

★ With calls to emergency services each year across Europe totalling over 200 million, interaction, coordination and information exchange between agencies and departments can be hectic. New systems can make big improvements, as **Uberto Delprato** of the REACT project, explains



Reacting to emergencies through enhanced data distribution

Effective emergency response requires a coordinated network of information exchange

Speed, coordination and transference of knowledge are key to emergency services in Europe and all over the world in providing an effective reaction and response to an emergency. Further, with increasing pressure put upon them through natural disasters – Hurricane Katrina being a recent and noteworthy example – and the current zeitgeist of Public Safety Answering Points (PSAPs) serving increasingly large areas, an accumulating importance is being given to emergency response systems that assist call takers and dispatchers in formulating a fast overview of the incident. The REACT (Reaction to Emergency Alerts using voice and Clustering Technologies) project, led by IES Solutions CEO, Uberto Delprato, wishes to address this need for fast, efficient and – most importantly – standardised knowledge throughout emergency service agencies and departments – no matter whether they are local or foreign.

“The REACT project aims at creating a seamless way to allow command and control centres of different agencies (or of the same agency in different locations) to share data in electronic format,” explains Delprato. “Currently the situation in Europe shows a large number of emergency services using different command and control systems and are – despite some improvement in this area – not sharing information in electronic format yet. This produces negative effects both in the response time and in the possibility that the right recipient of the piece of information is actually addressed and informed about an event.

“A good example of this,” continues Delprato, can be seen “during the deadly 1998 Sarno mudflow (137 casualties) in Italy. Here, several notification calls of minor precursory flows were addressed from on-spot citizens to police stations or municipalities: however, such

precious and precise information was not addressed to the right decision maker. Despite the inherent local geological conditions and extreme rainfall, there is evidence that the high number of casualties was partly due to a lack of a unified information repository, available to emergency crews as well as emergency ‘intelligence’ managers.”

The REACT project – which is funded by the European Commission under the Sixth Framework Programme – is currently addressing this problem by the design and implementation of working prototypes that allow:

- A seamless sharing of information between different agencies in electronic format
- A reliable voice (and language) recognition for capturing more information from caller/call takers’ conversations

- An intelligent ‘clustering’ of apparently non-related incidents into a dynamic scenario, therefore creating a decision support tool based on a large/larger group of calls

Currently the REACT project’s system for call clustering, call prioritisation and interoperability is being utilised by the Corpo Nazionale Dei vigili Del Fuoco (Italy), ACPO – Sussex Police Authority (United Kingdom) and Feuerwehr Aachen (Germany) emergency services. In these cases each emergency service has set the target for a system that will increase both efficiency and efficacy of work, particularly when a lot of calls are received for the same event (potentially using different emergency numbers) and where small incidents may go underestimated and escalate in scale.

passed through Web Services for integrity and protection. Because of the existing limitations in the modifications that can be brought to existing legacy infrastructure at each user site, a customised interface is then employed to plug their current command and control software into the REACT system.”

An important breakthrough

Since the project’s conception excellent progress has been made, culminating with a decision by the Italian government introducing information sharing between emergency services and fire fighting authorities; and announcing the implementation of a communications platform developed by European researchers. Delprato explains: “The Italian Ministry of the Interior has issued a formal decree

This is excellent news as it is the first time in Italy that an emergency organisation will open its databases to other similar organisations, providing they adopt the communication protocol which has been defined and developed within the REACT project

The REACT architecture

The REACT system itself is based on a distribution model that supports efficient and performance optimised data exchange, coupled with platform independence. “This type of architecture,” notes Delprato, “was chosen to satisfy requirements for deployment and assist integration with components from many different partners, which is key for us. The communications backbone of the project is provided by XML-based Web Services, these facilitate the interconnection of components using clearly defined APIs. Web Services were chosen because they are an industry standard way for disparate components to interoperate, independently from the used operating system or programming language. In addition, security is of paramount importance in REACT to protect the information transmitted between components or between our systems. Encryption is applied to the messages

concerning the sharing of data between the fire department and other emergency organisations, such as the ambulance service. The decree – published in the government’s *Official Journal* – defines the communication protocols for exchanging data and information between emergency service command and control rooms. This is excellent news as it is the first time in Italy that an emergency organisation will open its databases to other similar organisations, providing they adopt the communication protocol which has been defined and developed within the REACT project. The work refining and combining two established communications protocols – the CAP (Common Alerting Protocol), a de facto standard and TSO (Tactical Situation Object) data dictionaries – by REACT is to be implemented in Italy. And, following the trials in Germany and the UK, talks are underway with the respective authorities to implement REACT’s platform there as well.” ★

At a glance

Full Project Title
REACTION TO EMERGENCY ALERTS USING VOICE AND CLUSTERING TECHNOLOGIES (REACT)

Project Aims
REACT aims at reducing risks to citizens and the environment by enhancing the interactivity of citizens with Emergency Services and by providing added value to integrated information coming from disparate sources.

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Uberto Delprato holds a degree in Nuclear Engineering and currently is CEO of ‘IES Solutions’, an SME based in Rome, Italy and active in the domain of ICT Solutions for Environment and Security (Earth Observation, sensor technologies, (wireless) Internet technologies and GIS application). Since the first stages of his professional career in companies of the Finmeccanica Group, he worked on international R&D projects, co-ordinating several project teams and typically representing the interface between the scientific and academic world and the industrial environment.

