

Joint Defra / EA Flood and Coastal Erosion Risk Management R&D programme

Background to R&D project

Flood forecasting and warning systems operated by regions and areas of the Environment Agency generally started life in the days of the Regional Water Authorities. Dissemination systems and methods were developed to meet local needs and budgets, a process which has to some extent continued despite the national focus given by the formation of the National Rivers Authority in 1989 and the Agency in 1996.

Following a Ministerial Direction in 1996, the Environment Agency took the lead role in the dissemination of flood warnings commencing on 1 September 1996. This resulted in the Agency commissioning an Automatic Voice Messaging system to issue these warnings using fax, voice and/or pager messages. This system limits the amount of information that can be disseminated. A new Multi Media Warning Dissemination Service is currently being developed with the functionality to disseminate warnings and information using a mixture a channel technologies. This R&D project will complement this new service.

The Environment Agency therefore commissioned Qinetiq, with the purpose of developing more effective methods for the dissemination of flood warnings. In particular to determine the opportunities that recent technological advances could provide to give earlier, more targeted warnings and to ensure the maximum receipt of warnings and reduced operation costs.

Results of R&D project

Phase 1 of this project (already delivered under FD2202) focused on three main areas of research shown in the Comparison document:

- Technology Comparison – which lists all technologies either in use or emerging and evaluates each one using technical criteria
- Requirements Analysis – which lists the system uses that each technology must satisfy using the Environment Agency's Multi Media Warning Dissemination Service as the baseline
- International Perspective – which identifies the dissemination methods currently in use in the following countries: Australia, Austria, Canada, Denmark, Finland, Japan, Netherlands, Norway, Sweden, Switzerland, USA



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This research resulted in a recommendation for future piloting as part of the Environment Agency's Multi Media Warning Dissemination Service. The conclusion recommends a heterogeneous approach using Digital Radio technology (DAB), supported by Internet 'push' to a wireless network of devices such as;

- alarm metaphors such as vibrating pillows
- household devices such as fire alarms
- common workplace device such as burglar alarms

Phase 2 of this R&D project has now delivered with the development and demonstration of a prototype to the project board and project team.

R&D Outputs and their Use

The principal outputs are presented in the R&D Technical Report listed below. This includes information on methods currently in use around the world for dissemination of all types of warning including flooding, chemical release and security alerts. A successful prototype demonstration using the technologies outlined in the above section concluded phase 2 of this project. A further extension using this technology will take place during 2005 with a field trial in flood communities in North Yorkshire.

Further research into emerging technologies is also included for consideration for future use. Each method has been assessed and ranked against pre-defined criteria for their suitability.

It is recommended that the report is used in 2 main areas:

- Expanding the warning dissemination and information channels to the Environment Agency's Floodline Warnings Direct Service

Recommendations to the Cabinet Office from the National Steering Committee for Warning and Informing the Public

This R&D Technical Summary relates to R&D Project FD2209 and the following R&D output:

- **R&D Technical Report FD2209/TR – Improved dissemination of flood warning – Phase 2.** Published July 2005.

Publication Internal Status: Released Internally External Status: Released to Public Domain

Project Manager: Bryan Nelson, Environment Agency (Head Office – Flood Defence)

Research Contractor: Qinetiq, Malvern, St Andrews Road, Malvern, Worcestershire, WR14 3PS

The above outputs may be downloaded from the Defra/EA Joint R&D FCERM Programme website (www.defra.gov.uk/envIRON/fcd/research). Copies are also available via the Environment Agency's science publications catalogue (<http://publications.environment-agency.gov.uk/epages/eapublications.storefront>) on a print-on-demand basis.



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Defra Flood Management, Ergon house,
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