



A Walk through TRIDEC's intermediate Tsunami Early Warning System for the Turkish and Portuguese NEAMWave12 exercise tsunami scenarios

Martin Hammitsch, Matthias Lendholt, Sven Reißland, and Jana Schulz

GFZ German Research Centre for Geosciences, CeGIT Centre for GeoInformation Technology, Potsdam, Germany

On November 27-28, 2012, the Kandilli Observatory and Earthquake Research Institute (KOERI) and the Portuguese Institute for the Sea and Atmosphere (IPMA) joined other countries in the North-eastern Atlantic, the Mediterranean and Connected Seas (NEAM) region as participants in an international tsunami response exercise. The exercise, titled NEAMWave12, simulated widespread Tsunami Watch situations throughout the NEAM region. It is the first international exercise as such, in this region, where the UNESCO-IOC ICG/NEAMTWS tsunami warning chain has been tested to a full scale for the first time with different systems. One of the systems is developed in the project Collaborative, Complex, and Critical Decision-Support in Evolving Crises (TRIDEC) and has been validated in this exercise among others by KOERI and IPMA.

In TRIDEC new developments in Information and Communication Technology (ICT) are used to extend the existing platform realising a component-based technology framework for building distributed tsunami warning systems for deployment, e.g. in the North-eastern Atlantic, the Mediterranean and Connected Seas (NEAM) region. The TRIDEC system will be implemented in three phases, each with a demonstrator. Successively, the demonstrators are addressing related challenges. The first and second phase system demonstrator, deployed at KOERI's crisis management room and deployed at IPMA has been designed and implemented, firstly, to support plausible scenarios for the Turkish NTWC and for the Portuguese NTWC to demonstrate the treatment of simulated tsunami threats with an essential subset of a NTWC. Secondly, the feasibility and the potentials of the implemented approach are demonstrated covering ICG/NEAMTWS standard operations as well as tsunami detection and alerting functions beyond ICG/NEAMTWS requirements. The demonstrator presented addresses information management and decision-support processes for hypothetical tsunami-related crisis situations in the context of the ICG/NEAMTWS NEAMWave12 exercise for the Turkish and Portuguese tsunami exercise scenarios. Impressions gained with the standards compliant TRIDEC system during the exercise will be reported.

The system version presented is based on event-driven architecture (EDA) and service-oriented architecture (SOA) concepts and is making use of relevant standards of the Open Geospatial Consortium (OGC), the World Wide Web Consortium (W3C) and the Organization for the Advancement of Structured Information Standards (OASIS). In this way the system continuously gathers, processes and displays events and data coming from open sensor platforms to enable operators to quickly decide whether an early warning is necessary and to send personalized warning messages to the authorities and the population at large through a wide range of communication channels.

The system integrates OGC Sensor Web Enablement (SWE) compliant sensor systems for the rapid detection of hazardous events, like earthquakes, sea level anomalies, ocean floor occurrences, and ground displacements. Using OGC Web Map Service (WMS) and Web Feature Service (WFS) spatial data are utilized to depict the situation picture. The integration of a simulation system to identify affected areas is considered using the OGC Web Processing Service (WPS). Warning messages are compiled and transmitted in the OASIS Common Alerting Protocol (CAP) together with addressing information defined via the OASIS Emergency Data Exchange Language - Distribution Element (EDXL-DE).

This demonstration is linked with the talk 'Experiences with TRIDEC's Crisis Management Demonstrator in the Turkish NEAMWave12 exercise tsunami scenario' (EGU2013-2833) given in the session "Architecture of Future Tsunami Warning Systems" (NH5.6).