



PREMFIRES

PREVENTION AND MITIGATION OF FIRE HAZARD

INTRODUÇÃO

PREMFIRES is a powerful and portable solution for prevention and mitigation of fire hazards.

The system comprises key features for both prevention and combat of forest fires that greatly enhance the efficiency of fire departments with reduced costs.

For prevention purposes, PREMFIRES uses satellite earth images to generate fire-risk maps which enable users to spot critical points where fires are likely to occur and consequently take preventive measures.

For fire combat, PREMFIRES provides a full blown command & control system that provides information in real-time to the firefighters in the field and collects field data to a Command and Control Center (CCC) for decision making and dissemination among firefighters in the fire scenarios.

As forest fires typically occur far from urban centers, three system requirements gain special importance. These are Communications, Mobility, and Positioning.

PREMFIRES answers these requirements by incorporating off-the-shelf PDA's (Personal Digital Assistants), GPS positioning devices, and a wireless communication infrastructure.



<http://scrif.igeo.pt/asp/enviados.asp>

PREMFIRES ARCHITECTURE

The PREMFIRES system is composed by three main components: the Command and Control Center, Field Devices and Communication system (see diagram).

COMMAND AND CONTROL CENTRE

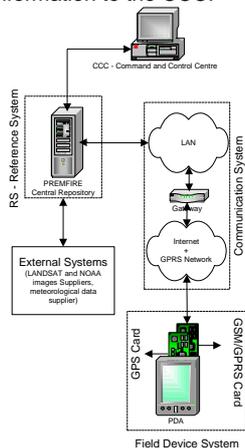
The Command and Control Center (CCC) is the central repository, where system operational and historical data is archived. The CCC is based on standard sql databases and open technologies. It is also responsible, among others, for the (automatic) generation of fire risk maps.

Whenever the system is fed with updated satellite images, the RS spots high-risk areas, identifies the regional or local fire brigades in charge of

those areas, and finally sends them alerts.

FIELD DEVICES

The Field Device (FD) is the equipment provided to the firefighters in the field. The FD was specified for low cost and comprises an off-the-shelf PDA, a GPS card, and a GPRS card integrated in a single box that allows full-duplex communication between the fire fighters on the field and the CCC. The FD guarantees that the firefighters have a global view of each fire as well as about critical resources in the field (such as water points, hospitals, and schools among others) and enable the input/update of critical field information to the CCC.



The FD supplies the firefighters with means to report their precise location to the CCC and easily search and identify (and catalog) critical resources.

COMMUNICATION SYSTEM

The GPRS card provides the wireless communication capabilities to the FD. The communication system is implemented in a modular fashion in order to facilitate the usage of other communication infrastructure such as HF radio, Tetra, or other option that fulfills the end user financial and operational requirements.

The FD has an advanced GIS interface with detailed maps of the field (military, ortophotos, thematic maps), including weather information on the fire location. Earth images for Europe are obtained from NOAA and LANDSAT satellites.

The FD acts as a remote client to the RS database, being able to work online (using the wireless communications), or offline mode (using a local database) for optimizing the remote access and provide cost savings.



HISTORY AND FUTURE EVOLUTION

The origins of PREMFIRES lie in a project of the European Space Agency (ESA) awarded to Critical Software S.A. focused on Southern Europe. A large demonstration will take place in Portugal by the end of 2002 and a subsequent demonstration is planned for Italy to demonstrate the modular structure and easiness of customization of the system.

Future plans for PREMFIRES include the support for other emergency situations like: floods, volcano's eruptions, big social events, earthquakes, among others. The system was developed with this evolution roadmap in mind

MORE INFORMATION

To obtain further information about PREMFIRES please contact:



Critical Software, SA
EN1/IC2 Km 185, Banhos Secos,
3040-032 Coimbra
Portugal
Tel: +351 (239) 801300
Fax: +351 (239) 801319
<http://www.criticalsoftware.com/>



Instituto Geográfico Português
Rua Artilharia Um, N.º 107
1099-052 Lisboa,
Portugal
Tel: +351 (21) 3819600
Fax: +351 (21) 3819699
<http://www.igeo.pt/>