ICIT and emergencies in historic districts
(how ICT improves large scale emergency operations involving historical buildings)

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Technical Rescue Operations normally need firefighters

Sometimes medical rescue support is needed

Managing the immediate aftermath of Rescue Operations when historical artifacts are interested need the help of specific experts
When large scale emergencies occur, civil protection plans come into operation. They allow to coordinate large numbers of first responders (firefighters, ambulance, police, army …)
When large numbers of different organizations are involved the main problem in coordinating is assuring data and information flow.

The most reliable and practicable way to improve immediate data flow is using IC technologies, i.e. web services.
In Italy, National Fire Department (Ministry of Interior) adopted CAP Protocol with the decree dated 17 June 2008.

The adoption of the decree followed the decision of opening the emergency management systems to systems from other authorities. Such decision comes from several considerations:

- The control room project (SO115) had been deployed and is being satisfactorily used.
- The experimental use of REACT system was satisfactory.
- The CAP protocol has been consolidated in a standard.
In Italy, National Fire Department (Ministry of Interior) adopted CAP Protocol with the decree dated 17 June 2008.

The decree approves the technical specifications aiming at cooperation in data exchange. Such specifications adopt the CAP standard as the only protocol to exchange emergency data with the National Fire Department.

CAP standard has been developed by the technical committee for emergency management of the OASIS consortium (Organization for the Advancement of Structured Information Standards). Details on CAP can be found at the Consortium webpage:

http://www.oasis-open.org/home/index.php
CAP standard has been adopted in 2009 by the U.S. Agency FEMA (Federal Emergency Management Administration) and is compatible with web services or existing standards like SAME (Specific Area Message Encoding) used for the U.S. “National Oceanic and Atmospheric Administration (NOAA) Weather Radio” or the “Emergency Alert System” (EAS).
Why CAP?

CAP is a simple and flexible standard which enables exchanging data in order to collect or notify safety and emergency warnings over every kind of public emergency net or system

Moreover CAP:

• Is compatible with every public information or emergency systems even in case of multilingual context;

• Includes geospatial references in order to easily and immediately identify the location of the emergency event;

• Allows operators to attach digital resources to each message (audio files, images, pdf etc);

  • Supports several systems aimed at ensure authenticity, integrity, confidentiality of messages (OASIS Web Services Security” - PKI technical Committee);

• Allows operators to deliver several emergency messages with a single action - possible use in public emergency communication
Other CAP features include:

- **Normalization of alarm/emergency information from different sources;**
  - Possible aggregation or comparison of results;
    - Usable for public alarm broadcast
    - Usable in remote control systems
The earthquake occurred at 03:32:39 killing 299 people. Within the first day, more than 1,000 responders of National Fire Department reached the city and the towns around Aquila, working on 24 hours shifts to save the most of lives. The emergency life-saving operations have been performed until every missing person has not been found,
The April 6th earthquake National Fire Dept. commitment:

In the first days after the earthquake, the Department has deployed:
• nearly 2,300 firefighters
• 500 hundreds vehicles
• 92 Special teams - 24 teams with dogs
• 3 Satellite Communication Vehicles
• 7 local temporary headquarters
• 20 local command unit (trucks with ITC equipment)
• 100 engineers to assess the safety conditions of civile buildings
• 8 engineers/architects to assess safety conditions of cultural heritage buildings
• 1 medical team
• 5 helicopters

As a result, 89,000 NFD performed rescue and emergency operations in 50 days
The April 6th earthquake National Fire Dept. commitment:

COM = LOCAL JOINT CONTROL ROOM (1 NFD REPRESENTATIVE)
CB = TEMPORARY NFD HEADQUARTERS
Operational use during the 6/4/09 earthquake: operations concerning cultural heritage buildings

the information flow:

first step: decision making

in this phase the possibility of sharing a common database allows interested people to shorten the time for decision making and to quickly set the priority lists of works to be done
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the information flow:

second step: assessment of the scenario

in this phase the remote data entry gives to assessing teams the possibility of recording all the information directly - such information are immediately available to the different structures

a joint team assessing the state of damage of an historical building in l’Aquila
Operational use during the 6/4/09 earthquake: operations concerning cultural heritage buildings

third step: elaborating provisional works

In this phase the remote data entry gives to assessing teams the possibility of recording all the information directly - such information are immediately available to the different structures.

The web based structure makes data management and fruition extremely flexible.
Operational use during the 6/4/09 earthquake: operations concerning cultural heritage buildings

the information flow:

fourth step: sharing information

the interoperability objective is reached - data are shared during the workflow and at the end of the process

web page showing sites interested by emergency activities
Firefighters deploy rescue operations

Cultural Heritage Office lists buildings subject of provisional works according priorities

Firefighters deploy the first provisional urgent works

Cultural Heritage Office prepares the draft for provisional works

Firefighters analyze the draft, and start the provisional works

Cultural Heritage Office follows the works and give expert judgment when needed
http://www.vigilfuoco.it/aspx/MessaInSicurezza_eng.aspx
Operational use during the 6/4/09 earthquake operations

future achievements:

During the first 30 days of emergency, Firefighters have carried out more than 60,000 rescue operations. The use of the web application based on CAP standard has begun 5 weeks after the earthquake occurred. In order to give access to relevant data for every civil protection authority, records on several thousand of rescue operations will be input using the web application. Such work will make possible, for the first time, to analyse completely and accurately the emergency management process, allowing to improve the emergency system.
Example: Research Project „IDIRA“
Interoperability of data and procedures in large-scale multinational disaster response actions

• Integrated Project within FP7 - SEC
• 2011 – 2015
• 18 partners
• Goal: develop a new capability for more efficient multi-national and multi-organisational disaster response actions
thank you

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