

SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Integrated Applications End-to-End Solutions (1)

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INTEGRATING NAVIGATION AND COMMUNICATION FOR EMERGENCY SERVICES

Abstract

All nations are susceptible to natural and man-made disasters. The number of casualties in a disaster could be reduced by applying emergency channels for early warning and mitigation. As disasters do not heed national boundaries, an international approach for these channels is -especially for large scale disasters- most appropriate. Integrating navigation and communication for emergency services is under consideration in Europe and Asia. In this contribution, we will describe the European and Japanese plans to apply GNSS for emergency services in combination with existing services.

The following channels are available to communicate to the general public in case of an emergency.

1. Public address (sirenes/loadspeakers)
2. Terrestrial broadcast
3. Fixed phone networks
4. Internet/email
5. Mobile phone networks
6. Satellite communications

These channels can be used for alerting, some of them also for informing, but they differ on aspects such as:

- The number of people that can be reached
- The amount of information which can be conveyed
- The way a channel actively or passively notifies the public
- Resilience of the channel to disasters

Recently the use of GNSS (especially GPS) in mobile telephones has increased, mainly in smart phones. Moreover we see the traditional differences between car navigation systems, smart phones and personal computers vanishing. The GNSS receivers applied in these devices could be utilized to send information to users in a specific area.

The GNSS based emergency services could combine the advantages of both satellite communication and mobile telephone based services, and it is potentially a good addition to available channels. It has high resilience as it is independent of ground infrastructure, which might be destroyed or disrupted by the disaster. The system itself is institutionally owned which could enhance trustworthiness of the service. One of the main advantages of GNSS as emergency message broadcaster is its sensitivity to the location

of the user, so that the alert might be showed just to users in the affected areas. Moreover different instruction can be broadcast to users in nearby located areas affected by the same disaster but in a different way.

This contribution will describe the developments in Europe and Japan and provide ideas for standardization which is required to achieve interoperability for this type of emergency service. As a single communication channel cannot meet the needs of all scenarios/citizens/timescales, we will describe the foreseen relationship between GNSS based and other emergency channels.