The Evolution of Disaster Early Warning Systems in the TRIDEC Project

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ABSTRACT
The TRIDEC project (Collaborative, Complex, and Critical Decision Processes in Evolving Crises) focuses on real-time intelligent information management in the Earth management domain and its long-term applications. It is funded under the European Union’s seventh Framework Programme (FP7). The TRIDEC software framework is applied in two application environments, which include industrial subsurface drilling (ISD) and natural crisis management (NCM).

For each domain, three consecutive demonstrators with extended capabilities are developed and field-tested during the projects lifespan. This article focuses on the technical advances achieved by the light-, mid- and heavyweight NCM demonstrators for Tsunami Early Warning.

KEY WORDS: Tsunami Early Warning System; TRIDEC; System of Systems; Mediterranean Sea, critical decision-support.

INTRODUCTION
Early warning of natural or man-made disasters is a major element of disaster risk reduction and decision-support. Its overall objective is the prevention of loss of life and the reduction of economic losses to a minimum.

TRIDEC is a IT Research Project in the European Union’s Framework Programme (FP7) focusing on new approaches and technologies for intelligent information management in collaborative, complex and critical decision processes in earth management.

The goal of TRIDEC is to develop a software framework for Collaborative, Complex and Critical Decision-Support in Evolving Crises. For this, the key objective is the design and implementation of a collaboration infrastructure of interoperable services through which intelligent management of dynamically increasing volumes and dimensionality of information and data is efficiently supported thus enabling multiple decision makers to respond quickly to the developing crisis situation via a collaborative decision-support environment. Collaborative computing is used to establish a decision-support enterprise system of services which can timely deliver critical information to decision makers during environmental crises such as tsunamis or during the drilling processes of an exploration well. This TRIDEC software framework is applied in two distinct application environments. These are industrial subsurface drilling (ISD) and natural crisis management (NCM).

This article focuses on the technical and functional advances achieved by the three consecutive TRIDEC NCM demonstrators and their installations for Tsunami Early Warning in the Mediterranean.

BACKGROUND
The natural disaster of the Boxing Day Tsunami of 2004 was followed by a communications-related catastrophe as crucial early warning information could not be delivered to