



NERIS-TP: TOWARDS A SELF SUSTAINING EUROPEAN TECHNOLOGY PLATFORM (NERIS-TP) ON PREPAREDNESS FOR NUCLEAR AND RADIOLOGICAL EMERGENCY RESPONSE AND RECOVERY

Research project under the European Commission's 7th Framework Programme, EURATOM for Nuclear Research and Training Activities (work programme 2010), Fission-2010-3.3.1, Grand Agreement Number 269718

1. NATURE AND SCOPE OF THE PROJECT

This project aims on the one hand to keep the momentum gained through the European Project EURANOS in establishing a platform where the operational and research community can meet and discuss with all the relevant stakeholders the topics related to emergency response and recovery preparedness and on the other hand to tackle urgent research topics in the area of nuclear emergency response and recovery preparedness. Through a collaboration of industry, research and governmental organisations in Europe, methodological aspects and computational models will be developed to be consistent with recent recommendations from international bodies such as the ICRP (International Commission of Radiation Protection) and improve Europe's response by coupling decision support systems with an emergency information system such as the European wide information system ECURIE. Within this project, a platform will be established that will be a unique place for combined meeting of the research and the operational community.

2. ACTIVITIES

The working program reflects the two objectives of the project

- Establishing a sustainable platform on emergency response and recovery preparedness (NERIS - European Platform on Preparedness for Nuclear and Radiological Emergency Response and Recovery)
- Research activities to improve emergency management on the local and the national level

The first bullet point mentioned above is the establishment and operation of the European Platform on Preparedness for Nuclear and Radiological Emergency Response and Recovery. This work will be based on the earlier created European wide NERIS Platform and also include the users groups of the two decision support systems ARGOS and RODOS. At the end of the project, the NERIS platform will be self-sustainable.

The second bullet point represents research activities to close existing gaps in nuclear and radiological emergency management and rehabilitation. This comprises work

- to improve simulation models in decision support systems to deal with new international recommendations such as the ICRP 103, ICRP 109 and ICRP 111 recommendations,
- to strengthen the preparedness at the local/national level by setting up dedicated fora and developing new tools or adapting the tools developed within the EURANOS projects (such as the governance framework for preparedness, the handbooks on countermeasures, the RODOS system, and the MOIRA DSS for long term contamination in catchments) to meet the needs of local communities,
- to couple an emergency information system with the existing European Decision Support Systems (RODOS/ARGOS) by developing a web based interface and a meteorological model chain that provides meteorological data for the assessments from freely available world wide data, and
- to test, train and disseminate the new modules and assure that the end users are fully integrated in the development process and that the end products will be used to their full



technical capability in the community for training, exercises, preparedness and operational application.

3. CONSORTIUM

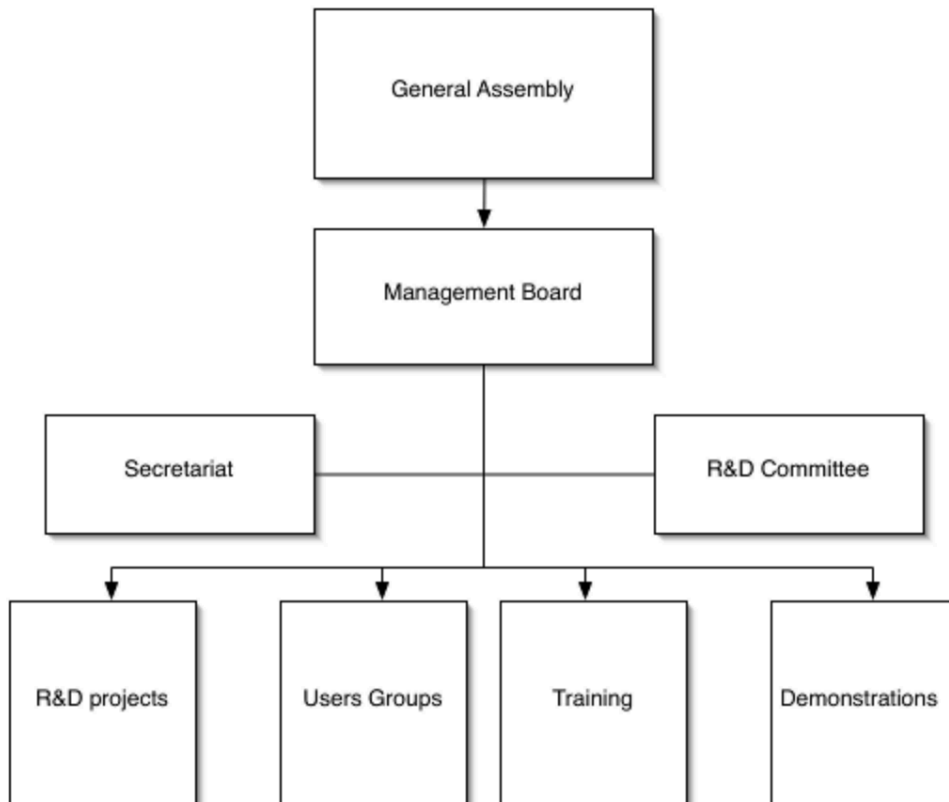
- Karlsruhe Institute of Technology, Germany (Coordinator)
- Centre d'étude sur l'Evaluation de la Protection dans le domaine Nucléaire, France
- Norwegian Radiation Protection Authority, Norway
- VUJE Inc., Slovak Republic
- Radiation and Nuclear Safety Authority of Finland, Finland
- Universidad Politécnica de Madrid, Spain
- Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, Spain
- MUTADIS, France
- "Horia Hulubei" National Institute of R&D for Physics and Nuclear Engineering, Romania
- National Centre for Scientific Research "Demokritos", Greece
- Risø National Laboratory for Sustainable Energy Technical University of Denmark, Denmark
- Danish Emergency Management Agency, Denmark
- Prolog Development Centre, Denmark
- Health Protection Agency, United Kingdom
- Norwegian University of Life Sciences, Norway
- Ukrainian Center of Environmental and Water Projects, Ukraine
- Bundesamt für Strahlenschutz, Germany
- Belgian Nuclear Research Centre, Belgium
- University of Western Macedonia, Greece

4. PLATFORM ACTIVITIES

The NERIS Platform will address the following three activities.

- Establish a forum for dialogue between European, national and local authorities, Technical Support Organisations (TSOs), professional organisations, research institutes, universities, non-governmental organisations (NGOs) and local and professional stakeholders to initiate and support through partnership European, regional, national and local activities and projects in nuclear and radiological emergency response and recovery preparedness.
- Initiate and coordinate networking activities to share experience, to contribute to a better harmonisation in Europe, to maintain and adapt existing tools and methods, and to develop new technical and governance approaches on nuclear and radiological emergency response and recovery preparedness.
- Ensure a supranational training programme by continuing the training courses developed during the EURANOS project and by launching new training courses according to the needs of all the various actors.

In this way, the NERIS platform will build the focal point for any further coordinated activities in this area in Europe. The structure of the platform is in principle as follows:



Important to note here is the objective to establish a platform that is self sustainable after the three years of the project.

5. RESEARCH ACTIVITIES (RTD)

The research activities in the NERIS-TP project have been subdivided into 3 work packages

The objective of the first work package is the adaptation of existing simulation models of Decision support Systems, in particular the RODOS system that they can treat the new ICRP 103 recommendations published in 2007. The new ICRP recommendations consider all exposure pathways within a certain period and define a so called residual dose that should not be exceeded. To deal with this new aspect, the existing simulation models have to be adapted. Furthermore, ICRP recommends preparing for all possible scenarios. To facilitate this preparedness aspect of ICRP 103, a new module will be developed that supports the generation of scenarios and the selection of management strategies.

The following methodology is envisaged.

- Firstly, expand the existing Emergency simulation model EMERSIM in RODOS such that it can be used as a screening tool to explore the need for sheltering, distribution of iodine tablets, evacuation and relocation. These actions should be modelled in an integrated way considering all exposure pathways within one simulation process.
- Secondly, expand the simulation capabilities of the Foodchain module AgriCP to have means to reduce the dose further after plume passage. One important aspect here is the assessment / reconstruction of exposure during plume passage, as this dose sets the framework for further optimisation after plume passage.
- In parallel, expand the inhabited area model ERMIN such that decontamination options can be used to reduce further the exposure after plume passage.

This work is backed-up by the ICRP working group to be established in the frame of NERIS.

The objective of the second work package is to strengthen the preparedness at national and local level in European countries towards nuclear and radiological preparedness and recovery. Based on the current status and experience, the following activities will be carried out:

- Test the viability of local-national forums where emergency and recovery strategies could be elaborated and cooperation mechanisms explored, involving all levels and sectors that would be affected by a radioactive contamination incident/accident;
- Develop robust and user friendly tools to assist the territories and local communities in preparing for the local cooperation (within and between territories and local communities) in case of incidents/accidents;
- Develop mechanisms and tools necessary for the feedback from local level to national level on implementation of mitigating actions in a response phase; and
- Foster cooperation between local, national and international stakeholders, decision-makers and experts involved in preparedness and recovery, through activities jointly with the European NERIS platform.

The third work package addresses the coupling of an emergency information system such as the European early warning system ECURIE with a Decision Support System (DSS) to have an automated assessment of doses and potential consequences initiated by a message from an emergency information system. A basic requirement is that the assessment be based on freely available meteorological data. The following items will be developed to achieve this objective:

- Computational tools to provide location, meteorological data and nuclides release (source term) information to the Decision Support System, based on the information contained in the message from an emergency information system.
- An automated framework to trigger the entire procedure, control the flow of information to the DSS and provides access to the results of the calculations.

The system concerning the meteorological data calculation and transfer to the DSS will be tested, optimised and evaluated for real cases.

6. TRAINING AND DISSEMINATION

The main objectives here are the further dissemination of the products that will be developed in the other work package. This includes tests by and training of end users of these products. Particular activities include:

- dissemination of the new methods and products on a European wide basis and beyond via the proposed European Platform and in form of two Topical Workshops,
- test the new products by independent end-users on a technical basis,
- develop and conduct two training courses to introduce the new products to the operational community,
- prepare and conduct two technical exercises and assure that end users are fully integrated in the development process,
- prepare and conduct one dissemination exercise and assure that the end product is used in the community,
- adopt the process of emergency and post-accidental preparedness by working together on a participatory approach.