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Bridging Resources and Agencies in Large-Scale Emergency Management		
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Abstract: This document outlines the planning and preparation, the execution and the documentation of the demonstrator 1 (D09.1) - Demonstration of network infrastructure and interoperability. The practical demonstration will show the status of the network infrastructure and interoperability aspects of the BRIDGE system (WP5) through the established Concept Cases in BRIDGE.		
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Document Collaboration Notes

Version History

Version ¹	Description	Date	Who
1	Initial Structure of implementation Scheme established	27.6.2012	Morten Wenstad
2	First full draft of the implementation Scheme finalised	02.7.2012	Thomas Kulbe
3	1 st Review completed	20.07.12	Thomas Kulbe
4	2 nd Review comments addressed	27.07.12	Morten Wenstad
5	Initial structure of D09.1 – Practical demonstration of network infrastructure and interoperability established	20.8.12	Morten Wenstad
6	Revisions, internal	20.9.12	Thomas Kulbe

¹ Note that the version number and description should correspond to the same information in the eRoom version control, thus version numbers are *integers*. See below for more information.

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FIGURE 1. SITUATION PLAN; NUMBERS INDICATING CONSECUTIVE PLACES DURING THE WALK THROUGH..... 11

1 A demonstration as a deliverable in BRIDGE

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 and Evaluation will cover specific elements for interoperability and single components, the demonstration work will show the integration of all parts of the solutions.

The demonstration is also seen as a marketing tool in order to bring innovation close to the market, which is very important for an SME 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.

All 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 will deal with single components that have to show interoperability under harsh conditions. Demonstrator 2 is a table top demonstration of a large scale crisis like the ExploChemco scenario (see 2.2.) addressing visualisation and interaction. Demonstrator 3 focuses on multiagency collaboration (technology) that will be shown in a real world setting. Finally Demonstrator 4 is based on a large scale crisis scenario with a complexity similar to ExploChemco. This will be an integrated exercise presenting the final results of the BRIDGE system.

1.1 The overall scenario

This section describes a constructed 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 D09.1 a separate scenario has been constructed taken into consideration relevant elements from the ExploChemco scenario demonstrating network infrastructure and interoperability.

An explosion occurs at 'ExploChemco', a large chemical factory near Cologne. Within seconds, the emergency call centre receives numerous reports from citizens affected by the blast, describing noises, and earthquake like shaking, broken windows, smoke, smells, and fire. A call to ExploChemco's operation control centre remains unanswered. The first team to arrive on scene is the police. On their arrival, they observe that a helicopter from a media broadcaster is already broadcasting images of a large smoke plume emerging from the plant. Bystanders and victims with minor injuries are scattered on a large space in front of the factory. Some of them use their mobile phones to inform friends and relatives. Almost at the same time of the police arrival, several related hash tags such as #CHEMCO and #explosion In Cologne start to trend in twitter. A couple of photos emerge from a victim showing to some extent the level of damage produced by the explosion.

According to existing regulation, the police begin to organize a command structure. The technical assistant in charge of the IT Infrastructure of the incident prepares the BRIDGE System, configuring the modules relevant to the situation. As resources from the different agencies arrives and engage in the intervention, the different devices available on site start to build the BRIDGE Mesh. This process is monitored and controlled using the BRIDGE

Communication Management module knits together the diverse communication media used by the different agencies involved.

The incident commander on scene uses the BRIDGE Mapper to have an overview of all the available information, and to add new bits coming from different sources. He uses his own in situ perceptions and (through communication with command centre staff) citizen accounts, information from CCTV video feeds from the plant monitoring system, and emission surveillance data to plan further steps in the response. The incident commander understands now that there is a large number of injured persons and victims, and that the triage process needs to start as soon as possible. The BRIDGE Mapper is used by the commander to identify danger spots and to structure the space for organizing an adequate response. Following a common approach, the site is divided into three district zones: the exclusion zone (hot zone), the contamination reduction zone (warm zone) and the support zone (cold zone). At first specialized forces try to approach the hot zone aiming at making it safer for other first responders to enter. As fire-service personnel establish cordons around the hot zone and a Rescue Vehicles (RV) zone, they mark boundaries using BRIDGE Beacons. The BRIDGE Mapper displays the emerging district zones of the incident site, as well as resources and personnel, enabling distributed team members (e.g. in command centers) to coordinate local aspects of the emergent response effort and report efficiently to the central command.

The chemical plant houses rather complex industrial processes, so external expertise is needed to understand events and potential risks on site. To find adequate information sources and supporting experts, the commanding staff uses the BRIDGE Experts Network Builder to alert a team of experts. In collaboration with these experts, the command post explores and assesses potential risks of the situation, using for this the BRIDGE Risk Modeller. Many of the structures on site are compromised and there is still a high risk of further explosions, structures collapsing, and of harmful emissions being blown into inhabited areas. This makes extremely urgent the task of evacuating the injured. The triage task receives in the BRIDGE Planner a very high priority, and the responding personnel are notified accordingly.

As soon as the firefighters secure the hotzone, following the task structure available from the BRIDGE Planner, victims are taken to the RV area, where medical staff triages them using the BRIDGE eTriage tools. The BRIDGE Monitoring system running in the personal device of medical staff alerts the personnel closest to the victim (in physical location or relevant medical expertise) if vital signs fall below critical thresholds.

On a sector adjacent to the explosion, a large office complex has collapsed, leaving several buried victims. In some of the collapsed dependencies, some persons are trapped only with minor injuries and are able to use their phones. Due to the presence of steel in the debris, there are problems to establish a connection to a cell of the GSM network. The users activate the RescueMe app, which, without a standard signal such as WiFi or GSM, begins the search of some peer to establish a BRIDGE mesh network. Slowly, one after another, a small group of mobile phones connects to each other using Bluetooth, creating a small network. One of the collaborating phones is close enough to the outside of the structure and manages to connect to the GSM network and the outside world. Using this chance opportunistically, the RescueMe transmits all relevant collected data, such as location, images, extent of damage, etc. through the BRIDGE Mesh network. This information is stored in the information repositories of the BRIDGE System and made available to the different organizations and across distributed teams by means of the BRIDGE Mapper and other front ends of the system.

The collection of information offered by RescueMe is not only passive. As one executive of the ExploChemco reports from inside one of the collapsed structures, he is contacted directly by an operator from the command post, who asks him for further information about the processes that might have caused the explosion. The executive is asked also for a picture from a particular

angle that allows an external expert to assess the level of damage of a large container of chemical residues close to the river. The commanding staff also uses the small ad-hoc network discovered by a BRIDGE assimilator to disseminate information to keep injured persons calmed.

The BRIDGE Risk Modeller alerts of a growing risk of chemical clouds to move toward near cities in Germany and the Netherlands. A member of staff in the command centre uses the BRIDGE Broadcaster to instruct people to go and stay indoors, close their windows and monitor for further information.

1.2 Demonstrator 1 (interoperability)

The practical demonstration is based on how Firefighters could work on a real explosion and fire scenario in a busy road tunnel, adapting the technologies proposed in the BRIDGE Concept Cases (see D2.1 and D2.2). The demonstration is held in the controlled tunnel environment of the Hagerbach Test Gallery in Flums.

Emergency call

The emergency center in St. Gallen is called via 118 by an eyewitness that stopped due to the traffic jam outside the car tunnel. The information received from the eyewitness was that he/she heard an explosion from inside and that smoke was coming out of the tunnel. The Emergency Center in St. Gallen alarms the Fire Brigade Flums. Due to the information received, the local appointed Incident Commander (IC) decides to go with 3 fire trucks to the incident area. He also calls the nearby hospital to have an ambulance service. On the way to the incident area, the IC receives further information about the accident on his portable BRIDGE Master System.

Around 20 minutes later the Firefighters arrives on scene, the IC gives a short brief of the situation using his transportable Master table (During the demo presented on a laptop) and the Fire-Brigade splits up into teams that prepares their activities based on specific roles and responsibilities..

Scene-information

The front officer equipped with an analogue radio and a tablet PC walks through the tunnel putting out the BRIDGE Mesh beacons. Very soon after this his tablet PC receives messages from persons due to their use of the BRIDGE Help Beacon that is sent through the BRIDGE Mesh network to the Master Table. When he arrives close to the hot zone he recognizes a number of cars involved in the accident. He also recognizes a number of injured and trapped people in the hot zone. He finds a truck loaded with chemicals in the front of the tunnel which he judges as a potential danger due to a leakage.

Final briefing and disposition of the rescue units

The front officer informs the Incident Commander about the situation and the Firefighters and paramedics get their orders and continue their work. The IC informs the emergency center about the situation, also recognizing the potential danger with the truck with chemicals. The Emergency Centre starts a risk assessment analysing the consequences of a potential leakage of chlorine from the truck.

Actions (rescue >> fire-fighting)

Close to the hot zone the rescue and fire-fighting units will be guided/introduced to the situation by the front-officer. The paramedics arrived on the scene triage the injured persons using the BRIDGE eTriage System and the trapped persons will then be released using a hydraulic cutter/spreader and transported to the ambulance vehicle waiting alongside of the fire trucks. The triage information collected by the eTriage nodes will be presented at the IC on the BRIDGE Master Table

Incident Commander requests for three extra firefighters with special equipment

The Incident commander receives the risk analysis related to the truck with chlorine and uses the Master Table interface to invoke the BRIDGE Resource Manager for requesting extra fire fighters and a fire truck needed in order to handle the problems with the chemical truck..

The end state of the demonstration of the BRIDGE system will be that the Incident Commander sees the arrival of the requested resources on the incident location at the Master Table.

1.3 Concept Cases

Following the BRIDGE project structure to the domain analysis, formulated user needs as an extract of participatory design workshops, field observations, the End-User advisory board , and internal workshops was defined as 7 so called BRIDGE Concept Cases:

- Master System
- BRIDGE MESH
- BRIDGE eTriage
- RescueMe (consisting of two components: “helpBeacon” and “local Cloud”)
- Risk analysis tool
- Resource manager
- Training concept

The preparation and the presentation of the concept cases during the demonstration as well as in the poster session is the responsibility of the Concept Case Owners. Each specific concept case will give information on its link/interoperability to the other BRIDGE tools with respect to the demonstration. They will address how the concept case fit into the BRIDGE System and highlight the BRIDGE momentum at the current stage.

2 The practical demonstration

The practical demonstration is based on how Firefighters work on a real explosion and fire scenario in a busy road tunnel, and how can they potentially include the BRIDGE Concept Cases in their work. The demonstration will mainly consist of three activities. First an initial system overview of BRIDGE including the established concept cases, second, a cold run where the reviewers and the end users will be guided through how the different concept cases collaborates and how the information flows through the network infrastructure during this specific demonstration, and finally the hot run demonstrating how BRIDGE operates in a “real” situation. The latter will generate a glimpse on how the BRIDGE system can be included in the practices, proving information about how practices emerges around these artifacts and how ordinary processes will be influenced by using BRIDGE-technology and will.

2.1 Technical Vision and Overview

The technical vision of the BRIDGE project, its overview, and the outline of the current research status will be presented by the Technical Coordinator. The presentation will address the process leading to the technical status of the different artifacts to be shown during Demonstrator 1 in the tunnel.

2.2 Cold Run

Following the technical overview a cold run of the demonstration will take place, providing a detailed “walk through plan”, to assure a common understanding of the roles and responsibilities during the demonstration. The Cold run starts at 16:00 immediately after the presentation of the Safety instructions. Andreas Zimmerman and Leonardo Ramirez will lead the Cold Run session supported by the Concept Case owners.

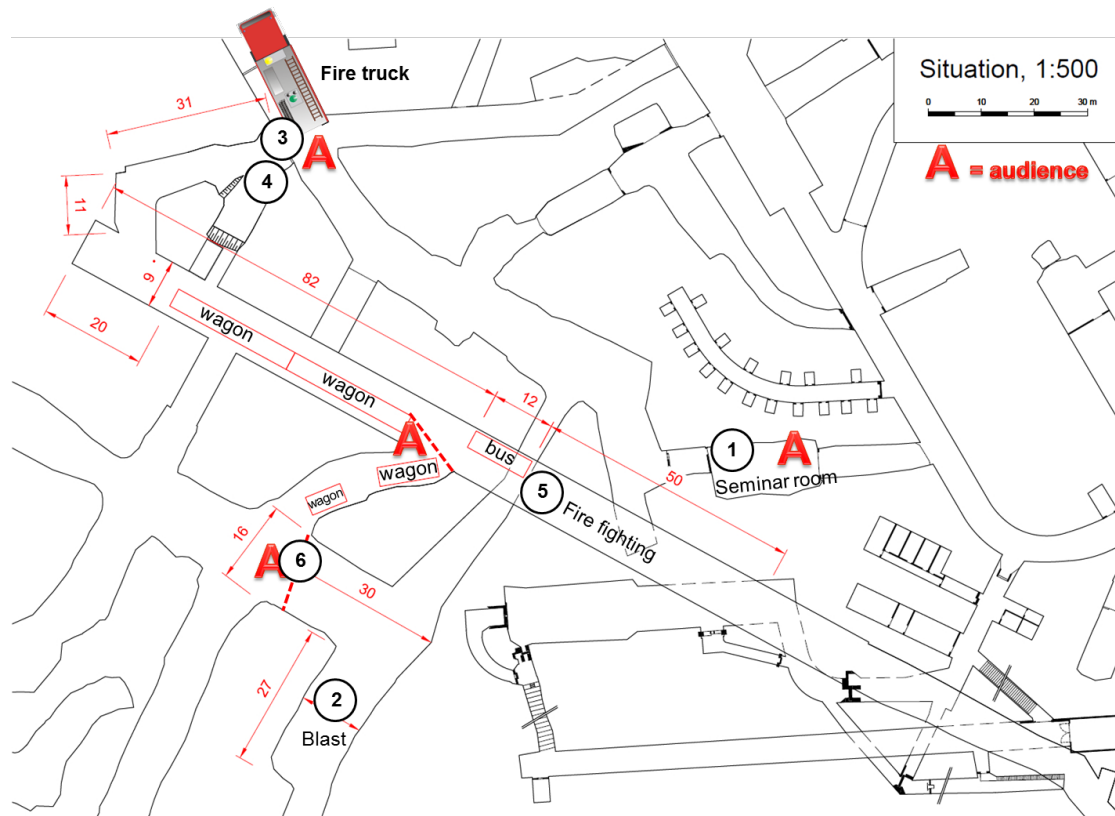


Figure 1. Situation plan; numbers indicating consecutive places during the walk through.

The following are the approximate times for the main milestones of the cold run.

16:05: Blast: Leaving the Steigersaal (1) through the emergency exit we go to the Blast area in Autobahntunnel (2) explaining the set-up and the link Hexdam-model ↔ validation

16:15: Fire trucks/master table: Via Glückauf-Kaverne we move to the fire trucks/Incident Command Post parked just outside the closed Wettertüre Zugang Brandstollen (3). When arriving the area with the fire trucks/Incident Command Post the Master Table functionality will be presented on a tablet. .

16:25: Mesh, help beacon local cloud: Then we enter Zugang Brandstollen and show the first BRIDGE Mesh node close to Brandofen (4). We move further to Brandstollen (5) passing the two train wagons. On the way we drop further nodes of the BRIDGE mesh, this time the so called bread-crumbs. Additionally on the way we start receiving help messages from the HelpBeacons via the seeker interface carried by the front officer. First from 1 person in the first train wagon and a bit later from 1 person in the next train wagon and finally from a person close to the hot zone, depending on the range. Finally, we install the last BRIDGE Node at the hot zone to provide a base node for the eTriage system. Additionally, as soon as this is done local

cloud messages from Bystanders that haven't been able to send due to a broken communication will be transmitted.

16:30: eTriage: The front officer will explain that the hot zone begins at the back of the bus with 2 other cars along side. The car close to the wall is upside down. During the hot run, the first mentioned cars are “only” crashed and not burning. The front officer is due to this, triaging an injured person in the bus, another one in the next car, injured and trapped due to demolition, and further injured person (dummy) beneath the car 1 turned upside down. During the hot run the injured persons will be rescued by the Firefighters/paramedics and evacuated to a safe area close to the fire trucks/Incident Command Post, where the Ambulance Service will take over the responsibility and the rest of the triaging process. The Dummy will be “stored” close to the train wagon. This to be able to demonstrate how the information from the triage bracelet will be read out as soon as the fire has been extinguished.

16:35: Master Table, Risk Analyzer, Resource Manager: and the Instrumented Training System. The group (the front officer) moves further to the centre of the hot zone to show the four burning cars, a burning truck carrying wood and right outside the tunnel, a damaged truck, loaded with chemicals. The information about the truck with the leakage motivates the Incident Commander to use the BRIDGE Master Table to request for a risk assessment and an assessment of the need for further specialized resources, via the resource manager. The latter part will be shown after the hot run, in the Steigersaal (1).

CTAS/SAAB will also give a short introduction of the Live Training System, describing the Video system, the “personal recording system” (Phone recording Voice, GPS, Video) and the observation tools (Tablets) all used in the incident area. Examples of the information received from the Incident Area will be shown at the Training System directly the hot run. Representatives from the EUAB and the Firefighter organisation will do observations during the hot run.

16:50: Shortly before hot run: all people that are not involved in the cold hot run should move from Steigersaal (1) to Sedrunstollen (6) without disturbing the review. The cold run participants will be guided to Sedrunstollen (6) too, which takes around two minutes. At this point all participants will receive safety instructions before the blast.

2.3 Hot Run

The Hot Run is the actual execution of the exercise, by the participating firefighters and members of the BRIDGE team. The main milestones follow:

Start hot run Blast: BANG! The reviewer have 5-10 min to observe the details of the blasting before they move back to the audience place for the Fire fighting exercise at Brandstollen (5). The short break will be used by FIT to reset the equipment and for the organizers to see if the fire chief is ready to light the fire.

Fire fighting exercise ca. 20 – 30 min

After the Fire chief declares that the exercise is finished, it will be shown to the reviewers how the paramedics would read out the eTriage bracelets.

Master table, risk analyzer, resource manager, training system: The visitors will then move from Brandstollen (5) back to Steigersaal (1) where a demonstration will be held of what and how information has been presented and how the information flows to and from the Master Table. The results of the observations done during the exercise will be shown at the Exercise

Management Centre in the Steigersaal (1) too. Finally a press conference will be held 18.00 h in the dependencies of the VSH-restaurant.

2.4 Detailed plan for the cold and hot run

A detailed description of the cold run and the hot run is presented in appendix A - Implementation Scheme.

3 Documentation

During the demo the training system will be used to capture some activities. There will be:

- One camera having an overview of the Incident area
- One camera on the helmet of the front officer
- One hand held camera following the Incident Command Team
- Voice recording of the most important actors during the demo (IC, Front officer and the Teamleaders)
- Observations of the most relevant activities related to the training objectives, done by 2-3 observers

This information will be made available for the Concept Case, but each Concept Case is also responsible to document the results from their part of the demo for internal use. There will not be any overall report summarizing the results from the demo. There will be a review process assuring that the experiences from the first demo will be gathered and taken into consideration for the following demonstrations.

4 Appendices

4.1 Implementation Scheme

This chapter outlines the different scenes to be used during the cold run and the hot run of the demonstration D09.1. The intention is to use these scenes as a logical “walk through”, to be presented for the EU-reviewers, the End User Advisory Board, media and other relevant observers invited. These observer groups have different background, roles and competence, so the scenes must be described from an operational perspective as well as from a technical perspective. Each scene must therefore be presented from these two perspectives. The Storyline for both shall be based on Pauls “Flow diagram”.

The Implementation scheme, shown under, describes briefly each scene. There are one scheme for the First responders and the activities happening in the tunnel, and one scheme related to the information flow to/from the “Incident Command Post”, to be presented in the conference room.

Description of the columns:

Scene nr: Describes the sequential number for each scene.

Description of the scene: Gives a brief introduction of each scene and its start and end state. The scenes are based on the Storyline presented in chapter nn.

Location: Clarifies where the demonstration of that certain scene shall be held.

BRIDGE scene responsible: Describes who is responsible to prepare the overall demonstration of this certain scene, assuring the alignment of the two flow charts, the storyline, and to describe what infrastructure that is needed for this part of the demo.. The BRIDGE scene responsible is responsible to present the scene to the reviewers at the demo.

Responsible for the preparation of the operational/functional workflow part of the scene: Describes who is responsible to prepare the operational workflow.

BRIDGE action to describe the operational/functional effect for the end user: Gives a brief introduction of each relevant Concept Case and the potential operational/functional change of effect for the end user.

Responsible for the preparation of the technical workflow part: Describes who is responsible to prepare the technical workflow.

BRIDGE action to describe the technical point of view; Gives a brief introduction of each relevant Concept Case from a technical perspective describe during this certain scene

Supporting BRIDGE resources: describes the allocated resources the responsible can use in the preparation of his part of the demo.

Observations: describes the planned observations that should be prioritized to assure a good documentation of relevant/important activities relevant to the BRIDGE Concept and each concept case.

Infrastructure: Describes the infrastructure necessary to fulfill the objectives of each scene to be delivered by WP9 (VSH).

Scene	Description from the point of view of the action forces (NA w.r.t. D9.1 = not available with respect to deliverable 9.1)	Location of the demo of the scene	BRIDGE scene responsible	OPERATIONAL/FUNCTIONAL VIEW		TECHNICAL VIEW		Supporting BRIDGE resources	Observations that assures documentation of the BRIDGE system and BRIDGE concept cases main functionality at the demo	Needed Infrastructure
				Resp. for the preparation of the operational view	BRIDGE actions to describe its operational/functional effect for the end user.	Resp. for the preparation of the Technical view	BRIDGE actions to describe the technical solution of the BRIDGE system and each relevant concept case			
Sc 1	Explosion of a car in the tunnel The emergency center in St. Gallen is called via 118 by an eye witness that stopped due to the traffic jam outside the tunnel. The forwarded info is: traffic jam, Heard an explosion from inside the tunnel, smoke coming out of the VSH-tunnel in the vicinity of Flums, broken communication,	Tunnel	Andreas/Leo	Fritz	The car blast is part of the validation process for a computer model that will be shown Friday by F. Steinhäusler	Th. Wilflinger	Short description of the technical solution that is used to simulate explosions resulting in potential effects/Risk assessments	Max	O1: Alarm sent to the Operational Centres. O2: Information received from ???	
Sc 2	Alarm at the Fire Brigade The Emergency Center in St. Gallen alarms the Fire Brigade Flums. Due to the information Chief Martin Gall decides to go with 3 Fire trucks. He also call the hospital Walenstadt to have support by a ambulance service team on side.	St.Gallen	Andreas/Leo	N/A	Emergency center staff selects and uploads the most appropriate risk model to the Risk Analyzer. The model will serve as a starting point for risk analysis during the incident. (NA w.r.t. D9.1)	N/A				
Sc 3	At arrival to the incident area On the way to the Incident area the IC receives further information about the accident on his transportable Master Table. The information received is: - Map of tunnel - Showing resources – 3 cars outside - The risk model selected by the Emergency center staff; this allows the IC to prepare for foreseen risks that are normally considered relevant for this kind of accident (NA w.r.t. D9.1)	Flums	Andreas/Leo	Jan	- The Master Table will have some information available that will be presented to IC using live video/screen capture from Conference room. - People will advertise HelpBeacon but the messages will not be sent outside (broken connection) and stored at the device	Atle	User will configure and deploy via app a WLAN access point.	Atle, Aslak, Amro, Thomas H.	O1: Info received at Master Table O2: Show live picture of table on large screen for the reviewers and media. O2: Help beacons are advertised? (2 messages)	The operator of the Master table need to listen in to the communication between FF (perhaps also somebody need to translate?) During cold run: big screen (27 inch) 2 casualties using HelpBeacons App

Scene	Description from the point of view of the action forces (NA w.r.t. D9.1 = not available with respect to deliverable 9.1)	Location of the demo of the scene	BRIDGE scene responsible	OPERATIONAL/FUNCTIONAL VIEW		TECHNICAL VIEW		Supporting BRIDGE resources	Observations that assures documentation of the BRIDGE system and BRIDGE concept cases main functionality at the demo	Needed Infrastructure
				Resp. for the preparation of the operational view	BRIDGE actions to describe its operational/functional effect for the end user.	Resp. for the preparation of the Technical view	BRIDGE actions to describe the technical solution of the BRIDGE system and each relevant concept case			
Sc 4	< 20 min later the rescue services arrive on Scene Fire-Brigade split up into groups after briefing: water-supply; rescue, fire-fighting, front-officer.	Tunnel	Andreas/Leo	Leo	Smoke diver recognizes help beacons are advertised.	Amro	1. HelpBeacons are scanned 2. HelpBeacons receive confirmation from reader and return back further parameters (IMEI, name, time of access point activation, GPS position)		O1: 2 Help Beacons are advertised? O2: Can connect to HelpBeacon? O3: Get back further info (IMEI, Name, Time of Beacon Activation)?	1 Smoke Diver using HelpBeacons App, device is carried via sports bracelet.
Sc 5	Preparation (Fire Brigade) 2-3 FF are looking for the water reservoir and set up the water supply to the pump water tender. The front-officer is equipped with analog radio and a tablet PC. He will go as far as possible to the center of the accident to gather information	Tunnel/ Conf. room	Andreas/Leo	Jan	Establishing the Master table at the simulated Command post in the Conference room. Establish hot zone, CP, position for casualty, entry and exit point, etc	Jan	How flows the information into the Master Table during the initial phase of the exercise. The scene stops when the Incident Command Post has been established and the Master Table has been activated at the Incident Command Post.			Power, 5 chairs, 2 tables, +++
Sc 6		Tunnel	Andreas/Leo	Mark	Front-officer is deploying BRIDGEMesh beacons on the way	Mark	Clarify connection from mesh to BRIDGE system – ex local Master Table and Data Space		O1: Mesh access point appears and can be connected to	Network plug in observer area
Sc 7		Tunnel	Andreas/Leo	Mark	As soon as the BRIDGEMesh is deployed the smoke diver uses the HelpBeacons app to send scanned beacons via Mesh to the BRIDGE system, in detail at the MasterTable.	Mark Jan Erion Amro	The main activity will be to present how the components connect to MESH and the information is received from the other BRIDGE components (Mesh, eTriage and HelpBeacon) using the whole BRIDGE system and picked-up and presented at the Master Table Amro: I was told HelpBeacons data is sent as SOAP messages, i.e. HelpBeacons will encompass a WS SOAP client		O1: Messages from HelpBeacon arrive at Master Table over MESH into the S2D2S?	

Scene	Description from the point of view of the action forces (NA w.r.t. D9.1 = not available with respect to deliverable 9.1)	Location of the demo of the scene	BRIDGE scene responsible	OPERATIONAL/FUNCTIONAL VIEW		TECHNICAL VIEW		Supporting BRIDGE resources	Observations that assures documentation of the BRIDGE system and BRIDGE concept cases main functionality at the demo	Needed Infrastructure
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Sc 8	Scene-information The front officer recognizes a number of cars involved in the accident, some cars are burning. Long way to hot zone; 2 injured people trapped in 2 different cars, 1 upside down; 1 injured people trapped in a bus; several cars burning, a lorry loaded with chemicals in front in the line of cars right outside of the tunnel, 2 disoriented persons staying a bit away from the hot zone	Tunnel	Andreas/Leo							
Sc 9	Final briefing and disposition of the rescue units The front officer informs the Incident Commander about the situation and the Firefighters continue their work. The IC informs the emergency center about the situation, recognizing the potential danger with the lorry with chemicals. 3 FF water-supply, 9 FF rescue (paramedics included), 5 FF fire-fighting starts their operations.	Tunnel	Andreas/Leo	Erion	eTriage of 3 injured trapped persons by the front-officer; information send to the BRIDGE System.	Erion			O1: eTriage information arrives at Master Table over MESH into the S2D2S.	
Sc 10	Meanwhile The front-officer stay close to the hot zone watching the situation. They recognize 3 injured persons, 2 trapped in 2 different cars and one trapped in the bus. Because they are unable to rescue them the FF-paramedics arrived on the scene etriage them3 bystanders arrives	Tunnel	Andreas/Leo	Leo		Amro	A local mobile ad hoc network is created by one device, other mobiles connect to it. Through a dedicated channel textual messages and images are interchanged. As soon as one device gets In range to Mesh or other Internet carrier it relays shared data to Twitter account for FlumsCC.		O1: Local Cloud is advertised? O2: 2 other mobiles joined local cloud? O3: Messages are interchanged? O4:Tweets from FlumsCC can be queried? O5:	3 Casualties using LocalCloud app.and at least 1 personnel using FlumsCC Twitter account Large display

Scene	Description from the point of view of the action forces (NA w.r.t. D9.1 = not available with respect to deliverable 9.1)	Location of the demo of the scene	BRIDGE scene responsible	OPERATIONAL/FUNCTIONAL VIEW		TECHNICAL VIEW		Supporting BRIDGE resources	Observations that assures documentation of the BRIDGE system and BRIDGE concept cases main functionality at the demo	Needed Infrastructure
				Resp. for the preparation of the operational view	BRIDGE actions to describe its operational/functional effect for the end user.	Resp. for the preparation of the Technical view	BRIDGE actions to describe the technical solution of the BRIDGE system and each relevant concept case			
Sc 11	Actions (rescue >> fire-fighting) A small truck (Pinzgauer) carrying the hose reel will be used to ensure the water supply from the pump water tender quicker to the hot zone. The rescue and fire-fighting units starts to work ca. 7 min after arrival. While approaching the hot zone, they eTriage the 2 disoriented persons and guide them away to the paramedics at the fire truck. Close to the hot zone the rescue and fire-fighting units will be guided/introduced by the front-officer. Trapped persons will be released using hydraulic cutter/spreader and transported to the ambulance team waiting at the fire truck. Fire-fighting until it's over takes ca. 10 minutes more.	Tunnel	Andreas/Leo	Leo	eTriage of the 2 disoriented persons (in the train wagons) Salvaged Persons mobiles will be viewed for help beacon and name or IMEI, if they match the smoke diver checks the message in his GUI.	Erion Amro			O1: eTriage information arrives at Master Table over MESH into the S2D2S. O2: Is salvage status sent to/received at MasterTable?	Prepaid cards for the Training tablets
Sc 12	Chemical lorry It is proofed that the lorry found close to the opposite entrance of the tunnel, from where the Incident Command Post/Fire, is loaded with chlorine. The main activity is the process of assessing the risk of a toxic plume from the leakage from the truck.	Conference room	Andreas/Leo	Fritz	Master table activities	Bernard/Mass /Atle/Fritz	Risk assessment: The scene starts when the Truck with Chlorine is found close to the opposite entrance of the tunnel, from where the Incident Command Post/Fire truck is found. It is also discovered that there is a leak from the truck. The main activity is the process of obtaining external expert assistance for estimating the spread of the toxic plume from the truck.		O1: Audience/domain expert response to the demonstration of the DEIN service request and response. Comments and suggestions about usefulness, etc	

Scene	Description from the point of view of the action forces (NA w.r.t. D9.1 = not available with respect to deliverable 9.1)	Location of the demo of the scene	BRIDGE scene responsible	OPERATIONAL/FUNCTIONAL VIEW		TECHNICAL VIEW		Supporting BRIDGE resources	Observations that assures documentation of the BRIDGE system and BRIDGE concept cases main functionality at the demo	Needed Infrastructure
				Resp. for the preparation of the operational view	BRIDGE actions to describe its operational/functional effect for the end user.	Resp. for the preparation of the Technical view	BRIDGE actions to describe the technical solution of the BRIDGE system and each relevant concept case			
Sc 13	Incident Commander requests for three extra firefighters with special equipment Start state: The risk analysis of Sc 12 shows that extra firefighters with special equipment are needed in order to handle the problems with the chemical lorry. End state: the Incident Commander sees the arrival of the requested resources on the incident location at the Master Table.	Conference room	Andreas/Leo	Andries	Incident commander sends via Master table a request via the Distributed Resource Manager (DRM) for three additional firefighters. DRM reports continuously the location of the firefighters who will be in charge.	Andries/Aslak	Distributed Resource Manager: The scene starts when the IC receives the plume estimate and risk assessment, which leads to the ICP's process of requesting the DRM for additional firefighters with special equipment, via the Master Table. The DRM creates an internal overview of the existing resources in the incident area and shows on the maps where they are located. After that, the IC via DRM on Master table requests selected firefighters for assistance through their smartphones. DRM issues them instructions and they respond their availability (to be sure about their 'readiness'). DRM collects the responses. After that, the DRM reports back to the MasterTable (IC) the availability and position. The locations of ALL resources will be shown at the MasterTable. The chemical first responders will be shown in a different way (different icon, different color, etc.).		O1: incident commander places request to DRM via the MasterTable O2: all selected firefighters, which have mobile coverage (five in total) receive an alarm on their smartphone. At least three responds positively. O3: the location and status of the chosen firefighters (three in total) is shown on the Mastertable.	

4.2 Agenda of the first BRIDGE review at VSH/Flums

Thursday 20 September

11:30	Reviewers' private meeting (Alphüttli)	Massimo Ciscato	EC/REA
12:30	Lunch (VSH Restaurant)		
13:30	Welcome (Steigersaal)	Volker Wetzig	VSH
13:40	Introduction to BRIDGE and this demonstration (Steigersaal)	Geir Horn	SINTEF
14:00	Technical vision and overview (Steigersaal)	Andreas Zimmermann	Fraunhofer FIT
14:45	Presentation of the scenario (Steigersaal)	Thomas Kulbe/ Morten Wenstad	VSH/ Crisis Training
15:15	Coffee break (Vestibule Steigersaal)		
15:30	Welcome (Steigersaal)	Reg. Rat Fredy Fässler (Head of Security and Justice Dept.)	Kanton St. Gallen
15:40	Safety instructions (Steigersaal)	Thomas Kulbe Martin Gall	VSH Fire Brigade Flums
16:00	Demonstration: Cold run in the tunnel	Andreas Zimmermann/ Leonardo Ramirez	Fraunhofer FIT
17:00	Demonstration: Hot run in the tunnel	All	
18:00	Questions, discussions, press meeting (Restaurant, new part)	Geir Horn	SINTEF
19:00	Departure for hotels (check-in)		
20:00	Review dinner		

Friday 21 September (Steigersaal, if there is no other indication)

09:00	User-driven innovation			
	• The methodology	D02.1	Monika Buscher	ULANC
	• Domain analysis	D02.2	Leonardo Ramirez	Fraunhofer
	• End-user advisory board	D13.2	Eivind Rake	RAKOS
10:00	Ethics, data protection, and legal risk analysis	D12.1	Monika Buscher	ULANC
10:30	Coffee break (Vestibule Steigersaal)			
10:45	Technical architecture and integration	D06.1, D08.1	Matts Ahlsén	CNET
11:15	Baseline emergency reference structures	D07.1	Bernard van Veelen	Thales
11:45	Simulation and calibration	D03.1	Friedrich Steinhäusler	PLUS
12:15	Posters: A closer look at the concept cases			
13:00	Lunch (VSH Restaurant)			
14:00	Outreach and impact			
	• Dissemination	D13.1	Friedrich Steinhäusler	PLUS
	• Exploitation	D11.1	Paul Burghardt	Thales
14:45	Management, budget, and conclusions	D01.1, D01.2, D01.3	Geir Horn	SINTEF
	Evaluation			
15:30	Reviewers' meeting (Alphüttli)		Review team	
16:30	Review conclusions (Steigersaal)		Massimo Piscato	EC/REA
17:00	Close			

5 Demonstration summary

5.1 Actual course of events

After a couple of preparation days the practical demonstration has been conducted on the 20.09.2012 after a common lunch of the Bridge members and the review team.

After a warm welcome from Volker Wetzig, VSH, the official part of the review started with 3 presentations. Geir Horn, SINTEF, gave an introduction what Bridge is all about and put the demonstration in a broader context. Andreas Zimmermann, FIT, presented the technical vision of Bridge, and showed where the project status is with respect to the demonstration 1. The main focus for demonstration 1 was on interoperability. He also introduced the Concept Cases that have been defined from Bridge to show interoperability:

- Master System
- BRIDGE MESH
- BRIDGE eTriage
- RescueMe (consisting of two components: “helpBeacon” and “local Cloud”)
- Risk analysis tool
- Resource manager
- Training

Thomas Kulbe, VSH, presented the scenario of the upcoming demonstration. The practical demonstration is based on how Firefighters work on a real explosion and fire scenario in a busy road tunnel, and how the BRIDGE Concept Cases could support their operation.

The Head of Security and Justice Department of Kanton St. Gallen, Fredy Fässler, mentioned in his welcome the need of better interoperability and communication in emergency cases of a regional scale.

A so called cold run of ca. 60 min was introduced where the reviewers and the end users were guided through the scenes to see how the different concept cases collaborates and how the information flows through the network infrastructure during this specific demonstration.

Finally the hot run was demonstrating how BRIDGE operates in a “real” situation. It generated a glimpse on how the BRIDGE system could be included in practical operations, proving information about how practices emerges around these artefacts and how ordinary processes could be influenced by using BRIDGE-technology.

After the hot run, the Fire chief from Flums, Martin Gall, declared that the exercise was finished, the audience moved back to the seminar room. A demonstration was held to present how information could be presented and how the information flows to and from the Master Table including risk analyzer, resource manager.. The Training system was also presented showing the results of the observations (training system) done during the exercise and how this information could be presented at the Exercise Management Centre. This presentation was guided by Andreas Zimmermann and the responsible concept case owners.

Friday the 21.09.2012 was used for a plenary session in the seminar room with different presentations as well as a poster session of the concept cases. The review was finished with a short conclusion by the review team.

5.2 Remarks from the organizing team

It was a demanding task to coordinate the needs of 40 first responders from different rescue services and the wishes from about as many scientists and engineers, bearing in mind at the same time the reviewers' points of interests. After an intensive, interesting, and instructive week of preparation, briefings, rehearsals, and the exercise itself, the organizing team was very pleased to hear the reviewers' assessment that the BRIDGE demonstration was "impressive and very well organised".

Even if there are things and operations to improve Bridge started at a pretty good level. The days before the review were very helpful for the upcoming demonstrations. These days showed clearly what kind of intensive and strong collaboration and co-operation is needed to conduct a successful demonstration when people, tools, and software from different companies and scientific groups have to work together. People can discuss intensively how, when and why things have to be done to accomplish, but when it comes to a practical demonstration tiny little things can make the difference.

5.3 Pictures from the preparation and the demonstration day



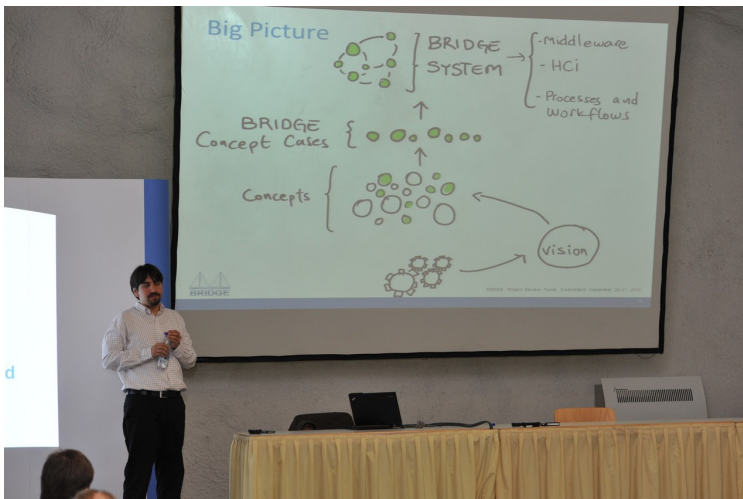
Scene visit with the Firefighter the day before.



Geir Horn: Introduction.



The meeting room at the review day 1.



Preparation of a presentation for day 2.



Arrival of the Fire brigade 1 hour before the exercise.



Fire Chief lights the fire for the hot run (a).



Fire Chief lights the fire for the hot run (b).



Running exercise (a).



Running exercise (b).



Introducing the Master Table including risk analyzer, resource manager, and training system (a).



Introducing the Master Table including risk analyzer, resource manager, and training system (b).



Introducing the Master Table including risk analyzer, resource manager, and training system (c).