THE USE OF GIS SYSTEMS AND VEHICLE TRACKING AND SURVEILLANCE OF FIREFIGHTERS IN FIRE AND RESCUE SERVICES

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GIS base IT applications

The IT applications based on GIS systems are a useful tools for the fires and rescue services in all the different task and operational levels. For example, following the operational levels of the Swiss firefighter ICS, we can demonstrate the importance of GIS as base of IT applications.

ICS used by the Swiss firefighters (basic schema)
Interfacing the different GIS data (for example forest fire scenarios in a specific region) allow to construct most probable scenarios of fire development. Starting from the scenarios it is possible to:

- define measures of prevention,
- verify the menaces,
- the infrastructures needed for the fire and rescue services (roads, water points, equipment)
- organize the specific training and exercises and so to elaborate plans of intervention.
Monitoring and evaluation of outbreaks of fires (fire points)

• The actual satellite monitoring system allow a worldwide detection of outbreak of fires (fire points) every 15 minutes.
• Every fire point could be analysed combining different data and particularly GIS data.
• In case of fire points in forest area it is possible a quickly evaluation of the spread of fire and the probability of mega fires through IT application (model of fire spreading + GIS data about vegetation+ climate data of the last 30 days and the following 7 days, ...).
• This tool allows to shorten the time of alerting and prioritization of employment of intervention forces (for example international wildfire aerial taskforce).
Readiness of the firefighters

- The world statistics produced by the CTIF indicate that the majority of the fire brigades are based on voluntary.
- The density of the population in rural areas does not allow to have units ready at all times as professional.
- The organisation of permanent pickets is too expensive.
- The voluntary firefighters have other professions or activities and it is not always possible in case of alert for all the personal to reach the fire station in a short time.
- The monitoring system that will be presented by Paolo Romani (Switzerland) “On duty! now!” is an interesting tool for controlling the readiness of the single voluntary firefighter.
Alerting phase
The GIS data in the alerting process are crucial to locate precisely the event and the access routes.
With this information, the call-centers can take first important decisions as demonstrated in the next presentations of this symposium.
Transfer to the place of event
GIS data are the basic support to guide the intervention forces to the right place and it will be presented by Dario Tretinjak (Croatia) “Tracking of firefighting vehicles and fire-fighters and adaptions of GIS layers”.
It can also give useful information during the transfer to the chief of the operations who can start to elaborate the operational decisions.
Operational phase

- The GIS data combined with the direct observations in the field help a rapid decision making and reducing the probability of errors.
- The IT applications allow a constant control of the location of the different means (vehicles, aerial means, ...) and of the fire fighters at the front of the event.
- GIS applications can also be useful by the conduct and revaluation of decisions during the operation.
End of the operational phase and investigation

- The evaluation of the operation and of the consequences of the event can be made easy with the support of IT applications based on GIS data.
- Also useful are GIS data in the investigations about the origin of the event (fire, ....).
## Conclusions

The IT application in Fire and Rescue Services are an indispensable tool for:

- a better understanding of the possible events (Scenarios);
- a more precise analysis of the needs (infrastructure, equipment, vehicles,...);
- a specific planning in case of event (intervention cards);
- an online monitoring combined with an online rapid risk assessment;
- an online controlling of the availability of volunteers (firefighters, rescuers...);
- an alarm combined with a series of preliminary decisions (to gain time, to anticipate the event...);
- a support of information for the head of intervention during the transfer to the place of event;
- a valid help to drivers on route to the accident site;
- a better control and supervision of the forces deployed on the front of the event;
- a helpful traceability in the evaluation of operations (critical evaluation of the intervention);
- the availability of precious information and data for inquiry.

In all these applications the GIS data play a decisive role improving the operational effectiveness and efficiency and also the security of the firefighters and the population involved.
A suggestion for the committee

CTIF Working group
IT application with IT competent active firefighters?

Operational competences + IT competences = firefighter adapted IT tools

Thank you for your attention