The EU ARISTOTLE Project

Alberto Michelini\textsuperscript{1}

Gerhard Wotawa\textsuperscript{2}, Delia Arnold-Arias\textsuperscript{2}, Daniela Pantosti\textsuperscript{1}

and the Aristotle Team

\textsuperscript{1) Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy}

\textsuperscript{2) Zentralanstalt für Meteorologie und Geodynamik, Wien, Austria}

ARISTOTLE

All Risk Integrated System TOwards Trans-boundary hoListic Early-warning

Pilot Project in the area of Early Warning System for natural disasters

Contract n. ECHO/SER/2015/722144
Outline

• Project in a nutshell
• Tasks
• Service
• Achievements
• Considerations
ARISTOTLE aims at the **provision of Multi-Hazard Advice to ERCC**, either in advance of / during activation of EC Civil Protection Mechanism (CPM) to **increase preparedness and response levels** of the EU and **improving ERCC’s assessment capacity**.

ARISTOTLE provides **rapid understanding** of events and how they might unfold helping to interpret the resulting hazards and impact.

ARISTOTLE relies and exploits **existing knowledge and professional expertise** matured in the European Operational Centers most of them with a national mandate.

**ARISTOTLE provides advice to ERCC consistent to that mandated nationally**
Project in a nutshell

Hazards

- Earthquakes (secondary induced hazard: Tsunamis)
- Volcanic Eruptions
- Severe Weather Events (Tropical Cyclones, winter storms, major cold waves and severe precipitation)
- Flooding

Partnership

15 institutions from 12 countries

The system is designed to be extendable and scalable to additional hazards and partners
Tasks

Task 1
- Management
  - an effective and efficient project management
  - operate an adequate risk management process
  - establishing the bridges between task and the final user ERCC

Task 2
- Inventory
  - inventory of entities which operate on a 24/7 basis and are lawfully mandated to provide expert advice to their respective national Civil Protection authorities with regard to natural hazards and/or disaster risks.

Task 3
- Scientific partnership and governance
  - creation of a multi-hazard scientific partnership that can support the ERCC with monitoring and analysis functions on a 24/7 basis and will facilitate the information exchange

Task 4
- 24/7 service
  - provision of a 24/7 monitoring and analytical service to the ERCC for the selected hazards covering at a minimum the UCPM countries and EU neighborhood

Task 5
- Training
  - seminars to ERCC personnel and end users on how emergency and reports should be read and interpreted with case studies and lessons learned from previous events
  - practical exercises and training by simulating various hazards
### Status of the Tasks

#### T3.3 - guidelines and recommendations document - potential future partnership enlargement that may include more hazards

#### T4.4 - transition to operational service post 24 month - sustainability
Status of the Service

- Since **February 2017 - 13 activations (2 pro-active, 11 reactive)**, 1-2 emergency reports per month, 1-2 events per weekly monitoring report and 1 update event per week

  - One event followed a request for international help (Peru landslides), one preempted a request for international help (tropical cyclone Mora, Bangladesh), one preempted increased international aid from existing NGOs in country (tropical cyclone Enawo, Madagascar)
Status of the Service

Activations

- Moldova Flash Flooding (08/04/2017)
- Danube basin floodalerts (04/02/2017)
- Mount Etna Eruption, Italy (16/03/2017)
- Pakistan earthquake (07/02/2017)
- Earthquake in Philippines (29/04/2017)
- Earthquake in Philippines (10/02/2017)
- Earthquake in Zambia (24/02/2017)
- TC MORA-17 (29/05/2017)
- Earthquake in South Africa (03/04/2017)
- Tropical Cyclone ENAWO-17 in Madagascar (05/03/2017)
- Tropical Cyclone Dineo 17 (14/02/2017)
- Peru – Floods and Landslides (21/03/2017)

Categories:
- Earthquake / Tsunami
- Volcano
- Flooding
- Severe Weather
Status of the Service

MHOB (Multi-Hazard Operational Board)
Status of the Service

Operation modes and products

Aristotle Products

Situational Awareness reports [ROM] - after the MHOB weekly meetings a Bulletin is prepared with the multi-hazard assessment. Delivered to ERCC through the ERCC portal

3 hour-informative scientific reports to ERCC [ERM, pro-active and reactive] Delivered to ERCC through the ERCC portal

Informative communication whenever appropriate following the SOP
The TikiWiki–based Aristotle IT platform, SPADA (Scientific Products Archiving and Document Assembly),
• facilitates the assembly of the reports to be provided to DG-ECHO ERCC.
• designed to gather the scientific, exposure and preliminary impact informations which are used by the multi-hazard operational board to assemble the reports.
• Relies on existing and newly developed (web) services
• Adopts a WYSIWYG text editor,
• Facilitates and fosters collaborative working methods.

Currently, SPADA has reached operational phase and is under continuous fine-tuning improving actions and software re-engineering.
The emergency report has a standard structure and contains four generic sections - all the details of the sections have been discussed and agreed with ERCC(JRC) -

- Event prime details (header).
- Executive summary.
- Assessment of the multi-hazards presented and their resulting impacts.
- Evidence and thinking behind the multi-hazards and impact assessment.

- In each hazard section:
  - Justification of the expert judgement
  - Contextual information (recent, historical, etc.)
  - Secondary and tertiary hazards
  - Combined hazards
Status of the Service

The situational awareness report

The short situational reports do not have a fixed format and provide basic informative mapping together with experts assessment. These reports are updated whenever needed.
Status of the Service

Report provision through the JRC portal

The reports (Emergency, weekly /situational) are uploaded onto the ERCC/JRC report sharing platform
Status of the Service

Governance

STEERING COMMITTEE

MANAGEMENT BOARD

MHOB

TECHNICAL Committee

METEO Hazard Group

FLOODS Hazard Group

VOLCANOS Hazard Group

EARTHQUAKES Hazard Group

TSUNAMIS Hazard Group

OTHER Hazard Group

24/7 OPERATIONAL SERVICE

INTERACTION & FEEDBACK

ADVISORY BOARD FEEDBACK

ERCC

ADVISORY BOARD
Main achievements

● Implementation and deployment of a 7*24 operational system after only 12 months from the project start

● Preparation of the first-ever “European Natural Hazard Scientific Partnership”, its Standard Operating Procedures (including the MHOB concept), Governance and Products tailored to the needs of ERCC

● Set up a management and working structure that, building on the partners’ expertise and operational background, allows different communities to work efficiently together with a single aim

● Preparation of a database with an inventory of entities operating 7*24 in the UCPM countries
Main achievements

- Successful **training** for an efficient service, both internal and to the ERCC duty officers
- Preparation of a centralized IT platform, **SPADA**, to gather the multi-hazard information and for the creation of the reports
- ERCC already **distributes** ARISTOTLE reports to the **Member States** for non-European events
- Fast evaluation (ERCC/JRC/Internal) of the activations for **prompt improvement**
Sendai Framework for Disaster Risk Reduction, – Target (g) - Substantial increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

Paris Agreement COP21, Article 7, para 7(c) Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making

Article 8 - 4. Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include:
(a) Early warning systems;

Sustainable Development Goals – Target 13, Climate Action - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Aristotle: at the forefront of the DRR Agenda
Considerations (1/3)

- The Pilot is being successful in providing multi-hazard expert advice to ERCC and the Member States by exploiting the capabilities of the existing operational centers of the participating Member States (i.e., successful integration)

- The Pilot relies and builds on previous, long lasting costly investments made by the Member States in terms of
  - Highly trained human resources (e.g., people doing the national monitoring)
  - Infrastructures (e.g., data acquisition networks)
  - Monitoring services (e.g., web services)
The developed **multi-national/multi-hazard Service** of the Pilot is highly innovative in its own and it shows

- The **added value, strength, potential and cost-effectiveness** of European cooperation/integration amongst Operational Centers **versus centralization**
- A **strong vision by the Pilot promoters** into the future of hazard monitoring and assessment **which could be further developed**
Due to financial constraints in relation to ERCC and its associated funding through the European Parliament we now expect a pause in delivery from ARISTOTLE
Thank you for your attention