



Press conference – Mitigating tsunami risk with early warning systems

Wednesday, 25 April, 15h00

This summary is the responsibility of its author and does not necessarily reflect the views of the European Geosciences Union.

A distributed architecture for tsunami early warning and collaborative decision-support in crises

By J. Moßgraber

A system for tsunami early warning is spread over a large geographic region of the world. It consists of a huge number of computer systems and sensors which need to interact and therefore speak a common 'language' (the semantic level). Currently, existing systems are not yet fully coupled and a lot of additional user action is required until a warning can finally be delivered to the public. By connecting existing systems, fusing their information and using them for simulated forecasts, one could get a better view of a situation. Furthermore automating existing decision processes is an interesting option.

In order to create an architecture that supports the whole spectrum of a modern, distributed and collaborative warning system one must deal with multiple challenges. Obviously, one cannot expect to tackle these challenges adequately with a monolithic system or with a single technology. Therefore, a system architecture providing the blueprints to implement the system-of-systems approach has to combine multiple technologies and architectural styles. At the bottom layer it has to reliably integrate a large set of conventional sensors, such as seismic sensors and sensor networks, buoys and tide gauges, and also innovative and unconventional sensors, such as streams of messages from social media services. At the top layer it has to support collaboration on high-level decision processes and facilitates information sharing between organizations. In between, the system has to process all data and integrate information on a semantic level in a timely manner. This complex communication follows an event-driven mechanism allowing events to be published, detected and consumed by various applications within the architecture.

The presentation will describe work on the system architecture that is being developed in the EU FP7 project TRIDEC on 'Collaborative, Complex and Critical Decision-Support in Evolving Crises'.

###

Information for editors

This research was presented on Wednesday 25 April at the press conference 'Mitigating tsunami risk with early warning systems' at the 2012 General Assembly of the European Geosciences Union. The corresponding scientific abstract, presented at the NH5.7/ESS11.7 scientific session, is available at: <http://meetingorganizer.copernicus.org/EGU2012/EGU2012-8040.pdf>.

The research was conducted by J. Moßgraber (Fraunhofer Institute of Optronics, System Technologies and Image Exploitation IOSB, Karlsruhe, Germany), S. Middleton (IT Innovation Centre, Southampton, UK), M. Hammitzsch (GFZ German Research Centre for Geosciences,



Potsdam, Germany), S. Poslad (Department of Electronic Engineering, Queen Mary University of London, UK).

About the Security business unit at the Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (IOSB)

The scientists of Fraunhofer IOSB have already made a name for themselves in the field of security research long before the field attracted the attention of the broad public about five years ago in national and European research programmes.

The Security business unit focuses on the security needs of people, companies and official bodies, which wish to protect against natural and intentionally planned hazards, and comprises a broad range of interlinked competencies that deal with sensor sphere optronic aspects as well as multimodal surveillance robotics (on land, at sea and in the air), the development of ultra-modern analytical methods, the support of interoperable standards for the real-time exchange of information for risk detection and management as well as assistance in the situational analysis and human machine interaction in situation centres.

Considering that new technologies are being discussed in controversial manner with respect to conflicting aspects of security needs and the need for freedom, particularly if they are associated with surveillance, IOSB pursues the notion of 'Privacy by Design', which requires that privacy criteria are already accounted for during the design of the system.

The range of services spans studies (e.g. for evaluation) to the realization of experimental systems or prototypes and in individual cases up to and including system development. In typical projects the security researchers of Fraunhofer IOSB support customers in their efforts to improve their competitive position, addressing challenges previously thought too difficult with new product generations featuring innovations from the cutting edge of research

Contacts

Jürgen Moßgraber
Researcher

Fraunhofer Institute of Optronics, System Technologies and Image Exploitation
Karlsruhe, Germany
Tel: +49-721-6091-562
Email: juergen.mossgraber@iosb.fraunhofer.de

Sibylle Wirth
Public Relations
Fraunhofer Institute of Optronics, System Technologies and Image Exploitation
Karlsruhe, Germany
Tel: +49-721-6091-300
Email: sibylle.wirth@iosb.fraunhofer.de