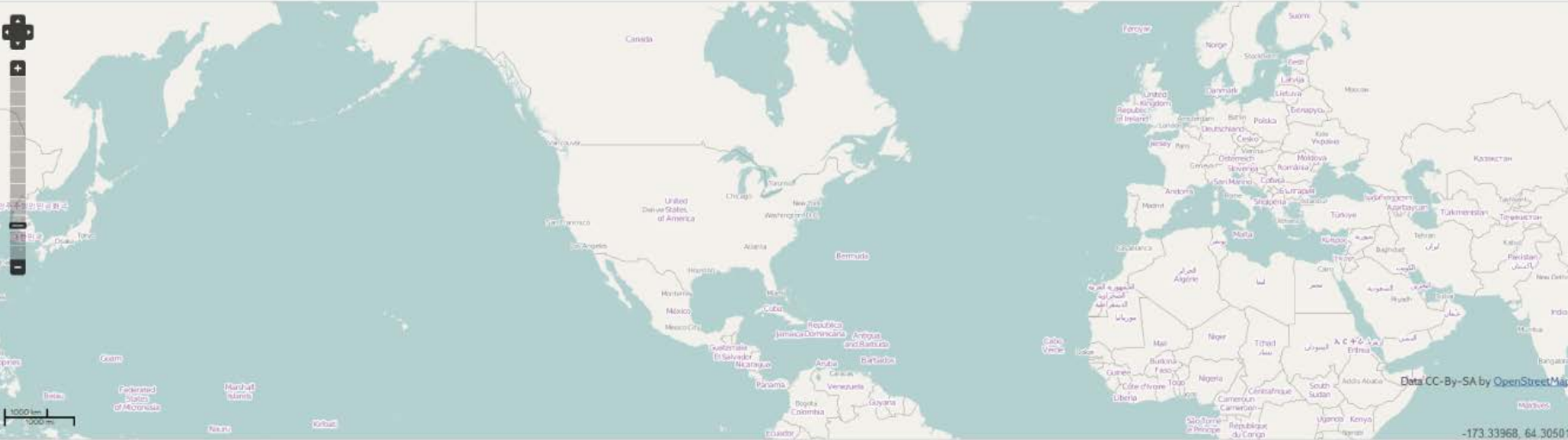
- 10 External information systems and services
- 11 Dependencies controlled using the Spring framework
- 12 The service layer design is driven by specific use cases

Spatial Database – Mapping

Discover, explore, and use collections of geospatial data from

Search for Geospatial Data

Optional: Click and drag to draw a bounding box for your search, then click the Search button. To zoom in on a specific area, hold down the **Shift** key while drawing the bounding box. To pan the map, hold down the **Ctrl** (PC) or **Option** (Mac), then click and drag the map.



Project Website
www.fp7-shelp.eu

www.Shelpdata.com

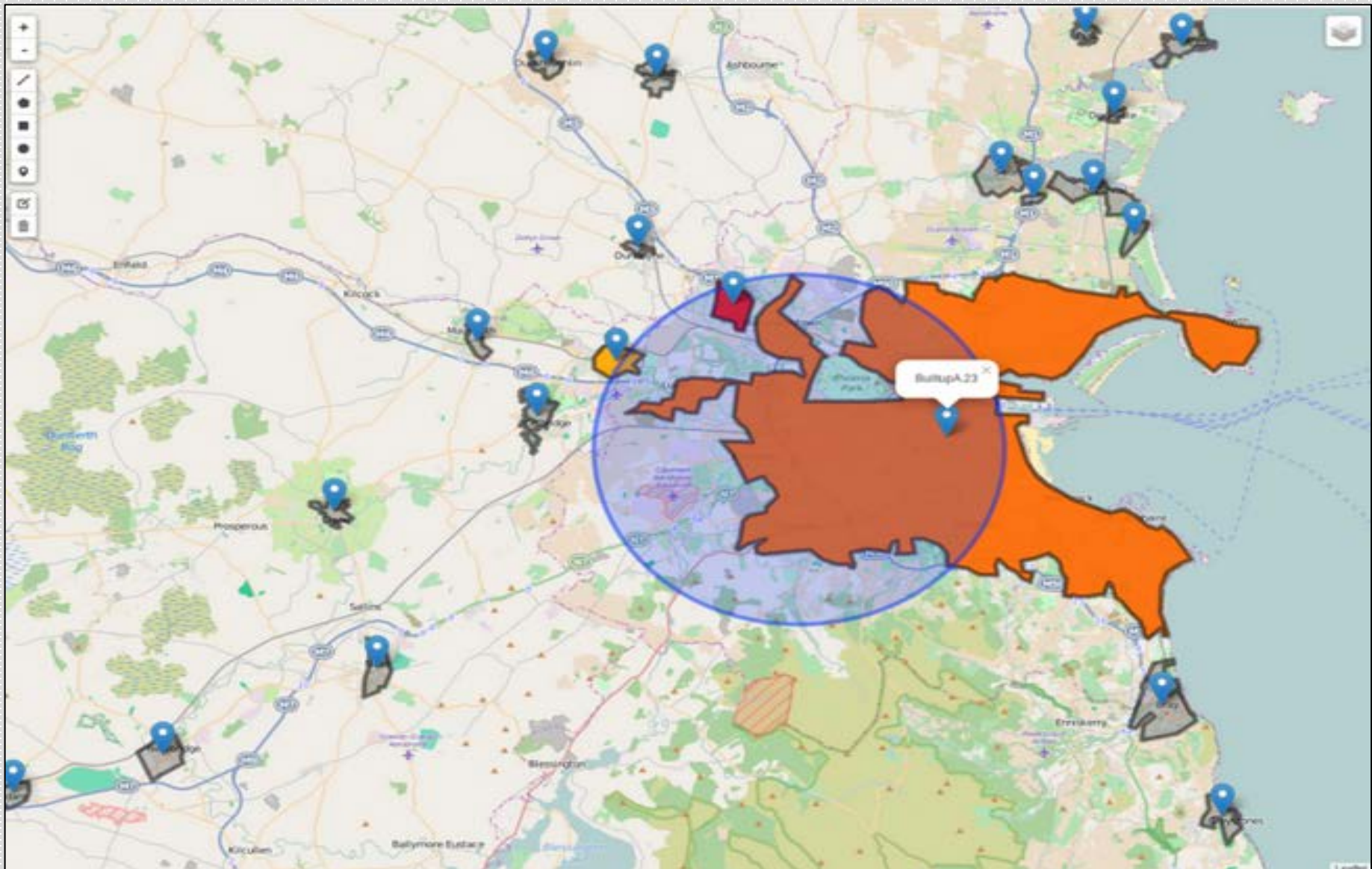
Spatial Database – Mapping

The image shows a web-based mapping application interface. On the left side, there is a control panel with a "Zoom to content" button, a "Situation Elements:" label, and an empty list box. Below this is an "Add Element" button. The main area is a map of the British Isles, including Great Britain, Ireland, and the Isle of Man. A blue route is highlighted, starting from London, passing through Cardiff, and ending in Dublin. The map includes various geographical features, roads, and place names. A vertical toolbar on the left side of the map contains icons for zooming, panning, and other map functions. At the bottom of the interface, there is a navigation bar with tabs labeled "default.default", "km.km", "test", "maps.map", and "vcl.vcl".

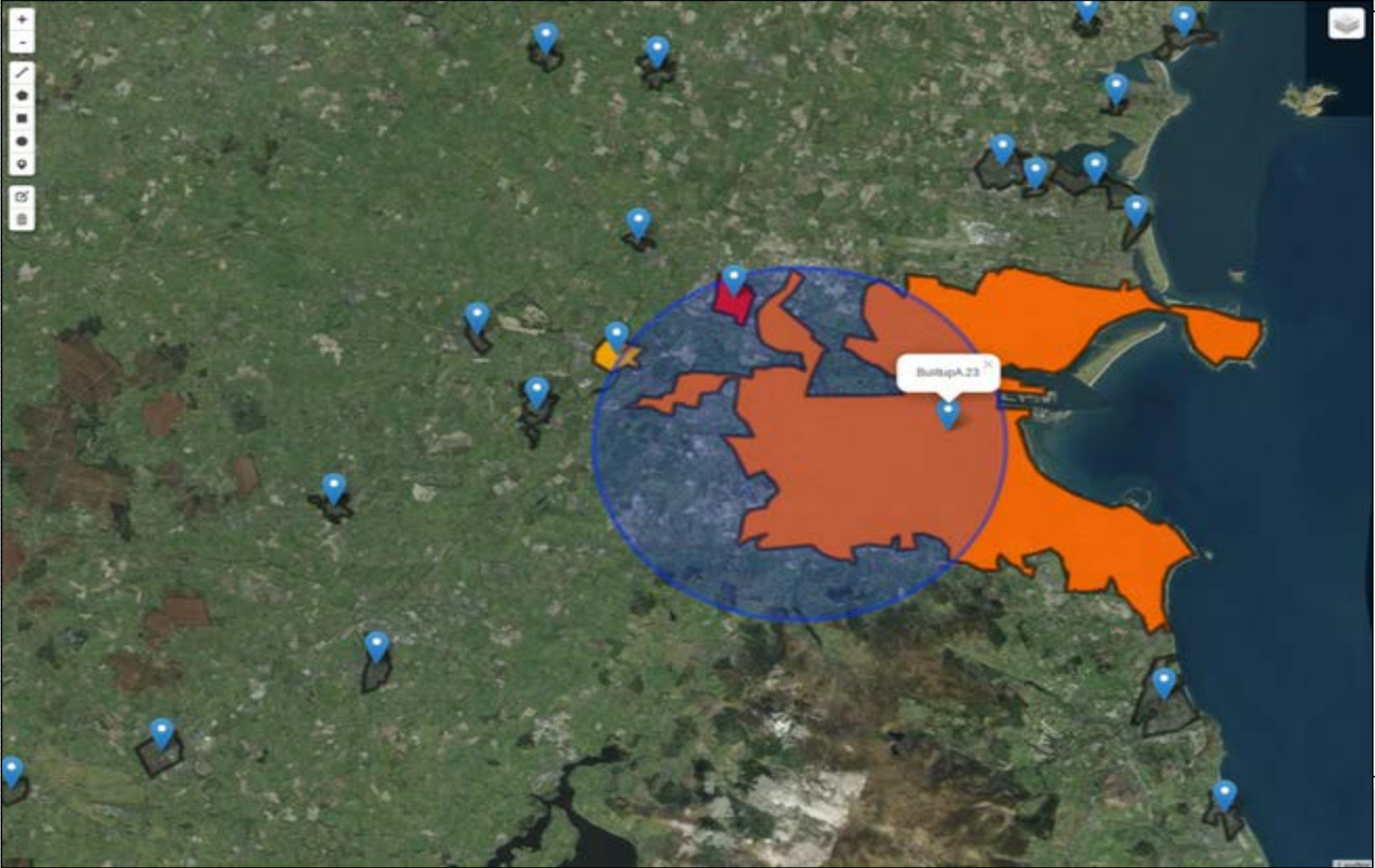
Spatial Database – Mapping



Spatial Database – Mapping



Spatial Database – Mapping



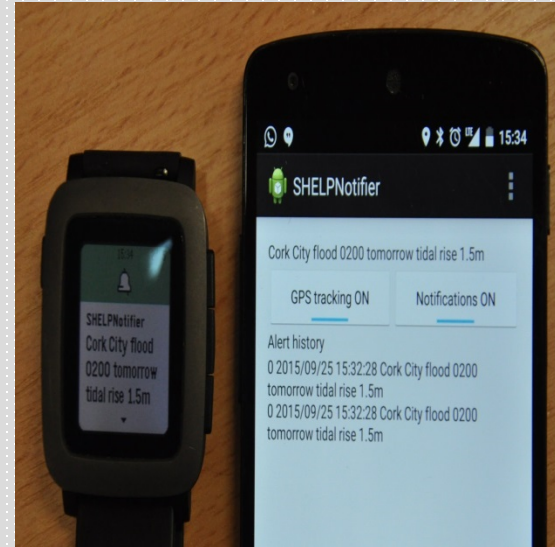
S-HELP DSS: Integration of the modules



Mobile App and Smartwatch

Mobile App

- Risk communication
- Notifications to citizens, EMTs...
- GPS tracking of selected handsets
- Role-based notification & tracking systems
- Geo targeted notifications
- *Prototype under development*



Smartwatch

- Notification to users when access to handset is a problem
- Preprogrammed responses if needed
- Smartband to follow for enhanced situational awareness
- *Prototype under development*

Multi-agency Interoperability

Glossary of terms and definitions &
common grounds and standards for interoperability
Strategic Disaster Management Wiki

Dashboard > EU Research Project S-HELP > S-HELP Strategic Disaster Management Wiki

Search

- Taxonomy for the Strategic Context of Disaster Management
 - Decision Making
 - Disaster Definition
 - Disaster Risk
 - Disaster Types
 - Extent of Event
 - Vulnerability
 - Emergency Management Cycle
 - Emergency Management Environment
 - Related Interventions
 - Resources
 - Definitions
 - Literature

S-HELP S-HELP Strategic Disaster Management Wiki

4 Added by Admin.Confluence, last edited by Helmut.Niessner on 14. Sep 2015 (view change)

Welcome to the Strategic Disaster Management Wiki of S-HELP

Taxonomy for the Strategic Context of Disaster Management

```
graph TD; A[What can happen? (Disaster Definition)] --> B[Decision Making]; subgraph B; B1[Who does make decisions? (Stakeholder)]; B2[How are decisions made? (Decision Making Levels & (Operational and Control) Roles)]; B3[How are decisions supported? (Decision Support Systems)]; B1 <--> B2; B2 <--> B3; B1 <--> B3; end; B --> C[What has to be done? (Emergency Management Cycle & Related Interventions)]; C --> D[Which staff and material are needed? (Resources)];
```

Emergency Management Environment

Multi-agency Interoperability

Glossary of terms and definitions &
common grounds and standards for interoperability

Strategic Disaster Management Wiki

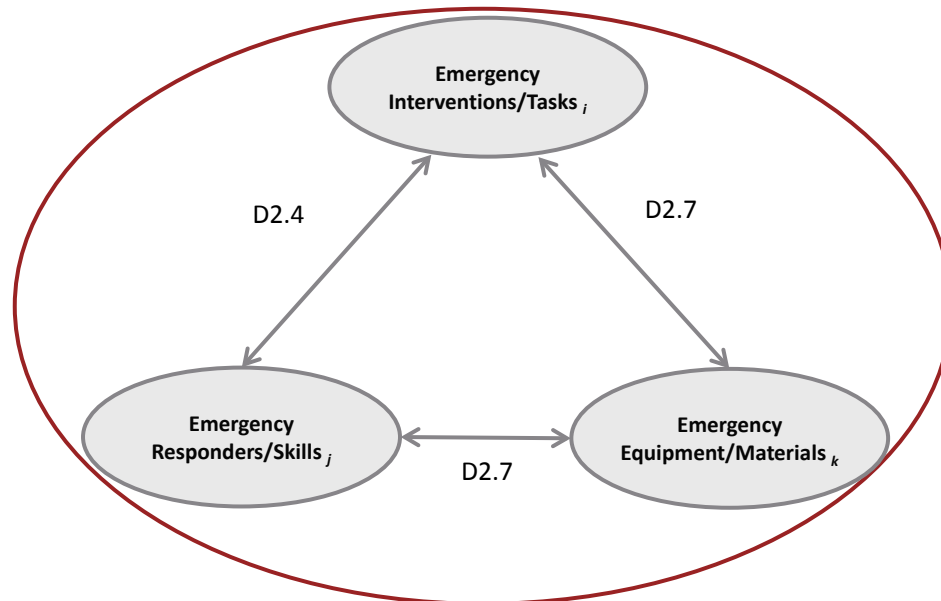
Dashboard > EU Research Project S-

Search

- [-] Taxonomy for the Strategic Context of Disaster Management
 - [+] Decision Making
 - [-] Disaster Definition
 - [+] Disaster Risk
 - [+] Disaster Types
 - [+] Extent of Event
 - [+] Vulnerability
 - [-] Emergency Management Cycle
 - [-] Emergency Management Environment
 - [-] Related Interventions
 - [-] Resources
- [-] Definitions
- [-] Literature

Draft skills taxonomy template

- Emergency interventions/tasks
- Related emergency responders/skills
- Required equipment/materials



Multi-agency Interoperability

Glossary of terms and definitions &
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Strategic Disaster Management Wiki

Dashboard > EU Research Project S-

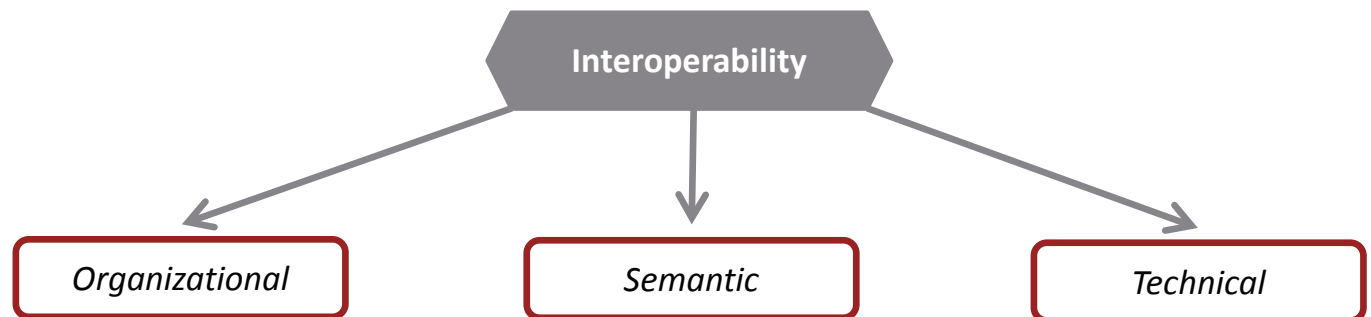
Search

- [-] Taxonomy for the Strategic Context of Disaster Management
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Draft skills taxonomy template

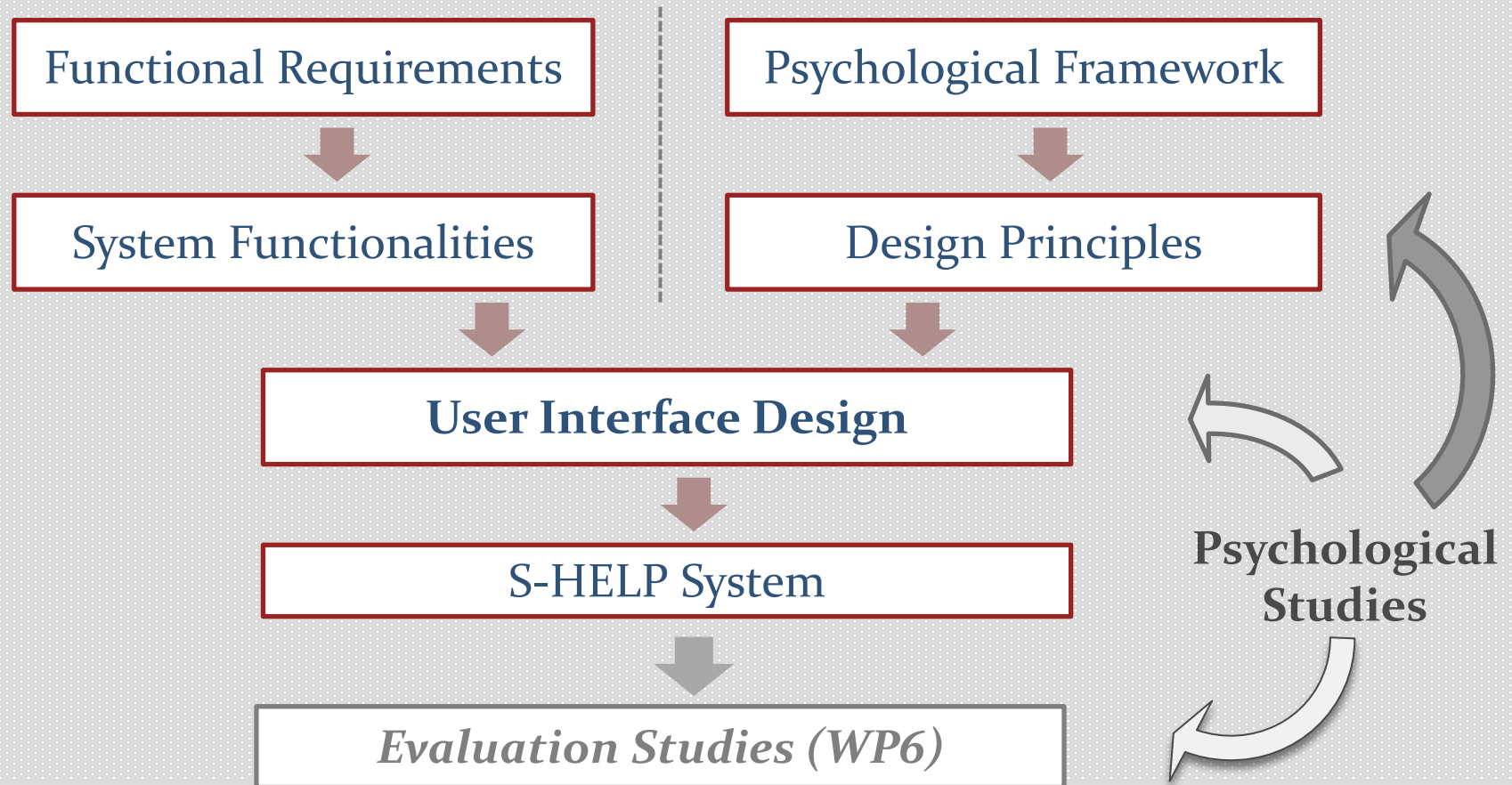
- Emergency interventions/tasks
- Related emergency responders/skills
- Required equipment/materials

Draft of the S-HELP interoperability



User Interface Design

The UI is based on psychological foundation and studies



Design Principles Game

S-HELP Survey - Mozilla Firefox

S-HELP Survey

http://localhost:8080/s-help-study02/

S-HELP User Interface Design for Emergency Management TU Graz

To which emergency service does Sam Smith belong?

```
graph TD; Ambulance --- DilbertCox[Dilbert Cox]; Ambulance --- GloriaLewis[Gloria Lewis]; Ambulance --- PhilOToot[Phil O'Tool]; Ambulance --- IreneToken[Irene Token]; FireBrigade[Fire Brigade] --- PaulClark[Paul Clark]; FireBrigade --- KimWalker[Kim Walker]; FireBrigade --- JakobWong[Jakob Wong]; FireBrigade --- ThomasLee[Thomas Lee]; FireBrigade --- ClarissaHill[Clarissa Hill]; Police --- GregBrown[Greg Brown]; Police --- NoraHavey[Nora Havey]; Police --- ClaraMorris[Clara Morris]; HumanResources[Human Resources] --- Ambulance; HumanResources --- FireBrigade; HumanResources --- Police; FireBrigade --- SamSmith[Sam Smith];
```

Select the correct answer:

- Ambulance
- Emergency Managers
- Police
- Fire Brigade

Remaining Time: 4 Seconds

Demonstration
<http://bit.ly/s-help-study02>

Scenarios to Evaluate and Test S-HELP DSS



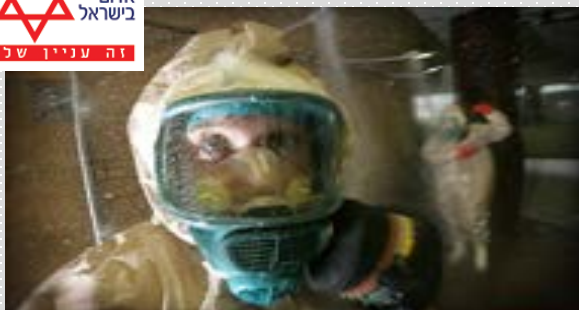
Chemical Explosion

- International border SDMS
- Complex pre-incident issues
- Knowledge management required
- Threat assessment and “what if” issues



Mass Flooding

- Major city on a major scale
- SDMS & mobile app
- Interoperability with mapping systems
- Can be any time of year



Biological Hazard

- Outbreak with international impact
- No early detection, slow rise event
- Requires links to WHO/ECDC systems
- Requires rapid and accurate transfer of data



Karen Neville

S-HELP Project Coordinator

Managing Director | Centre for Security & Emergency Management

Department of Business Information Systems | University College Cork



KarenNeville@ucc.ie



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



[@fp7shelp](https://twitter.com/fp7shelp)



Business Information Systems





COBACORE

Community-Based Comprehensive Recovery

Working together to recover faster

THE COBACORE PROJECT – A COMMUNITY-BASED APPROACH TO DISASTER RECOVERY

Martijn Neef

Netherlands Organisation for Applied Scientific Research TNO

Technical coordinator COBACORE project

Organisation sponsors:





The COBACORE project

Community-Based Comprehensive Recovery

An EU funded project that aims to:

- close collaboration gaps between communities that play a role during disaster recovery
- make it easier to match needs with capacities
- help affected communities to voice their needs and find communities that can help



The disaster recovery challenge:
bring a disaster- stricken area back
into a stable, self-sustainable state



The disaster recovery challenge:
bring a disaster- stricken area back
into a stable, self-sustainable state

environmental
domain

economical
domain

security and
safety

institutional
domain

mobility
& transport

built
environment

vital
infrastructures

social, cultural
and educational

healthcare

quality of life



The Community-Based Comprehensive Recovery approach

Develop a vision on how communities can work together to recover faster from disaster

Build a demonstration platform that shows how current technologies can make that happen

Create a network of supporters that can adopt the COBACORE outcomes and bring it into practice



Organisation sponsors:

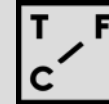




Many



Organisation sponsors:





Many

many needs



ities

many capacities

municipalities

military organisations

volunteers

donors and advocacy groups

national governments

NGO's

social groups

businesses

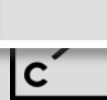
professional care institutions

civilian communities

media

online technical volunteers

Organisation





Many

many needs



ities

many capacities

municipalities

military organisations

disaster recovery is a whole of community matter
(and should be approached that way in R&D)

NGO's

social groups

businesses

tions

civilian communities

media

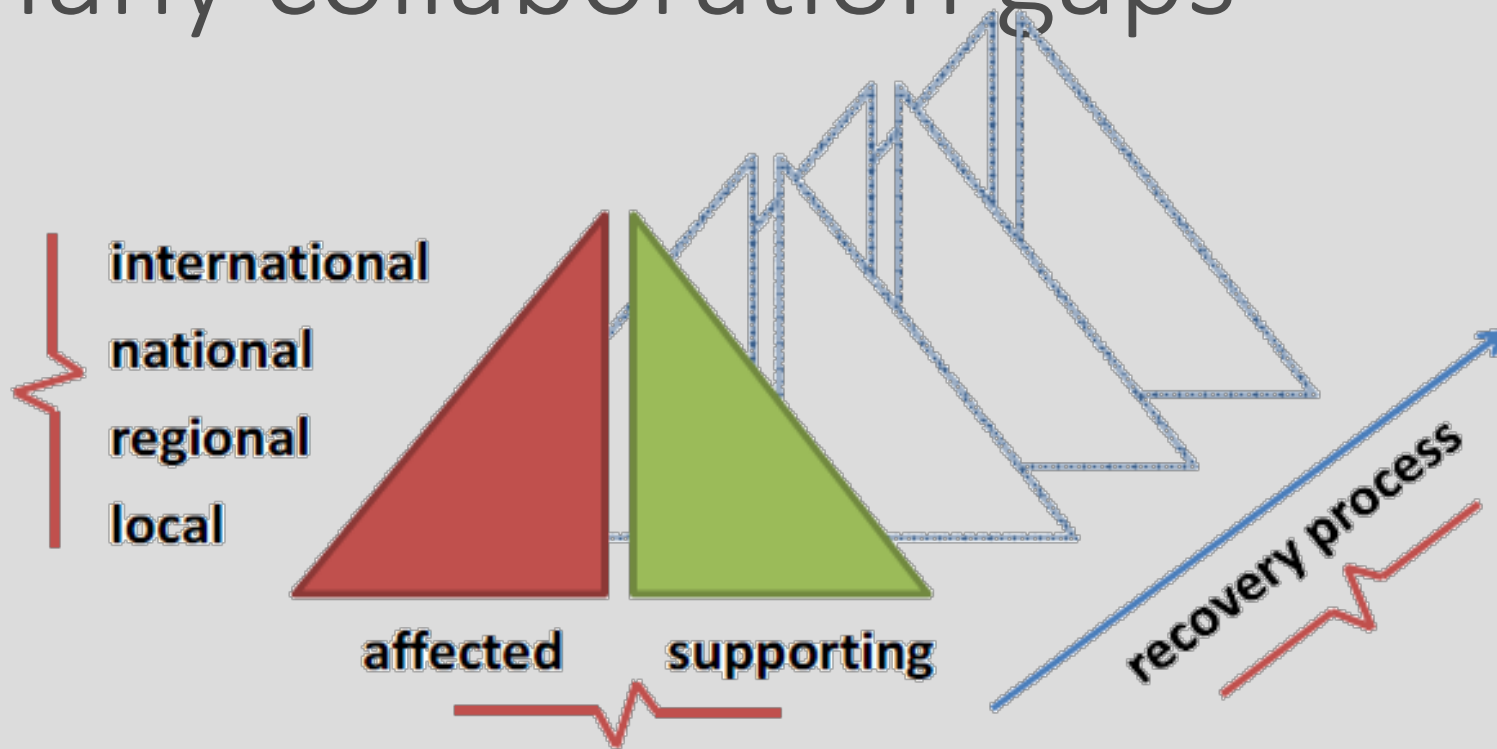
online technical volunteers

Organisation





Many collaboration gaps



organisation awareness

decision making

resource sharing

coordination

information sharing

Hey Christchurch! What do you say?

Share an idea and help shape your Central City.

A new vision is being developed for our Central City and we want your ideas. Get involved by coming along to the community expo.

CBS Canterbury Arena (next to Adlington Raceway) Saturday 12 & Sunday 13 May 10am to 5pm

You can also sign up and contribute online at shareanidea.org.nz.

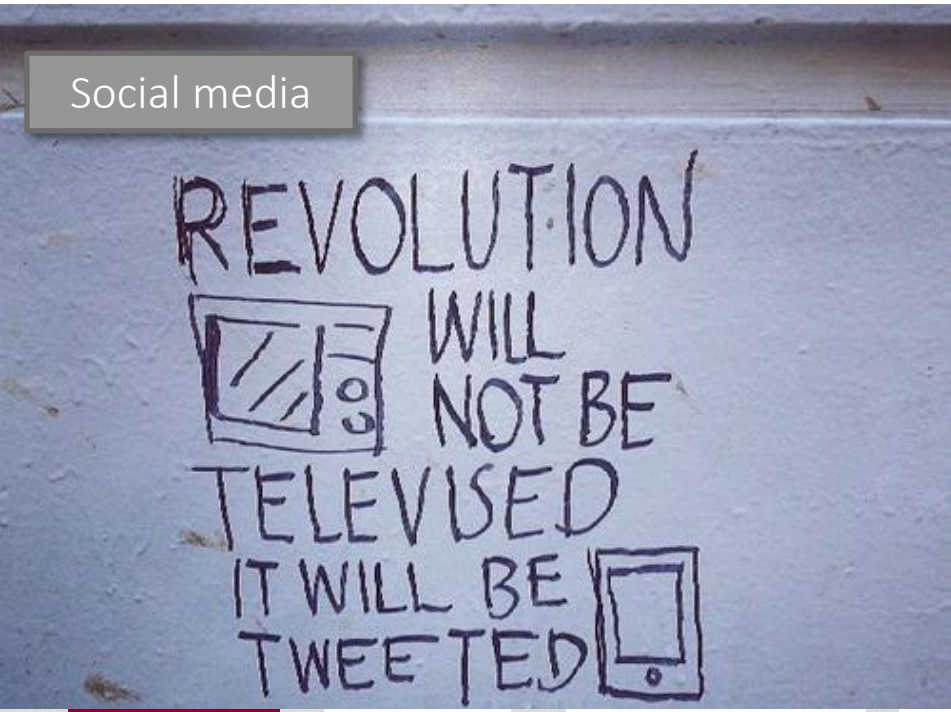
share an idea
shareanidea.org.nz

Public participation

Social engagement



Social media



In Haiti? Text 4636 (International: 447624802524) on Digital with your location and need. Report emergencies and missing persons.

Haiti

The 2010 Earthquake in Haiti

Search Reports Here: [input] DOWNLOAD REPORTS (133) [button]

HOME REPORTS SUBMIT AN INCIDENT GET ALERTS CONTACT US HOW TO HELP ABOUT

FILTERS + REPORTS NEWS PICTURES VIDEO TODO VIEWS - CLUSTERS

From Jan 12 2010 To Jan 22 2010 [button] PLAY

CATEGORY FILTER

- ALL CATEGORIES
- 1. URGENCES | EMERGENCIES
- 2. MENACES | THREATS
- 3. URGENCES LOGISTIQUE | VITAL LINES
- 4. SECOURS | RESPONSE
- 5. AUTRE | OTHER
- 6. NOUVELLES DE PERSONNES | PERSONS NEWS

Crowdsourcing technologies



The COBACORE communities



Organisation sponsors:

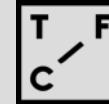




The COBACORE communities



Organisation sponsors:



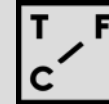


The COBACORE communities



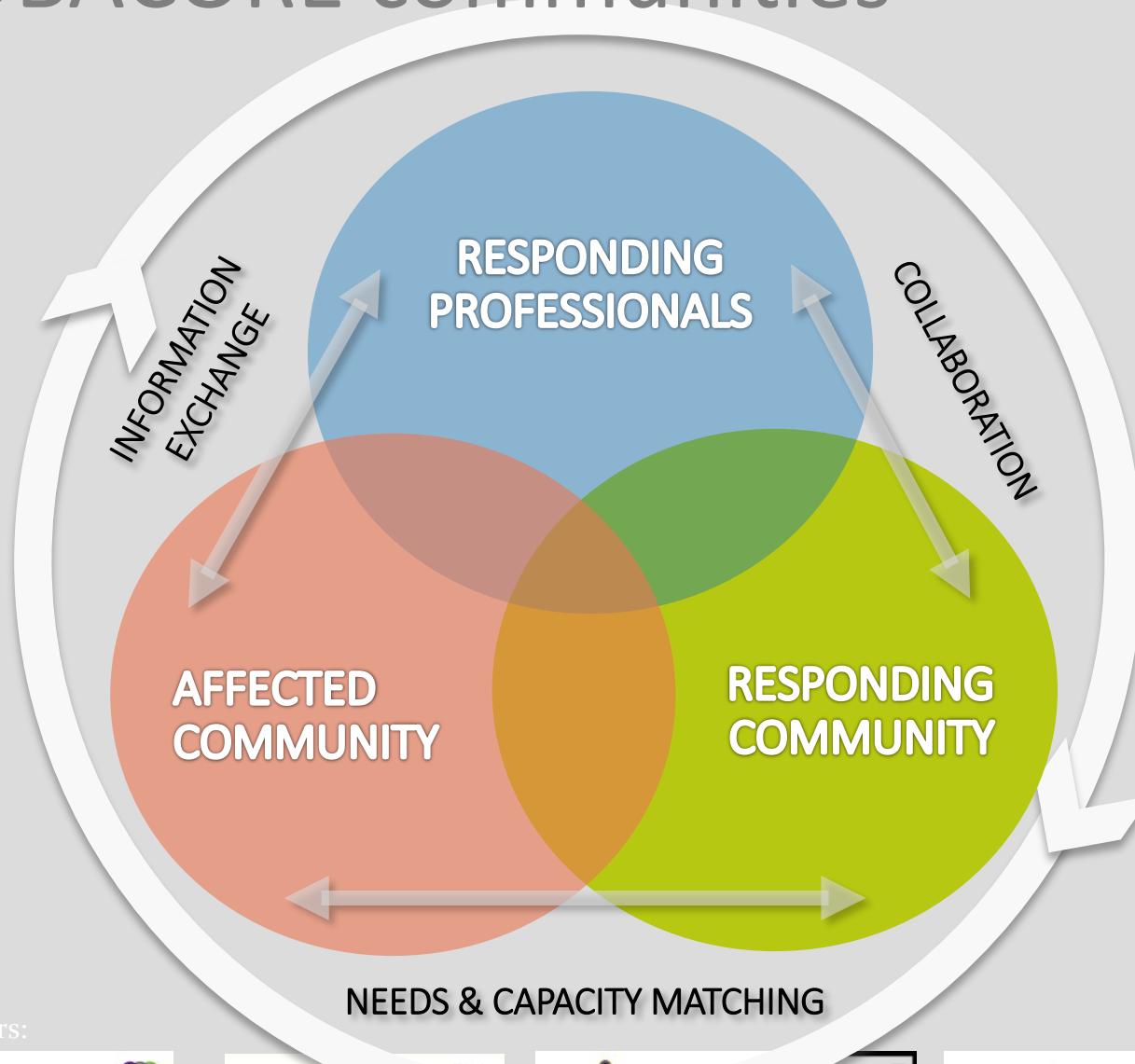
NEEDS & CAPACITY MATCHING

Organisation sponsors:





The COBACORE communities

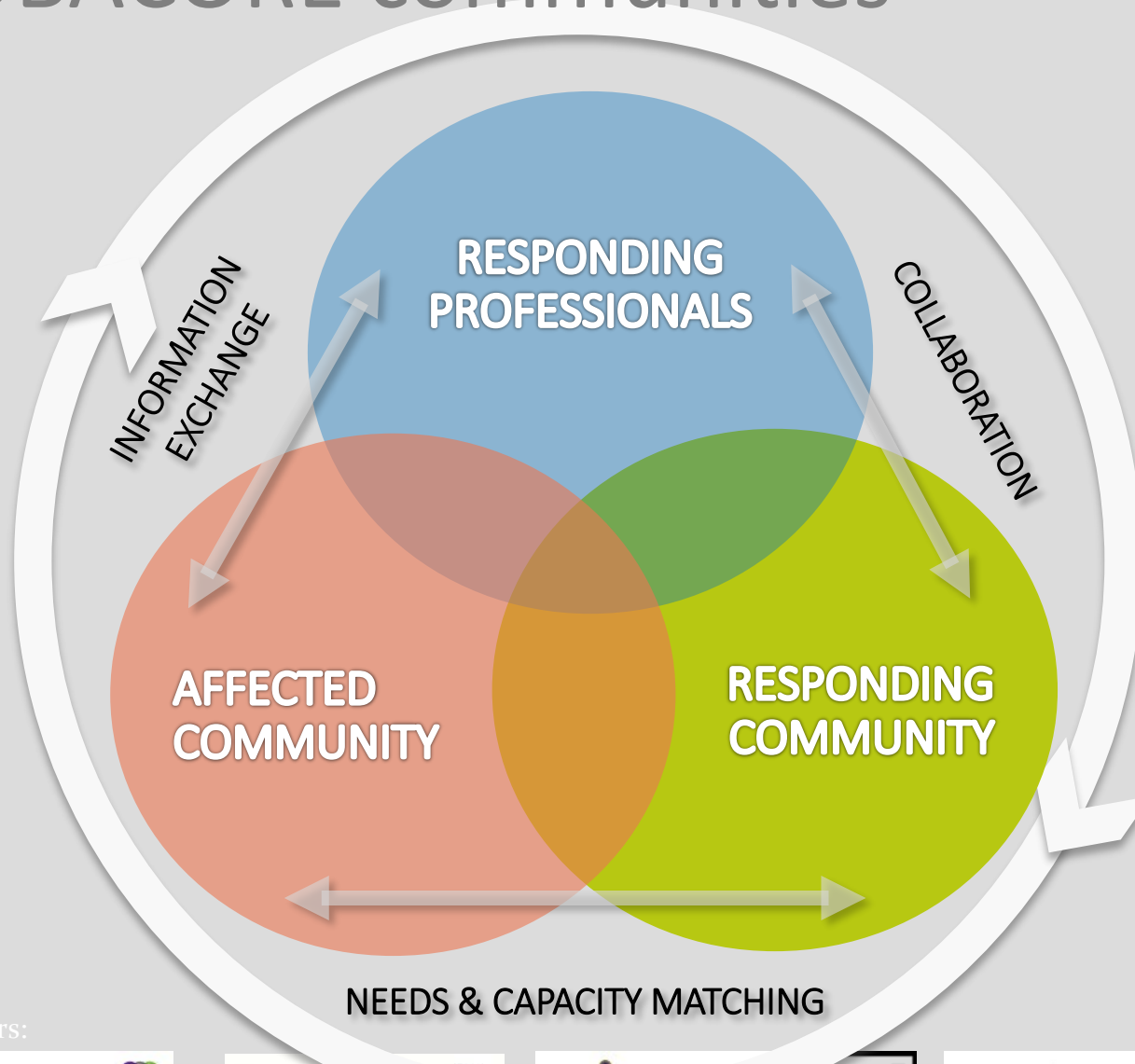


Organisation sponsors:





The COBACORE communities



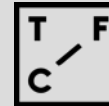
Organisation sponsors:



The COBACORE platform

The screenshot displays the COBACORE web application interface. The browser address bar shows `iscram.azurewebsites.net/#/needs?activity=4726`. The application header includes the COBACORE logo and navigation buttons: "I Need Help", "I Can Help", and "Register Activity". A user profile for "Lucas" is visible in the top right corner, with a "Log out (lucasmartens)" link. The main content area is split into two panels. The left panel shows a map of Kristiansand with various icons representing different types of needs. A pop-up window for activity ID 4726 is displayed over the map, featuring a profile picture of "Liaison" and a message: "The local community gym is open to shelter users affected. However we are over crowded, so please check 1st before coming." Below the message is a "Contact" button. The right panel shows a list of needs. The top entry is from "Liaison" and reads: "We need food and water, especially animal feed for my cows." It includes a date "1 day ago", a status "Needed Within a Few Hours", and a "Watched 1 time(s) Open" indicator. Below this is a "Suggestions" section with a link to "id:17507". The bottom entry is from "Lucas" and reads: "Help fix my pool! The earthquake ruined my pool. The pool is a major Hotspot for kids in the".

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The COBACORE platform

The screenshot shows the COBACORE platform interface. The top navigation bar includes the COBACORE logo, buttons for 'I Need Help', 'I Can Help', and 'Register Activity', and a search bar. The main content area is split into two panels. The left panel displays a map of Kristiansand with various icons representing different types of needs or activities. A pop-up window for a specific need (Id: 4726) is shown, featuring a profile picture of a man named Conor and the text: 'The local community gym is open to shelter users affected. However we are over crowded, so please check 1st before coming.' Below the text is a 'Contact' button. The right panel shows a list of needs with search filters and a 'Date Added' dropdown. The first need is 'We need food and water, especially animal feed for my cows.' by a user with a red profile icon. The second need is 'Help fix my pool! The earthquake ruined my pool. The pool is a major Hotspot for kids in the' by a user named Lucas with an orange profile icon.

for affected & responding communities

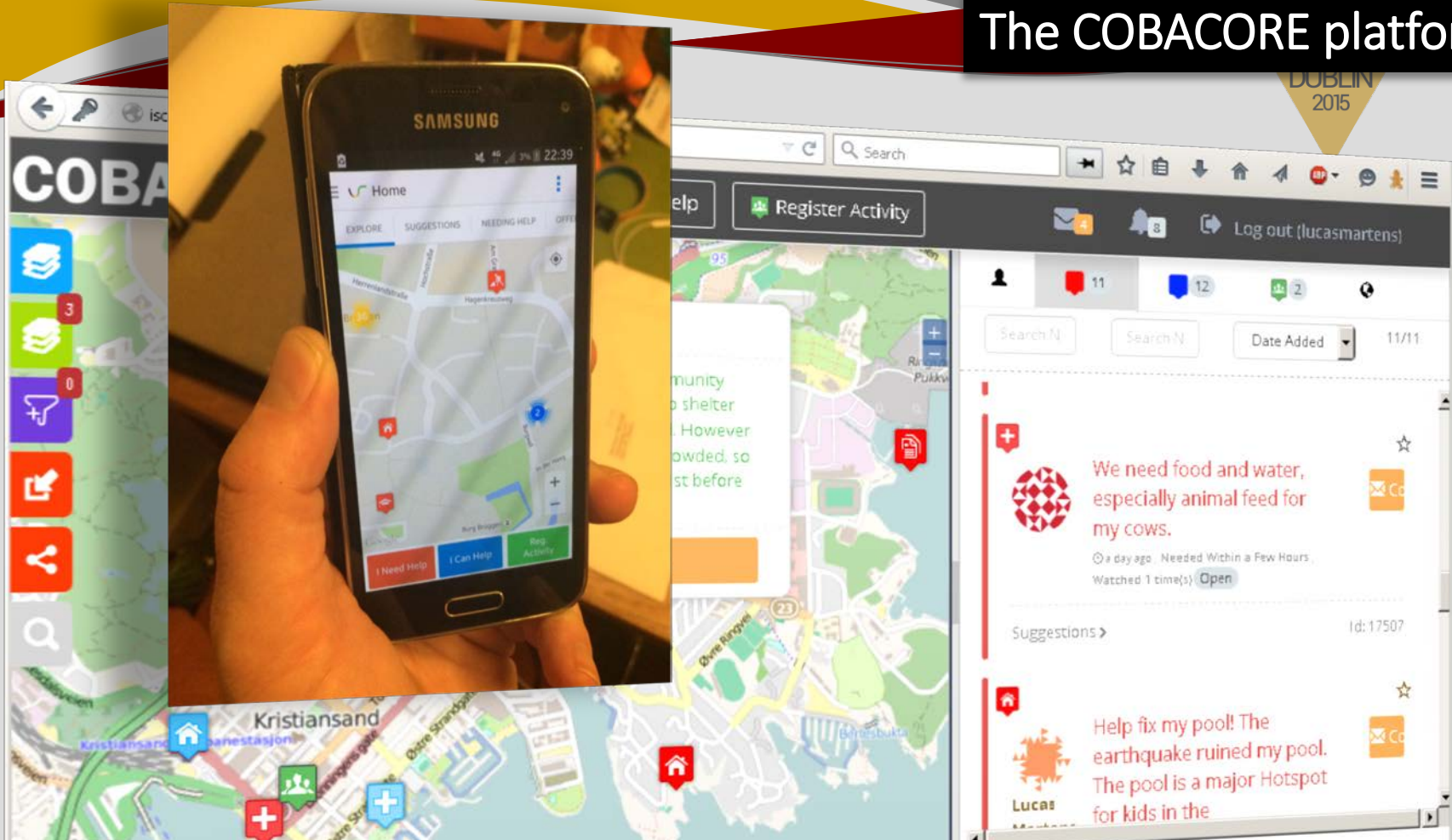
- voice needs and offer help
- make matches and join recovery activities
- share information
- get help and instructions from professional

for professionals

- overview of needs, capacities, actors and activities
- link operational- with community-generated data
- give targeted information to communities
- join community-started activities

The COBACORE platform

DUBLIN
2015



for affected & responding communities

- voice needs and offer help
- make matches and join recovery activities
- share information
- get help and instructions from professional

for professionals

- overview of needs, capacities, actors and activities
- link operational- with community-generated data
- give targeted information to communities
- join community-started activities



DUBLIN

Partial
Berlin, Sev
Bel
Conce

Intermed
june 2014
COBAGame

Intermedi
April 2015, A
Cross-b

Final
October 2015,
Cross-b
Operational



COBAGAME

A

Congratulations!

You have been specially invited to join in a game during the ISCRAM conference. The game is designed around the COBACORE project and platform designed to help emergency responders from disasters. You can find more information about the project in the attached flyer (B).

STEP 1: Your situation
Your first steps should be to learn -- you can see in this mail -- find yourself.

COBAGAME

via profile (C)
to make and
the game (D)

COBACORE

B

COBACORE
Platform Installation

ED
VERY

C

BIO
LAURA BARKER
KRISTIANSSAND

Your name is L
The city will

D

COBACORE Quickstart

The COBACORE platform can be accessed either via your mobile devices using a mobile application or with your laptop using a web browser. In both instances you need to register for the platform using a username and email address. Your email address will only be used to send you a short follow-up survey and if needed to contact you for support.

After ISCRAM we will delete all personal (account) information from the platform and you for support.

GAME SCENARIO

On Sunday May 24, 2015 in Kristiansand, Norway a major earthquake occurred with a magnitude of 7.2 on the Richter scale.

It was one of the worst earthquakes ever in this area.

The epicentre of the quake was in Stral and the depth of the epicentre was 11 km.

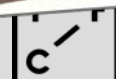
The earthquake has caused major damage in Kristiansand and other villages around it.

Buildings have collapsed or are significantly damaged and the affected areas are difficult to reach.

Organisa



Planning + Research + Economics





DUBLIN
2015

Partial
Berlin, Sev
Bel
Conce

Intermed
june 2014
COBAGam

Intermedi
April 2015, A
Cross-b

Final
October 2015,
Cross-b
Operational



Organisa



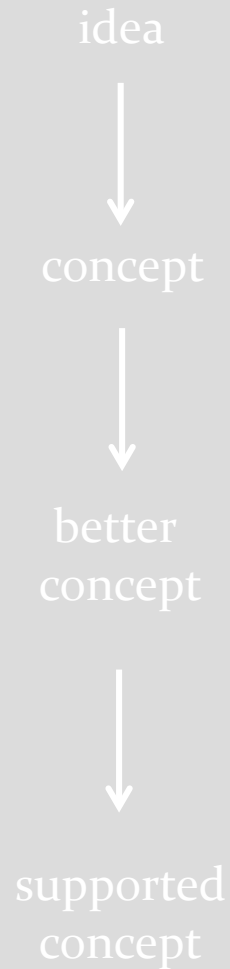


Partial Evaluations
Berlin, Seville, Dublin, Cork,
Belfast, Zilina
Concept evaluation

Intermediate Evaluation
june 2014, Rotterdam, NL
COBAGame, first evaluation

Intermediate Evaluation II
April 2015, Ahrweiler, Germany
Cross-border NL-GER

Final Evaluation
October 2015, Ahrweiler, Germany
Cross-border NL-GER
Operational, mobile, large scale



Organisa





Project SAMENREDZAAM

- Do not confuse a good concept with a ready solution

-

Organisation sponsors:

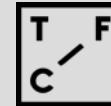




Project SAMENREDZAAM

- Do not confuse a good concept with a ready solution
- Co-creation: work with stakeholders to build practical local variations from the core material

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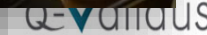
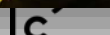
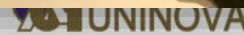


Project SAMENREDZAAM

- Do not confuse a good concept with a ready solution
- Co-creation: work with stakeholders to build practical local variations from the core material



Organisation sponsors:



ESR

DUBLIN
2015



COBACORE

project

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Technical: Martijn Neef (martijn.neef@tno.nl)
EU FP7 Grant: 313308
Duration: 1 April 2013 – 31 March 2016

connect

Get in touch and join us!

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for life

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ULSTER



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Red Cross
 **Deutsches
Rotes
Kreuz**

 **INTEGRASYS**  **geopii**

FutureAnalytics
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TILBURG  **UNIVERSITY**

 **International Federation
of Red Cross and Red Crescent Societies**