Workshop Overview

JRC is organizing the 6th JRC European Crisis Management Laboratory (ECML) workshop on Tsunami Decision Support System tools in order to convene and discuss the state of the art of this type of specialized and specialistic software. Regional Tsunami Warning Centers are being created in the framework of UNESCO in order to respond to the need to alert National organization for the potential risk of Tsunami. Some of those centers have been created long time ago (e.g. Pacific Tsunami Warning Center) while other have been established only recently (i.e. CENALT, in France) and the interface for these centers are authorities in other Countries, Tsunami National Focal points. Often those centers serve also as National Tsunami Warning Center and in this case their interfaces are generally the National Civil Defense authorities.

In both cases the management of those centers requires highly reliable connectivity, relevant IT infrastructure and software tools that allow the operator to decide which type of Alerting message should be issued based on established and agreed Decision Matrix or based on the Analyst interpretation of the event.

The objective of this workshop is to invite experts of Tsunami Warning Centers as well as system providers or end users (Civil Protection), to show the status of the technology in this field, the specific requirements and the benefits in the use of one or another technological solution. What are the main features of the various systems and is there a software suite covering the whole workflow of procedures essential in crisis room operations (e.g., prioritisation, decision support, scheduling, resource planning, communications, etc.).

This is the 6th JRC European Crisis Management Laboratory (ECML) Workshop, and this time it is dedicated to Tsunami Decision Support Systems as of demand of practitioners and crisis managers. A demonstration of available ICT solutions for crisis room operations will show the state of the art of such software suites.

The number of participants is limited to 35. Participation is free of charge. Lunches, coffee breaks, and social dinner are courtesy of the JRC. Registration is mandatory for preparing entry permits to the JRC site.
Target Audience & Goals

The workshop will bring together stakeholders in the design, development, and use of ICT tools for tsunami Decision Support in crisis room operation:

1. **Manufacturers & technology providers** of ICT solutions fostering tsunami decision support systems.
2. **Practitioners** of information analysis and crisis management, operating national or regional tsunami warning centers.
3. **Academia experts** of fields relevant to tsunami analytical tools in the area of:
   a. InfoVis & VA – Information Visualisation & Visual Analytics
   b. GIS – Geographical Information Systems
   c. Modelling & computation
   d. Crisis Management
4. **JRC staff** operating the ECML, providing information analysis and early warning systems to the United Nations, the European Commission, EU member states, and the humanitarian and disaster relief community.

**Technology providers** will have ample room for the presentation of their solutions and products. Demonstration exercises will provide hands-on experience on systems’ use. Participating and showcased ICT systems and products will be described in the workshop report. A collaborative evaluation by all participants will provide the basis for lessons learned, state of the art, directions and needs for further development.

**Practitioners** will have the opportunity to see promising designs of relevant tools and available systems for their work. The more important is their end-user perspective in the assessment discussions and the chance to give directions for future development needs of required ICT systems.

**Academia experts** are invited to present outcomes of their research in the form of near mature or ready to use ICT solutions for situational awareness and incident management. Respective system descriptions shall be included in the workshop report. Their input in the assessment discussion and in outlining future R&D needs is very much looked forward to.

**Programme**

Day 1 afternoon is reserved for systems providers’ arrival, installation, and setup of hard- and/or software.

Day 2 will open with a keynote talk after introductory presentation incl. the DRIVER project. Warning Centers end-users are then invited to present briefly their mandate and their systems in use for TDSS. End-users are kindly asked in addition to send in their vision and ideas on TDSS that would support their crisis management organisation best by filling in a brief questionnaire distributed 2 weeks before the workshop.

ICT system providers will then introduce their products and are kindly asked to address apart from technical aspects the philosophy behind their systems and the functional background of the systems’ use. Templates for 1-2 slides to be included in their presentations will be distributed 2 weeks before the workshop. A discussion on the end-users’ perspective on the state-of-the-art and a “Vision 2020” will close day 1.

Day 2 afternoon will start with the demonstration (in parallel; streamed to the video wall of the ECML) and then followed by the presentation and discussion of results and outcomes focused on the different tasks at hand. A collaborative evaluation and assessment discussion will provide directions for further R&D and will close day 3.

**Scenario**

For the demonstration exercise the proposed scenario to be followed includes tasks at hand in the tsunami monitoring centres:

- Dealing with ever-changing incoming electronic information coming from seismological centres.
- Deletion or masking of irrelevant, duplicate, or already processed information.
- Sea level information flow: latency, availability, relevance
- Consolidation, association, or abstraction of multiple information pieces.
- Inclusion of paper-based information into the ICT systems.
- Situational Report (SitRep) production.
- Planning support for drafting of operation schedules or action plans.
- Communication needs (e.g., clarification and validation of information).
- Preparation of printed documentation and/or backup material in case of ICT failure.
- Efficient utilization of big wall display area (e.g., multiple view visualization), if foreseen.
- Sharing of final situational picture (e.g. Tsunami bulletin or Tsunami Flash Report or Tsunami Analysis) to cooperating crisis room (interoperability, data formats).
- Data information exchange with other warning centers
- Last mile alerting
- Presentation of and briefing on final situational picture to the crisis manager in charge.

**Data Exchange Formats**
The data distribution of seismic source will be defined on the basis of participants requirements. Common formats are RSS, quakeML, Jason, KML etc.

**Proposed Workflow of Demonstration Exercise**
Participating systems shall deal with the following course of events. None of the presented tasks are eliminatory. Some systems will be specialised for some areas and therefore tasks not relevant for these systems shall be skipped and have no influence on the further demonstration.

The systems will be operated in parallel in different offices next to the ECML and their video output will be streamed to the wall-sized display of the ECML for the participants to follow the progress. In addition groups of participants are invited to visit the different system stations for hands on experience during the demonstration. Important steps of the exercise might be demonstrated sequentially in more detail on participants’ (system providers or end-users) request.

**00:00** An initial input of information input feed (e.g., seismic event in an area of responsibility/interest of the participant) is received that has to be mapped and analysed. At uneven interval new estimation of the seismic event is given (up to 5 ). The new events are considered coming from the same or from other institutions.

**00:05** More reports come in. Some information duplicates already available reports from initial feed. Duplicates should be removed or masked properly.

**00:10** Creation of the first bulletin based on the information received so far. In the meantime sea levels will be simulated in specific tide gauge/DART. A verification of the sea level and eventually bulletins updates are necessary.

**00:15** Paper based reports should be produced for a first estimation of the potential damages.

**00:20** Ranking of so far know hazards and resulting prioritisation of next steps is performed.

**00:30** First Situation Report (SitRep) has to be prepared asking for: situation summary, known hazards, affected area, affected number of people, relief units on location, prioritised list of most urgent actions to be taken, better estimation of the source.

**00:35** Incoming information is contradictory to previously recorded information. Identification of sources and clarification is required.

**00:40** Large display area of big wall screen is utilised efficiently to communicate situation overview / common operational picture.

**00:45** Sharing of situation awareness with cooperating crisis room and/or field units is requested. Exported information of system X ideally should be made available on provided server to be read by other participating systems.

**00:50** End of demonstration exercise.
Evaluation
During the exercises check lists of the aforementioned basic tasks will be used to record if and how the participating systems support its execution. Final remarks and explanations by technology providers complement the fact sheets for each system in the context of the demonstration. Detailed presentations of systems and exhaustive lists of functionalities as reported by system providers shall be part of the final report.

After the demonstration session a collaborative assessment performed in a discussion together with all participants. Lessons learned, state of the art in ICT solutions for tsunami Decision Support Systems, and interesting directions and needs for further research and development will be outlined.

ECML Crisis Room Hardware Setup
The European Crisis Management Laboratory acts as a research, development and test facility for ICT focused solutions which integrate devices, systems, and relevant information sources to support crisis management needs, such as threats analysis, situational awareness, early warning, response and coordination, and collaborative decision making. For the exercise all crisis management systems shall be integrated in the ECML to a reasonable extent. Minimum requirement for participation is the streaming of the respective video outputs to the video wall. Individual setups and most practicable solutions to be clarified bilaterally. The ECML has the following setup:

Video Wall
- 5x3 matrix (5m x 2.22 m) rear projection video wall
- Overall resolution 5120x2304 pixels
- Simultaneous digital & analogue video inputs
- Touchable over the whole surface (single touch, medium precision)

Computers
- 4 workstations to feed the video wall, 2 used to control it
- 1 server (Windows 7) to control the video inputs and drive the video wall

Other hardware
- Samsung SUR 40 multi-touch table
- AppleTV for AirPlay streaming to video wall
- iPad, iPhones, Windows 8 touch tablets
- Professional video conferencing system (Tandberg), landline phones, webcams, microphones
- AO plotter
- SMART Board interactive whiteboard (single touch)
- Guest WiFi
- Meeting table

Data Sources
The list of data sources will be established once the participants will have confirmed their interest. Basically the system should be ready to access either a local or an internet based data source in a preferred format for

- Sea level
- Seismic sources

For the sea level we propose to use a replica or a system simulating the UNESCO GLOSS [http://www.ioc-sealevelmonitoring.org/](http://www.ioc-sealevelmonitoring.org/) while for the DARTs the example is the NOAA web site [http://www.ndbc.noaa.gov/station_page.php?station=52401](http://www.ndbc.noaa.gov/station_page.php?station=52401)

For the seismic sources several methods can be used. Example are the

But other can be created for the purpose.

**Venue**

The workshop takes place at the European Commission Joint Research Centre site in Ispra, Italy. Nearest airport is Milan Malpensa (MXP). The JRC organises and takes care of taxi transfers between nearby airports and train stations, the JRC, social dinner location, and the hotel. Our secretariat supports you in booking at nearby hotel in your name. All accommodation and other travel costs are at the participants’ expenses.

European Commission (EC) - Joint Research Centre (JRC)  
Institute for the Protection and Security of the Citizen (IPSC)  
Global Disasters Alerts and Coordination System  
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