



# MEETING

## Frederikssund Halsnæs Fire & Rescue Service (FHFRS)<sup>1</sup>

8-9 December 2014

Frederikssund – Denmark

### 1. Objectives

The Project Mappers consortium held a technical back-to-back meeting between CNR (coordinator and responsible of MAppERS app development) and FHFRS (partner and final app tester). FHFRS illustrated activities, roles and responsibilities as local rescue service, both for prevention and emergency support. For the same aim CNR presented a scientific review of smartphone solutions adopted at global level available in literature, including database, layout, usability criteria and final objectives.

### 2. Participating organisations

The meeting was attended by the scientific representatives of the National Research Council of Italy (CNR)/Research Institute for Geo-hydrological Protection of Padua (IRPI) and Frederikssund Halsnæs Fire & Rescue Service (FHFRS).

- ✓ Simone Frigerio - CNR
- ✓ Kim Lintrup - FHFRS
- ✓ Nanett Mathiesen - FHFRS
- ✓ Signe Engeli - FHFRS
- ✓ Amalie Møller Janniche - FHFRS
- ✓ Klaus Larsen – FHFRS
- ✓ Ole Hermadsen - FHFRS
- ✓ Jens Olusen - FHFRS
- ✓ Thomas Danholm - FHFRS

### 3. Programme

The Frederikssund meeting was divided into two full programme days (8th and 9th December 2014). Kim Lintrup introduced FHFRS as team group with own facilities and resources. A presentation of single

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<sup>1</sup> <http://www.fh-brand.dk/>

responsibilities within jurisdiction Frederikssund and Halsnæs municipalities explained in details FHFRS roles. The Storm “Bodil” represented one critical example of climate change in Denmark and its consequences improves the interest by local territorial agencies in the preparedness of new scenario including these extreme events. Simone Frigerio proceeded with in-depth Interviews of the FHFRS capacities and roles with local community. Klaus Larsen and Jens Olusen illustrated the stuff adopted for emergency, the central management room, instruments and resources available to FHFRS. Klaus Larsen, Ole Hermandsen, Signe Engeli and Thomas Danholm presented the information management within ABA (*Automatisk Brandalarm Anlæg*), the internal communication system adopted (tools and devices), the Fire Plans structure and the link with other rescue departments in Frederikssund and Halsnæs. Simone Frigerio presented the crowdsourcing review concerning smartphone applications for crisis and prevention at global level. Consequently a brainstorming with all FHFRS team provided best solutions for app development within MAppERS for FHFRS final aims.

## 4. Outcome

FHFRS is included in the national Fire & Rescue Service organization, started from Ministry of Defence arriving to the Chief Fire Officer, and legally the City Council is responsible for local administration at municipality level. The Danish preparedness provides two levels: Level 1 - The municipal Fire & Rescue Service (332 places with full time, Part time and volunteers) and Level 2 - The government Fire and Rescue (5 places with conscripts), with the Danish Emergency Management Agency (DEMA). Fire & Rescue Service response task is to prevent, reduce and mitigate damage following national law, while the municipal Fire & Rescue Service must be able to provide in relation to local risks prevention, mitigation and remedial actions against every type damage. Every Fire & Rescue Service has compulsory roles:

1. Create steps for preparedness identifying and analyzing local risks
2. Define the level of the emergency preparedness based on the risk profile.
3. Prepare a comprehensive plan for the municipality's total emergency and civil protection.

The risk Identification includes Information collection, resource and persons. Gathering information from external sources is a key-role for FHFRS, providing an overview of how the relevant information can be found, the resource persons who can contribute to gathering information and must participate in the further work. Internally a strong work of statistics analysis provides more detailed data (e.g. reaction reports, distribution of reaction types, number of call outs, fire deaths, blind, false or real alarms). The activity delivers an overview of the accidents occurred in Frederikssund, the location and their extension (temporal and spatial).

A scheme to identify relevant persons linked with Information partners can contribute is clear at municipal scale and it has not to be over-scaled for roles and responsibilities. The prevention is fundamental especially at municipality level because prevention activities provide knowledge of what risks exist actually, what risks can arise and what types of incidents can happen.

Within risk analysis a matrix is periodically updated, defining risks likelihood and potential impacts. A total of 84 scenario are actually defined in Frederikssund and for each one an analysis of scenarios prevention and response capacity is considered. Frederikssund like each municipality decides own level of daily preparedness and also for disasters and other major accident. Each single policy is shared with DEMA, who constantly has a full overview of scenarios in Denmark and the capacities available.

FHFRS covers a huge area of 382 square kilometers with approximately 76.000 inhabitants and 130 km cost line controlled with 15 full-time employees, 100 part-time firefighters and 100 volunteer firefighters (details in Annex 1). A large list of actions is covered by FHFRS<sup>2</sup>, split in:

1. Operational preparedness (e.g. Rescue of people, water Rescue Service and waterdivers)
2. Prevention ( e.g. fire inspections, prevention campaigns, evacuation planning)
3. Other tasks (running for alarm systems, organization of courses in basic fire fighting, first responder and first aid).

<sup>2</sup> <http://profilfilm2.nord-ad.dk/Vis.aspx?id=184>

A general serious climate change in Denmark is visible by critical events (Heavy Rain in Copenhagen in 2011, *Allan* storm in October 2013, *Bodil* storm in December 2013). It is visible from:

1. Rainfall variability (e.g. seasonal spot of precipitations, drought and heavier downpours in summer seasons)
2. Milder and more humid winters. Warmer summers and longer heath waves.
3. Higher water levels (general increase in water levels expected for the seas around Denmark.
4. More wind (powerful storms expected)

Climate conditions are visible in the effect on Danish NW coast line. Strong wind increased and consequently water level significantly fostered as average and severe flooding events. The *Bodil* storm is an evident proof of this new climate trend. Frederikssund and Halsnæs areas within Hovedstaden region were critically vulnerable because of their elevation few meters above sea level compared with a peak of water level 2,06 m above normal during storm. The Roskilde fjord and Kronprins Fredriksbro were directly and indirectly damaged (Annex 2). FHFRS managed different evacuation centers combined with command post and rescue points. The Danish government proposed a new systematic approach through national and local action plans. This means that municipalities within two years must have made a local action plan for climate change adaptation. Involvement of populations is an actual issue, compulsory for higher quality of disaster management.

DEMA published a public website<sup>3</sup>, designed by a Task Force on Climate Change Adaptation directly for to Ministry of the Environment, able to provide research and real-time information of weather conditions, with different access roles:

1. Citizens: information about relevant climate changes and future scenario; preparation for single family with guide and advice;
2. Municipalities: rules for climate change plan, tools to simulate climate changes, legislation, departmental orders and planning, sharing of climate change plans for municipalities.
3. Business: business wizard, techniques to minimizing risks, grants to climate adaption.

For MAppERS aims, *klimatilpasning* offers visual and interactive methods and tools, which are a clear local-scale links for internal planned deliverables. Technicians can plan own scenarios based on modeling output (Fig. 1). Input provided by smartphone device can be included in similar structure offering details on other involved feature (e.g. control of scenario boundaries, exposed elements at risks). The scenarios have double utilities. The features offer return-period flooded area useful for planning, and potential flooded area significantly important for crisis management.

<sup>3</sup> <http://www.klimatilpasning.dk/>

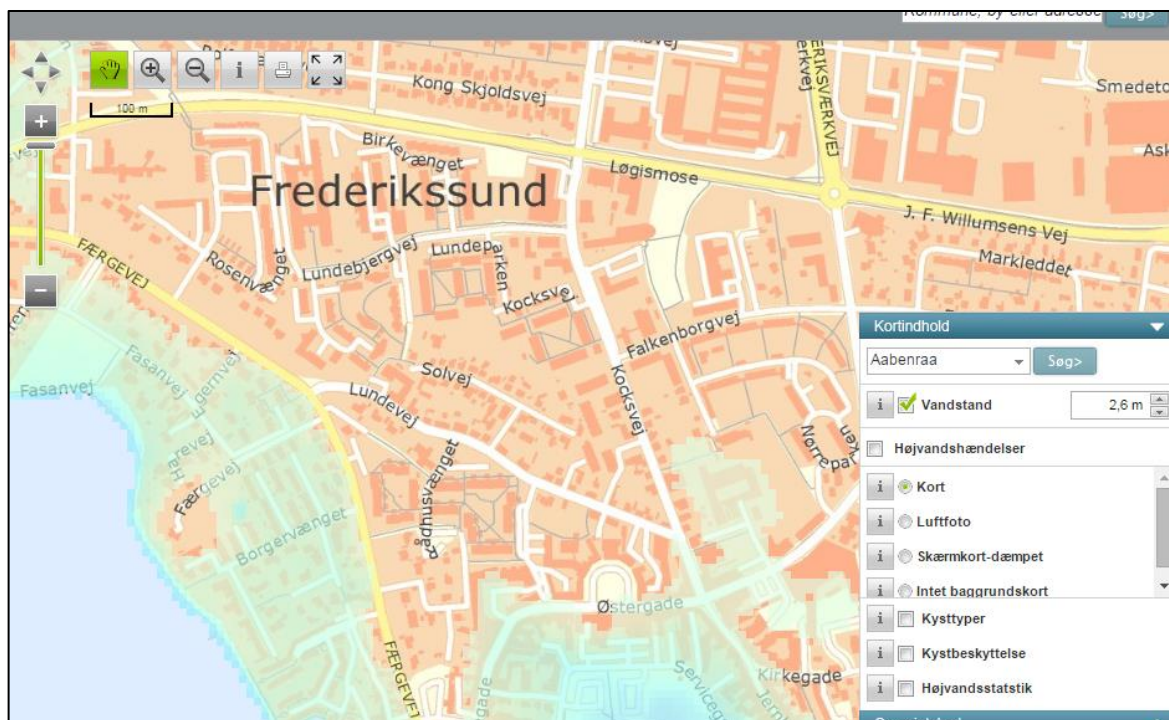


Fig. 1. Web service for flooding scenario creation.

This services are based on DEMA database structure, designed and updated. The utility copes with the capacity of climate change plan or spatial locations for prevention and preparedness. An example of top-down data management is here showed. DEMA manages dataset of features provided by modeling output and spatial features. Local agencies like FHFRS and municipality are final end-users with special access to the data for own utilities. In Fig.2 geo-located features concerning buildings and linked information are visible for spatial query and export (not-public access, open for public agencies like FHFRS). Cadastral ID is visible on map, and details of single buildings offer information for territorial agencies like Frederikssund municipality and FHFRS. MAppERS utility should offer integration also to this dataset, towards ID-linked geo-referenced information (e.g. building state and materials, number and age of inhabitants).



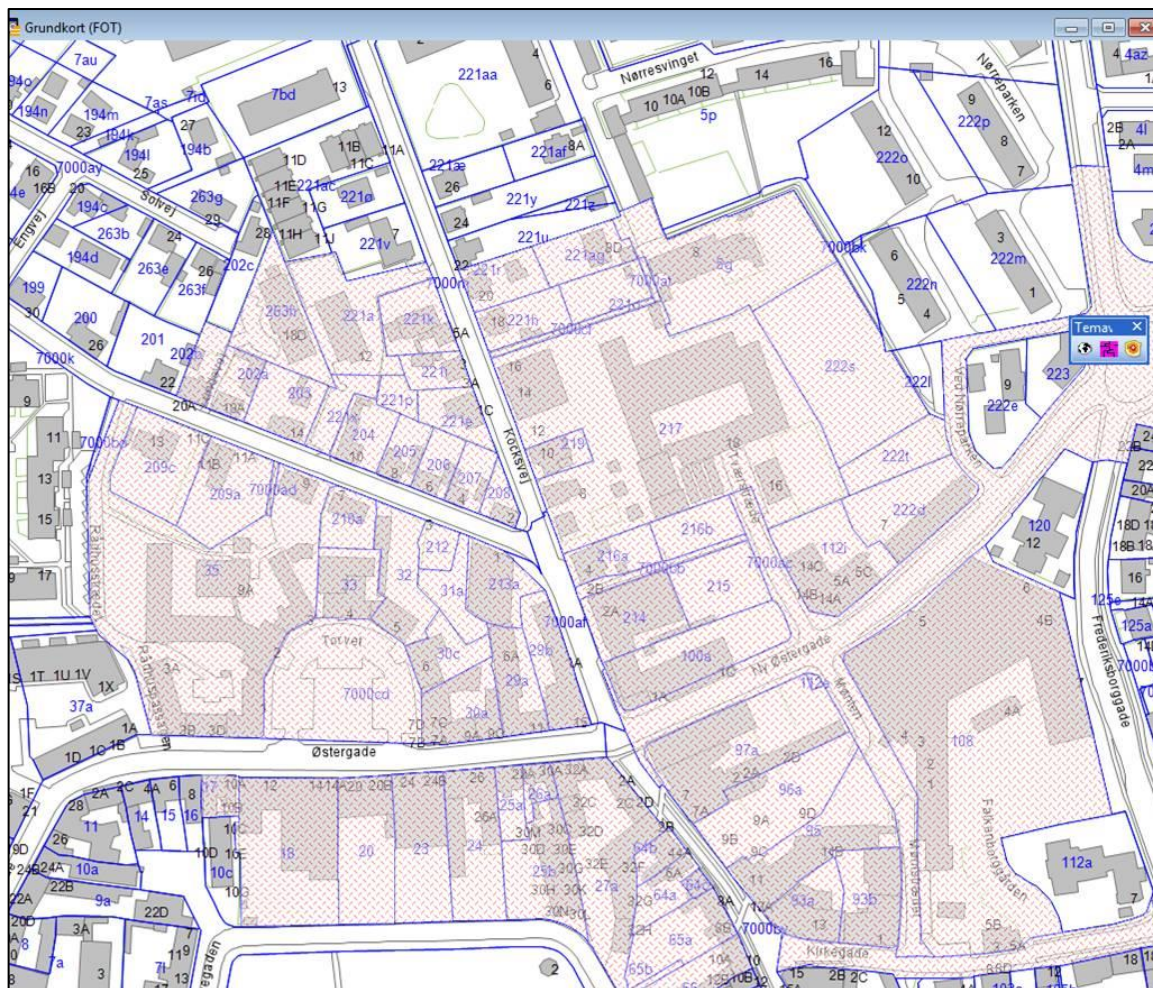


Fig. 2. Zoom on Frederikssund area with buildings spatial information.

Communication for FHFRS plays a direct role also during emergency phase. The combination with web service is evident by other examples of tools for the fire brigade. A spatial web-service for fire extinguishers (available also for smartphone) with own location, water capacity and real-time distance from rescue vehicle. FHFRS includes in this way a volunteers solution centrally managed (Fig. 3).

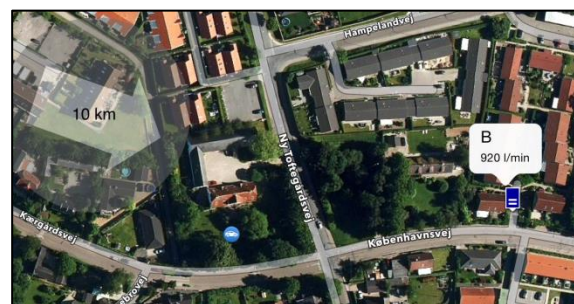
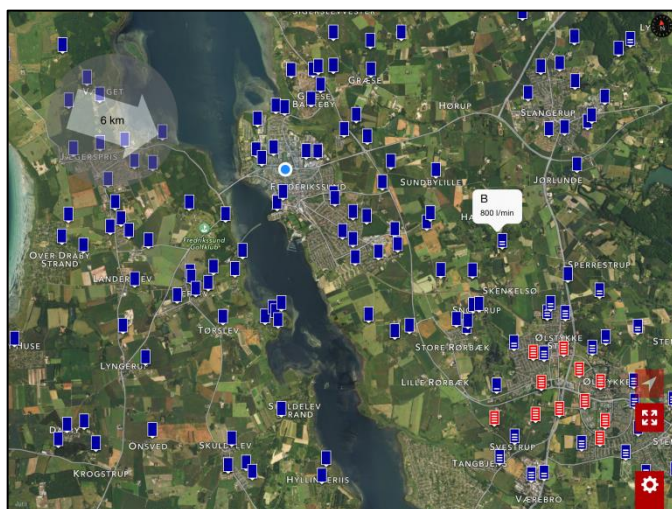


Fig. 3. The spatial web-service for fire brigade and a zoom on a fire extinguisher.

FHFRS has on trucks and vehicles a connection with central *Automatisk Brandalarm Anlæg* (ABA) management set by remote control. It can skip absence of people in the central room. ABA system manage 4 municipalities and all departments of single management room are consequently linked to the same visual interface. (Fig 4)

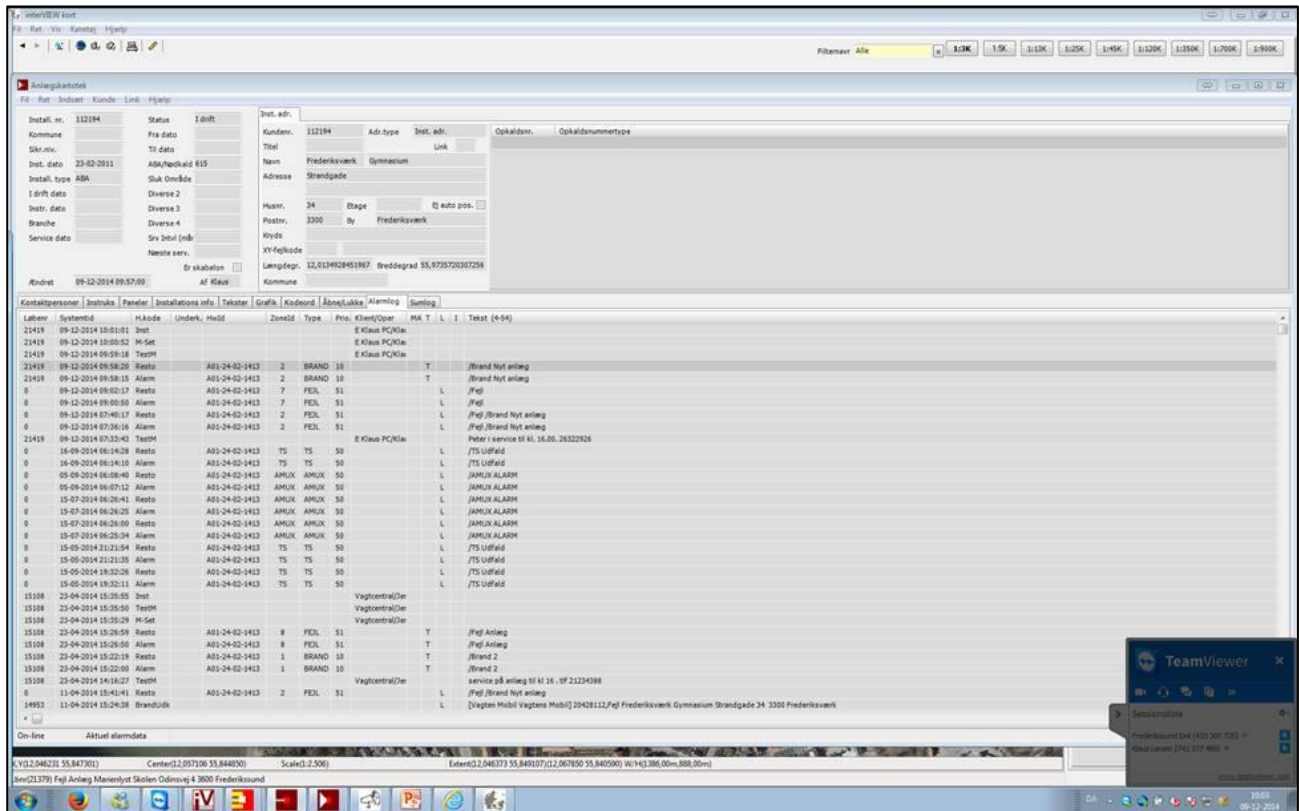


Fig. 4. Record of actions by fire brigades squads in all the area. By remote connection within truck, a fire man can communicate on state of work with central room data storage (also without personnel).

Green record correspond to finalized action, with date, location and responsible. Purple ones link to completed action but with technical check on course. When technicians finish control, they call central station who conclude the action. The platform is in common because all the activities could be visible and transparent. The remote connection is useful for fire brigades to control numbers, resources and other stuff available on central DB while they are in mission. The database offers locations of squads available on field. Thus in case of rescue a priority can be done to the closet squad for the location and typology of actions (materials, instruments and resources required). Also in the trucks garage, a fire brigade team can visualize before starting the new record and the new event and print the “state-of-art” before starting (Fig. 5). They have the address and they follow the navigator automatically fixed on truck.

Internally FHFRS a mobile application (*Beredskab Styrelsen*) is actually on course and adopted for fire brigade safety in case of chemical accident. Critical situations and decision rules are indicated and based on chemical and biological products involved. User can follow rules and pay attention how to solve emergency, including safety and control measures (Fig. 6).



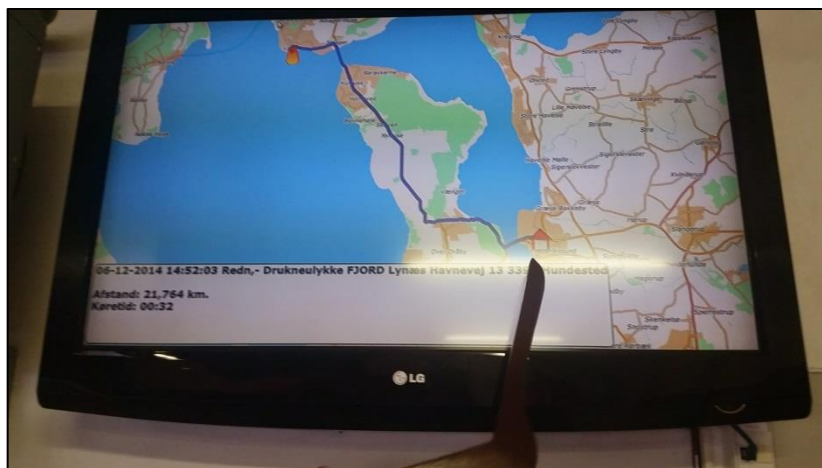


Fig. 5. Quick tools before actions of squad. The system works synchronized with ABA. It offer route and locations of emergency, with required details. Details are available immediately before the action starts.

**Benzin**

33  
1203

Kortet omfatter motorbenzin.  
Farveløse til gullig væske med karakteristisk aromatisk lugt.  
Der findes også indsatskort for *Biodiesel*, *Diesellole* og *Petroleum*.

**- Farlige egenskaber**

**Brandfare**  
Eksplosionsfare  
Indåndingsfare  
Sundhedsfare  
Forhold over for vand  
Miljøfare  
Specielle risici

**Meget brandfarlig**  
Dampene danner eksplosive blandinger med luft, men i lukkede rum overskrides øvre antændelsegrænse let.  
-  
Væsken er uopløselig i vand og flyder ovenpå.  
-  
Væsken opløser fedtbelægninger og angriber visse kunststoffer samt materialer af gummi, der indgår i fx pakninger. Væsken kan forårsage kroniske sundhedsskader.  
Blyholdig motorbenzin indeholder tetraethylbly og/eller tetramethylbly - se indsatskortene.

**- Personlig beskyttelse**

Inden for sikkerhedsafstanden  
Direkte kontakt  
Rensning eller dekontaminering

Normal indsatsbeklædning og fuld åndedrætsbeskyttelse.  
Beskyttelsesdragt som ifølge producenten er egnet til beskyttelse mod stoffet. Dragten yder kun begrænset beskyttelse mod varmebehandling ved brand. Fuld åndedrætsbeskyttelse.  
Forurenet personligt beskyttelsesudstyr renses med vand og sæbe.

**- Indsats**

**Sikkerhedsafstand**  
Mindst 50 m.  
Benyt gnistfrit værktøj og eksplosionsikkert udstyr.  
Tildæk afløb. Inddæm med sand eller jord. Afdampning kan mindskes ved dækning med skum.  
Stand udstømningen. Anvend opsugningsmateriale eller pump/æs spildet op. Opsaml i tæt lukkede,

**Spild på land**

**BEREDSKABS STYRELSEN**

Benzin

Benzin	UN 1203
IK Benzin	Indsatsgruppe 21
Benziniform	UN 1846
IK Tetrachlormethan	Indsatsgruppe 41

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**BEREDSKABS STYRELSEN**

Benzin

Benzin	UN 1203
IK Benzin	Indsatsgruppe 21
Benziniform	UN 1846
IK Tetrachlormethan	Indsatsgruppe 41

Version 1.1.3

Fig. 6. Beredskab Styrelsen for chemical emergency support system (by web device).

At the end of meeting a technical brainstorming CNR-FHFRS produced practical and technical ideas for development (second fundamental deliverable for project aims). Basic idea focus on MAppERS-V tested by FHFRS, and MAppERS-C tested with HCRD. The development plan is on course, it is based on clear link required with population for FHFRS and an evident opportunity to involve a solid volunteer trained group for HCRD. Details on applications, aims and engineering structures are actually internally shared and they will be published during step of single development.

## Annexes:

Annex 1. Frederikssund-Halsnæs Brand- & Redningsberedskab – General overview.

Annex 2. Frederikssund-Halsnæs Brand- & Redningsberedskab – Climate change.

Annex 3. Crowdsourcing in MAppERS.