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Bridging Resources and Agencies in Large-Scale Emergency Management

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Title:

D09.2: Demonstration of Visualisation and Interaction

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Approved by:
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Classification:
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Abstract:

This document outlines the planning and preparation, the execution and the documentation of the 2nd demonstrator (D09.2) - Demonstration on Visualization and Interaction. The practical demonstration that was executed in Stavanger, Norway on 2013-04-24 showed the visualisation and interaction for each of the concept cases developed in the project.

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1 Executive summary

The second demonstration focused on visualization and interaction technologies. It also reports other aspects like usability and more technical issues uncovered during the demonstration.

One goal of the second demonstration was also to prepare for the third demonstration and was therefore located in Stavanger. The third demonstration will be part of a cooperative exercise between many response organisations in the Stavanger region. By locating the demonstration in Stavanger we could therefore get access to end users which will take part in the exercise. The second demonstration therefore acted as a table top demonstrator for the third demonstration.

In the second demonstration nine concept cases were demonstrated:

- Adaptive Logistics (AL)
- Advanced Situation Awareness (ASA)
- Dynamic Tagging of the Environment (DT)
- Federated Control Room (FCR)
- First Responder Integrated Training System (FRITS)
- Information Intelligence (II)
- MASTER
- Robust and Resilient Communication (RC)
- Situation aWare Resource Management (SWARM)

The demonstration was done in the context of a scenario which focused on a terror attack with two suicide bombers that had blown themselves up after shooting a number of people. There were many dead and injured people at the car deck of a ferry, in the area of the passenger terminal, at the site of the local company and also located very close to a LNG Factory.

The participants in the demonstration were 18 persons from the emergeny services and other respons organisations,which gave comments on each concept case.

In total there were collected around 80 topics and around 45 suggestions for improvements of the concept cases.

Version History

Version	Description	Date	Who
1	First version	13.09.2013	Jan Håvard Skjetne
2	Version for internal review 1	16.09.2013	Matts Ahlsén
3	Version based on first review	18.09.2013	Jan Håvard Skjetne
4	Version based on second review	20.09.2013	Jan Håvard Skjetne
5			
6			

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2 Background

The goal of BRIDGE is to increase safety of citizens by developing technical and organisational solutions that significantly improve crisis and emergency management. The key to this is to ensure interoperability, harmonization and cooperation among stakeholders on the technical and organisational level.

The demonstration work package of BRIDGE is aiming to demonstrate tangible results created during the different project phases. While work package 10 Validation will cover specific elements of visualisation and interaction of single components, the demonstration work showed how the whole system interact and the visualisation of each components when in a system.

The demonstration is also seen as a marketing tool in order to bring innovation close to the market, which is very important for the industry as well as for the end user. This research community – end user interaction will be part of the Demonstration work, leading to a high degree of impact of the created solutions.

The four demonstrators are based on specific scenarios. Each demonstrator differs from the others with respect to its focus but all four are of consecutively increasing complexity. Demonstrator 1 dealt with single components and how to show interoperability under harsh conditions. Demonstrator 2 was a table top demonstration of a large-scale crisis addressing visualisation and interaction and preparing for the third demonstration. Demonstrator 3 will focus on multiagency collaboration (technology) that will be shown in a real world setting. Finally Demonstrator 4 will be based on a large-scale crisis scenario. This will be an integrated exercise presenting the final results of the BRIDGE system.

2.1 The goal of 2nd demonstration in Stavanger

The second demonstration focused on visualization and interaction technologies. It also reports other aspects like usability and more technical issues uncovered during the demonstration.

One goal of the second demonstration was also to prepare for the third demonstration and was therefore located in Stavanger. The third demonstration will be part of a cooperative exercise between many response organisations in the Stavanger region. By locating the demonstration in Stavanger we could therefore get access to end users, which will take part in the exercise. The second demonstration therefore acted as a table top demonstrator for the third demonstration.

2.2 The process of developing a demonstration activity

To develop and run a successful demonstration is a very collaborative effort. All partners need to agree on and to run the demonstration in concert. For this demonstration there was also put down a considerable amount of labour to coordinate and involve external parties to ensure that the project got a good involvement from end users so also their need was met.

To enhance the collaboration and coordination between partners in BRIDGE we decided to use a wiki. This was based on the experiences from the first demonstration, which revealed that people had problems to keep up with the latest information using a document centric

collaboration process. A wiki was then established. The wiki is hosted by BRIDGE partner Fraunhofer FIT using the Confluence tool from Atlassian[1].

To ensure good cooperation with those external parties two persons from BRIDGE consortium got involved as members in the exercise board for the exercise which BRIDGE will take part in as part of the third demonstration.

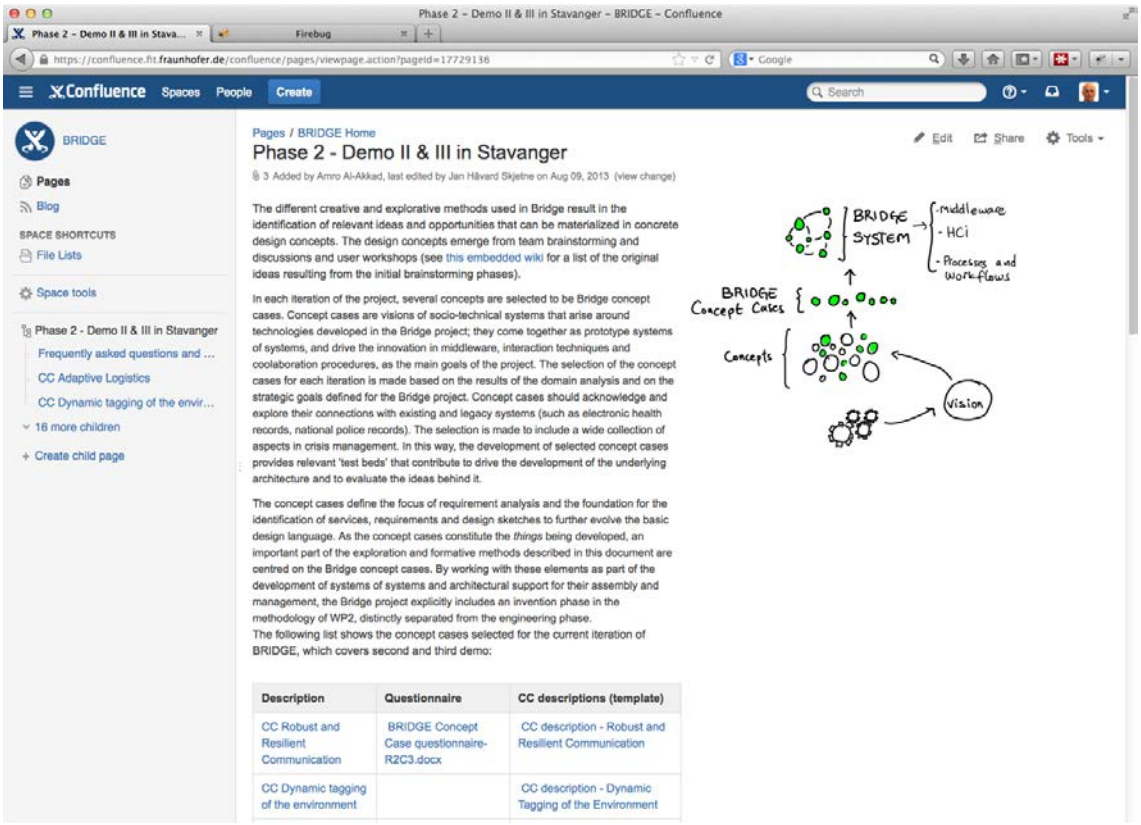


Figure 1. BRIDGE wiki

2.3 Concept cases demonstrated

The development of the BRIDGE technology is driven by concept cases (CC). Concept cases are visions of socio-technical systems that arise around technologies developed in the BRIDGE project; they come together as prototype systems of systems, and drive the innovation in middleware, interaction techniques and collaboration procedures, as is the main goals of the project. The selection of the concept cases for each iteration is made based on the results of the domain analysis and on the strategic goals defined for the BRIDGE project.

In the second demonstration nine concept cases were demonstrated:

- Adaptive Logistics (AL)
- Advanced Situation Awareness (ASA)

[1] https://www.atlassian.com/software/confluence

- Dynamic Tagging of the Environment (DT)
- Federated Control Room (FCR)
- First Responder Integrated Training System (FRITS)
- Information Intelligence (II)
- MASTER
- Robust and Resilient Communication (RC)
- Situation aWare Resource Management (SWARM)

A description of each concept case can be found in Appendix 1.

2.4 The overall scenario

This section describes an emergency scenario in which different aspects of the incident are used to exemplify the use and interaction of the different components of the BRIDGE System. For D09.2 a scenario was constructed taken into consideration relevant elements from the exercise which the project will take part in as part of the third demonstration.

This scenario description was prepared based on the information from our dialogue with the Stavanger Region Exercise Organizing Committee and own suggestions. We did this to assure an as good interaction and relevance as possible between the exercise and the suggested approach from the BRIDGE Concept Cases. The scenario description was continuously elaborated in close dialogue with the Exercise Organizing committee. It was also focused on presenting the BRIDGE concept cases potential to optimize the way the relevant agencies could manage the incident.

2.4.1 Scenario overview used in 2nd demonstration

Starting event

Wednesday 25th September 2013 at 9:16 and the minutes after, there are several messages received at the Regional Emergency Call Centers regarding explosions and shootings in and around the passenger terminal and the Skangass LNG factory in the Risavika Harbor. The callers inform that at least two suicide bombers have blown themselves up after shooting a number of people. There are many dead and injured people at the car deck of the Fjord Line's ferry, in the area of the passenger terminal, at the site of the RESQ company and very close to the Skangass LNG Factory. There is also a truck on fire close to Skangass. Some witnesses / callers also reports of two armed persons who leaves the place in a speedboat.

The BRIDGE oriented scenario description

Based on the received information the Emergency Control Centre (112) performs a first risk assessment using the information, which is available in the system using the MASTER.

The risk analyser which is part of the MASTER *uses the information from:*

INFORMATION INTELLIGENCE (II) *using data gathered from social media, which is analyzed, via a developed detection process.*

ADVANCED SITUATION AWARENESS (ASA) *presenting a:*

- *primary model for physical damages and estimation of injured or dead victims (basis: worst case assumption, unless other data are available from the incident)*

- *primary model of plume dispersion (basis: worst case assumption, unless other data are available from the incident)*

ADAPTIVE LOGISTICS (AL) - *Resource Manager presenting relevant information about all available resources in a predefined area.*

The Emergency Control Centre forwards an extract of this information to the Incident Command Team representatives, which are on their way to Risavika Harbour. The information is received on their hand held MASTER *giving them information about:*

ADVANCED SITUATION AWARENESS
- *Blast Wave Dimensions*
- *Identification of*
  - *Destroyed structures (HOT ZONE)*
  - *Undamaged structures (COLD ZONE)*
  - *Potentially damaged structures*
- *Identification of areas where injured persons are to be expected*
- *Plume dispersion as a function of time for uncontrolled release of toxic chemicals*

ADAPTIVE LOGISTICS
- *Resources on their way to Risavika*

*Arriving at Risavika Harbour the Incident Command Team establish an intermediate Incident Command Post just outside the hot zone. They launch the unmanned helicopter Octocopter (*ADVANCED SITUATION AWARENESS*) which starts searching for injured persons, and giving better information to fine tune the physical damages of the SKANGASS structures. They also receive further details about the air quality from the Octocopters sensor suite. The sensors measures the toxic level in the area. The information also gives the Incident Command Team live pictures and environmental data directly from the HOT ZONE, all presented on the* MASTER.

*Based on updated information from the Octocopter the new risk assessment concludes that a number of first responders are allowed to go into the hot zone. The risk assessment also concludes the need for special vehicles to support the handling of the crisis. This is found in the BRIDGE knowledge database (*ADAPTIVE LOGISTICS*). On request the party is willing to provide the vehicle containing the capability, which is then appropriately equipped, staffed and dispatched. The special vehicles are on their way to Risavika.*

*Since the explosions brought down the network in the areas first responders deploy wireless routers in the Hot Zone in order to build an ad-hoc communication network (*ROBUST AND RESILIENT COMMUNICATION (RC) – *MESH-network).*

*The explosions cause major damages in some areas of the passenger terminal/Risavika Harbour HQ. This hinders first responders to deploy the MESH. Trapped personnel are using their HelpBeacons app (*ROBUST AND RESILIENT COMMUNICATION*) to establish an internal network advertising their emergency needs. Supported by the help beacons mechanism, the smoke divers arrive and salvage the casualties in the area. As soon the phone of the smoke diver gets in range to a BRIDGE Mesh node it publishes discovered*

personnel in the Passenger Terminal/Risavika HQ to allow for visualization on the MASTER.

*The fire-fighters also deploys annotations that mark the space with small units of information that can be relevant to him in finding his way out, or to store information for other firefighters (*DYNAMIC TAGGING OF THE ENVIRONMENT (DT)*).*

*The first responders are using a snap-on networked bracelet to triage each victim (*DYNAMIC TAGGING OF THE ENVIRONMENT – *eTriage). The eTriage integrates physiological sensors and a GPS unit for location tracking. The triaged victims are tagged, carried to the wounded nest, loaded into ambulances (which have been ordered when the victims were diagnosed/triaged and arrive 'just in time'). The ambulance takes the victim to the hospital. The hospital, meanwhile, has been expecting these victims and has prepared the necessary resources (*ADAPTIVE LOGISTICS*).*

*The requested special vehicle (*ADAPTIVE LOGISTICS*) is guided through traffic to its destination, where the traffic police ensure the vehicle can pass through unhampered. At the scene responders receive the vehicle and help coordinate the accomplishment of its task.*

ADAPTIVE LOGISTICS*: A group of people is evacuated from an area that is marked as dangerous by the incident command team. The evacuation action involves counting the number of people to be evacuated, finding and allocating shelter facilities, organizing transport vehicles from the dangerous area to the shelter. Some people may use their own cars to evacuate; others may require busses or ambulances. All individuals are counted and tracked; hence the incident command team (or the governmental incident care team) can retrieve at any moment whether somebody was evacuated, where she/he is evacuated to, and so on.*

Continuously the ADVANCED SITUATION AWARENESS – *gives frequently graphical updates.*

The same occurs from the INFORMATION INTELLIGENCE – *gives frequently updates of their analysis social media and media.*

See also Appendix 4 for a full description of the scenario.

3 The practical demonstration

3.1 2nd Demonstration of visualisation and interaction

The practical demonstration was organised to show and get feedback on how the different concepts cases could support emergency workers from different agencies – police, fire department, hospital, home guard, civil defence and Regional county governor.

The demonstration was organised as a café set-up where nine concept cases presented their technology related to the main scenario at different stations. See appendix 1 for a short presentation of each Concept Case.

The different concept cases were developed to different technology readiness Levels (TRL) ranging from 2 to 4. Technology Readiness Level (TRL)[2] is a measure used to assess the maturity of evolving technologies. Level 2 to 4 is where technology is used to research on the feasibility of the concepts.

3.2 Venue

The demonstration was run in the venues of the Stavanger University Hospital. This ensured that most of the end-user had short distance to the demonstration and the project could also visit the location for the 3rd demonstration, which is close to Stavanger.

Figure 2. St. Svithun hotel at Stavanger University Hospital

See appendix 3 for more information about the meeting venue.

[2] http://en.wikipedia.org/wiki/Technology_readiness_level

3.3 End-users participating

18 person from local response organizations participated in the demonstration:

- 2 persons from the County Governor of Rogaland
- 2 persons from two SMEs – One developer of emergency systems and one industrial designer
- 2 persons from Norwegian Civil Defense
- 3 persons from health care sector- two from local Ambulance service and one from hospital emergency coordinator
- 3 persons from the local fire department – two fire chiefs and one responsible for coordination
- 4 persons from the local police department - incident commanders and leaders
- 1 person from Home defense
- 1 person from the Norwegian Joint Rescue Coordination center

In addition two persons from the projects' End User Advisory Board (EUAB) participated.

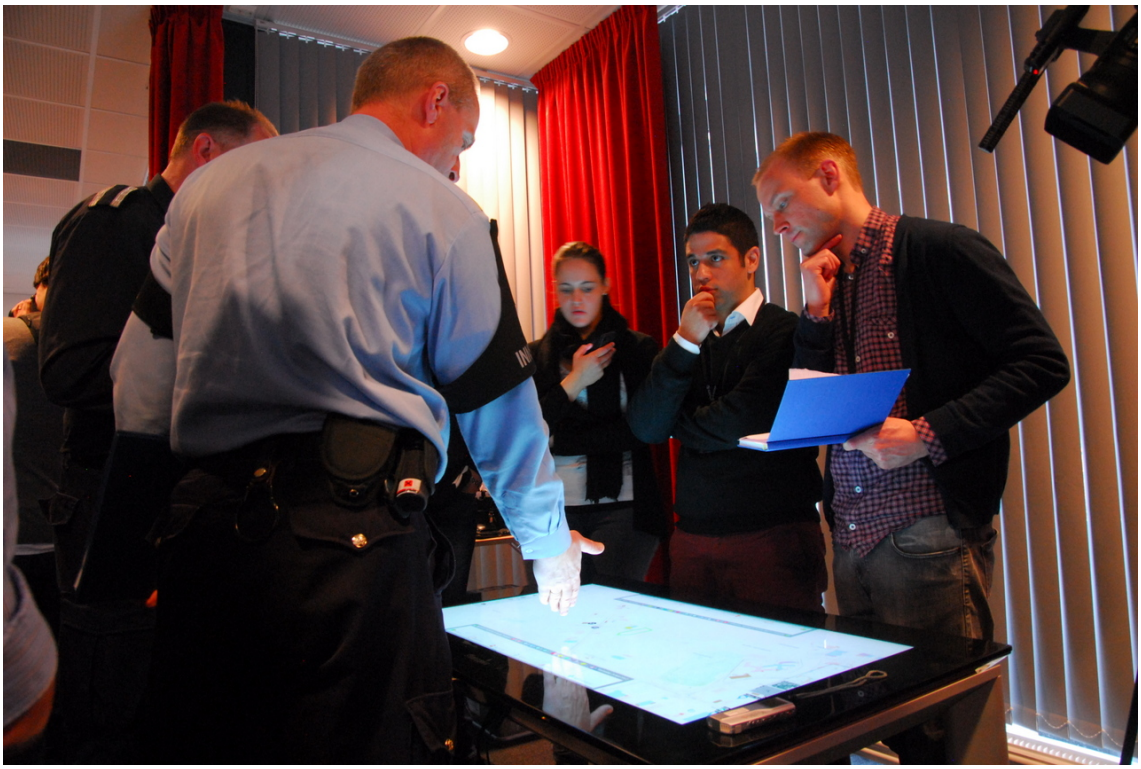


Figure 3. Demonstration of the MASTER

3.4 Organisation of the demonstration

All end users were organised into three groups. These groups consisted of people from different response organisations to ensure that intra-organisational aspects were discussed.

These three groups each visited three different concept cases where they were demonstrated how each concept case would be used in relation to the scenario. It was decided to let each group have more time with a few concepts rather than less time with all. This was done to ensure that each concept case had enough time to get good feedback.

Group / Time	0900	0940	1030	1130
Group 1	Opening and presentation of BRIDGE	MASTER	SWARM	AL
Group 2		FCR	DT	RC
Group 3		FRITS	ASA	II

Figure 4. Time plan for demonstration of all concept cases

The preparation and the presentation of the concept cases during the demonstration was the responsibility of each Concept Case Owners. Each specific concept case gave information on its link/interoperability to the other BRIDGE tools with respect to the demonstration. They also addressed how the concept case fit into the BRIDGE System. To ensure coordination between the different concept cases there were developed an implementation scheme which showed for each concept owner their role in the scenario and the technical set-up. See appendix 5 for the implementation scheme and appendix 1 for description of each concept case.

See appendix 2 for the full program of the meeting.

Figure 5. Demonstration of the CC Information Intelligence

4 Documentation

To be able to learn as much as possible form the involvement of the end-users. It was stressed during the planning that we had a procedure to collet as much information as possible form all participants.

This was done partly by ensuring that all concept cases got their full attention from end-users during the demonstration by the organization of the program, but also that opinions from all end-users where documented fully during the session.

This was done through two means. First by video recording each session so each concept owner could analyse the results after the demonstration. The second was to collect experiences from the demonstration by project participants in a Day after review questionnaire (Appendix 7).

Figure 6. Demonstration of CC FRITS – the training concept case

This questionnaire was developed to ensure that what was learned from the 2nd demonstration is brought forward for further development in the project. The main categories collected were:

- User feedback
- Improvements based on user feedback
- Technology this CC depends on
- Dependencies on this CC
- Requirements to QoS from this CC

There was collected one questionnaire from all nine concept cases and one from WP 11 – Social, legal and ethical aspects. In total there were collected around 80 topics from end-users and around 45 suggestions for improvements of the concept cases. These topics and suggestions are documented in appendix 6.

There will also be also made one video from the demonstration, which will be accessible through the project´s web site.

Figure 7. Demonstration of Adaptive Logistics

Figure 8. Demonstration of Robust and Resilient Communication

4 Appendix 1 – Description of each Concept Cases demonstrated

Overview of BRIDGE Concept Cases

2nd Demonstration

Adaptive Logistics (AL)

CC-owner: Bernard

Purpose:

Coordinating, integrated and synchronizing work processes, and support collaboration.

3 main topics:

- Resource logistics on the site (know where personnel, vehicles and equipment are)monitor progress
- Patient tracking/ e Triage / prediction of victims
- Evacuation of residents

This CC relies heavily on results of other CCs

Expectation of complete demo is demo 4, not earlier.

Expected user need: risk analysis

Advanced Situation Awareness (ASA)

CC-owner: Fritz

Purpose:

Maintaining good situational awareness is crucial to the safety of first responders and the outcome of the situation. *This CC supports situational awareness* by supplying real-time information and filtering of information.

The *BRIDGE Awareness* concept case (CC) will consist of the following components:

- The *PLUS Octocopter* is an unmanned aerial vehicle (UAV). It provides information on physical damage on the scene; number of victims; magnitude of fires; environmental hazards due to toxic substances; plume dispersion; comparison of actual environmental measurement data with exposure limits and recommendations. The UAV is optionally under manual control or on a pre-programmed automatic flight pattern.
- *PLUS Expert System* will be used to automatically analyze incoming data from the PLUS Octocopter. The data will be provided by the Octocopter Ground Station either directly or via an intermediate step, including computer modeling. Within the *PLUS Expert System* incoming data is rated and combined with expert recommendations.
- *PLUS Modeling Module* will be used to create computer-based models of the incident site and the predicted plume in case of an uncontrolled release from the site.

Expected user need: Risk analysis & Situation assessment/awareness

Dynamic Tagging of the Environment (DT)

CC-owner: Erion

Purpose:

Dynamics Tagging is about attaching digital information to real-world objects – to exchange information.

Example:

A 'marker' can be attached to a car, a building, a tree, a person, or be thrown on the ground and they contain information for first responders. These markers can even contain sensors. The first responders can see the information on a map on their devices, or maybe through special glasses, or in other ways.

User need:

- information gathering,
- situation awareness
- optimization of Triage

Federated Control Room (FCR)

CC-owner: Paul

Purpose:

To work together on national level between control rooms. See those control rooms as one large virtual organization.

Incoming calls can be handled more easily, capacities of other control rooms can be used, experts can be asked for advise.

Specific use case, for example: handling heavily burned patients (where to place them for specific treatment?)

Expected user need: Communication & sense-making

First Responder Integrated Training System (FRITS)

CC-owner: Morten

Purpose:

The Main Objective for the Integrated Training System Concept Case is to establish an optimal learning and training methodology, supported by an adequate set of tools, which should improve the quality of emergency response and crisis management in intra-agency and interagency operations. The concept envisions the development in 3 aspects:

- Develop and implement a common optimized learning and training methodology for BRIDGE
- Develop and implement a cost effective training system that supports the above mentioned methodology
- Integrate the training system with the operational BRIDGE system, to assure transfer of information necessary from a training perspective.

Information Intelligence (II)

CC-owner: Daniela

Purpose:

The tool supports emergency managers to get rid of the huge amount of data coming from an additional source of information – social media platforms. Relevant information is aggregated and presented in an easy readable way to the emergency management team (especially person(s) responsible for media monitoring).

The current version of the tool can accessed through an internet browser. The tool aggregates items from different social media platforms (Twitter, Flickr and YouTube) and summarizes the results through the detection of sub-events. Sub-events show important topics the public is concerned with during a crisis. By selecting the sub-events (shown in a map) the corresponding tweets, pictures and videos are shown to the user.

User need: Situation awareness and Information overload

MASTER

CC-owner: Jan

Purpose:

MASTER assists in keeping a common operational picture among central actors during an incident.

The MASTER provide functionality to present and act on three types of information which are accessible through the BRIDGE system:

- Information about the incident, ex incident location and number and triage status of victims.
- Information about the response, ex number and position of police, fire and health vehicles
- Information from external services, ex Weather

User need: Situation awareness & Information sharing

Robust and Resilient Communication (RC)

CC-owner: Amro

Purpose:

This CC is to support communication during emergency response. In hastily formed networks that are established during an emergency response operation the network may be disrupted or partitioned, forming “islands of connectivity”. The idea of the *Robust and Resilient Communication Concept Case* is to build on-demand temporary bridges between those islands of connectivity to improve communication.

Example:

For example a Local cloud of mobile phones of victims in an area can connect to each other, beacons in the field can be used to establish a network, and thereby information can be made visible to first responders.

User needs:

- To aid in communication and information exchange
- To cope with overloaded networks
- to share a mobile on the fly S.O.S. app for people in the proximity

SWARM:
Situation aWAre Resource Management
(previous the Resource Manager + Human Resource Sensing Platform Concept Cases)

CC-owner: Andries

Purpose:

The idea is to combine resource management (resource identification, involvement, task assignment, status reporting) with techniques for situation awareness, in order to:

- Provide a continuous overview to first responders of the resources in their immediate surroundings (including human resources);
- Communicate the context of human resources (e.g. their condition and health, environmental conditions like temperature, background noise, etc.);
- Provide better context-aware estimations of arrival times for moving resources.

User need: Resource management & situation awareness

5 Appendix 2 – Full agenda for the whole demonstration

Agenda 2nd demonstration and project meeting

Meeting Subject:	**2nd demonstration and project Meeting**
Venue:	St Svithun Hotel Gerd-Ragna Bloch Thorsens gate 8 4011 Stavanger Tlf: 51 51 26 00 **Room: Lyssalen**
Date:	22nd – 25th April, 2013
Chair:	Geir Horn, Andreas Zimmermann
Distribution:	Project consortium

DAY 0 – Monday 22nd

Time	Subject	Topics to be covered	Time (mins)	Lead participants
12:00	**Preparing for demonstration**	Set up of demonstrators and preparation		All
15:00	Planning of demonstration			Jan Håvard Skjetne

DAY 1 – Tuesday 23rd

Time	Subject	Topics to be covered	Time (mins)	Lead participants
09:00	**Opening**	• Welcome • Information		RAKOS Stavanger University Hospital
09:15	**Preparing for Cold Run**	• Set up of demonstrators and preparation • Internal testing • Desired outcome of the Cold Run		Jan Håvard Skjetne
09:30	Cold run I	Technical Validation		Jan Håvard Skjetne and each Concept Case Owner
10:30	Coffee break	15 min		
12:00	Lunch break			
13:00	Cold Run II	Technical Validation		Jan Håvard Skjetne and each Concept Case Owner
14:00	Coffee break			
14:15	Visit to Risavika	Bus transport. Bring jackets and rain coats.		Morten Wenstad

16:30	Bus to back hotel			
18:00	Social Event	Bus transport. Meeting point outside main entrance St.Svithun. Casual, bring jackets and rain coats		RAKOS

DAY 2 – Wednesday 24th

Time	Subject	Topics to be covered	Time (mins)	Lead participants
08:00	**Preparing for Demonstration**	Set up of demonstrators and preparation		Jan Håvard Skjetne
09:00	Introduction to the Demonstration	• About BRIDGE • Describing short each Concept Case		Andreas Zimmermann
09:30	Demonstration by end-user with guidance from BRIDGERs.	Follow script developed		Starting with Morten Wenstad and Jan Håvard Skjetne
	Coffee will be served during the demonstration			
11:45	Demonstration by end-user with guidance from BRIDGERs.			
12:30	Lunch break			
13:30	Co-Design Workshop	• Explain Video Prototyping method • Hand out equipment • Form groups • Video Prototype of the BRIDGE SoS • Do the scripting and cutting		Monica Büscher
14:30	Coffee break			
14:45	Co-Design Workshop continued	• Production of Video Prototypes		Monica Büscher

16:15 - 17:00	Demonstration (by end users)	• Presentation of Video Prototypes, through this demonstrate use of BRIDGE SoS and individual Concept Case Systems • Discussion (formative evaluation) • Validation focused on identifying potential for qualitative improvement of large scale emergency response		Monica Büscher
19:00	Dinner	Bus transport. Meeting point outside main entrance St.Svithun		RAKOS

DAY 3 – Thursday 25th

Time	Subject	Topics to be covered	Time (mins)	Lead participants
09:00	**Demo II Retrospective**	• What was good, what went wrong? Input from Validation. • What should we do more next time? • What should we avoid next time? • Feedback from EUAB • Start BRIDGE EIA and second PIA (Ethical and Privacy Impact Assessment)	90	Andreas Zimmermann and Geir Horn
10:30	Coffee break			
10:45	Priorities for "technical" development	• Concept cases • Work packages (WP4 - WP8) • Middleware	90	Bernard Van Veelen Group activities
12:15	Lunch break			
13:30	Demo III Revision	• Revise scenario / storyboard for Demo III (Morten Wenstad) • Revise timeline of Demo III • Align concept case scenarios with the timeline of the demo	90	Bernard Van Veelen Group activities

15:00	Impact on Demo III	Summarize experience of Demo II Discuss consequences on Demo III	75	Andreas/Geir
16:15	Close of the meeting			

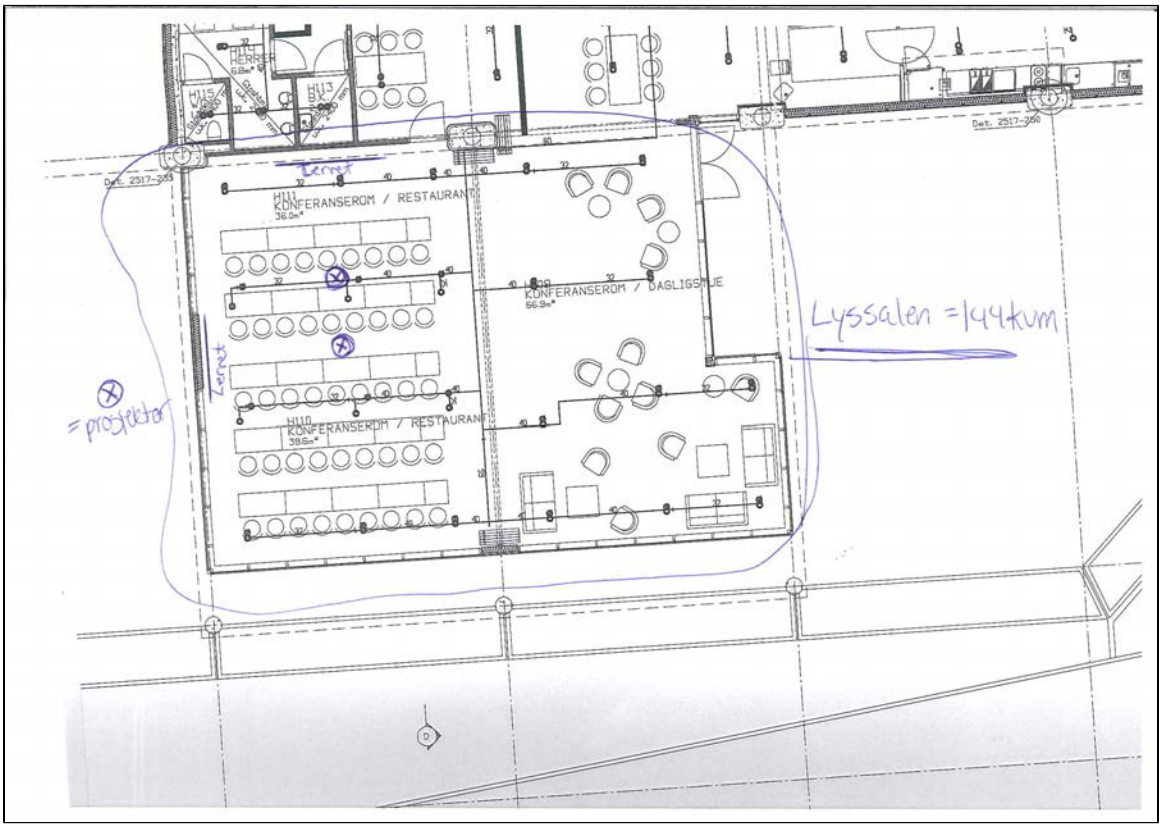
(DAY 4 – Friday 26th - optional for a few)

Time	Subject	Topics to be covered	Time (mins)	Lead participants
09:00	**Demo II Follow up**	• Interviews with end-user participants • EIA/PIA with end users	?	Jan Håvard Skjetne FIT WP2, ULANC WP2

Demo III Revision

6 Appendix 3 – Information about the meeting location

St. Svithun info



Floor plan of the conference room

We will have one big conference room and some smaller rooms.

Access to outside area.

Part of the hospital

Good conference facilities with open wireless internet access.

7 Appendix 4 – Full scenario

Scenario Description Demonstration II and III in Stavanger

The scenario description will give an overall picture of the scenario giving the BRIDGE team necessary input for detailing the demonstrations. The scenario description for demo II and III are under development and will be continuously updated based on input from the Concept Case Owners and through Morten and Åges dialogue with the Exercise Coordination Committee.

SCENARIO DESCRIPTION - DEMO 3 2013 IN RISAVIKA - STAVANGER

Introduction

This document describes the overall scenario for the execution of demonstration D09.3 in BRIDGE. D09.3 will be aligned with a live exercise owned and managed by the Stavanger Region Emergency Exercise Organising Committee. The live exercise will be managed and lead by the emergency actors with the main objective to train their personnel on different levels of operation. BRIDGE must align their demonstration in accordance with this situation.

Representatives from BRIDGE and WP9 (Morten Wenstad and Åge Vølstad) participates in the Exercise Organising Committee responsible for the planning and execution of the overall live exercise. This, to assure a good coordination between the Committee and BRIDGE.

Participating organizations

The participating organisatons in the exercise are as follows:

- Rogaland Police District
- South Rogaland Fire Department
- Stavanger University Hospital including ambulance services
- Joint Rescue Coordination Centre – South
- Rogaland Civil Defence District
- Rogaland Home Guard
- Risavika Harbour
- LNG Factory (Skangass)
- Other potential industrial actors in Risavika Harbour

Description of the RISAVIKA site and its surroundings

Risavika Harbour is a modern and future-oriented harbour offering a comprehensive and attractive range of harbour services for regional, national and international players. The harbour enjoys a solid position with arrivals and departures from and to international harbours, and as a hub for cargos being transported to other locations in Norway. A description of the Risavika Harbour is found on: http://risavika.no/modules/module_123/proxy.asp?D=2&C=58&I=152&mid=133

A number of populated residential areas are close to the harbour. Further information and photos of the Risavika Harbour and its surroundings are found on: https://project.sintef.no/eRoom/ikt2/BRIDGE/0_2bc18.

Close up Risavika.png

Passenger terminal.jpg

The above picture of the Passenger Terminal and the RESQ Training Centre is planned to be the main role out area for the BRIDGE system of Systems.

RISAVIKA Scenario description

Introduction

This scenario description has been prepared based on the latest information from our dialogue with the Stavanger Region Exercise Organizing Committee and own suggestions. This, to assure an as good interaction as possible between the exercise and the suggested approach from the BRIDGE Concept Cases. The scenario description will be continuously elaborated in close dialogue with the Exercise Organizing committee. It is also focused on presenting the BRIDGE concept cases potential to optimize the way the relevant agencies could manage the incident. See also: Scenario Description Demo 3

Phase 0: 23rd September 1400

PSS (Police Security Service) presents an updated threat assessment to the Chief of staff and the Operations manager at the local precinct. The threat assessment is classified as RESTRICTED and can not be presented here.

It is related to a terrorist threat against harbour terminals and supply bases received in June 2013. The background is that “Al Muntaqim” (AM) tried a similar terrorist attack in the Netherlands. Their target was the supply base at Hoek van Holland located at the seaward approach to Rotterdam. The conclusion is that AM probably has the capacity to strike against Norwegian interests in the near future. On this basis PSS has described recommended measures.

Phase 1: 25. September 09.06 - 09:25

The Dispatch Centrals 1-1-2, 1-1-0, 1-1-3 receives multiple inquiries about ongoing shooting and explosions at the ferry terminal and Skangass at Risavika Harbour. The following information is received:

- 4 persons arrived in a rib/speedboat. They started shooting with automatic weapons which was followed by 2 suicide bomb explosions.
    - Two of the attackers armed with rifles and machine guns is about to leave the premesis in the same boat as they arrived in.
    - Many people are killed, and there are also a lot of severe injured people in the area.
    - A truck is set on fire, and is parked just a few meters from the fence at Skangass.

Phase 2: 25. September 09:25 - 10:15:

- First units from the emergency agencies are arriving at Risavika.

- Several reliable witnesses states:
    - 4 heavy armed persons arrived in a speed boat.
    - 2 of them blasted themselves.
    - 2 remaining persons has recently left the premesis in a white speed boat after shooting a lot of people in the harbour area.
- The scene is chaotic, many injured in all degrees, and unharmed peoples are strongly affected by the incident.

- The fire in the truck has been extinguished by personnel from Skangass.

- The school vessel “Gann” is on fire – and there are many shot victims and severe damages caused by one of the suicide bombers.

- The police forces establishes a secured area for the paramedics and the firefighters. The Risavika area in total is not secured at this moment.

- There are many killed and injured on the ground nearby a bus at the ResQ training centre, and in the area of the international ferry terminal.

Phase 3: 25. September 10:15 - 11:00

- The fire in the truck and the fire on Gann have been extinguished.

- There are a large number of dead and injured in 3 different sectors in Risavika Harbour:
    - International ferry terminal
    - School vessel “Gann”
    - Training centre ResQ

  In addition there are 1 dead and 3 injured near the truck. (2 of them with severe burn wounds)

- The overview of dead, injured,minor injured and evacuees are as follows:
    - ResQ and Truck – 10 dead, 15 injured, 3 minor injured and 12 evacuees.
    - Ferry terminal - 21 dead, 5 injured, 3 minor injured and 18 evacuees
    - Vessel «Gann» - 25 dead 15 injured, 2 minor injured and 21 evacuees
      Several of the injured have life-threatening injuries. Among the dead and injured there are youngsters from different schools from the municipalities Stavanger – Sandnes – Klepp.

- Resources arrives continuously, also from the reinforcement units.

- Injured patients are transported to Stavanger University which is under pressure regarding capacity.

- There are a large number of incoming calls from anxious relatives.

- There are a large number of evacuated (minor or none injuries) who is strongly affected by the incident.

- National and local media broadcasting «live» from the site and at the hospital

Phase 4: 25. September 11:00 - 12:30

- Critically wounded patients are given emergency medical assistance, and being transported to the University hospital. Some critical injuries will be transported to Bergen and Oslo by plane or helicopter.
- Helse Stavanger HF asks the municipalities to implement measures to relieve the hospital capacity.
- Next of kin centre is established at Sola Airport Hotel, but there are a lot of inquiries regarding the incident at the hospital as well.
- Among the killed and wounded there are also foreign citizens. (It has been confirmed Danish, German, and Polish citizens among the dead).
- The media escalates, and are approaching with a critical view and points out comparisons to the Utøya incident.
- The dead ppersons are still at the various locations/crime scenes.

Phase 5: 25. September 12:30 - 16:00

- A total of 38 injured patients have been placed at 3 different hospitals.
    - 6 of the injured inflicted with severe burn wounds. In addition 4 of them have suffered from shot wounds.
    - 12 with minor injuries is transported to different local medical clinics.
- A total of 51 persons is evacuated to the next of kin centre. Among these there are a number of teachers and students associated to Stavanger, Sandnes, and Klepp municipalities.
- Several countries have established contact with Norwegian Authorities to offer support and assistance.
- Superior authorities demanding status reports and measures being implemented.
- Emergency response personnel are exhausted and heavily affected by the incident.

Phase 6: 25. September 16:00 - 23:59

- All the injured are taken care of at the hospitals
- The evacuation and next of kin centre still holds many clients.
- The schools involved are requesting assistance.
- A total of 56 peoples are killed at Risavika- 52 on site, and 4 in the hospitals. There are several critically injured, so the number of death may increase.

Remarks

1. SKANGASS will be under normal production during the exercise. Due to safety regulations we are not allowed to use non EX-certified systems inside SKANGASS in this time frame. This will still give us the possibility of simulating and modelling the effects of the explosions at Skangass but the "role out" of the BRIDGE system will mainly be done in the area between Skangass and the ferry terminal.
2. One of the main training objectives will be the handling of mass casualties from the incident area and to different appointed hospitals other evacuation centres. This also includes coordination of international support handling major burning injuries.

8 Appendix 5 – Implementation scheme

Stavanger Implementation Scheme - 2nd demonstration

Scene	Description from the point of view of the action forces	Concept Case(s) involved	BRIDGE scene responsible (no indication = CC leader)	OPERATIONAL/ FUNCTIONAL VIEW Resp.: CC leader if no other indication *(Effect/change/advantage of the Bridge component for the end user)*	TECHNICAL VIEW Resp.: CC leader if no other indication *(Brief introduction of relevant Concept Case from a technical perspective during this certain scene)*	Observations that assures documentation of the BRIDGE system and BRIDGE concept cases main functionality at the demo
0 0930 - 0950	**Starting position: Presenting the scenario for Demo2 and the reasoning behind the differences to the existing draft of the scenario for Demo3.** • Fjord Line ferry is passing Skangass towards passenger terminal • Entire area is under construction • Heavy traffic • Bus of oil workers arrived in front of RESQ (a training company)	FRITS	MWe	**FRITS**: Based on the process so far in the Exercise Organising Committee for Risavika, presenting the learning and Training Methodology in the MeTracker (Methodology Tracker). Mainly focusing on the **Analyze** and **Planning** Phase. For the **Execution** phase, present:	Describing MeTracker, use of a simulation tool (VBS2) and the use of AKKA as a supporting tool for doing observations during the exercise and results for the evaluation phase.	Video of the presentation.

	• 20 specialists from all over Europe are inside Skangass for maintenance work and modification • Skangass: 2 persons in the Operational center and 5 persons supporting the specialists at different places inside the factory area. • 1 truck unloads propane (western part of the industrial area) and 1 truck is loading LNG gas close to the main entrance. A number of LNG trucks are outside the gate waiting to load LNG gas. • Tanker with 10 persons onboard is waiting to load LNG			1. one example of using a Virtual Training System for the Incident Command level. Test Case: Sola Airport. 2. AKKA as an observation tool. Test case: Hell Tunnel. Showing an example of the Exercise Management tool controlling the exercise. For the **Evaluation** Phase: Present the results from the exercise in the Hell Tunnel in Trondheim. For the **Lesson Learned Repository** phase, just describe a general example on how this could be done. A number of end users will receive a tablet, prepared for doing observations during the demo, reflecting their comments and initial thoughts about each concept case.		

1	**Initial event (not terror)** Around 09 h a truck with propane gas on its way through the SKANGASS gate suddenly explodes resulting in subsequent explosions in the same area. This results in massive injuries (at least 20) and leakage of oil, gas. The gas is burning.					
2	**First reaction** SKANGASS operational centre starts the emergency procedures: calling emergency centres. In parallel the emergency centre´s (110 – Fire, 112 – Police and 113 – Ambulance) receives a lot of calls with different descriptions of the accident. Police find that the explosion is not caused by an terror attack.					

3	**Gathering of available information and resources** by the Emergency control center all sources e.g. social media like Twitter. Go into federated mode.	**Information Intelligence (II)** Resource Manager **Master**		II: Operation centre go through Social Media messages (especially, Twitter) to know what issues/incidents/ problems concerns the public. It could be seen as an additional (but not the single-)source of information for decision making. Master: An operator at the operation center is seated in front of a desktop computer running Master. The map is also showed on a projector at the center so that everyone there can see the situation picture. Per default, the Master shows the scene of the incident. RM: The current location and status of the resources are shown on the Master map.	II: Use stand-alone system (including a GUI) to show the principles/idea of sub-event detection Master: Desktop computer running Master application, which is streamed to a projector. RM: a Smartphone application in combination with a BRIDGE service. In demo 2, we use a simulator instead of smartphones for the resources. The simulator simulates the resources and their movements and publishes them to the BRIDGE middleware publish/subscribe component. The Master is subscribed to this data.	M: A videocamera directed towards the desktop computer running the Master will film th e sessions. Sound will in addition be recorded with audiotapes.

4	**Mobilize necessary resources and establish basic common operational picture** • Mobilize IC team • contact other Emergency control rooms even cross border in case of… • Incident commander will get risk assessment results on hand held master on their way to Risavika harbor. • Spesific modes for burned victi ms	Federated Control Rooms (FCR) **Master**		Master: The person at the operation center who sits in front of the desktop computer proceeds to: 1. Mobilize a set of resources to the scene of the incident (decide resources with Almende) and see them moving to the incident site. 2. Add relevant elements to the map regarding the incident (e.g. risks, entry point, exit point). 3. The incident commander who is on his way to the incident site has a tablet or laptop computer with him that runs Master. He sees the elements that the team at the operation center has added earlier (as all information about such elements is synchronize d between the Master instances).	Master: Desktop computer running Master application, which is streamed to a projector. Master: Stream Master in Tablet via Skype (or show the real Master on a laptop).	M: A videocamera directed towards the PC or/and projector will film the sessions. Sound will in addition be recorded with audiotapes.

5	**First Risk Assessment** **…** based on discussion between ICTeam and representatives from Skangass.					
5a	**…** based on info analyzing social media	Information Intelligence		II: Operation centre go through Social Media messages (especially, Twitter) to know what issues/incidents/ problems concerns the public. It could be seen as an additional (but not the single-)source of information for decision making.	II: Use stand-alone system (including a GUI) to show the principles/idea of sub-event detection	
5b	**…** based on worst case modeling	Advanced Situation Awareness (ASA)		I. Definition of diffferent zones of physical damage to structures. II. Estimate of different degrees of injuries and number of casualties. III. Definition of different zones of dispersion of toxic gases as a function of time following the explosion. IV. Visual and infrared images of disaster zone (aerial view).	Use of (1) sensor equipped flying platform, (2) computer-based expert system, and (3) computer-based modelling of blast damage to structures and persons, and environment impacted by hazardous material.	

5c	**...** based on resource manager tool	Adaptive logistics (AL)		AIM of AL: To (be able to) get an overview of the interaction/coordination between all ongoing efforts, current plans and intentions, and actual progress being made. Especially (planning and monitoring) the coordination between activities is our concerns USECASE: Plan/coordinate distribution of victims over available hospitals Gain overview of relevant aspects of the SAR effort • How many wounded predicted • How many resource personnel available • How many beds • Who is going where?	Based on the predictions from the ASA concept case, negotiations are started to obtain sufficient beds for the burnwounds (FCR) The	
5d	... update operational picture based on information	Master		Master: Incident command team at the operation center discuss risks and add risk elements to map to show where the risks are located.	Master: Desktop computer running Master application, which is streamed to a projector.	M: Videocameras directed towards the desktop computer and projector running the Master will film the sessions. Sound will in addition be recorded with audiotapes.

6	**Continues collecting information and update operational picture** • Establish Incident Command Post • Check & verify different information • Live pictures • Building Damages • Casualties • Air quality (safety of health services) • toxic plume • damaged ferry • damages at Risavika harbor terminal • many burn victimsàcross border • broken communication • dropping environment markers and sensors	Advanced Situation Awareness (ASA) **Federated Control Rooms (FCR)** **Dynamic tagging of the environment (DT)** **Human Resource sensing platform (HR)** Master Information Intelligence		Master: Commanders from the emergency services gather around the Master table at the local control post. The commanders use the freehand drawing functionality in the table to denote information that comes in, and updates the map with new elements when new information comes in. ASA: Risk reduction for first responders due to sensor- and camera-based information on the disaster zone. DT: Firemen get information on the environment even before they go into it. Tags work as position markers, in addition to having temperature and gas sensors on board. II: Operation centre go through Social Media messages (especially, Twitter) to know what issues/incidents/ problems concerns the public. It could be seen as an additional (but not the single-)source of information for decision making.	ASA: Real-time update of sensor data from flying platform; optimization of models using current data. DT: Dropped tags have a GPS sensor or are initialized with the GPS coordinates from the octocopter. II: Use stand-alone system (including a GUI) to show the principles/idea of sub-event detection	M: A videocamera directed towards the MaterTable will film the sessions. Sound will in addition be recorded with audiotapes.

7	**Update Risk Assessment** including**:** • Blast wave dimensions (damaged/undamaged) • Areas of expected casualties • Plume dispersion • Status of the “Resources”	Advanced Situation Awareness Advanced logistics				M:Video and audiotape
8	**Establish Communication Network and sensor network** is build up by emergency services while entering the hot zone	Robust and Resilient Network (RR) – MESH-network Dynamic tagging of the environment		DT: Tags are part of the mesh network and help with the hopping of data.	DT: Emergency workers carry "courier" device to gather information from tags that are out of reach of the MESH.	
9	**Identify victim involved** **HelpBeacon.app** is used by trapped persons in the heavily damaged Risavika harbor terminal because rescue services are hampered to set up the mesh. The phone of an arriving fire fighter is building automatically a bridge to the next Bridge Mesh allowing the visualization on the Master	Robust and Resilient Network Master HelpBeacon app		Master: The information gathered by the HelpBeacon app is sent to the Master where the trapped persons shows up on the map. The commanders at the local control post click the icons representing the trapped persons to get more information about them. Master: The users allocate paramedics to go and help the victims by dragging the resource to the victim position and choosing SAR -> person needing help in the pie menu.	Master: The users use the Master table and/or the desktop computers that are setup at the local control post.	M: A videocamera directed towards the MasterTable will film the sessions. Sound will in addition be recorded with audiotapes

10	**Continuos tracking of progress of search and rescue and control of situation** Triaging of the victims by a snap-on networked bracelet. Entering their location via mobile mapping app since no automatic localization technology is available.	Dynamic Tagging of The Environment Master		Master: The information gathered by the eTriage system is sent to the Master where the wounded patients show up on the map. The commanders at the local control post click the icons representing the trapped persons to get more information about them.		M:video and audiotape
11	**Identify victims and get overview** Triage data is explored by different visualization technologies.	Dynamic Tagging of The Environment		The triage data is currently in the system but cannot be explored by the experts in the field. We present different user interfaces and want to explore which one fits best for which situation		M: A videocamera directed towards the MasterTable will film the sessions. Sound will in addition be recorded with audiotapes
12	**Transport victimes for treatment** • The triaged victims are tagged • carried to the wounded nest • loaded into ambulances • ambulance takes the victim to the hospital • Hospital has meanwhile prepared the necessary resources	Adaptive Logistics Master		Get overview of actions/coordination of actions in the near future • deployed resources • progress on started procedures • coordination • intended/planned actions • intervention/ adjustment capability		M: Video and audiotape

13	**Manage resources for efficient implementation of decisions** A **requested special vehicle** i s guided by the traffic police who ensures that the vehicle can pass through unhampered.	Adaptive Logistics Resource Manager				M:Video and autdio tape
14	Continuously and frequently **updati ng of** all available **inform ation**, resources, actions and moves of all involved forces on the Master.	Master Advanced Situation Awareness Adaptive logistics Resource Manager Human Resource Sensing Platform Information Intelligence				M. Video and audiotape
15	Communication with the network is interrupted The network is not reliable and connection is lost from time to time.	Master Mesh		Master: All users of Master instances is continuing their work. When the network is up an running all data is syncronized.	Master: When network is down data is stored locally and synchronized when the network is up and running again.	M: A videocamera directed towards the MasterTable/PCs /etc. will film the sessions. Sound will be in addition be recorded with audiotapes

9 Appendix 6 – Main results from Day after questionnaire

1 Advanced Situation Awareness

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

Advanced Situation Awareness (ASA), consisting of:

(1) Unmanned aerial vehicle with cameras and sensors, connected to manned ground station (computer-control of UAV);

(2) PLUS Expert system (sensor data analysis software, providing advice to emergency services based on the evaluation of real-time environmental data);

(3) Module Computer-based modelling (2D and 3D) of explosion induced damages and injuries, as well as atmospheric dispersion of toxic gases

What was the user feedback on the demo of the technology in the CC/WP:

- Provide at least two versions of ASA:
  (a) Most basic version (e.g., UAV (Octocopter) with VIS camera only);
  (b) Fully comprehensive version (e.g., UAV with VIS- and IR cameras, plus environmental sensor module, PLUS Expert system, plus Modelling Module))
- Main probable users: fire fighters
- Define specific advantages of ASA for different groups of first responders (Police-ASA, Fire fighter-ASA, Paramedic-ASA, Environmental Protection-ASA)
- Consider training efforts (duration of ASA training; background know-how as pre-requisit)
- Specific ASA services to be purchased for Critical Infrastructure protection (e.g., large chemical factories, power plants, airports, railway stations, etc)

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
UAV	(a) Definition of environmental operating parameters of Octocopter (b) Test flights with and without sensor platform
Cameras & Sensors	(a) Laboratory tests of VIS- and IR cameras (b) Laboratory tests of radiation-, gas- and particle sensors (c) Ensure display of geo-referenced ASA-derived information (video, sensor-data, plume dispersion model) on MASTER Table Ensure display of 3D structural- and injuries models on MASTER Table

2 Adaptive Logistics

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

Adaptive Logistics

What was the user feedback on the demo of the technology in the CC/WP:

- Trust
  - Too detailed information for decision making at incident command
  - Too much interaction
  - Discussion trust vs skill/education/etc. (disqualification)
    - (Red colour coding might be an issue)
  - Interaction with Resource Manager & vehicles
- Planning & tracking patients
  - Useful as concept
  - Align with their plan-mode
  - E-triage also on vehicles & resources
  - What happens when e-triage is loose and lost
- Control
  - Challenging to give decision power out of hands
  - Inform vs. Decide
  - Level of automation vs. Autonomy
  - Fallback options (if automation fails, are ,“old“ procedures still directly available
- Feasibility
  - Challenging to get all information systems together
- Gantt chart with milestones could be useful for communication (vs. Workflow representation)

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Focus	Choose a specific subscenario for implementation (patient tracking/ face map)
Integration with other CC	Dependent on subscenario (RM, II/etc)
3 configuration	Need to include domain specific knowledge/information

approaches	
Coordination of configuration	Interaction using BRAWL
Middleware	Need to implement on Bridge middleware platform
Trust support	Simplify interface, collect reputation & feedback data, integrate in configuration approaches
DEIN	Make DEIN knowledgebase accessible for configuration approaches

3 Dynamic Tagging of the Environment

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/ Work package discussed in this form?

Dynamic Tagging of the Environment

What was the user feedback on the demo of the technology in the CC/WP:

- general feedback was that the concept as presented is quite useful
- one policeman said that visualization of triage data is not relevant for police. When the decision has to be made which patient to treat next, health services have the most experience and therefore they provide orders for police. So, he thinks that the visualization technologies could be useful for health services but not for police
- The first impression after the comparative user study of most participants was that the map is more useful than the AR view because they were of the opinion that it provides a better overview. However, also some people preferred the AR view because it provides a more direct reference between virtual and real objects
- an ambulance complained about too much information on the visualization which distracts from perceiving the most important information. He explained that he usually draws a very simple map on a blank sheet of paper only consisting of some landmark structure like walls or buildings and the position and category of victims
- eTriage was deemed as very useful for the triage and medical personnel. The desire was expressed to also help with the identification of the victims, maybe by a fingerprint reader or a driver's licence reader.
- Sensor bombs to sense gases etc in the environment were not deemed as particularly useful for several reasons: the fire fighters already go prepared and in full breathing gear in such environments; the real risk is from gas chemical reactions under high temperature, not from the gases themselves; the sensors to be thrown would land on the ground where the air is relatively fresh. Sticky sensors could be useful, though they did not believe any technology could stick to the walls long enough to bring useful data out.
- Tagging the environment, i.e. leaving messages associated with an object for other responders was not deemed as particularly useful, as the work is mainly coordinated by the chief of operations, i.e. there is no direct communication between teams. Every team stays at most 20 minutes in the building, hence faster reporting does not substantially improve the process.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Visualization	Analyse which visualization is superior for which use case. Then analyse which use cases should be addressed and adjust the visualization accordingly.
Extension of CC	Carefully rethink CC and talk with other users to see whether there is indeed a case for tagging the environment. Regarding the eTriage concept, it should be extended with victim identification.
Implementation of Sensor Bomb	The sensor bomb concept needs to be studied more in depth and with more users to see whether it could fit anywhere in the responders' workflow.

4 FEDERATED CONTROL ROOM WITH "FACEMAP"

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

FEDERATED CONTROL ROOM WITH "FACEMAP"

What was the user feedback on the demo of the technology in the CC/WP:

The end users were very positive about the usefulness of this concept. They believe that critical decisions can be made faster and more efficient when facemap is available to support work involving multiple federated control rooms. Some specific remarks from the workshop. The system: - Saves time in processes - Gives good overview of people involved - Provides immediate interoperability between multi-agency (distributed) experts - The general benefits of this facemap approach seems to outweigh the dis-benefits - Capability of developing further: lots of concrete ideas for further feature extensions and improvements - Great starting point!

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Vetting	Check is someone can perform the role or task well.
Security Check	The available people in the federated network, available in facemap, should be checked
Selection Support	System could automatically suggest 1 candidate for a role. It should allow you to inspect why it suggests this candidate as preferable under the specific circumstances. Experience with similar cases could be a reason for selection. A matching with a tagging/description of the circumstances could be used as additional tags to use. (Example – experience with CBRN). So there is a matching between the specific incident characteristics and the person profile and experience.
Logging capability	Logging functionality could be added. This essential logs who you connected with via facemap, when, what for, what was discussed, what was decided. It should be possible to look back in the log during the incident. The first responders felt that transparency is necessary and ok. (this function is partly application-specific, but could make use of a general logging service if available). Logging should include who made which decisions.
Keep it updated	Have the system somehow ensure that the peoples profiles in the federation facemap system are up to date. There is an organizational responsibility in addition to an individual responsibility. The organization determines in which roles and for what purposes someone may provide work.

Keep it actual	It should be clear and accurate who is currently available, on duty, standby etc. This should be maintained continuously.
Keep it simple	The user interface should be clear and simple.
Unified Process and role terminology should be used	There should be a clear set of common definitions for processes, tasks, roles etcetera. Consideration: a Rank in one organization may have a different quality than in another one. This means that people with the same nominal rank, may not be suitable for the same (common definition) roles.
Face Views	You should see different selections of faces depending on the area or interest or the process you are doing. This could be handles by tabs, layers etc. For example: fire, medical, police views for example, and within that more specific. Expert views also.
Critical task ICON with status indication	This allows the end user to condense a face-map view for a specific decision and process to a single icon that stays on screen. The icon may have a collared (flashing) ring around it suggesting its priority (can wait, critical etc) or status (on-going, completed). The status indication could also show if there is a critical blockage in getting the underlying work done. It could be that someone underlying has been reassigned to another task.
Protocols	Should be incorporated into the federated system. These should be processes on which the federated organizations agreed – also in terms of which organization and role has responsibility for what. The federated system views using the protocols should be able to adapt the protocol/process views easily to get the job done under situations where improvisation might be necessary.
Trust	The system should allow training runs that allow people to get acquainted and gan trust. Distinguish. trust inside and outside organizations. System could make of some kind of trust components/logic.
Training	System should allow training/exercises.
SMART	Specific measurable actionable reliable timely etc The processes should be specific. Intermediate results should be measurable/observable (the underlying DEIN forms could hell). Actionable: system should help make a process completely actionable and make sure that there are no blockages Reliability: right people at right time Timely: the system should help keep things timely The specific protocols/processes/plans that are made (and put under an icon) should have SMART characteristics

5 FRITS – First Responder Integrated Training System

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

Concept Case Training: FRITS – First Responder Integrated Training System

What was the user feedback on the demo of the technology in the CC/WP:

In overall very good feedback. **MeTracker/ Training Methodology** Avoid being a document management system The need for this kind of system is great. This kind of tool does not exist today. **AKKA/Observer/Controler** The need for an easy-to-use tool to gather information and get it structured in a centralized place. Not only highlight negative actions, but also bring up the good examples. **Virtual/Simulated training system** This kind of tools is needed for procedure training.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
MeTracker	Make the analysis and planning tools ready for operational use. Prototype of AKKA integration for exporting training objectives.
AKKA	Export and replay of observational data. Improve the UI. Improve the tracking.
Virtual	Implement the scenario for Risavika. Export data to mastertable(entity position status and type) Video integration (Stream “virtual” video, e.g. CCTV, Octocopter to Master table or any other RTSP compliant device)

6 Information Intelligence

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

Information Intelligence

What was the user feedback on the demo of the technology in the CC/WP:

Demonstration of "Information Intelligence" Concept Case – Questions and Discussions; Stavanger, 24 April 2013, "Group 3"

Questions:
- Does the tool allow access to "open" tweets only? (police)
- How many people required to operate the tool? 1 person sufficient? (police)
- How long does it take for information (e.g., Tweet) to show up in tool? "Time is essential." (police)
- How can the information be narrowed down? Keywords? (county)
- Are media channels being monitored as well? (county)
- Aren't media houses using such tools? They should have it. (county)
- What is (classified as) "old" information, what is "new"? (civil protection)

Suggestions:
- - Possible to permanently "scan" social media, in real time, using keywords like "shooting", "fire" "bombing", etc.? Who, e.g., public authority, would be allowed to "scan" social media like this?
- - Monitoring of media channels should be included as well.
- - Filtering down information using keywords as well as stop/black lists of words should be possible.
- - Filtering based on geo-coordinates (specific area) given by the user
-

Potential uses:
- It is important for the media spokesperson to have an overview, e.g., by means of the tool. (county)
- We have to get all information, find people, get information about and from people, find out who needs help, who can provide help. (police)
- Tool would be most useful in large gatherings like concerts, festivals; important information can be acquired early on; problems/riots often start with, or are indicated early on by, Tweets; source/start of problems could be detected (and restrained) from the very beginning. (police)
- It is about interaction with the public, providing information and getting information. (civil prot.)

Assessment:
- "very good" (civil protection)
- "exciting, most impressive"; "finish it, we buy it" (police)

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
User Interaction	Filtering of results/messages based on keywords (considering also a stop/black list of words) given by the user
User Interaction	Filtering based on the geo-coordinates defining a specific area of interest
Source Data	Creating and using a dataset related to the scenario (Stavanger II); in terms of time, geo-data and the scenario description (with its detailed events)

7 MASTER

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

MASTER

What was the user feedback on the demo of the technology in the CC/WP:

We got a lot of constructive feedback from the end-users, (we also video taped some feedback): - Need areas with information regarding the incident site on MASTER (YR.no / weather station / metrologisk institute data to MASTER). Information like wind direction is important. - Octocopter possibility to MASTER (Fritz's data to MASTER). - Need universal SITREP message to all resources on the map (instant SITREP message to all resources) - Important to secure and clarify the area before allocating resources. Very important! - Need a plan layer for Risavika, Stavanger. - "Plan mode": Should be able to plan on the map, like drawing, and then be able to save the plan and distribute it later. - Drawing ability should definitely stay. - Critical to have a tablet version of the MASTER for Stavanger 2. This is currently a great challenge for us since our SDK does not support Windows 8 (need to upgrade the framework and see how it goes...) - Should be able to allocate a specific group of resources from the map (make it simple and use mouse for this?) - Daniela's information aggregator is nice to have on the MASTER for Stavanger 2. - CTAS' management system must be in place in MASTER for Stavanger 2. - Zooming - instant zooming out to get clear view of the incident area. - Acknowledgement from a resource back to commander, that he/she has been allocated and moving. - Filtering resources in accordance to the agencies using MASTER - Police for instance does not want to share their stuff, it is against the law. - Include a table that shows the total amount of available resources. - Police arrival phase: Use MASTER only. - Police action phase: Combine radio communication with MASTER. - Positive to and they need resource management on MASTER.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
S2D2S	Problems when there are a lot of simultaneous publish/subscribe operations going on and general stability.

8 Robust and Resilient Communication

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

Robust and Resilient Communication

What was the user feedback on the demo of the technology in the CC/WP:

Delay-tolerant networking:

It can help in situations of normal radio communication break down.

One first responder (fire fighter) mentioned limited potential for providing fall back communication channel as he only uses real-time voice communication and delay of voice traffic is very critical in most situations. The first responder was not sure if delays of 5-10 seconds would be tolerable (i.e., delay of voice traffic is very critical) and could give no feedback to other types of communication.

Viral Deployment:

Useful for deploying an app dynamically by deploying ad hoc a router. But, also one first responder (fire fighter) explained that this is only useful for limited scenarios.

Reluctant towards technological change.

Further, several first responders mentioned concerns about security issues, e.g. a terrorist could hack system and send false reports (e.g., send message with need for help at a certain place but there is a bomb hidden there).

One first responder (from police) could imagine that such an application (i.e., HelpBeacons) could be used by the police during for gun rampage to communicate with “trapped” people. However, this would also raise security issues.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
GUI	Simplify User Interface, remove too technical information
Distribution	Add more modalities, e.g. QR codes.
DTN	Explore new native reference implementation for Android phones.
Messaging	Explore UDP instead of TCP/IP for short-lived interactions.

9 SWARM: Situation aWAre Resource Management (new CC title)

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

Resource Manager + Human Resource Sensing Platform -> **SWARM: Situation aWAre Resource Management (new CC title)**

What was the user feedback on the demo of the technology in the CC/WP:

Since most resources are only indirectly controlled by the incident commander, via their respective profession-specific control rooms, it is necessary for the incident commander to be able to provide to these control rooms tasks to mobilize a certain amount of their respective resources.
The way of working proposed in this concept case should eventually be adopted as the standard way of communicating between incident commanders, control rooms and first responders, also outside emergency response situations.
Communication via phone, messaging, etc. should all be logged inside a single log trace.
More overview on the Master is necessary, independent of the map: lists of task assignments (and tasks which exist but have not been assigned yet) and lists of resources (including their status).
Include the target destination indication and ETA in moving resources.
Smartphone app should contain direct call button underneath the acknowledgement button, enabling the first responder to seek contact with the task assigner.
Think of integration / coexistence with TETRA.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Master integration	Extension with lists of resources and tasks
Master integration	Extension of resource visualizations with destination and ETA reporting
Smartphone app	Realize the new version of the app ☺ including the phone integration and destination and continuous ETA reporting
Task concept	Extend task concept with metatasks (Russian doll tasks)

10 WP12 – Social, legal and ethical aspects

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Work package discussed in this form?

WP12

What was the user feedback on the demo of the technology in the CC/WP:

Legal: Importance of privacy/security issues was raised in several discussions with end users. *Ethical*: nonmaleficence (Privacy/Security, logging, information overload, access to technology, usability, fear of technology failure, fear of time-consuming input, 'holes' in what is being tracked, need for communication support, public understanding), beneficence (speed, efficiency, quality of service, decisions, collaboration, automation/deference, decision support, not decision making, citizen engagement),

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Privacy/security	Implemented by design and default, e.g. through mechanisms for encryption, and anonymization, as well as rules for storing, access-levels and deletion of data. Additional legal requirements that must be transformed into technical functions are functions making it possible to determine "informed consent" and/or "opt out" from data subjects. Transparency/non-technical documentation of reasoning for exceptions.
Nonmaleficence (logging, information overload, access to technology, usability, fear of technology failure, fear of time-consuming input, 'holes' in what is being tracked, need for communication support)	Transparency of what is being logged, tracked and *not* tracked, training, graceful augmentation, resilience/robustness, make innovation *socio-technical*, that is, consider new roles, such as information officer, feeding master and operating master, add 'dialog/confirm' to resource allocation, make role-based access/usage possible, public understanding
Beneficence (speed, efficiency, quality of service, decisions, collaboration, automation/deference, decision support, not decision making)	Possibility to overrule and opt out of automated processes, inspect algorithms, logics and policies, give sense of information quality and provenance, support citizen engagement, dialog with communities

Support	circumstances. Experience with similar cases could be a reason for selection. A matching with a tagging/description of the circumstances could be used as additional tags to use. (Example – experience with CBRN). So there is a matching between the specific incident characteristics and the person profile and experience.
Logging capability	Logging functionality could be added. This essential logs who you connected with via facemap, when, what for, what was discussed, what was decided. It should be possible to look back in the log during the incident. The first responders felt that transparency is necessary and ok. (this function is partly application-specific, but could make use of a general logging service if available). Logging should include who made which decisions.
Keep it updated	Have the system somehow ensure that the peoples profiles in the federation facemap system are up to date. There is an organizational responsibility in addition to an individual responsibility. The organization determines in which roles and for what purposes someone may provide work.
Keep it actual	It should be clear and accurate who is currently available, on duty, standby etc. This should be maintained continuously.
Keep it simple	The user interface should be clear and simple.
Unified Process and role terminology should be used	There should be a clear set of common definitions for processes, tasks, roles etcetera. Consideration: a Rank in one organization may have a different quality than in another one. This means that people with the same nominal rank, may not be suitable for the same (common definition) roles.
Face Views	You should see different selections of faces depending on the area or interest or the process you are doing. This could be handles by tabs, layers etc. For example: fire, medical, police views for example, and within that more specific. Expert views also.
Critical task ICON with status indication	This allows the end user to condense a face-map view for a specific decision and process to a single icon that stays on screen. The icon may have a collared (flashing) ring around it suggesting its priority (can wait, critical etc) or status (on-going, completed). The status indication could also show if there is a critical blockage in getting the underlying work done. It could be that someone underlying has been reassigned to another task.
Protocols	Should be incorporated into the federated system. These should be processes on which the federated organizations agreed – also in terms of which organization and role has responsibility for what. The federated system views using the protocols should be able to adapt the protocol/process views easily to get the job done under situations where improvisation might be necessary.
Trust	The system should allow training runs that allow people to get acquainted and gan trust.

	Distinguish. trust inside and outside organizations. System could make of some kind of trust components/logic.
Training	System should allow training/exercises.
SMART	Specific measurable actionable reliable timely etc The processes should be specific. Intermediate results should be measurable/observable (the underlying DEIN forms could hell). Actionable: system should help make a process completely actionable and make sure that there are no blockages Reliability: right people at right time Timely: the system should help keep things timely The specific protocols/processes/plans that are made (and put under an icon) should have SMART characteristics

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview:
https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	**Concise description of dependency**
	(please extend table as required)

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	**Concise description of improvement**
	(please extend table as required)

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	Concise description of usage
	(please extend table as required)

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	Concise description of available service
	(please extend table as required)

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	Bandwidth	Update Frequency	accuracy	data availability	latency	Payload size/formats	…

5 FRITS – First Responder Integrated Training System

5.1 BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

Concept Case Training: FRITS – First Responder Integrated Training System

What was the user feedback on the demo of the technology in the CC/WP:

In overall very good feedback. **MeTracker/ Training Methodology** Avoid being a document management system The need for this kind of system is great. This kind of tool does not exist today. **AKKA/Observer/Controler** The need for an easy-to-use tool to gather information and get it structured in a centralized place. Not only highlight negative actions, but also bring up the good examples. **Virtual/Simulated training system** This kind of tools is needed for procedure training.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
MeTracker	Make the analysis and planning tools ready for operational use. Prototype of AKKA integration for exporting training objectives.
AKKA	Export and replay of observational data. Improve the UI. Improve the tracking.
Virtual	Implement the scenario for Risavika. Export data to mastertable(entity position status and type) Video integration(Stream “virtual” video, e.g. CCTV, Octocopter to Master table or any other RTSP compliant device)

Technology this CC/WP depends on

What technology of other CC’s or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the ‘services’ that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	Concise description of dependency
WP 8	Integration with Master table using the middleware. (Virtual)
Master	Support for RTSP in the Master table
Middleware	Transformations service from SOAP-XML to EDXL

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	Concise description of improvement
Master	The mastertable must support additional Ethernet interface for hi-capacity IP network for this to work, ref discussion regarding LinkSmart bandwith capacity of videoservices.

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	Concise description of usage
Master	Master table training module integration. (EDXL/XML) Video stream

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	Concise description of available service
Master	Input of simulated entities operated in a virtual environment: vehicles and humans with attributes: GPS (long, lat), health status, IDs, name (free-text) and type.

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	**Bandwidth**	**Update Frequency**	**accuracy**	**data availability**	**latency**	**Payload size/formats**	**…**
WISE gateway handler	Max: 1 mbps	Variable bit rate depending of number of entities.	Real-life accuracy.		1000ms	1kb/entity	
Video LAN	Max: 2,5mbps	Hardware encoder: Real-time	H264 Mpeg4	Multicast	HW encoder: <250ms SW: encoder: <5000ms	Max UDP packages size.	

6 Information Intelligence

6.1 BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

Information Intelligence

What was the user feedback on the demo of the technology in the CC/WP:

Demonstration of "Information Intelligence" Concept Case – Questions and Discussions; Stavanger, 24 April 2013, "Group 3"

Questions:
- Does the tool allow access to "open" tweets only? (police)
- How many people required to operate the tool? 1 person sufficient? (police)
- How long does it take for information (e.g., Tweet) to show up in tool? "Time is essential." (police)
- How can the information be narrowed down? Keywords? (county)
- Are media channels being monitored as well? (county)
- Aren't media houses using such tools? They should have it. (county)
- What is (classified as) "old" information, what is "new"? (civil protection)

Suggestions:
- Possible to permanently "scan" social media, in real time, using keywords like "shooting", "fire" "bombing", etc.? Who, e.g., public authority, would be allowed to "scan" social media like this?
- Monitoring of media channels should be included as well.
- Filtering down information using keywords as well as stop/black lists of words should be possible.
- Filtering based on geo-coordinates (specific area) given by the user

Potential uses:
- It is important for the media spokesperson to have an overview, e.g., by means of the tool. (county)
- We have to get all information, find people, get information about and from people, find out who needs help, who can provide help. (police)
- Tool would be most useful in large gatherings like concerts, festivals; important information can be acquired early on; problems/riots often start with, or are indicated early on by, Tweets; source/start of problems could be detected (and restrained) from the very beginning. (police)
- It is about interaction with the public, providing information and getting information. (civil prot.)

Assessment:
- "very good" (civil protection)
- "exciting, most impressive"; "finish it, we buy it" (police)

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
User Interaction	Filtering of results/messages based on keywords (considering also a stop/black list of words) given by the user
User Interaction	Filtering based on the geo-coordinates defining a specific area of interest
Source Data	Creating and using a dataset related to the scenario (Stavanger II); in terms of time, geo-data and the scenario description (with its detailed events)

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	Concise description of dependency
Publish/Subscribe (blackboard)	Using the S2D2S to communicate results from the aggregation process to the Master Table (Advanced Situational Awareness)

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	Concise description of improvement
Publish/Subscribe (blackboard)	Storage of several hundreds of text messages (tweets, descriptions of pictures and videos, including links to related pictures and videos) representing the sub-events detected in social media; the sub-events are selected by the user who triggers the communication to the Master

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	Concise description of usage
none	

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	Concise description of available service
N/A	

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	Bandwidth	Update Frequency	accuracy	data availability	latency	Payload size/formats	…
Publish/Subscribe (blackboard)	1 Mb/s	Depending on the user (e.g., every 5min)	--	Until consumption by the Master table	1 sec (for 100kB text data)	EDXL (incl. JSON)	

7 MASTER

7.1 BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

MASTER

What was the user feedback on the demo of the technology in the CC/WP:

We got a lot of constructive feedback from the end-users, here are my personal notes (we also video taped some feedback):

- Need areas with information regarding the incident site on MASTER (YR.no / weather station / metrologisk institutt data to MASTER). Information like wind direction is important.
- Octocopter possiblity to MASTER (Fritz's data to MASTER).
- Need universal SITREP message to all resources on the map (instant SITREP message to all resources)
- Important to secure and clarify the area before allocating resources. Very important!
- Need a plan layer for Risavika, Stavanger.
- "Plan mode": Should be able to plan on the map, like drawing, and then be able to save the plan and distribute it later.
- Drawing ability should definitely stay.
- Critical to have a tablet version of the MASTER for Stavanger 2. This is currently a great challenge for us since our SDK does not support Windows 8 (need to upgrade the framework and see how it goes...)
- Should be able to allocate a specific group of resources from the map (make it simple and use mouse for this?)
- Daniela's information aggregator is nice to have on the MASTER for Stavanger 2.
- CTAS' management system must be in place in MASTER for Stavanger 2.
- Zooming - instant zooming out to get clear view of the incident area.
- Acknowledgement from a resource back to commander, that he/she has been allocated and moving.
- Filtering resources in accordance to the agencies using MASTER - Police for instance does not want to share their stuff, it is against the law.
- Include a table that shows the total amount of available resources.
- Police arrival phase: Use MASTER only.
- Police action phase: Combine radio communication with MASTER.
- Positive to and they need resource management on MASTER.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	Concise description of improvement
S2D2S	Problems when there are a lot of simultaneous publish/subscribe operations going on. S2D2S could simply not handle the stress, having crashed at least two times during the demo and several more times in the days prior to the demo. The problem is related to threading. S2D2S experienced unrealistic thread spikes of up to 2500, which froze and crashed the device.

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	Concise description of dependency
ETriage	To be able to showcase ETriage on MASTER, they need to be frequently sent out to S2D2S. This was not the case during the demo. (Ref. Erion)
HelpBeacons	Similar to ETriage, the HelpBeacons are showcased correctly on the MASTER map only if they are sent in with correct data to S2D2S. (Ref. Amro)
S2D2S	The share data space and currently the core; all data is there. (Ref. Reinier / Bernard)
Resource Manager	To be able to showcase resources on the map. Resources like Police, Health, Fire. (Ref. Andries / Ludo)
Octocopter	To be able to showcase information on the MASTER, that the octocopter gathers from the incident site. (Ref. Fritz)
Information Intelligence	To be able to gather information of the incident and showcase it – including photos. (Ref. Daniela)

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	Concise description of improvement
ETriage	Send ETriage messages so we can show them on the MASTER....

HelpBeacons	Format is good now and handled in the MASTER. The format could change before Stavanger 2, but let's handle it in good time before the demo.
S2D2S	Threading problem. Many suggestions to fix this, but perhaps as a first step, need to find out the reason to the unexpected high thread spike that occurs.
Resource Manager	A simulation of resources will not be used in Stavanger 2. It will be the real thing; real people resources with mobile phones.

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	**Concise description of usage**
MASTER	--

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	**Concise description of available service**
MASTER	The map in the MASTER will show case everything, from every CC defined in this form.

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	**Bandwidth**	**Update Frequency**	**accuracy**	**data availability**	**latency**	**Payload size/formats**	**…**

8 Robust and Resilient Communication

8.1 BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

Robust and Resilient Communication

What was the user feedback on the demo of the technology in the CC/WP:

Delay-tolerant networking: It can help in situations of normal radio communication break down. One first responder (fire fighter) mentioned limited potential for providing fall back communication channel as he only uses real-time voice communication and delay of voice traffic is very critical in most situations. The first responder was not sure if delays of 5-10 seconds would be tolerable (i.e., delay of voice traffic is very critical) and could give no feedback to other types of communication. Viral Deployment: Useful for deploying an app dynamically by deploying ad hoc a router. But, also one first responder (fire fighter) explained that this is only useful for limited scenarios. Reluctant towards technological change. Further, several first responders mentioned concerns about security issues, e.g. a terrorist could hack system and send false reports (e.g., send message with need for help at a certain place but there is a bomb hidden there). One first responder (from police) could imagine that such an application (i.e., HelpBeacons) could be used by the police during for gun rampage to communicate with “trapped” people. However, this would also raise security issues.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
GUI	Simplify User Interface, remove too technical information
Distribution	Add more modalities, e.g. QR codes.
DTN	Explore new native reference implementation for Android phones.

Messaging	Explore UDP instead of TCP/IP for short-lived interactions.

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	**Concise description of dependency**
BRIDGE Mesh	used to access Internet
Shared data space	Reports for command post (i.e., HelpBeacon messages) are stored there
Publish/Subscribe mechanism	In future LS Virtual Addressing to reach shared data space
Visualization on Map	Each Help Beacon is positioned with details on map view.

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	**Concise description of improvement**
Shared data space	More robust, i.e. less service down times
Publish/Subscribe?	Generic Support for Mobile Platform

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	**Concise description of usage**
Master Table	Can show collected Help Beacons

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	Concise description of available service

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	Bandwidth	Update Frequency	accuracy	data availability	latency	Payload size/formats	…

9 SWARM: Situation aWAre Resource Management (new CC title)

9.1 BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

Resource Manager + Human Resource Sensing Platform -> **SWARM: Situation aWAre Resource Management (new CC title)**

What was the user feedback on the demo of the technology in the CC/WP:

Since most resources are only indirectly controlled by the incident commander, via their respective profession-specific control rooms, it is necessary for the incident commander to be able to provide to these control rooms tasks to mobilize a certain amount of their respective resources.
The way of working proposed in this concept case should eventually be adopted as the standard way of communicating between incident commanders, control rooms and first responders, also outside emergency response situations.
Communication via phone, messaging, etc. should all be logged inside a single log trace.
More overview on the Master is necessary, independent of the map: lists of task assignments (and tasks which exist but have not been assigned yet) and lists of resources (including their status).
Include the target destination indication and ETA in moving resources.
Smartphone app should contain direct call button underneath the acknowledgement button, enabling the first responder to seek contact with the task assigner.
Think of integration / coexistence with TETRA.

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Master integration	Extension with lists of resources and tasks
Master	Extension of resource visualizations with destination and ETA reporting

integration	
Smartphone app	Realize the new version of the app ☺ including the phone integration and destination and continuous ETA reporting
Task concept	Extend task concept with metatasks (russian doll tasks)

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	**Concise description of dependency**
WP5	Publish/Subscribe (for communication with Master)
Master	Visualization of resources on map and in list, and tasks in list
WP5	If possible: Identification Svc (for unique identification of resources)
WP5	If possible: Tagging (for tagging of non-human resources)

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	**Concise description of improvement**
WP5	The Publish/Subscribe service should be able to handle at least 150 publications per second, including the servicing of at least 2 subscriptions to these publications
WP5	The Identification Svc service should be able to handle at least 10 ID generation requests per second
WP5	The Tagging service should be able to handle at least 10 tagging requests per second
Master	Master should be able to visualize a large amount of resources on the map, including better clustering (larger circles for larger clusters), and should be able to present interactive lists of tasks and resources. Master should be able to handle at least 150 incoming updates of resource statuses per second

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	**Concise description of usage**
Adaptive Logistics	AL will use SWARM as the means to manage the resources executing the logistics operations

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	**Concise description of available service**
Adaptive Logistics	We can provide the management of 150 real human resources and 500 nonhuman resources in terms of: - Providing location, availability, status, destination and ETA of resources - Assigning and monitoring the status of tasks (started, ongoing, completed)

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	**Bandwidth**	**Update Frequency**	**accuracy**	**data availability**	**latency**	**Payload size/formats**	**…**
Publish / Subscribe		150 publications per second					

10 WP12 – Social, legal and ethical aspects

10.1 BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

WP12

What was the user feedback on the demo of the technology in the CC/WP:

Legal: Importance of privacy/security issues was raised in several discussions with end users. Ethical: nonmaleficence (Privacy/Security, logging, information overload, access to technology, usability, fear of technology failure, fear of time-consuming input, 'holes' in what is being tracked, need for communication support, public understanding), beneficence (speed, efficiency, quality of service, decisions, collaboration, automation/deference, decision support, not decision making, citizen engagement),

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
Privacy/security	Implemented by design and default, e.g. through mechanisms for encryption, and anonymization, as well as rules for storing, access-levels and deletion of data. Additional legal requirements that must be transformed into technical functions are functions making it possible to determine "informed consent" and/or "opt out" from data subjects. Transparency/non-technical documentation of reasoning for exceptions.
Nonmaleficence (logging, information overload, access to technology, usability, fear of technology failure, fear of time-consuming input, 'holes' in what is being tracked, need for communication support)	Transparency of what is being logged, tracked and *not* tracked, training, graceful augmentation, resilience/robustness, make innovation *socio-technical*, that is, consider new roles, such as information officer, feeding master and operating master, add 'dialog/confirm' to resource allocation, make role-based access/usage possible, public understanding
beneficence (speed, efficiency, quality of	Possibility to overrule and opt out of automated processes, inspect algorithms, logics and policies, give sense of information quality and

service, decisions, collaboration, automation/deference, decision support, not decision making)	provenance, support citizen engagement, dialog with communities

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	**Concise description of dependency**
	It is the other way around, the legitimacy (and thus possibility to put any CC into practical use) is depending on elaborated and robust technical functions described in this document.

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	**Concise description of improvement**
	It is not necessary to make these improvements before 2nd demo in Stavanger, but for efficiency reasons it is likely that several of them should be integrated into the design as early as possible. To minimize risks of need to redesign and reprogramming, transparency and privacy mechanisms should be addressed concretely as early as possible.

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	**Concise description of usage**
	All concept cases are depending on access to the technical functions pointed out by this WP. Addressing ethical issues in design is a requirement for FP7 research. Dialog with WP12 should be sought. Collaboration infrastructure for this is 1. Concept case descriptions, 2. PIA, EIA, 3. Peter, Michael, Monika

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	Concise description of available service
	We can provide the functional specifications and participate in the translation and transformation into technical functions and evaluation of them, during and after the implantation process.

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	Bandwidth	Update Frequency	accuracy	data availability	latency	Payload size/formats	Security
			Must be possible to inspect and undertake efforts of verification of data quality and provenance	Must be restricted in several ways, depending on category and type of data, e.g. access levels, time of storing, encryption, anonymization, deletion, etc.		This requirement is valid for a large portion of the data collected in all formats	Data security, robustness, safety of technologies, backup, standardization, documentation, avoid overdependence on technology, education-training of users, early warning of potential resource failure, fail fast, cascading default options or graceful degradation, oblivious transfer
				Must be transparent and possible to modulate and aggregate/abstract, feed different perspectives.			

10 Appendix 7 – Day after questionnaire

BRIDGE Technology Priorities Session Questionnaire

About the Concept Case or Work Package

The questions in this questionnaire are based on your experiences from the demonstration session of Wednesday, April 24, 2013 (from here on: The demo).

What is the name of the Concept Case/Workpackage discussed in this form?

What was the user feedback on the demo of the technology in the CC/WP:

Based on the user feedback, what improvements/alterations/adjustments should be made on the CC/WP technology before the demo in September:

Aspect	**Concise description of improvement**
	(please extend table as required)

Technology this CC/WP depends on

What technology of other CC's or Work Packages does this technology depend on? (Look at the confluence wiki for middleware services). Enumerate the 'services' that you want to use, and include what (type of) data needs to be sent back and forth.

(Middleware services overview: https://confluence.fit.fraunhofer.de/confluence/display/BRDG/Middleware+Stuff)

CC/WP	**Concise description of dependency**
	(please extend table as required)

For each of these dependencies, describe the improvements that are important to be made before the 2nd demo in Stavanger. Include in the description what the minimum performance of this technology must be in order to be useful for you in September, e.g., "the Publish/Subscribe service should be able to store data-elements of 1 GB".

CC/WP dependency	Concise description of improvement
	(please extend table as required)

Depending on this Concept Case/Work Package

What Concept Cases benefit/make use of/ depend on the technology in this CC/WP. Describe what the form of the collaboration between the two is. Include what (type of) data needs to be sent back and forth.

CC	Concise description of usage
	(please extend table as required)

Can you describe what you can provide in September (Stavanger II demo) to support these Concept Cases? Can you be as precise as possible (for example, don't say "we can provide advanced situation awareness", but say "we can provide a simulation of a pressure wave, in the form of an AVI-movie, for a given explosion point (GPS coordinate) and explosion power (in tons of TNT). We can also provide a single jpg picture of the entire estimated blast pressure."

CC	Concise description of available service
	(please extend table as required)

Quality of Service

Could you describe your requirements in terms of quality of service (ask Matts, Peeter or Bernard for advice)

Service	Bandwidth	Update Frequency	accuracy	data availability	latency	Payload size/formats	…