EUROPEAN COMMISSION

Community Research

EC-SARNET

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PROJECT PRESENTATION (PP)

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Dissemination Level		
PU	Public	x
RE	Restricted to a group specified by the partners of the SARNET project	
CO	Confidential, only for partners of the SARNET project	

Introductory paragraph

49 organisations network in ***SARNET*** (Network of Excellence) their capacities of research in order to resolve the most important remaining uncertainties and safety issues for enhancing, in regard of Severe Accidents (SA), the safety of existing and future Nuclear Power Plants (NPPs). This project has been defined bearing in mind the necessity to optimise the use of the available means and to constitute sustainable research groups.

1 Nature and Scope of the project

SARNET tackles the fragmentation that exists between the different R&D national programmes, notably in defining common research programmes and developing common computer tools and methodologies for safety assessment. SARNET comprises most of the actors involved in SA research in Europe. A few organizations are covering a wide range of competences though not complete, whereas others are specialized in very specific areas and thus complementarities are developing. The critical mass of competence for performing experiments needed in the SA domain, analysing them, developing models and integrating them into ASTEC (integral computer code used to predict the NPP behaviour during a postulated SA) is achieved for most types of NPPs in Europe.

2 Activities

To reach these objectives, all the organizations networked in SARNET contribute to a so-called Joint Programme of Activities (JPA), which can be broken in several elements:

* Implementing an advanced communication tool for fostering exchange of information;
* Harmonizing and re-orienting the research programmes, and defining commonly new ones;
* Analysing commonly the experimental results provided by research programmes in order to elaborate a common understanding of concerned phenomena;
* Developing ASTEC, which capitalizes in terms of models the knowledge produced within SARNET;
* Developing Scientific Databases, in which all the results of research programmes are stored;
* Developing a common methodology for Probabilistic Safety Assessment (PSA) of NNPs;
* Developing educational courses and text (source) books;
* Promoting personnel mobility between the various European organisations.

In order to preserve the interest of the different organizations, a clear policy in terms of knowledge management, notably regarding access rights, has been defined. Reports on "protected" data will only be distributed to members who, through the activity they offer, increase significantly the value of the data (production of analyses, model development and assessment). In any case, the outcome of these programmes are models implemented in ASTEC and safety assessment methodologies, which will are available for all the SARNET members, or other European organizations that would like to use them for safety assessment or improvement of NPPs.

3. Expected Results

SARNET provides an appropriate frame for achieving within a couple of years a sustainable integration of the European research capacities on SA. By capitalizing the acquired knowledge in ASTEC and in Scientific Databases, SARNET produces necessary conditions for preserving the knowledge produced by thousands of men-years and diffusing it to a large number of end-users. By fostering collaborative work on developing and validating ASTEC, SARNET makes this code as the European reference for any kind of water-cooled NPP existing in Europe. By fostering collaborative work in the domain of code development and PSA, SARNET creates the necessary conditions for harmonizing the approaches and making Europe a leader in SA computer code and risk assessment methodology. Through a periodic review of priorities and co-programming of work amongst organisations, SARNET allows a more efficient use of available means and budget. Through an education and training programme addressing young scientists, SARNET consolidates on the long term the European excellence in the SA domain.

4. Societal Impact

As the end-products developed by the Network (ASTEC, PSA guides, scientific databases) may be used not only for R&D activities but also for industrial applications, most of the European Industry and Safety Authorities (or Technical Support Organizations) are contributing to SARNET. In return, the end-products of the Network that capitalize the large amount of knowledge acquired in this area contribute to a better prevention and mitigation of SA in European NPPs, including those of Russian design, and thus to the improvement of safety of existing and future European NPPs.
European end-users are mostly using integral computer codes and PSA methodologies developed in the United States, which results in a strong dependence on the US technology. SARNET, by fostering collaborative work in these areas, creates the necessary conditions for Europe to become a world leader in the concerned domains.

SARNET clearly becomes a reference, in terms of research priorities in the field of SA, having impact on national programmes and fund allocations. Progressively all the research activities in this field will become strongly coordinated by the Network, which contributes to an optimised use of European resources.
Through education and training programmes, SARNET develops synergies with educational institutions and thus keep attractive the concerned domain of activity for students and young researchers. This also contributes to enhance and preserve in a sustainable way the European scientific leadership.

5. Information about important public events

Future events: SFEN seminar (Paris, October 2004), EUROSAFE seminar (Berlin, November), SARNET presentation during the PHEBUS FPT3 event (last test of PHEBUS-FP programme, Cadarache, November-December 2004), SARNET seminar (second half of 2005).

6. Project Website address & contact person

A Web site provides since June 2004 all the information connected with SARNET, and in particular an access to documents elaborated in the frame of the network, an access to the SARNET experimental database and to the ASTEC code. The access is open only to SARNET organizations and the EEC. A Web-site extension open to the public is planned for beginning of 2005. The name of this extension is: www.sar-net.org.
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List of partners

IRSN (FRANCE), AEA-T (UNITED KINGDOM), AEKI (HUNGARY), ARC-S (AUSTRIA), AVN (BELGIUM), Becker Technology (GERMANY), BUTE (HUNGARY), CEA (FRANCE), CESI (ITALY), Chalmers University (SWEDEN), CIEMAT (SPAIN), CSN (SPAIN), DEMOKRITOS (GREECE), DIMNP-Pisa University (ITALY), EA (SPAIN), EDF (FRANCE), ENEA (ITALY), FORTUM (FINLAND), FRAMATOME ANP SAS (FRANCE), FRAMATOME ANP Gmbh (GERMANY), FZJ (GERMANY), FZK (GERMANY), FZR (GERMANY), GRS (GERMANY), IKE (GERMANY), INR (ROMANIA), INRNE (BULGARIA), IVS (SLOVAKIA), JRC (Ispra, ITU, Petten, EEC), JSI (SLOVENIA), KTH (SWEDEN), LEI (LITHUANIA), NNC (UNITED KINGDOM), NRG (NETHERLANDS), PSI (SWITZERLAND), RUB (GERMANY), SWEDPOWER (SWEDEN), TECHNICATOME (FRANCE), THERMODATA (FRANCE), TRACTEBEL (BELGIUM), TUS (BULGARIA), UCL (BELGIUM), UJD (SLOVAKIA), UJV (CZECH REPUBLIC), ULB (BELGIUM), UPM (SPAIN), VEIKI (HUNGARY), VTT (FINLAND), VUJE (SLOVAKIA)

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