"An INtegrated next generation PREParedness programme for improving effective inter-organisational response capacity in complex environments of disasters and causes of crises"

D3.7 IN-PREP Communications Framework (Iteration One)

Document Summary Information

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Executive Summary

IN-PREP's overarching goal is to support collaborative response planning and training for transboundary disasters and causes of crises. To do so, IN-PREP delivers the Mixed Reality Preparedness Platform and a Handbook that supports Preparedness that allow civil protection agencies to: 1. Make/enter a plan; 2. Create a scenario; 3. Define criteria to test; 4. Play (train); 5. Score, assess and 6. Adapt.

All above are realized thanks to the IN-PREP tools, namely:

1. The Scenario Builder (SB) for dynamically creating, editing, storing and executing training scenarios;
2. The Modelling tools for risk and impact assessments which enhance the dynamicity and realism of the training session and further to that facilitate collaborative response planning process;
3. The Training Platform for sharing the operational picture to decision makers and merging response plans whilst evaluating achievement of training objectives;
4. The C2s that allow insertion of individual response plans and support operational and tactical management during a training session;
5. The Recommendations Engine that supports decision-making in the form of notifications (the latter visualized in the Training Platform);
6. The Communication Modules (i.e. Emergency Management Content Router and Data Distribution Module) which interconnect all above sub-systems.

IN-PREP Mixed Reality Preparedness platform is envisaged to be deployed as a single integrated system, consisting of all above sub-systems that need to communicate to each other. This should be realized in real-time, in order to perform a rich in information data exchange among sub-systems, among trainees and between them and the trainer whilst a training session is executed. Underperforming (or even worst, failing) to accomplish such communication may jeopardize the proper execution of training session and as such influence its outcomes.

The Communication Framework of IN-PREP is primarily part of the «Application Layer» of the TCP/IP model. In IN-PREP there are two modules that are responsible for this communication, the Emergency Message Content Router (EMCR) and the Data Distribution Module (DDM). All IN-PREP sub-systems bi-directionally communicate with these two modules in order to exchange information in a reliable and efficient way, in real time. The EMCR is mainly used for exchanging operational information, such as dispatching, availability of assets, tasking and notifications from the field, whereas DDM facilitates the interconnection of the Training Platform with the scenario storyline, the modeling results and decision-making aspects. Special attention has been payed to incorporating and complying to information and data exchange standards, ensuring in this way that the IN-PREP system is extendable, scalable and ready to be connected, with little or no effort, to other legacy or external sub-systems.

Furthermore, the IN-PREP Communications Framework addresses the link layer aspects which concern physical connectivity of the various sub-systems over wired or wireless interfaces. The experience during the first three TTXs of the project has proven that the "Link Layer" must also be considered for the IN-PREP system to function correctly.

Exercises take place in various locations each time consisting of a variety of trainees (civil protection agencies at various level of command), addressing disasters and crises in a multi-hazard constellation and to different scopes, the latter addressing the response planning and training needs of the hosting agency or country. The above result in extensive training needs of the trainees on the use and understanding of the IN-PREP MRPP. Moreover, exercises may involve outdoor or/and indoor locations and the activities of the exercises might be restricted to a single room or might be extended to several KMs range, even passing the borders of a country. In order to cover all those aspects (and many more) the link layer must be carefully planned and designed prior to each exercise by experts, that understand both the technical details of the network and the training goal of each exercise.

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