



ROmanian Nuclear Higher Education and Training Network

Acronym: RONEN

- **Coordination and Support Actions**
 - **Supporting (CSA-SA)**

Work programme topics addressed:

Fission-2010-6.0.1: Actions supporting programme implementation and other activities

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Proposal Summary

The last feasibility studies performed with specialized international bodies underlined the major role to be played by nuclear power in the next future in Romania. Cernavoda NPP Units 3-4 is seen as the least cost solution for short and medium term energy development. A second NPP is estimated to operational until 2025.

In this context nuclear education and training system has to increase its role in the future energy development and to adapt its curricula, methods and practices to the new trend.

In the same time the accession to the European Union, impose the harmonization of national policies, strategy and programs with the documents and practices of EU.

To establish the new position in the national context, the new role to play and the new structure able to optimize the development of nuclear E&T – Education and Training - activities in Romania, a FP7 CSA-SA project was proposed under the name RONEN in order to acquire this objective.

RONEN (Romanian Nuclear Higher Education and Training Network) is a joint initiative of the most important Romanian Universities, Research Institutes, SME, NGO and Regulatory Body to coordinate their efforts in order to strengthen their institutional capability to assure a high quality of nuclear education and training in accordance with the European requirements.

The main purpose of this project is to assist RONEN Consortium elaborate the strategy and programs for future development of nuclear education and training in Romania and to establish an E&T national framework.

The project will take into consideration all the topics addressed by FP7Euratom WP, from nuclear engineering, radioactive waste, nuclear safety, new reactor concepts to radiological protection and medical applications of nuclear energy.

RONEN main objectives are:

- Evaluate the needs and the current status of the Romanian nuclear education and training and coordinate the joint efforts to establish a National Framework
- Establish a national strategy for Nuclear E&T harmonized with EU requirements
- Enhance the learning technologies and courses for both online (e-learning) and onsite training of trainers and trainees
- Develop a knowledge database to efficiently exploit the project results and to disseminate the knowledge
- Perform the preparatory work (feasibility study) to set up a national network as a “mirror group” of European Education and Training Network-ENEN and as a corporate adviser and support for the National Authorities and Beneficiaries

A communication and dissemination strategy will be established to spread the knowledge and to share the results; a devoted website www.ronen.ro has been already created.

RONEN is designed to comply with ENEN and other European initiative in the field of nuclear higher education and training, to implement EURATOM requirements and to harmonize the Romanian nuclear E&T system with the European methods and practices in order to assure its quality validation and recognition. ENEN Association mission is the preservation and further development of expertise in the nuclear fields by higher education and training; RONEN will have the same mission at national level.

RONEN will be part of the European system of nuclear higher education and training and will promote the European cooperation and integration.

The project will have 7 Work Packages:

- WP1. Project Management
- WP2. State of the Art
- WP3. Quality Assurance
- WP4. Learning Technologies & Advanced Courses
- WP5. Knowledge Management
- WP6. RONEN Set Up
- WP7. Communication and Dissemination

The project milestones are: Romanian Nuclear Education and Training Strategy, Self - Evaluation Reports, Joint Pilot Course(s) and RONEN Set - Up.

The in the project partners are the most significant actors in Romanian academic and nuclear research area, with important contribution to the development of nuclear E&T, regulatory body, NGO and SMEs, as well as the first national consortium BNEN, represented by SCK*CEN.

All the Consortium members are committed to sustain the development of the project as a sound base to strengthen their E&T capability to and will allocate their best staff and equipment to fulfill the objectives of the project.

This consortium will represent the “core group” of the future entity to be developed and will be open to all eligible institutions which will intend to join RONEN as “users group”.

RONEN is also supported by the National Authority for Scientific Research (ANCS), National Agency for Nuclear Activities and Radioactive Waste (AN & DR), the owner of NPP, SN NUCLEARELECTRICA SA (SNN), as well as by the Romanian Association of Nuclear Industry - ROMATOM as potential beneficiaries of the project results.

At the end of the project RONEN will have contributed at the national level to the coordination and harmonization of nuclear E&T system and at EU level to the mobility of the European scientists and to the creation of the European Area of Higher Education and Training, to the integration of the Romanian nuclear research program into the European Research Area and thus to the enlargement of Europe. This means to address all the issues connected with EURATOM, European Nuclear Safety Regulator Group (ENSREG), European Nuclear Energy Forum (ENEF) in the area of Waste management, Radiation protection, Safety, Governance issues, Research, Decommissioning, Transport of nuclear material.

Due to the fact that more than 50% of the researchers are women, the project will contribute also to the reinforcement of the place and role of women in science.

The coordinator of the project, National Institute for Physics and Nuclear Engineering – “Horia Hulubei” (IFIN-HH) is the most important physics and nuclear engineering research institute in Romania with a long and significant experience in nuclear E&T, with relevant experience as participant in national, European and international projects, both as partner and coordinator.

Its project management expertise, acquired through the coordination of major projects, will contribute to the efficient management of the project and to the success of the RONEN project.

The main department involved in the project, Nuclear Training Center (CPSDN) has more than 40 years experience in nuclear education and training and an impressive number of training programs (more than 780 training programs) and trainees (about 19000 trainees). This experience will be a valuable contribution to the project and a guaranty of its success.

Through Nuclear Training Center, IFIN-HH is an Associated Member of ENEN Association and in partnership with an ENEN Effective Member – POLITEHNICA

University of Bucharest - UPB will spread its principles, methods and the practices to the Romanian participants to the project.

A4.1 SCIENTIFIC AND/OR TECHNICAL QUALITY

(i) Concept and objectives

Nuclear energy, nuclear technologies, and without any doubt their applications in energy and non-energetic domains play an key role in satisfying the present society needs and are expected to continue this role in the future.

International economical and political circumstances are more and more positive for nuclear energy and a revival, a "nuclear renaissance" is expected and a boost of a new generation of power plants.

In the near future an increasing number of highly qualified nuclear specialists/scientists are required for the new generations of reactors (generation III+ and Gen. IV) and to solve the issues raised by the nuclear facilities decommissioning. Therefore the preservation of the experience in the nuclear area, the better use of the complex and expensive infrastructures of R&D centers as well as the European integration represent important objectives for EU nuclear research responsible as well as for Romanian Authorities.

The objectives of FP7 EURATOM Program reflect very well this trend. Waste management will become more and more the main concern of nuclear.

Radiation protection, safety of existing NPP, security of nuclear fuel cycle facilities and medical applications of nuclear energy are also important topics of EU and national RTD&D programs.

All of these programs need qualified, with nuclear specific skills people and all facilities need to be managed safely, demanding high quality, technically competent personnel.

Other organizations, like Licensees organizations, Support companies and Regulatory bodies have an actual need for highly trained, professional personnel as many of the existing competent engineers and scientists, who helped create the present nuclear industry, and its regulatory structure, are approaching retirement age or are already retired.

Under the EURATOM program a concerted action plan has started (ENEN, NEPTUNO, BNEN, CENETNOM, EUDENTRAF, PETRUS, CETRAD) aiming to help the initiatives to strengthen nuclear higher education and training and to harmonize in a positive way the efforts and the contribution of all European countries.

To gather together by specific support actions all the institutions involved in nuclear education, research and training, taking into consideration the industry feed-back, is one of the ways how nuclear E&T in a member (or assimilated) state can become a valuable partner in the European common research area.

With an expanding National Nuclear Power Program Romania has to adapt to this situation and to take actions in order to assure the qualified human resources for future developments, for actual nuclear facilities operation and for the activities to be done in the future. The experience of some Romanian entities in connection with EU exercise to harmonize and upgrade the E&T system encourage us to propose a similar project like some other more experienced countries.

The measurable objective of the project is to achieve and setup a Romanian network of excellence for the preparation of human resources in nuclear field by the development of a flexible, modern and efficient training system, synchronized with EU countries' systems, which can provide (related to the situation both in Romania and UE countries):

- Management of the present knowledge and expertise;
- Stimulation of the collaboration between universities and between universities and R&D centers in view of higher level utilization of the formative potential, of modern instrumentation, infrastructures, and existing facilities;
- Enhancement of the learning process quality by introducing new courses, course modules and modern learning methods (e-learning) and organization of the learning process (Systematic Approach to Training - SAT);
- Increase of the competitiveness in connection with European integration.
- The project aims to implement, consolidate and expand at national level the achievements of ENEN I-II, NEPTUNO, CETRAD, and ENETRAP projects attended by University POLITEHNICA Bucharest, CITON and IFIN -HH during the 5-th - 7-th framework programs.

In order to reduce the project risk and to maximize the help of European expertise and ENEN compatibility we will develop our project in co-operation with the Belgian Nuclear Education Network legally represented by SCK*CEN through:

“Implementing” tools

“Implement” education and training methodologies agreed under the European projects ENEN and NEPTUNO by applying the course evaluation criteria to all partners for the actual course and training performance, taking into consideration the end-users' needs. The educational and training activities should take its place in a scheme which permits links and feed-back from all possible end users (see Fig.1).

In this respect the overview of state of the art of Romanian and European Higher education and training systems will permit to identify and define the needs, the strategy and the means. It also will lead to a RONEN network data-base, containing all information about the courses and training activities provided by partners, as well as by the European universities by linking with other web-sites or knowledge management systems (as NEPTUNO-CS).

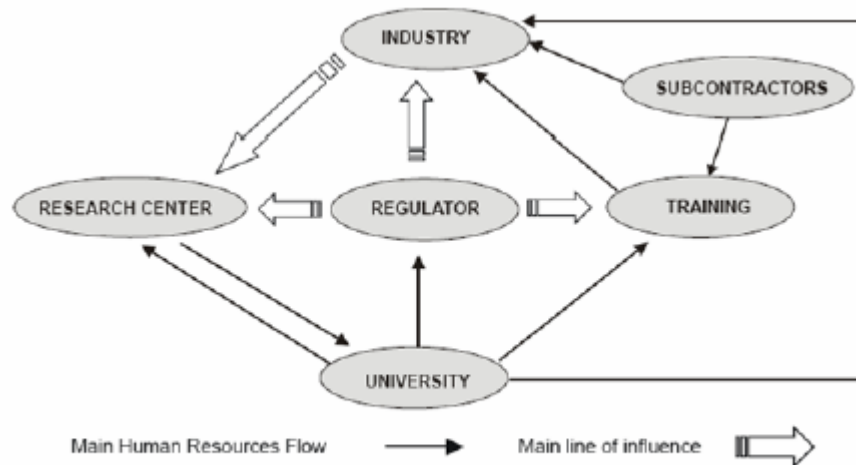


Fig. 1. Main players in nuclear education and training

“Consolidate” a system

“Consolidate” a network of excellence for training in nuclear field allows harmonizing and improving the existing training programmes, ensuring a better use of the research infrastructure and scientific equipment, enhancing the competence of the trainers and the competitiveness of the “product” of their activity - the nuclear field staff. The results allow attracting and integrating all interested entities (either trainer - or user - type) in the network. The universities have the opportunity to integrate themselves into high-performance European accredited system, based on modern learning technologies, to improve the scientific research basis, and to access the R&D existing infrastructure. The R&D and engineering centers have the opportunity to participate with their experts and their research basis to the staff training process (whom they will benefit in the future), and to access supplementary funding.

The results of this program devoted to training in the nuclear field may be applied in other fields of the S/T development in our country. But, as a synthesis of all the above aspects, one must understand that the Romanian nuclear higher-education and training will not survive in the European Community without the effort of reaching the level already existing in almost all advanced countries, in the way those countries have already understood to develop themselves in the future, using in this field also a feature which looks like another aspect of the communitarian “aquis”.

Achievement of the RONEN network will be formally the result of the agreement between the project participants. The network will permit the development of common practices, integration of academic and R&D activities based on the experience of pilot common activities.

End-users involvement is a necessary input and a corrective feed-back.

“Expand”

“Expand” by moving outside the academic education area into professional and vocational training, thereby strengthening the interactions and collaboration of universities, research centers, training organizations and industries to make training offers better respond to industry needs and enhance mutual recognition of professional qualifications. The network of excellence has to be seen as a flexible dynamic structure, which can absorb other than project partner institutions, if they will meet the established conditions.

"Expand". by moving beyond the disciplines related to nuclear engineering for power plant design, construction and operation, into a broader area of other disciplines in support of reactor safety, radiation protection, radioactive waste management, decommissioning and industrial applications of nuclear technologies.

It may assure enhancing the capacity and professional qualification both for the teachers/trainers and for the students by stimulating / encouraging the mobility of the network members.

"Expand" by strengthening the interactions with the European education and training networks, such as ENEN, ENETRAP, CETRAD, EUNDETRAF networks. In this way, it will assure the best allocation of the human and material resources with positive influence on the R&D capacity and competition at European level.

(ii) Contribution to the coordination of high quality research

The nuclear E&T system, through the generated expertise will generate the future nuclear research and developments and will provide the necessary knowledge to assure European security of energy supply. Development of common ground for cooperation in nuclear education, training and knowledge management is essential in this context.

The EU 7 Framework Programme, in the "EURATOM RESEARCH AND TRAINING PROGRAMME ON NUCLEAR ENERGY" for 2007/2011 underline the importance of nuclear education and training and indicates the selected topics regarding "harmonizing the nuclear education and training schemes in Europe having the objective to "contribute to the European high-education area in the nuclear field and to its extension to training in order to meet the safety of actual reactors, waste disposal, new reactor concepts, and radioprotection user requirements".

A *EURATOM Fission Training Schemes* (EFTS) is expected to be proposed "in particular in areas where a shortage of skilled professionals is identified. An EFTS is aimed at structuring research training and career development across the EU, targeting research workers at post-graduate or equivalent level, e.g. from doctoral students to senior visiting scientists, and is a long-term and ambitious programme spread over many years."

Expected impact of EFTS: "Through effective coordination at Community level, EU added value is seen as a result of: the establishing of public-private partnerships recognised as international scientific references and training schemes and/or doctoral schools spread over many years and many countries; maximising the transfer of higher-level knowledge and information on technology catering for young as well as experienced research workers; increasing the attractiveness of nuclear research careers across the EU and strengthening links with other Community policies and training networks outside the EU".

"An EFTS should encourage the involvement of young researchers, address life-long learning and career development of experienced researchers, maximise transfer of higher-level knowledge and technology with emphasis on multi-disciplinary, trans-national and inter-sectorial mobility of trainees as well as trainers (e.g. industry ,academia partnerships across the EU), use a systematic approach to higher-level training (e.g. analysis, design, development, implementation and evaluation) and develop best practice guidelines on the basis of the lessons learned."

In line with the strategy of SNE-TP, IGD-TP and MELODI this initiative is intended "with the aim to anticipate future training needs and to support policies for the creation of

an 'internal market' of nuclear research workers, mobility of trainers and trainees, access to research and training facilities, etc."

This EU trend can be seen at the national level in different similar initiative.

In the developed European countries the concentration and integration of the activities has been accomplished by merging the education activities in nuclear engineering from the universities and research and technological engineering centers. This process led to creation of BNEN (Belgian Nuclear Engineering Network) in Belgium, "Kompetenzverbund Kerntechnik" in Germany, CIRTEN (Centro de Ingenieria e Ricerca Tecnologica per Energia Nucleare) in Italy, Nuclear Technology Education Consortium, known as Dalton Institute of Technology in United Kingdom; in France all the above activities are covered by INSTN (Institut National pour Sciences et Technologies Nucleaires), and by NTC (Nuclear Technology Consortium) in Sweden. That concentration is not (necessarily) an administrative one, but aims to higher employment of the human resources (trainer and trained), better use of the research infrastructures, as well as to concentrate / attract funding and to enhance the competitiveness.

It led to the foundation of ENEN Association, which has juridical personality and represents an important player in the European nuclear education system, being recognized and appreciated by the World Nuclear University and the International Atomic Energy Agency.

The European Nuclear Education Network (ENEN) Association was established on the basis of the European High Education Area by the partners of the "European Nuclear Engineering Network" project. The ENEN was given a more permanent character and a legal status by the foundation of the ENEN Association, a non-profit international organization on 22 September 2003 under the French law of 1901. The main objective of the ENEN Association is the preservation and the further development of expertise in the nuclear fields by higher education and training.

The ENEN approach relies on the principles of: **modularity of courses and common qualification criteria, common mutual recognition system, facilitation of mobility for trainers and trainees across the EU and feedback from the 'future employers' from public or private sectors**, in order to establish an "*European Passport for Continuous Professional Development*".

These objectives must be realized through the co-operation between universities, research organisations, regulatory bodies, the industry and any other organisations involved in the application of nuclear science and ionising radiation.

The general goals of the ENEN Association are defined as follows:

With respect to the Academia:

- To develop a more harmonized approach for education in the nuclear sciences and nuclear engineering in Europe;
- To integrate European education and training in nuclear safety and radiation protection and
- To achieve better co-operation and sharing of academic resources and capabilities at the national and international level.

With respect to the End-Users, such as nuclear industries, research centres, regulatory bodies and nuclear applications:

- To create a secure basis of skills and knowledge of value to the EU;
- To maintain an adequate supply of qualified human resources for design, construction, operation and maintenance of nuclear infrastructures, industries and power plants and

- To maintain the necessary competence and expertise for the continued safe use of nuclear energy and applications of radiation and nuclear techniques in agriculture, industry and medicine.

Specific Objectives

- Promote and further develop the collaboration in nuclear education and training of students, researchers and professionals, ensure the quality of nuclear education and training, increase the attractiveness for engagement in the nuclear fields for students, researchers and professionals, promote life-long learning and career development at post-graduate or equivalent level.
- The basic objectives of the ENEN Association are to:
- Harmonise European Master of Science curricula in nuclear disciplines and promote PhD studies,
- Promote exchange of students and teachers participating in the frame of this network,
- Increase the number of students by providing incentives,
- Establish a framework for mutual recognition,
- Foster and strengthen the relationship between universities, research organisations, regulatory bodies, the industry and any other organisations involved in the application of nuclear science and ionising radiation by facilitating their participation in (or associating them with) nuclear academic education and by offering continuous training.

Actions towards the Academia:

Assist universities to attract young and brilliant students by identifying, developing and disseminating new and challenging subjects for research and establishing links and cooperation with research centres;

- Convince universities to recruit new academic members for teaching and research in nuclear disciplines and maintaining expertise in key nuclear areas by developing, promoting and supporting ENEN exchange courses in nuclear disciplines, disseminating and supporting the concept of lifelong learning in nuclear disciplines and facilitate and coordinate the participation of universities to European research projects.

Action towards End-Users

- Preserve the nuclear knowledge and improve the expertise by developing and establishing databases, web sites and distance learning tools;
- Define the goals and set up the criteria for professional recognition and recruitment throughout the EU;
- Provide resources and lecturers for advanced training courses, professional development and continual training programmes;
- Identify, disseminate and support interesting projects and research topics for internships, master theses and PhDs.

The RONEN project is concordant in every detail with the objectives of ENEN program as were stated before and with the E&T developments included in EURATOM research and training program having the overall scope to assure the integration of Romanian nuclear E&T system into the EU similar programs.

(iii) Quality and effectiveness of the support action mechanisms, and associated work plan

The Work plan of the RONEN Support Action project consists of Support Activities and Management Activities. The Support Activities can be broken down in six main Work Packages. The management activity is continuously carried out by the project co-ordinator. The Work Packages are broken down into individual tasks, leading to the project deliverables and results.

WP1 - Project Management Activities

Management activities will be presented in A4.2.

Support Activities

The Working packages constituting together the Support Activities are the following:

WP2 - State of the Art of Romanian and European Nuclear Education

The objective of this work package is to assess the present situation, the strong and weak aspects of the training in the nuclear field in Romania in comparison with the European offer.

The activities of this work package must supply information:

- for Romanian partners about
 - Universities providing nuclear education at the level of licence, master degree, PhD
 - Institutes which offer nuclear qualified training, existing specializations;
 - Existing and future personnel/staff structure;
 - Existing facilities at these institutes;
 - The type and the contents of theoretical and practical courses;
 - Existing research infrastructure;
 - Qualification / competence of the trainers.
- for European countries about:
 - The nuclear engineering programmes in the European countries (structure, duration, learning plans);
 - Some aspects related to the training for nuclear industry;
 - Current trends.

Based on the above information will result conclusions and recommendations for the next work packages, the nuclear education and training development strategy, the ways and the tools for set-up the network of excellence. All partners will participate in this work package.

WP3 - Quality Assurance procedures for curricular harmonization

This work package represents the basis of the project core.

One must understand that even with a pertinent analysis usually “the system” shows reluctance to changes. In order to have the desired changes first step is to set procedures, mandatory for all players. For curricular harmonization they should be concordant with the similar ones used in other European countries and especially by

European clusters and associations. The procedures will be spread like guidelines among the project partners in order to reshape their activities. The guide lines will refer to:

- Introduction of ECTS system to all activities. This will permit the quantification/evaluation of the difficulty of each course and training activity that a student attends, while allowing him to be involved, depending on professional requests, into a flexible scheme. This scheme will ensure enhancement of the competence, the possibility of enhancing the qualification, and a better mobility on the labour market.
- Quality Assurance Procedures to be implemented regarding the quantitative and qualitative contents of courses, the weight of different activities (course, applications, and independent work), evaluation methods, student/teacher contact etc.
- Establishing the self-evaluation report. This report is the result of an internal analysis of the strengths, weaknesses, opportunities and threats of the existing educational programmes and should promote an evaluation methodology. The evaluation methodology should be based on conclusions from WP2 and use the experience of BNEN project, adapted to existing conditions in Romania. Inputs from end-users (through AREN, SC NUCLEARELECTRICA SA and ROMATOM), former students should be taken into consideration.

All partners will participate, under the direction of the UPB, which has the necessary experience and expertise, gained by developing similar activities as ENEN Effective Member.

WP4 - Learning Technologies and Advanced Courses

(a) One of the objectives of the network is the optimal use of the partners existing infrastructures, especially at R&D units (like INR Pitesti). Therefore is proposed as a pilot course, for the first time in our country, an “Educational module based on methods, computer codes and experiments for reactors physics”, by combining theoretical activities with the utilization of the existing research basis (TRIGA research reactor).

The objective of the module is the development of the abilities in reactor physics field, which is indispensable for nuclear engineering:

- Understanding the fundamental concepts of reactor physics by using structured calculations and experiments.
- Revealing mathematical and physical background of the transport operator higher order approximations
- Developing computer code modules for each type of approximation;
- Analysis of code performances as compared to codes based on classical methods;
- Selecting high-performance methods and integrating them into a code package;
- Testing the codes (experimental measurements performed at INR facilities will be used among other reference data) and assessing their limitations or restrictions;
- Initial design of the educational software as a whole;
- The design of each component of the educational software;
- Integrating of the components in complete educational software;
- Selecting the topics of interest for training nuclear field staff.

Achieving this goal will represent a model of integrated activities performed in universities and R&D Institutions.

(b) Nowadays enhancement of learning and training methods is more and more based on multi-media instruments and on remote learning (e-learning) methods. Among remote learning features, the network of excellence will propose an interactive type course based on existing and high-performance software (e.g., WEB-CT, Moodle), which is also used for such applications in other European universities. Accomplishing this aim is difficult, due to novelty and IT support (software, hardware and know-how) involved.

In the mentioned EU educational networks similar to the proposed network of excellence, the engineers and/or managers who cannot attend to the common, classical courses because of time and/or distance limitations prefer the remote courses. The skills obtained in that way are equivalent with skills provided by classical courses (diplomas, certificates, etc). The learning process takes place on-line using the web site of the university/training centre (e.g. WEB-CT). Such a program offers various kinds of exercises for self-testing, group exercises, discussion sessions, and interaction with the course manager. The training assistance is performed by e-mail and also by a “questions for the teacher” clipboard assistant. The course is also available on CD, allowing the students to work off-line when needed.

During the course, 1 or 2 meetings are scheduled at the University. The first one is dedicated to some presentations, exercises, and demonstrations or to the participant assistance. The second could be scheduled before the exams. Those meetings are not compulsory, but they are offering the opportunity to:

- meet the module manager and the program developer team and to discuss and clarify the major aspects of the module,
- organize the future works/activities, including scheduling the exams,
- meet other students, especially when some group/team exercises have to be performed,
- perform experimental, practical works in the laboratories,
- visit the Training Centre / University and other research facilities

The setup of a pilot course offers the opportunity to emphasize the steps, which should be performed in organizing future courses using the English language. This could represent another open door to the European cooperation among universities or groups/networks of excellence. Two pilot courses are intended to be developed in the frame of this project: Dosimetry and Radiation Protection Course and / or CANDU Reactors and Technology Course

WP5 - Knowledge Management

The WP on “Knowledge Management” will develop and will agree a proposal on management of knowledge acquired during the project development respecting intellectual property rules and spreading the results between partners and other interested stakeholders.

The database to be developed will include all the deliverables produced during the project, the technical and progress reports as well as other background information as a support to further developments based on the project results.

WP6 - RONEN Set - Up

This work package will connect into an organizational scheme all the institutions that wish to participate in the network, depending on their specific training, scientific

potential, and existing infrastructures - laboratories, research facilities, and training infrastructure.

The network of excellence will implement the method of systematic training (Systematic Approach to Training- SAT). For project partners the qualification procedures for courses/curricula and for trainers will be established and will apply, by taking over from Nuclear Objectives Staff Training Centre (CPPON) of Cernavoda NPP, and extending, for the first time in Romanian universities,

The network of excellence has to be seen as a flexible dynamic structure, which can absorb other than project partner institutions, if they will meet the established conditions. It may assure enhancing the capacity and professional qualification both for the teachers/trainers and for the students by stimulating/encouraging the mobility of the network members, but also through international cooperation into common projects or through affiliation to European organizations. In this way, it will assure the best allocation of the human and material resources with positive influence on the R&D capacity and competition at European level.

Therefore the potential members of the network should be part of a multilateral agreement- the RONEN Agreement, which will formalize their co-operation and activity. It will also include the Academic Plan, regarding the courses offered, the research and experimental infrastructures used, the joint activities etc

WP7 - Dissemination and Communication

A specific communication WP was established in the frame of the project which aims to develop a communication strategy and associated programs in accordance with the Romanian target groups.

The content of the website of the project will address topics specific to the partners of the project but also a variety of communication means appropriate to the target groups from public at a large to media, local authorities, policy makers, students, NGO and a forum to collect the feedback from all the target groups.

Information about similar projects, and links to the relevant websites will be available on the project website already established: www.ronen.ro . Link to the project website will be active on all partner websites and a short presentation of RONEN also.

RONEN is an open initiative to all the eligible institutions which intend to join the project as a "user group" based on clear rules available on the website.

Communicating nuclear science will be a priority for the communication team .An inter-institutional team made by experienced experts with more than 20 years of experience in communicating science will be involved in the project.

Even before the start a leaflet will be issued and the project proposal will be made available to the nuclear community.

Project Gantt chart.

Task Name	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24	
	Year 1												Year 2												
WP1: Project Management																									
A1.1 First Progress Report																									
A1.2 Second Progress Report																									
A1.3 Third Progress Report																									
A1.4 Elaboration of Final Report																									
WP2: State of the Art																									
A2.1 Assessment of European Nuclear Education and Training																									
A2.2 Assessment of Romanian Nuclear Education and Training																									
A2.3 Elaboration of Romanian Strategy for Nuclear Education and Training																									
WP3: Quality Assurance																									
A3.1 Guidelines for Curricular Harmonization																									
A3.2 Quality Assurance Procedures																									

Task Name	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
	Year 1												Year 2											
A3.3 Individual Self Evaluation Reports																								
WP4: Learning Technologies and Advanced Courses																								
A4.1 Evaluation of Partners Infrastructures																								
A4.2 Enhancement of Existing Learning and Training Technologies																								
A4.3 Maximise Usage of eLearning and Advanced Platforms																								
A4.4 Joint Pilot Course(s) Implementation																								
WP5: Knowledge Management																								
A5.1 Set Up Project Database to Preserve Valuable Scientific Knowledge																								
A5.2 Progressive Database Update, Dissemination of Knowledge for Supporting Teaching and Learning																								

Task Name	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	Month 24
	Year 1												Year 2											
WP6: RONEN Setup																								
A6.1 Set Up RONEN Agreement																								
A6.2 Set Up RONEN Future Activities Calendar																								
WP7: Dissemination and Communication																								
A7.1 Project web site																								
A7.2 International cooperation / Dissemination of knowledge, for supporting teaching and learning																								
A7.3 Project workshop																								

Gantt Table Caption:

Abbreviation	Caption	Colour	Caption
WP	Work Package		Work Package Bar
A	Activity		Activity Bar
			Work Package Delimiter

Table A4.1 a: Work package list

Work package No	Work package title	Type of activity	Lead participant No	Person-months	Start month	End month
1	Project Management	MGT	1	6	1	24
2	State of the Art	SUPP	1	10	1	6
3	Quality Assurance	SUPP	2	7	4	12
4	Learning Technologies & Advanced Courses	SUPP	3	14	13	18
5	Knowledge Management	SUPP	6	10	1	23
6	RONEN Set Up	SUPP	1	12	13	23
7	Dissemination and Communication	SUPP	9	4	1	23
	TOTAL			63		

Table A4.1 b: Deliverables List

Del. no.	Deliverable name	WP no.	Nature	Dissemination level	Delivery date
D 2.1	European Nuclear Education and Training - State of the Art	2	R	PU	3
D 2.2	Romanian Nuclear Education and Training - State of the Art	2	R	PU	3
D 2.3	Romanian Nuclear Education and Training Strategy	2	R, O	PU	6
D 7.1	Project Web Site	7	D, R	PU	6
D 1.1	Progress Report	1	R	PU	6
D 3.1	Guidelines for Curricular Harmonization	3	R	PP	9
D 3.2	Quality Assurance Procedures	3	R	PP	9
D 3.3	Self-evaluation report	3	R	PP	12
D 5.1	Database to Preserve Valuable Scientific Knowledge	4	R	PU	12
D 1.2	Progress Report	1	R	PU	12
D 4.1	Evaluation of Partners Infrastructures	4	D, R	PP	15
D 4.2	Enhancement of Existing Learning and Training Technologies	4	R	RE	15
D 4.3	Maximise Usage of eLearning and Advanced Platforms	4	D, R	RE	15
D 4.4	Joint Pilot Course(s)	4	D, R	PU	18
D 6.1	RONEN Agreement	6	R, O	PU	18
D 1.3	Progress Report	1	R	PU	18
D 7.2	International Cooperation / Dissemination of Knowledge, for Supporting Teaching and Learning	7	D, R	PU	21
D 5.2	Updated Database to Preserve Valuable Scientific Knowledge	5	R	PP	23
D 6.2	RONEN Calendar	6	R	PU	23
D 7.3	Project Workshop	7	R, O	PU	23
D 1.4	Final Report	1	R	PU	24

Table A4.1 c: List of milestones

Milestone number	Milestone name	Work package(s) involved	Expected date ¹	Means of verification
1	Romanian Nuclear Education and Training Strategy	2	6	<ul style="list-style-type: none"> • Approved strategy • Progress Report
2	Self-Evaluation Reports	2,3	12	<ul style="list-style-type: none"> • Self-evaluation reports • Progress Report
3	Joint Pilot Course(s)	2, 3, 4	18	<ul style="list-style-type: none"> • Dosimetry and Radiation Protection Course • and / or • Nuclear Reactors and CANDU Technology Course • Progress Report
4	RONEN set-up	2, 3, 4, 5, 6	24	<ul style="list-style-type: none"> • RONEN Agreement and Future Activities Calendar • Updated Database • Dissemination Report • Final Report

¹ Measured in months from the project start date (month 1).

Project Acronym- RONEN
Table A4.1 d: Work package description

Work package number 1 **Start date or starting event** Kick-off Meeting

Work package title	Project Management										
Activity Type	MGT										
Participant number	1	2	3	4	5	6	7	8	9	10	11
Participant short name	IFIN-HH	UPB	UB	UBB	UPIT	INR	DOZIMED	ASCENDIA	AREN	CNCAN	BNEN
Person-months per participant:	6	-	-	-	-	-	-	-	-	-	-

Objectives

- ⇒ Coordinate and support for the Workgroup and Workloads within each work package
- ⇒ Evaluate Workgroup and participant activity and QA compliance
- ⇒ Eliminate any point of divergence within the working group
- ⇒ Report progress and final to evaluators and public.
- ⇒ Ensure project visibility for target audience and organizations

Description of work

⇒ IFIN-HH as coordinating participant will be responsible with group adhesion and with providing a smooth collaboration within the working group. As manager will also check the QA compliance for each of the intermediary and final reports given by WP responsible and coordinate joint activities to ensure project visibility among the target organizations.

Deliverables

- ⇒ Progress report for each 6 month period (months 6,12,18)
- ⇒ Final report at the end of 24th month.

Project Acronym- RONEN

Table A4.1 d: Work package description

Work package number	3			Start date or starting event 4 th month							
Work package title	Quality Assurance										
Activity Type	SUPP										
Participant number	1	2	3	4	5	6	7	8	9	10	11
Participant short name	IFIN-HH	UPB	UB	UBB	UPIT	INR	DOZIMED	ASCENDIA	AREN	CNCAN	BNEN
Person-months per participant:	1	4	1	-	-	-	1	-	-	-	-

Objectives

- ⇒ Establishment of workgroup Q&A procedures
- ⇒ Project activities evaluation
 - ⇒ Workgroup reports evaluation and quality control
 - ⇒ Education and Training quality control and evaluation

Description of work

- ⇒ Quality control and assurance is one of the most important support activities for any running project. All activities here have impact on intermediary and final report. The leading party is known for its QA and organizational capabilities.
- ⇒ UPB and UB have the highest load and responsibility mainly because of the impact given to national Education. UB is the leading national party in Nuclear and Energy Physics.
- ⇒ UBB and UPIT are support organizations that will verify and make recommendations
- ⇒ DOZIMED will provide the feedback from radiation applications (medical, industry), based on its interactions with Radiological Safety Officers and occupationally exposed works in Romania.

Deliverables

- ⇒ Quality assurance procedures – description and requirements for workgroup reports and activities – report by month 9
- ⇒ Establish a set of guidelines for curricular harmonization – report by month 9
- ⇒ Establish a model for Self-evaluation report - by month 12

Project Acronym- RONEN
Table A4.1 d: Work package description

Work package number	4										
Start date or starting event	13 th Month										
Work package title	Learning Technologies & Advanced Courses										
Activity Type	SUPP										
Participant number	1	2	3	4	5	6	7	8	9	10	11
Participant short name	IFIN-HH	UPB	UB	UBB	UPIT	INR	DOZIMED	ASCENDIA	AREN	CNCAN	BNEN
Person-months per participant:	1	1	4	1	1	2	1	2	-	-	-

Objectives

- ⇒ Evaluation of learning technologies used at this time
- ⇒ Evaluation of future requirements in learning technologies in order to faster implement new advanced courses and technologies in Training and Education.
- ⇒ Evaluate the industry needs for advanced nuclear technology training and education
- ⇒ Propose and implement pilot coursed (with or without hand-on activities)

Description of work

- ⇒ An optimal use of partner infrastructure means identification of joint resource needs and evaluation of points that are not covered by the agreed joint infrastructure (industry facility, laboratory, courses and other needed resources). Enhancement of Learning and Training Infrastructure focuses on course adjustment to address, particularly, the available infrastructure in order to achieve the agreed quality assurance needs. At this step we also address new learning technologies like e-learning.
- Use of e-learning platform is focused mainly on nuclear radiation usage periodic evaluation and training but it's not limited to evaluation and also addresses training and information renewal.
- ⇒ UB as leading partner for this section will develop, with support from all other involved parties, courses in Nuclear Fission and Fusion, Dosimetry and Radiation Protection, Nuclear Reactors and CANDU technology. Courses will be targeted at postgraduate level and in advanced Nuclear Education and Training. UB will also check the ENEN compliance for current advanced courses like *Utilization of the Radioactive Isotopes*- recognized by the national authority in the field (CNCAN).
- ⇒ UB, as leading partner will evaluate the ASCENDIA proposal to check if it can be used for Online Advanced Nuclear Education.
- ⇒ Where applicable, courses will be held using eLearning technology;
- ⇒ Courses will be checked by CNCAN and tested on joint pilots held with all parties and all regulatory bodies that are involved in the Advanced Educational Process.
- ⇒ IFIN-HH and INR will check the courses with the industry ENEN requirements

and make localized industry requirements recommendations
⇒UPB, UBB and UPIT will check the courses with learning ENEN requirements and make localized university requirements recommendations
⇒All partners will provide infrastructure as needed
⇒DOZIMED, based on its current activities, will allow students and Dosimetry and Radiation Protection Pilot Course participants to practice the actual individual monitoring of occupationally exposed workers in Romania.

Deliverables

- ⇒ Optimal use of partners infrastructures (D.3.1) by month 15
- ⇒ Enhancement of learning and training technologies (D.3.2) by month 15
- ⇒ Use of eLearning and Advanced Platforms (D.3.3) by month 15
- ⇒ Joint pilot courses - Dosimetry and Radiation Protection and / or Nuclear Reactors and CANDU technology - (D.3.4) by month 18

Project Acronym- RONEN
Table A4.1 d: Work package description

Work package number 5

Start date or starting event Kick off Meeting

Work package title	Knowledge Management										
Activity Type	SUPP										
Participant number	1	2	3	4	5	6	7	8	9	10	11
Participant short name	IFIN-HH	UPB	UB	UBB	UPIT	INR	DOZIMED	ASCENDIA	AREN	CNCAN	BNEN
Person-months per participant:	2	1	1	1	1	2	1	1	1	-	-

Objectives

- ⇒ Identification and implementation for a KB Database including a document management system to serve the workgroup needs.
- ⇒ Implementation of a workgroup communication platform
- ⇒ Develop an integrated website with both public and private access for workgroup and public documents and reports

Description of work

- ⇒ ASCENDIA as technology partner will propose at least one platform to cover all workgroup communication needs (including collaboration)
- ⇒ All members will evaluate the proposal and give the feedback to ASCENDIA in order to implement the required ICT system.
- ⇒ ASCENDIA as technology partner will create the workgroup website (www.ronen.ro) with both public and private access to documents
- ⇒ In order to achieve the visibility target, ASCENDIA will provide the SEO activities for the public information.
- ⇒ Other partners will provide knowledge and support as required but limited to their capabilities and profile.

Deliverables

- ⇒ Set Up Project Database to Preserve Valuable Scientific Knowledge due to end of month 9
- ⇒ Progressive Database Update, Dissemination of Knowledge for Supporting Teaching and Learning due to the end of 23rd month

Project Acronym- RONEN
Table A4.1 d: Work package description

Work package number	6										
Start date or starting event	13 th Month										
Work package title	RONEN Set Up										
Activity Type	SUPP										
Participant number	1	2	3	4	5	6	7	8	9	10	11
Participant short name	IFIN-HH	UPB	UB	UBB	UPIT	INR	DOZIMED	ASCENDIA	AREN	CNCAN	BNEN
Person-months per participant:	2	2	2	1	1	2	1	1	-	-	-

Objectives

⇒Preparation and alignment between partner for all details required to setup RONEN as legal entity

Description of work

⇒Based upon the collaboration results and QA reports, all partners will develop a draft for RONEN agreement and a proposal for further activities
 ⇒Legal departments for all parties will be involved in RONEN Agreement alignment between each other resulting a final version
 ⇒All parties will align a long-term strategy for RONEN
 ⇒Each party (IFIN-HH, UPB, UB, UBB, UPT, INR, DOZIMED, ASCENDIA, AREN) – excluding consultants (CNCAN, BNEN) will provide a short and medium strategy to achieve the agreed long-term targets.
 ⇒Short and medium term strategies will be aligned and aggregated in one small and medium term strategy that will provide the RONEN calendar.

Deliverables

⇒ RONEN agreement by the end of month 15
 ⇒ RONEN future activities calendar by the end of month 23

Project Acronym- RONEN
Table A4.1 d: Work package description

Work package number 7

Start date or starting event Kick off Meeting

Work package title	Dissemination and Communication										
Activity Type	SUPP										
Participant number	1	2	3	4	5	6	7	8	9	10	11
Participant short name	IFIN-HH	UPB	UB	UBB	UPIT	INR	DOZIMED	ASCENDIA	AREN	CNCAN	BNEN
Person-months per participant:	1	-	-	-	-	1	-	1	1	-	-

Objectives

- ⇒ increase the visibility for group activities among target audience
- ⇒ increase the visibility for group activities among public audience (personal and organizations)
- ⇒ lobby for national adoption of the proposed Strategy in the field of Nuclear Education and Training.

Description of work

- ⇒ AREN will use its infrastructure to disseminate all knowledge gathered in this project.
- ⇒ The workload is mainly distributed to ASCENDIA and INR for the development of the project's website and its optimization in order to make it visible to our target audience.
- ⇒ Participation to workshops and seminars is included in all other packages for parties like UPB, UB, UBB, UPIT.
- ⇒ DOZIMED will use materials produced in this WP to increase the level of understanding of Radioprotection concepts and culture among the occupationally exposed workers in Romania.

Deliverables

- ⇒ Project web site due to the end of month 6
- ⇒ Dissemination of knowledge, for supporting teaching and learning – Dissemination Report - due to the end of month 21
- ⇒ Project workshop to be organized at the end of project (month 23).

Table A4.1 e: Summary of staff effort

Participant no./short name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total person months
IFIN-HH	6	1	1	1	2	2	1	14
UPB	0	2	4	1	1	2	0	10
UB	0	2	1	4	1	2	0	10
UBB	0	1	0	1	1	1	0	4
UPIT	0	1	0	1	1	1	0	4
INR	0	1	0	2	2	2	1	8
DOZIMED	0	1	1	1	1	1	0	5
ASCENDIA	0	0	0	2	1	1	1	5
AREN	0	1	0	0	1	0	1	3
CNCAN	-	-	-	-	-	-	-	-
BNEN	-	-	-	-	-	-	-	-
Total	6	10	7	13	11	12	4	63

Project risks

The project has associated a series of risks. The most significant risk for RONEN is the lack of founding. It will delay with a few years the RONEN Set Up, until the consortium will be able to self finance, or to address another founding scheme which will address support activities.

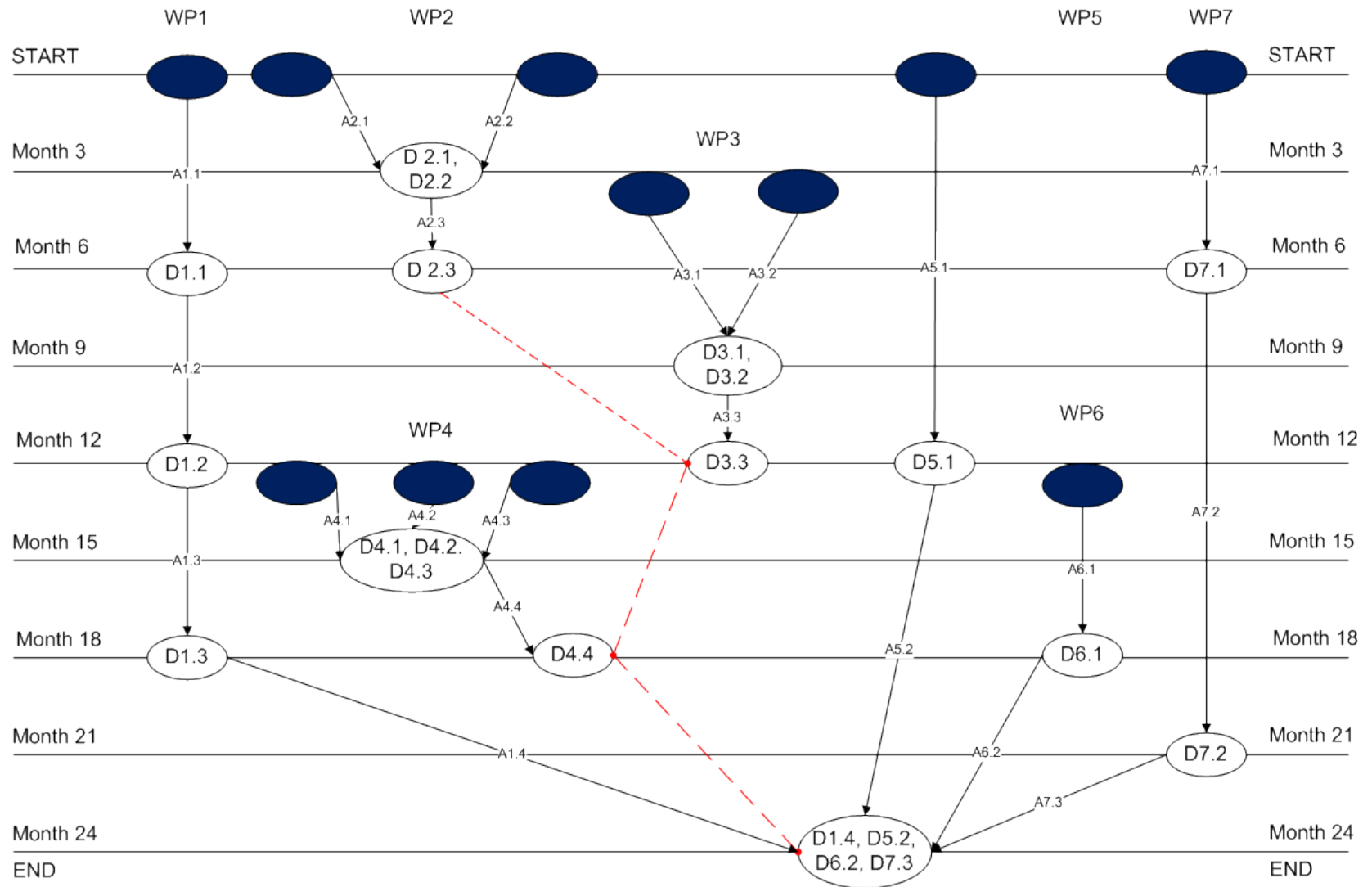
One of the most important risks identified by the consortium is the lack of expertise to build such an organisation. The partners have decided to ask for BNEN expertise as one of the first national ENEN Mirror Groups. In RONEN consortium BNEN legally represented by SCK*CEN will act as a consultant.

The project management risks has been reduced by a (- 3 Months) parallelisation of tasks. It allows to have a corrective feedback for an activity before its deadline, and to apply corrections during its progress, in order to minimise the delivery risks.

The project has four clearly defined stages, Analyse, Development, Proof of Concept and Operational Launch; each stage ends with a milestone which is documented and agreed by the partners and submitted to DG Research as Progress Reports.

The Operational Launch stage is mostly an administrative one. During this stage any potential issues which were not solved during the project can be updated by the technical personnel working in consortium. During this stage (Month 19 – Month 21) a three month period has been reserved for the project working groups as a “backup period”. It is the main reason the Work Package 6 is developed during a year, as one can see in the figure bellow:

Graphical Presentation of the Components, Showing Their Interdependencies



Instructions in Section A4.2 are applicable to all funding schemes

A4.2 IMPLEMENTATION

(i) Management structure and procedures

Project Manager

The project will be coordinated by the National Institute of Physics and Nuclear Engineering – “Horia Hulubei” (IFIN-HH).

The existing experience of partners in university education (engineering, master, and post-graduate courses), nuclear training, Cernavoda NPP staff training, as well as the involvement in European programmes FP5-ENEN, FP6-NEPTUNO, FP6 ENEN II, FP6 CETRAD, FP6/7Enetrapp ensure the expertise and competence required by the project. The working team combines the experience and the competence in nuclear field, with the youth of many team members that are involved in order to learn teamwork style and to take over the experience of the teachers.

The project coordinator plays the role of the interface with DG Research and EURATOM Project Officer.

Project Management Board

The coordination and harmonisation between partners is ensured by the Project Management Board (PMB), which will evaluate, each 6 months, through progress meetings the progress of activities inside the work packages and will take the necessary actions in order to implement the project accordingly with the schedule. The meetings may also be convened at different dates, at partner request.

PMB involves project partner representatives (PR), who have managerial functions in their institutions, thus required authority and experience. The chair person of the Board is the representative of the co-ordinator.

Work Package Leaders and Partners

The project is split up in 7 work packages: a management WP and six support WP.

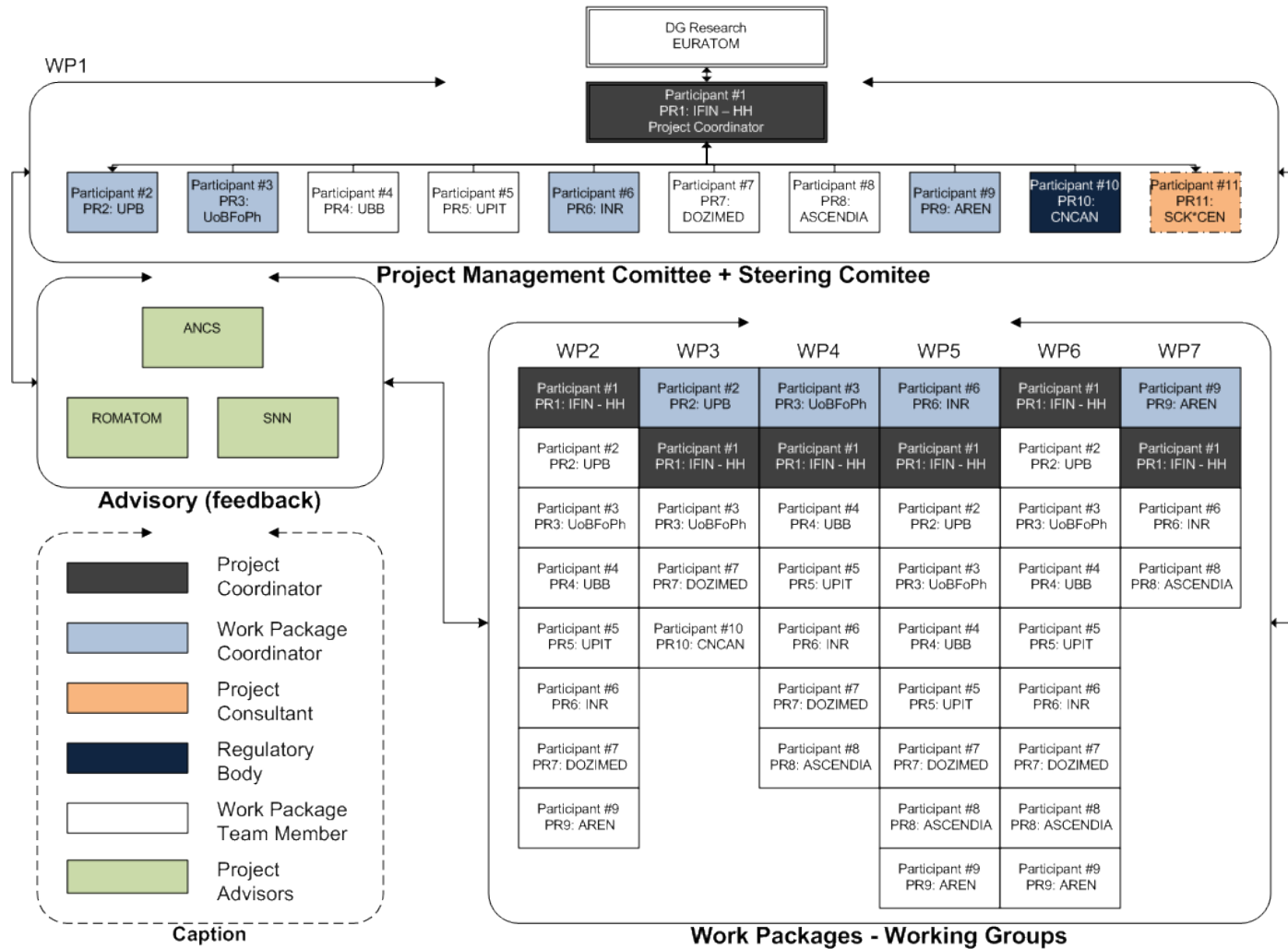
Each WP has a work package leader, appointed by the Project Management Board based on the expertise of the institutions and of the persons.

PMB nominates the work package leaders following PR's proposal.

The work package leader is responsible of in time achievement of the scheduled objectives, and of monitoring the activities. He also detects and points out deficiencies and applies corrections when necessary.

It is expected that multilateral issues will be solved between partners based on mutual agreement.

Project Organizational Chart



Consortium Agreement

For the purpose of this project a consortium agreement will be established between the members actively involved in the tasks and signed by their administrative official with the relevant level of authority and mandate. The purpose of this Consortium Agreement is to specify the organisation of the work related to this project between the members, to organise the management of the Project, to define the respective rights and obligations of the participants, including, but not limited to, their liability and indemnification, to set out rights and obligations of the participants, supplementing but not conflicting with those of the EC Contract. The participants agree to cooperate pursuant to the terms of this Consortium Agreement in order to execute and fulfil the EC Contract with the EC and perform the tasks designated in the activities in the present document.

(ii) Individual participants

Participant 1 – Coordinator - NATIONAL INSTITUTE FOR R&D IN PHYSICS AND NUCLEAR ENGINEERING (IFIN HH)

The coordinator of the project, National Institute of Physics and Nuclear Engineering – “Horia Hulubei” (IFIN-HH) is the most important physics and nuclear engineering research institute in Romania with a long and significant experience in nuclear E&T, with relevant experience as participant in national, European and international projects, both as partner and coordinator.

Its expertise in project management acquired through the coordination of major projects will contribute to the efficient management of the project and to the success of the RONEN project.

With a contribution of almost 10% of the national scientific output, IFIN-HH is one of the most important public R&D organizations in Romania. It continues the tradition of the Institute of Physics belonging to the Academy (1949), later becoming the Institute of Atomic Physics (1956). The founder was Horia Hulubei (1896–1972) who had earned his doctor’s degree in Paris under Nobel Prize winners Jean Perrin and Marie Curie. The first big physics infrastructures in Eastern Europe, outside the former Soviet Union, were operated here: the nuclear reactor (currently in the process of decommissioning) and the cyclotron, as well as the construction of the first laser conceived by Romanian scientists (1962) – the fourth in the world, and the first Romanian electronic computer (1958).

IFIN-HH addresses a spectrum of research and development activities in fundamental and applied research areas including Nuclear Physics and Astrophysics, Particle Physics, Atomic Physics, Life and Environmental Physics, Theoretical Physics, Nuclear Techniques, and Advanced Communication Systems. Featuring a variety of nation-wide-scoped facilities among which we can mention the Tandem Van de Graff Accelerator, the U120 Cyclotron, the Multipurpose Irradiation Facility Centre, the Radioactive Waste Treatment Plant, the institute is an important part of the Romanian research infrastructure.

Despite of the fact that IFIN HH has as main profile RTD, being a real “brand” in Romanian and European nuclear physics and engineering, it played an important role in nuclear education and training in Romania through Nuclear Training Center (CPSDN).

Today CPSDN represents the basic training center for Romanian Nuclear Field Activities Regulatory Body (CNCAN), but also is providing courses required by different governmental institutions on Radioprotection, Decommissioning etc.

CPSDN represents an important department of IFIN-HH, charged with education and training of almost all personnel working in nuclear, excepting Nuclear Power Plant staff.

The training center has an experience of more than 40 years in providing training courses in the following fields of activity: radioprotection and radiological safety, application of radioisotopes and nuclear radiation sources, non-destructive defectoscopy, radioprotection and nuclear safety for uses of the fixed X-rays installations, dosimetry and radioprotection, transport of radioactive materials, radioactive waste treatment, mining radioprotection, medical uses of open sources.

The person in charge with the coordination of the project is Dr. Vlad AVRIGEANU, the Scientific Director of IFIN-HH and associate professor at Bucharest University. His main responsibility concerns the management of the IFIN-HH scientific research program and international co-operation while formerly, as IFIN-HH scientific secretary, was dealing with the management of training and documentation. Prof. AVRIGEANU has also a significant work experience and project management in the field of nuclear reaction studies and nuclear data evaluation, including the leadership of the IFIN-HH team involved within 15 Research Contracts with the Nuclear Data Section of IAEA-Vienna, in the latest 20 years, as well as under EURATOM / EFDA Nuclear Data Task contracts since 1999. As associate professor at the Physics Department of Bucharest University since 2000, Prof. AVRIGEANU has supervised PhD and Master Theses on nuclear reaction mechanisms, carried out by Bucharest University students within his research team at IFIN-HH.

More information on: www.nipne.ro

Participant 2 - UNIVERSITY POLITEHNICA BUCHAREST (UPB)

University POLITEHNICA of Bucharest (UPB) is the largest and the oldest technical university, among the most prestigious universities in Romania, with a tradition of more than 185 years, undergoing a continuous modernization process, being involved in a permanent dialogue with great universities in Europe and all over the world. It was created in 1818 as the "Technical High School". It became in 1867 the "School for Mines, Bridges and Ways", following the French model. In 1920 its name was changed in "School Politehnica of Bucharest" with 4 faculties: Electromechanical, Constructions, Mines and Metallurgy, and Industrial. In 1948 its name changed again in Politehnical Institute of Bucharest and starting 1950 did created most of the faculties exist now.

At present University POLITEHNICA Bucharest has 13 faculties and 4 departments. The following 11 faculties teach in Romanian: Electrical Engineering, Power Engineering, Automatic Control and Computing Science, Mechanics and Mechatronics Engineering, Electronics, Telecommunications and Information Technology, Engineering and Management of Technological Systems, Biotechnical Systems, Transports, Aerospace Engineering, Materials Science and Engineering, Applied Chemistry and Materials Science. There are also Faculty of Engineering and Faculty of Applied Sciences with teaching in English, French or German languages.

There are also 4 departments: Management, Bioengineering and Biotechnology, Human Resources Training Center and Department for Teaching Personnel Training and Socio-Human Sciences.

The main faculty of UPB involved in RONEN is Power Engineering Faculty. University POLITEHNICA Bucharest (UPB) is the only higher education institution in Romania that provides education in the Nuclear Power Engineering field. The Faculty of Power Engineering of University POLITEHNICA Bucharest has a tradition of over 50 years

in power engineering education, from which more than 30 years in higher education for Nuclear Power Engineering.

The Power Engineering Faculty has been founded in 1950, being now the largest in the country among other eight similar faculties. During its half-century activity, the Power Engineering Faculty (PEF) continuously shaped its training system, according to the needs of modern power engineering and to its environmental and economical aspects.

Every year the Power Engineering Faculty yields more than 250 graduated students from which over 40 are Nuclear Power Engineers. The last five years brought an accelerated updating of nuclear high education according to similar activities in EU countries: transferable credit system, the option of a major and a minor, curricular re-shaping according to Bologna, master studies, post-graduate studies, training for nuclear specialists and open courses. The co-operation with European countries in several TEMPUS programs helped to develop a modern Radiation Protection Laboratory and to establish master studies in Nuclear Safety and Radiation Protection. The Department has 3 full professors, 3 associate professors, 5 assistant-professors.

The Nuclear Energy Department leads the Romanian National Research Program Energy-Environment, which has a Nuclear Energy Section, as well as different projects in the framework of Romanian Excellency Research Program.

Due to the participation in ENEN project and related activities, first EMSNE Diploma Supplement obtained by a Romanian student in December 2005 shows the acceptance of nuclear higher education delivered by UPB. This made now possible that Nuclear Power Engineering higher education in University Bucharest to be competitive and compatible to any EU country or USA.

PEF delivers undergraduate studies (4 years) for Bachelor Degree in: Electrical Power Systems, Hydro-power Engineering, Thermal-power Engineering, Nuclear Power Engineering and Nuclear Technologies, Management of Energy, Applied Informatics for Power Engineering, Economic Engineering in Electrical Power Systems and Electronics Field, Environment Protection, and Engineering within Industry. At present, the total number of undergraduate students is about 2000.

PEF delivers also graduate studies of 3 semesters for MSc degree in 9 fields, having a number of 150 enrolled students each semester. One of the Master degree studies is in Nuclear Engineering.

The number of faculty academic staff is 270. of which 47 full professors.

Professor Petre GHITESCU is the representative of UPB_PEF; he is born 1947, Diploma engineer at University POLITEHNICA Bucharest in 1969, PhD at the Energetic Institute of Moscow in 1973. Present position: professor at the Nuclear Power Department, Power Engineering Faculty. Professor Petre GHITESCU has represented UPB in FP-5, FP-6 and FP-7 programmes ENEN and NEPTUNO. He is member of the Teaching and Academic Affairs Committee of ENEN Association

An important UPB contribution to RONEN will be done by Conventional & Nuclear Thermal Equipment Department represented by Professor Mihai CECLAN, member in EUDENTRAF II Steering Committee.

Another faculty involved in project is Faculty of Applied Sciences represented in the project by the Professor Gheorghe CATA-DANIL.

More information on: www.upb.ro

Participant 3 – UNIVERSITY OF BUCHAREST – FACULTY OF PHYSICS (UoBFoPh)

Established under the auspices of *Faculty of Sciences, since 1863*, Faculty of Mathematics and Physics, from 1948 to 1962, Faculty of Physics has a long tradition and prestigious reputation in assuring the education of students in Physics, at national and international level.

Since 1974, the Faculty of Physics of the University of Bucharest has the headquarters on the Physics Platform, in Măgurele, together with the representative research institutes in Physics field. A long list of Professors increased the teaching level of the Faculty of Physics.

The Faculty of Physics of the University of Bucharest offers high level knowledge in the three studies cycles, as well as at post university level, namely:

Cycle I - Bachelor level – License University Studies

The duration of studies is 3 academic years in the field of the *Exact Sciences – Physics*, 4 academic years in the field of *Applied Engineering Sciences*, respectively, in agreement with Bologna system regulations. In the first field there are 4 specializations, namely: *Physics, Biophysics, Medical Physics and Informatics Physics*. In the second field there is a single specialization: *Technological Physics*.

At the end of this first cycle, for graduation, a final examination consisting in a written examination from basic notions and an oral examination involving Diploma Thesis presentation is necessary for each student. Undergraduate studies are concluded by a graduation examination (License), consisting of 3 exams. The diploma Thesis reflects the specialization.

The Faculty of Physics of the University of Bucharest offers, in addition to the Curricula in Romanian language, the possibility to study in English or in French the compulsory courses.

Cycle II - Master of Sciences level – Master Studies

The students having the graduation examination completed, at any national or international recognized university, can continue their studies in the second cycle, following Master of Sciences programs, in one of the *15 specialization directions recognized by the National Authority* in the field (ARACIS). Admission for Master of Sciences studies is by concurs, in September. It consists in 2 written exams and a minimal mark is imposed, namely 7 (in Romanian evaluation 10 is the highest mark). The studies have 2 academic years in the Bologna education system, at this level. There are common courses for all specializations, courses taught for groups of 3 or 2 specializations, as well as courses specific for a specialization. Students in each Master Studies program are involved in research projects, in agreement with their specializations. There is the traditional condition that the Dissertation presented at the end of this study cycle must contain this research activity, and the highest mark can be obtain if some results of the research were presented at a conference at national or international level, or/and is published or accepted for publication.

Cycle III – PhD level - Doctoral Studies

Since academic year 2005-2006, the studies at the Ph.D. level are organized in the frame of the *Physics Doctoral School*, Faculty of Physics and University of Bucharest. This Doctoral School has 7 specializations, namely: (i) *Atomic and Nuclear Physics, Elementary Particles, Astrophysics and Applications*, (ii) *Biophysics and Medical Physics*, (iii)

Condensed Matter Physics, (iv) Educational Physics, (v) Optics, Spectroscopy, Plasma and Lasers, (vi) Physics of the Earth and Meteorology (vii) Theoretical Physics.

The admission to the Ph.D. program is made by concurs. Minimal mark for admission is 8. The degree of Master of Sciences in Physics or in related fields is necessary for the students which graduated after academic year 2002-2003.

Since the sixth decade of the 20th century there is a **post university level course** in the **Utilization of the Radioactive Isotopes**. At this course with 243 hours of contact the persons with university education studies aspects related to the work in radioactive fields. The course is recognized by the national authority in the field (CNCAN) and the Diploma is recognized at national level. The course is organized by the *Atomic and Nuclear Physics Chair*.

The Faculty of Physics of the University of Bucharest is organized, in present, in 6 chairs, namely: (a) *Atomic and Nuclear Physics Chair*, (b) *Electricity and Biophysics Chair*, (c) *Mechanics, Molecular Physics, Polymer Physics, Physics of the Earth Chair*, (d) *Optics, Spectroscopy, Plasma and Lasers Chair*, (e) *Solid State Physics Chair*, (f) *Theoretical Physics and Mathematics Chair*.

The 90 active members of the academic staff, the 13 consulting Professors and the 17 Honorific Professors taught more than 200 courses at different levels and are involved in the research activities in 10 research centres, together with many of their students.

In the Atomic and Nuclear Physics Chair there are 3 research centres. The staff members, with different status, provide many general and special courses in specific fields, as: Atomic Physics, Physics of Molecules, Nuclear and Elementary Particle Physics, Interaction of Radiation with the Matter, Nuclear Reactors Physics, Radioprotection and Dosimetry, Management of the Radioactive Wastes, etc.

Faculty Scientific Research

The major research fields are the following:

Nuclear Physics: neutron induced reactions and nuclear fission; exotic radioactivity; atomic and nuclear methods of analysis and control; numeric data processing in the nuclear field, heavy ion reactions at low, intermediate and relativistic energies, nuclear spectroscopy, phase transitions in nuclear matter.

Elementary Particle Physics: fundamental research for the Standard Model; study of the radiation detectors; multi-quark systems study; interactions of bosons with nucleons, the study of non-nuclear degrees of freedom in few nucleon systems.

Physics of Atoms and Molecules: magnetic resonance, clusters, faults in solids, surface atomic and molecular processes; phase transitions study with the aid of magnetic resonance, paramagnetic defects, dynamic systems and fractals, active MASER media

Astrophysics and Astroparticle Physics: search for neutrino Physics and related processes, composition and interaction of the cosmic rays etc

The coordinator of the project will be Professor Alexandru JIPA, PhD, MS, He has begun his activity in the *Atomic and Nuclear Physics Chair, Faculty of Physics* of the *University of Bucharest* in 1988. Since the academic year 2001-2002, he is *Professor* at the same chair and since academic year 2003-2004 he is PhD advisor. The lectures and seminars delivered during the time include: (i) *Fundamentals of Nuclear and Particle Physics* (one semester, general course); (ii) *Nuclear and Elementary Particle Physics* (extended version: two semester, general course; short version: one semester, general course); (iii) *Nuclear Structure Models and Reaction Mechanisms* (extended version: two semester, specialization course; short version: one semester, specialization course); (iv)

Relativistic Nuclear Physics (extended version: two semester, specialization course; short version: one semester, specialization course, Master study level); (v) *Anomal States and Phase Transitions in Nuclear Matter* (one semester, specialization course, Master study level); (vi) *Processing of the Information at the Visualization Detectors* (one semester, specialization course, Master study level); (vii) *Introduction in the Heavy Ion Physics and in Astrophysics* (half a semester, Bologna system, specialization course); (viii) *Experimental Methods in the Physics of the Nucleus and Elementary Particles* (one semester, specialization course).

General courses in *Fundamentals of Nuclear Physics*, *Detection of the Nuclear Radiations*, *Processing of the Experimental Data in Nuclear Physics*, as well as specialization courses in *Nuclear Equipments*, *Applications of the Nuclear Physics in Medicine and Biology*, *Nuclear Spectroscopy* were taught in post-graduate program of training in *Nuclear Radiation and Isotope Applications*.

Professor *Alexandru JIPA* presented lectures from the fields of the mentioned courses at the *Doctoral School* organized by the *Faculty of Physics*, specialization *Atomic and Nuclear Physics*, *Elementary Particles*, *Astrophysics and Applications*.

The research interests are related to the *investigation of the dynamics of the relativistic nuclear collisions*, behavior of the high excited and dense nuclear matter, phase transitions in nuclear matter, connections with the cosmological scenarios. In this direction Professor *Alexandru JIPA* was involved in long-term collaborations in this field with JINR Dubna, Russia (SKM 200, MARUSYA), BNL, USA (RICH-BRAHMS), GSI-FAIR, Germany (CBM), RIKEN and KEK, Japan. He coordinated several national research contracts, in this field. Some of the researches have been done in coordinated research programs organized by international organizations and institutions. Another field of research is represented by *high energy cosmic rays studies*. He is member of the international collaboration LAGUNA, coordinated by ETH Zürich, Switzerland. Professor *Alexandru JIPA* works too in applications of nuclear methods in different fields (Computer Assisted Tomography, Nuclear Archeology etc). Around 25 PhD students of Professor *Alexandru JIPA* are actively involved in all mentioned research activities.

The list of publications of Professor *Alexandru JIPA* includes around 60 papers indexed in Science Citation Index Expanded (ISI) and about 200 papers published in different journals or proceedings, some indexed in Conference Proceedings Citation Index Science (ISI) – having, in total, around 1100 citations (excluding self-citations). He is coauthor at 4 books.

More information on: www.fizica.unibuc.ro

Participant 4 - BABES–BOLYAI UNIVERSITY (UBB)

The Babes–Bolyai University is the oldest institution of higher education and the largest university in Transylvania. Today it claims a multicultural profile rooted on a multilingual basis.

The history of the Cluj University can be traced back to 1581. The decree of May 12, 1581 allowed Stephanus Báthory to set up an academic college, organized and run by Jesuits. The confrontations between Catholics and Protestants made the college pass into clergy hands. After World War I was created The ‘King Ferdinand Ist University of Cluj’ in Romanian language. After WWII it was renamed into ‘Victor Babes University’. After the Second World War, in 1945, the Bolyai University was founded in Cluj, having Hungarian as teaching language. The two universities merged in 1959 under the name of ‘Babes–

Bolyai' University. Today the official teaching languages are Romanian, Hungarian, German and English.

The UBB-Cluj-Napoca University has a Physics Department and a didactic Nuclear Physics laboratory, equipped with some alpha, beta, gamma emitting sources and two neutron sources (one Am-Be and one Pu-Be); detection is made with old fashioned but working equipment.

The courses taught cover basic nuclear physics, radiation detection, radiation protection and nuclear reactors and nuclear materials. Additional optional courses as "Nuclear Interactions", "Nuclear Magnetic Resonance" and "Elementary Particles" are made available. The target level is better than 'DOE fundamentals handbook, 1993'.

The scientific staff has yielded publications in the field of neutron activation, Radon as health risk and structure of nuclear materials (texture of Zircaloy and oxidic fuel).

Despite this scarce equipment the Cluj University has a regional goal in providing nuclear education and a modern scientific background to its graduates.

A close cooperation with the Technical University in Cluj-Napoca is anticipated.

More information on: www.ubbcluj.ro

Participant 5 - UNIVERSITY OF PITESTI (UPIT)

The University of Pitesti is a young, dynamic, modern and flexible institution of high education which offers large educational possibilities to high school people mostly at a regional basis.

The priorities of the University of Pitesti are directed also towards the development of a high quality scientific research activity and training of the future high specialists, able to find a proper job in the Romanian and European labor market, which becomes more and more saturated and demanding.

Close links and location to the Institute for Nuclear Research in Mioveni-Pitesti and to the National R&D Institute of Cryogenics and Isotopic Technology in Rm. Valcea raised the interest for nuclear education. Consequently at the Faculty of Sciences were introduced courses with nuclear topics for physicist engineers (in the third and fourth years) as: Nuclear Materials, Reactor Physics and Nuclear Materials, Nuclear Physics, Nuclear Technologies, Nuclear Safety, Radwaste treatment and management, Quality Assurance in Nuclear Engineering etc.

Faculty of Science has a very powerful Research Center with the following facilities:

- Surface Physics Laboratory (Digital Erleed 100- LEED AUGER SPECTROMETER, SPECS 2006, Safire system for data acquisition and processing for LEED and RHEED spectrometer, Ultrasonic 2001 NTD-US Flow detect system, Voltalab 21 potentiostat / galvanostat system).
- XRD Laboratory (Ryaku Ultima IV diffractometer, Dron UM 1 and Dron UM 2 diffractometer completely upgraded and computer interfaced with data base, SAXS attachments).
- X-ray Laboratory (EDXRF spectrometer - SPECTRO MIDEX M; WDXRF spectrometer upgraded 2003).

Professor Ioan STEFANESCU, born 17.11.1948, has a Physics Diploma at Physics Faculty of University Babes-Bolyai in Cluj and a PhD degree at Atomic Physics Institute in Bucharest. He is also General Manager at National R&D Institute of Cryogenics and Isotopic Technology, Rm. Valcea and has a strong work experience in nuclear physics, Dosimetry and radioprotection, as well as in environmental monitoring for tritium and radiological risk assessment.

Professor Serban Constantin VALECA, born 23.06.1956, has an Engineer Diploma at Polytechnic Institute Bucharest, and a PhD degree in Industrial engineering. Very strong activity in national and international organizations related to nuclear power plant and general nuclear field. He was General Manager of Nuclear Research Institute Pitesti and also Romania Governor at International Agency for Atomic Energy, Vienna.

Professor Viorel MALINOVSKI, born 2.09.1950, has a Physics Diploma at State University of Sankt Petersburg and a PhD degree at Bucharest University.

Professor Dumitru CHIRLESAN, born 20.08.1963, has a Physics Diploma at Bucharest University and a PhD degree at Iasi University.

Claudiu SUTAN, born 17.11.1973, has a Physics Diploma and a master Diploma at Bucharest University.

More information on: www.upit.ro

Participant 6 - INSTITUTE FOR NUCLEAR RESEARCH PITESTI (INR)

The Institute for Nuclear Research Pitesti is a complex R&D center with over 30 years of activity in the nuclear energy field, deeply involved in the management and execution of the R&D National Nuclear Power Program. The main activities cover a large spectrum of nuclear energy: nuclear safety, designing, manufacturing and testing of nuclear fuels, ageing mechanisms of structural materials, irradiation technologies and radioisotopes production in TRIGA 14MW research reactor, instrumentation and control, environmental protection, and radioactive waste and spent fuel management.

Several significant Projects required detailed and complex neutronics investigations and core design:

- Independent Design Manual Reactor Physics for the CANDU 6 Reactor, Cernavoda NPP, Unit 1;
- Final dimensioning of the adjuster rods for the Cernavoda NPP, Unit 2,
- Advanced Reactors and advanced Fuel Cycles (RU and SEU),
- Neutronic design for FBR (Russian type BN1600 and PRISM concept)
- Double Core TRIGA Reactor Commissioning;
- Design of in-pile irradiation testing of Romanian nuclear fuel, CANDU type, manufactured by the Institute;
- Preparation of Reactor Physics tests and measurements for the Phases A and B, Cernavoda NPP Unit 1 Commissioning;
- Participation at the on-site activities during Cernavoda NPP Unit 1 Commissioning; independent interpretation of the Reactor Physics Commissioning tests and measurements;
- Design of a zero-power heavy water research reactor,
- RMZ (Multi-Zone Reactor) design, a zero-power light water research reactor, with a small central heavy water and CANDU fuel testing zone

A significant effort was related to the identification of new methods and algorithms, to the development of original new computer programs, to the testing and validation of the codes and associated methodologies. The aim was to obtain proper instruments for the needed computer simulation, related to CANDU reactor Commissioning or to “hot problems”, like the reactivity void effect. Although the main support for the analysis was the computer simulation, the essential and often decisive data were usually based on the measurements performed by the Institute specialists. Both computer simulation and

measurements required a continuous effort for identification, development and preliminary evaluation of new ideas, methods, algorithms, nuclear data and methodologies. After these prospective investigations, the veritable research activity included development of original computer codes, experimental methods and methodologies, adaptation of the computational system and individual codes supplied by AECL, DOE (RSICC), NEA, iterative testing, improving and assessing tools and techniques. Validation methodologies were identified and used; the measured data during CANDU 6 Cernavoda NPP Unit 1 and TRIGA reactor Commissioning played and still play an important role.

More information on: www.nuclear.ro

Participant 7 – S.C. DOZIMED S.R.L.

DOZIMED is a SME founded in 1999, which provides personal dosimetry services for exposed workers to external sources of X and gamma radiation

Quality Management System is certified by TÜV NORD in accordance with EN ISO/IEC 17025:2005 and ISO 9001:2008 certified.

The Dosimetry Lab. is an Approved Dosimetry Service for whole body external dose assessment (Accreditation number ODA 02/2008). Number of customers: over 850, from all fields of nuclear activities, number of dosimeters: 9000 dosimeters / month (over 100,000 per year) – the biggest individual monitoring lab at national level.

The methods used for evaluation of doses are validated through European Inter-comparisons Exercises (EURADOS 2008, 1010, etc.)

In the laboratory there are two methods used for dosimetric monitoring:

- Film dosimetric system, based on AGFA films and PTW badge
- TLD dosimetric system, based on Harshaw system

These systems can be used for:

- Whole body dosimetry - film, TLD;
- Extremities dosimetry – TLD;
- Neutrons dosimetry – TLD;
- Area dosimetry – film, TLD;
- Environment dosimetry – TLD.

In the last years, there were performed research activities related to the use of TLD dosimeters in extremities dosimetry, retrospective dosimetry using tooth enamel and dose to the patients in medical applications.

Based on interaction with the exposed workers monthly monitored (about 60 % of total exposed workers in Romania), DOZIMED will provide feedback related to the needs of Radioprotection Safety Officers (RSO) training, as well as information regarding the level of understanding of the radioprotection concepts and culture among the exposed workers.

DOZIMED will allow students and pilot courses participants to practice the actual exposed workers monitoring activities deployed in its Dosimetry Lab.

More information on: www.dozimed.ro

Participant 8 – S.C. ASCENDIA DESIGN S.R.L.

ASCENDIA Design is a Small Enterprise forged together by a team of IT specialists. Services and products provided by ASCENDIA have as point of origin the client's vision and his field of activity which are blended then with company's expertise to produce a

result of the highest quality. ASCENDIA offers quality solutions and protects the confidentiality of information. The company is ISO: 2008 and ISO27001:2006 certified.

ASCENDIA provides highly qualified expertise in the following areas: design and development of web applications and portals, eLearning software design and development, design and development of other interactive materials (3D models, simulations and virtual laboratories). Company's portfolio includes hundreds of hours of eLearning courses developed for countries across Europe and beyond, both for school and academic subjects and corporate clients.

The main activity field of the company is eLearning software development. This area includes educational software applications which are based on eLearning standards, such as SCORM 2004, and rich media presentations whose features go beyond common Slide Show applications.

ASCENDIA main expertise is Exact Sciences eLearning development, mainly Mathematics, Physics and Biology, which qualify the company as a value partner for the eLearning component of project Pilot Course(s) development and any ITC activity (Knowledge Management Database, web page and Knowledge Management frontend, Dissemination and Communication activities, ITC infrastructure for collaborative activities).

More information on: www.ascendia.ro

Participant 9 - AREN

AREN is the main Romanian nongovernmental organization, legally registered, which has acting in the nuclear field since early '90s. It has a large spectrum of professionals in nuclear field but also retired specialists, teachers, students or professionals working in other industrial or social sectors which collaborate with nuclear energy sectors. "Women in Nuclear" is a branch of AREN where a lot of women-specialists with background in radioactive waste management activities are involved in.

Within the last years, AREN has had a strong active role in supporting the work made in Romania for public information and increasing of the public awareness on peaceful use of nuclear energy. The organization has collaborated with the Romanian nuclear industry forum, the Cernavoda NPP owner, and the radioactive waste management organizations but also with the Governmental authorities, politicians, other NGOs, students, mass media, local communities from neighborhood of the nuclear facilities and general public in the country. AREN has had a leader role in organizing conferences, seminars, workshops, etc promoting but also debating strong aspects of public interest on nuclear energy use, particularly radioactive waste management. Professionals from AREN worked for organization in order to elaborate materials, leaflets, bulletins, specific reports, etc.

More information on: www.aren.ro

Participant 10 - NATIONAL COMMISSION FOR NUCLEAR ACTIVITIES CONTROL (CNCAN)

The National Commission for Nuclear Activities Control (CNCAN) is the competent national authority in the nuclear field, with duties in the regulation, authorization and control of nuclear activities. In this capacity, CNCAN is an independent institution, which has a specific, unique and important role in ensuring the compliance with the safety and radiation protection requirements. The particular role of the institution consists in rigorously

observing the compliance with the legal provisions in force, the elaboration of norms and the authorization of safe conduct of nuclear activities, so as to meet the conditions set for nuclear safety, for the protection of professionally exposed personnel, of the population, of the environment and property, at minimal risks, provided by regulations, with the fulfillment of obligations arising from the agreements and conventions Romania is party to. With the main objective of ensuring nuclear safety, the outlines of CNCAN activity are the following:

- CNCAN controls the implementation of and compliance with the provisions of Law no. 111 / 1996 on the safe deployment, regulation, authorization and control of nuclear activities, republished, as well as with other regulations in the field.
- Upon the accession of Romania to the European Union, the role of CNCAN as national authority in the nuclear field has become more important. The entire corpus of regulations and practices in the nuclear field is constantly being reviewed and revised, when necessary, in accordance with the guidelines and standards of the International Atomic Energy Agency, with the acquis of the European Union and with EURATOM requirements.
- CNCAN aims at assuring a high quality regulatory control, by using cutting-edge technology and constantly improving the professional competence of the personnel, through national and international seminars and exchange of experts with similar institutions from countries with performances in the field. Our goal is to contribute to the enhancement of the scientific and technological research potential in the field of nuclear safety in Romania.

CNCAN is responsible performing its duties and functions, by maintaining the highest standards of competence in the use of nuclear energy in Romania.

More information on: www.cncan.ro

Participant 11 - STUDIECENTRUM VOOR KERNENERGIE (SCK•CEN)

BNEN, the Belgian Nuclear higher Education Network has been created in 2002 by five Belgian universities and the Belgian Nuclear Research Centre (SCK•CEN) as a joint effort to maintain and further develop a high quality programme in nuclear engineering in Belgium.

The master of nuclear engineering is a one year interuniversity programme. The program is taught in English. Its high modularity allows for optimal time management for teachers and students, it facilitates individual participation in selected courses e.g. advanced courses in the context of continuous professional development and it also facilitates foreign students participation in blocs of courses.

The 60 ECTS masters programme goes through subjects like neutron physics (3 ECTS), nuclear safety (3 ECTS) and nuclear thermal hydraulics (6 ECTS), provides the knowledge for neutronic reactor core design (8 ECTS) and plant operation and control (3 ECTS). At a more interdisciplinary level, the programme includes courses on nuclear energy (3 ECTS) and material science (6 ECTS) with a particular interest in the fuel cycle (3 ECTS). Radiation protection (6 ECTS) and a menu of advanced courses (4 ECTS) belong also to the backbone of the programme. The master thesis (15 ECTS) offers opportunities for internship in industry or in a research lab. ECTS credits indicate the average student work load to successfully complete a course. 60 ECTS represents, in term of workload, one year of study.

The Belgian master of nuclear engineering programme is embedded in the European ENEN association, a non-profit international organization of universities and research centers for the preservation and further development of higher nuclear education and expertise. The Belgian master of nuclear engineering programme collaborates, where appropriate, with the ANENT, the Asian Network for Education in Nuclear Technology.

The Belgian Nuclear Research Centre, SCK•CEN, was created in 1952. SCK•CEN is a foundation of public utility with a legal status according to private law, under the tutorial of the Belgian Federal Minister in charge of energy. More than 600 employees realize a turn-over of 80 M€. The statutory mission gives the priority to research on problems of societal concern like safety of nuclear installations, radiation protection, safe treatment and disposal of radioactive waste, fight against uncontrolled proliferation of fissile materials, education and training (BNEN, ENEN and International School for Radiological Protection), etc. In order to perform its research programme, to provide services to industry and third parties and for training purposes SCK•CEN operates several nuclear facilities:

- The BR2 Material Testing Reactor with a very high neutron flux, both thermal and fast;
- The BR1 graphite-gas Research Reactor;
- The VENUS zero power, light water critical facility;
- The HADES Underground Research Laboratory, sited at 250 m depth in the Boom clay-layer;
- The Laboratory for High and Medium Activity with various hot cells;
- The Nuclear Analysis and Chemical Laboratories;
- The MYRRHA project, a design study of a new accelerator driven sub-critical System;
- The BR3 Pressurized Water Reactor, presently a European demonstration programme for reactor dismantling

More information on www.sckcen.be

Frans Moons obtained his electromechanical engineering degree from the Katholieke Universiteit of Leuven in 1973. He started as a project engineer at the BR2 materials reactor. He was seconded to the design team of the Next European Torus (thermonuclear fusion) at Garching near Munich, Germany, for the period 1983-89. From 1989 till 1998 he co-ordinated the Belgian thermonuclear technology program, set up the SCK•CEN corrosion lab, was a member of the EU Fusion Technology Steering Committee and of the Halden Project Program Group (president in 1995) and he is still scientific secretary to the SCK•CEN's external scientific advisory board.

Since 1998, he is research coordinator, reporting to the general manager. In this capacity he is responsible for some 20 young researchers preparing a doctoral thesis at SCK•CEN. He coordinated the FP5 co-ordination action: ENEN – European Nuclear Education Network. He drafted the FP6 NEPTUNO project and participated in the drafting of the CENETNOM project which is in the contract negotiation stage. He is treasurer and board member of the ENEN association.

(iii) Consortium as a whole

The RONEN Consortium consists of Universities, Nuclear Training Centers, Nuclear Research Centers, SMEs, NGO and Regulatory body. This Consortium is sustained by the Utility SNN - SN NUCLEARELECTRICA SA, ANCS - National Agency for Scientific Research and ROMATOM - Nuclear Industry Association which will give a feedback to RONEN proposals for nuclear E&T harmonization. The participants constitute a consortium able of achieving the project objectives, and they are suited and are committed to the tasks assigned to them through the work plan. The complementarities between consortium members assure a well-balanced solution in relation to the objectives of the project and will permit the transfer of knowledge between different category and the harmonization of E&T methods and practices

a) Universities

Universities are involved in nuclear higher education and actually develop courses and research projects related to different nuclear topics.

The universities are:

- University POLITEHNICA Bucharest (UPB) – has a large experience in European nuclear E&T projects: ENEN - European Nuclear Engineering Network and NEPTUNO - Nuclear Engineering Platform for Training and University Organizations, ENETRAP. Also UPB is one of the founders of ENEN Association;
- The University of Bucharest is one of the leading institutions of higher education in Romania, and enjoys a considerable national and international prestige. Its various schools are well known for their activities in all important scientific and academic domains. There are over 50 institutes, departments and research centers functioning within UB, most of which work in collaboration with similar centers in other countries.
- The Faculty of Physics was founded in 1967 as an independent branch of the Faculty of Mathematics and Physics of the University of Bucharest, one century and a half old center of traditions in basic and technical science, teaching and research.

- The Department of Atomic and Nuclear Physics gives Master and PhD degree in: atomic and molecular interactions, astrophysics, nuclear interactions, elementary particles, and applied nuclear physics. The teaching staff is recognized internationally for their research activities, and collaborations with prestigious institutions in the field (NEA DB Paris, IAEA Vienna, IRMM Geel, PTB Braunschweig, LNHB Saclay, BNL, CERN, GSI, etc.)
- University of Pitesti (UPIT), which develops Nuclear Engineering and Nuclear Physics courses, being in close cooperation with the Institute for Nuclear Research in Pitesti.
- University Babes-Bolyai in Cluj (UBB), which cooperates with the Technical University in Cluj in order to offer courses in Nuclear Physics, Nuclear Medicine and Nuclear Engineering. This university is interested to develop or participate into a Master of Science program dedicated to Radioprotection or Radwaste Management.
- Belgian Nuclear Higher Education Network (BNEN), legally represented by SCKCEN Moll. As a cluster of universities and research centre in Moll, BNEN offers the gained experience and advising to the consortium in all aspects.

b) Training centers

The Vocational Training Centre of National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH) Bucharest is located on the Nuclear Platform in Magurele and develops courses mainly on Regulatory Body demand, but also courses required by different governmental institutions on Radioprotection, Decommissioning, Medical Applications, etc.

The Training Centre of Cernavoda NPP (CPPON) could be considered as an observer to the activity proposed by this project, having a positive attitude. The actual tasks) do not permit an active involvement in the project work packages.

c) Research Centers

The coordinator of the project, National Institute for Physics and Nuclear Engineering – “Horia Hulubei” (IFIN-HH) is the most important physics and nuclear engineering research institute in Romania with a long and significant experience in nuclear E&T, with relevant experience as participant in national, European and international projects, both as partner and coordinator.

Its expertise in project management acquired through the coordination of major projects will contribute to the efficient management of the project and to the success of the RONEN project.

The main department involved in the project, Nuclear Training Center (CPSDN) has more than 40 years experience in nuclear education and training and an impressive number of training programs (more than 780 training programs) and trainees (about 19000 trainees). This experience will be a valuable contribution to the project and a guaranty of its success.

Through Nuclear Training Center, IFIN-HH is Associated Member of ENEN Association and will spread ENEN.

IFIN-HH will provide the necessary logistic tools for the project and access to its infrastructure.

Institute for Nuclear Research in Pitesti is the biggest and well known specialized institution in nuclear research having large experimental facilities (nuclear research reactor TRIGA, hot cells, laboratories, fuel handling research team etc.).

Such-a-way the consortium gathers (almost) all the Romanian entities involved in nuclear field and interested to collaborate with European partners.

All partners are interested in achievement of the network of excellence as they see it as a possibility to further preserve, develop and improve their abilities and to connect to European level. Their expertise, abilities, material base and goals are complementary and harmoniously gathered in the RONEN project.

The project staff comprises both experienced university professors and scientific researchers, and young assistants and scientific researchers, being dimensioned in accordance with the effort required by the objectives; its structure covers the project areas. The staff structure was thought also in view of the implicit objectives of the project regarding the management of the existing expertise of the domain, and the training of the young staff.

d) SMEs

SMEs involved in the project are experienced entities, one in Dosimetry, with laboratory infrastructure available for the project, and another in e-learning and educational software with the availability to offer its expertise and learning infrastructure for pilot projects.

e) Regulatory body will be the guaranty that the project will respect the national requirements

f) NGO

AREN is the main Romanian nongovernmental organization which has acting in the nuclear field since early '90s. It has a large spectrum of professionals in nuclear field but also retired specialists, teachers, students or professionals working in other industrial or social sectors which collaborate with nuclear energy sectors

All together the founders of RONEN are able and committed to develop this project.

Their background, capability, complementarities and commitment are a guaranty of the project success.

(iv) Resources to be Committed

The financial resources, as detailed in Table 4.1.e were distributed in accordance with the estimated intensity of the effort required by each stage and activity. They are prevalent during the months 6-24 of the project, when essential activities are scheduled in order to setup the network of excellence, to organize the pilot courses and remote learning courses. Those activities require both an important manpower effort, and expenses for setup of the IT basis.

Besides the material basis that could be provided by the partners (pre-eminently the IFIN-HH, UB, DOZIMED and SCN experimental basis), is necessary to procure modern computing and multi-media equipment, taking account of the large volume and high speed imposed by the computations performed during the pilot courses, digital signal processing equipment (in agreement with the current trend in the field), and high-performance software represented by computation and data acquisition/processing platforms and

remote communication packages. This material effort will stand mainly on coordinator's behalf and will not be charged to this project.

Existing and procured equipment will become the development basis of the network of excellence, being able to support future activities.

The project will permit not only to gather and to strengthen partners with their expertise, material basis and (limited) financial resources, but also, and this is clearly the added-value, will promote a new work style.

The network concept supposes a strong collaboration between partners and a quantifiable contribution in each step.

The project is structured in work packages. Their order and duration is meant to ensure the informational flow required by the decision process. The work packages are structured in activities that allow straightforward evaluation of the objectives and action results by monitoring documents, reports and so on.

The amount of work in the work packages is valued at 63 professional man-months (pmm). The current distribution of the pmm's over the different work packages reflects the required personnel contribution of the RONEN members. The distribution of the tasks and the allocation of resources are presented in the Project Effort Form.

A kick-off meeting will be held at the start of the project.

Formal project progress meetings, as foreseen in the work planning, and requiring the presence of representatives of project members, will be held every six months. They will normally be preceded by a Management Committee meeting to prepare the meeting, to discuss and evaluate the progress, to allocate resources and to settle financial matters.

Work Package leaders will organize meetings for the members involved in the different work packages, as needed. Each partner involved in the project has the responsibility to participate into appropriate events for disseminating the results of the project and the knowledge acquired.

The intellectual property rights are subject to existing regulations and belong to the partners.

The project does not foresee subcontracting nor the purchase of major (expensive) equipment.

An additional resource to the project will be the support and the feed-back of the main users NUCLEARELECTRICA, ANCS and ROMATOM.

A4.3 IMPACT

(i) Expected impacts listed in the work programme

The project will contribute to the FP7 2010 cal main objective: to establish a sound scientific and technical basis in order to accelerate practical developments for the safe management of long-lived radioactive waste, to enhance the safety performance, resource efficiency and cost-effectiveness of nuclear energy and to ensure a robust and socially acceptable system of protection of man and the environment against the effects of ionising radiation. All this topics will be addressed in their E&T component , by this project.

RONEN intend to be a "mirror group" with the same structure, objectives, practices and programs at national level as ENEN is at European level.

Two of the partners are already ENEN members and some others intend to apply for membership.

Our intention is to register RONEN as member of ENEN.

The impact of the project will be both on national and European level:

- At national level, due to the harmonisation of nuclear education and training program which will allow increasing the quality of the process, to develop a common learning, teaching and training program and to provide expert support to the authorities regarding nuclear education and training policy and development.
- At European level by increasing the quality and participation of Romanian nuclear E&T community to the EURATOM program and by contributing to the development of the specific knowledge on CANDU PHWR and its fuel cycle.

One can distinguish several directions of impact at European as well as at national level:

- Integrating and mutually recognizing the educational and training programmes in order to improve mobility and competitiveness,
- Developing mutually recognized schemes by the EU countries in cooperation with the regulatory authorities,
- Establishing common learning and training schemes based on qualitative evaluation procedures recognized by qualification and regulatory authorities,
- Establishing good practices e.g. exchange courses, remote interactive learning (e-learning), and improved performance programs.
- The "Romanian Excellency Research Program - CEEX 2005" and other national projects carried out by the Ministry of Education and Research points to:
 - Setup of integrated technological networks in specific fields, which allow the integration in technological platforms at European level,
 - Knowledge that ensure the methods, techniques, procedures, models and theory which add value and enhance visibility at international level;
 - Development of science, services, top techniques and applications, with the aim of connecting to specific research European priorities and objectives.
- All these strategic objectives are present in the RONEN project proposal.

At national level the nuclear high-education and training at present look merely fragmented. Only University POLITEHNICA Bucharest has a complete nuclear engineering programme.

University of Bucharest has a long and valuable experience in teaching nuclear physics, theoretical and technological physics, as well as in training nuclear industry.

The other universities (UBB, UP) also offer Nuclear Physics or/ and Nuclear Engineering courses or modules.

Several staff categories are quite randomly trained at the Vocational Training Center of National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH). Only the Romanian utility- Cernavoda NPP/CPPON- has a complete training program according to national and international specifications.

One may stress the following positive features:

- The specialized courses and the learning plan at UPB are in good concordance with the European requirements, as a result of the UPB participation into the FP5, FP6- ENEN projects,
- The training at NPP/CPPON uses the SAT system, and meets all requirements and recommendations of the national and international regulatory bodies/organizations,
- The training centre of IFIN-HH has a long and important experience in training of non-energy applications of nuclear energy and a large access to the nuclear community; more than 19000 persons have been trained along the time in Nuclear Training Centre (CPSDN) starting with 1967. Mobility policy implemented through programs of Tempus, Leonardo, Socrates type allowed enhancing professional qualification of the teachers and trainers.

The negative features are:

- Almost total lack of experimental research infrastructure in universities and of the access to high performance and recognized computer codes;
- The future of staff dynamics and management of existing expertise. Highly qualified staff is close to retirement while the young staff migrates to better paid jobs;
- Lack of funding for introducing and applying modern learning methods;
- Lack of administrative and financial regulations allowing harmonized integration of the users for the existing experimental basis from research centres other than universities;
- Lack of coordination between educational efforts of different kinds: engineering, master, post-graduate, training courses, continuous training etc.
- No training courses at European level for specific Romanian reactors, CANDU PHWR

All these negative features are corrected by the project actions.

Creating a network of excellence for nuclear education and training, concordant with the existing structures in EU, perfectly fitting with the ENEN structure, gives more strength to all running projects in nuclear education.

The practical implementation of the project outcomes will result in the consolidation of a sustainable National and European Area of Higher Education and Training covering nuclear engineering, nuclear safety, radiation protection, decommissioning and radioactive waste management. It will contribute to the preservation of the nuclear knowledge in Romania and in Europe and make it more accessible. It will facilitate the mobility of individuals, as well students as professionals, and enhance the mutual recognition of their

diplomas and qualifications across the European Union. Through the mechanisms implemented within the project, it will be possible to achieve European certifications of an educational type, such as for the European Master of Science and for advanced courses on a variety of nuclear disciplines, and for the professional type, like training programmes or post-graduate courses to be imparted and recognized anywhere in Europe.

The national and European impact will be dependent on the extent of dissemination and the accessibility of the results, the participation of young professionals and students to the pilot sessions, and the involvement of the stakeholders. By participation of AREN/ROMATOM virtually the whole range of nuclear players will be represented: apart from the educational institutions themselves, the research institutions, the government institutions, the nuclear enterprises, the regulatory bodies and the nuclear learning societies will become involved in the project.

A higher level of networking of nuclear related organizations and industries will be obtained, in particular within the nuclear disciplines, such as engineering, radiation protection, radioactive waste management, decommissioning and between the academic institutions, the training organizations and the end-user associations. This will enhance the adjustment of curricula and training packages to the end-user needs, thereby improving the employment and career opportunities, and the qualifications of the young professionals.

Procedures and guidelines for courses in nuclear fields will facilitate the joint organization of such courses, optimizing and coordinating the contents, and will enhance their quality.

Contribution to standards

A contribution to existing national standards will be made through several tasks and deliverables in the RONEN project:

- Curricular harmonization needs guidelines and models to be established and implemented.
- Mutual recognition can be reached by developing and implementing procedures based on actual European experience gained in other projects (ENEN, BNEN). These procedures stipulate in an objective way how to allocate the appropriate ECTS weight for courses, how to organize joint courses etc.
- Systematic Approach to Training methodology has to be a model of organizing the academic activity.
- Construction and operation of the database will be carried out according to standardized or recommended practices and will provide experience on the utilization of such practices.
- Introduction of an e-learning computer based platform, accepted and used at European level, will ease inter-connection with other existing networks. Also it will lead to creating handbooks for teachers and students.

(ii) Dissemination and/or exploitation of project results, and management of intellectual property (CP)

A specific communication WP was established in the frame of the project which aims to develop a communication strategy and associated programs in accordance with the Romanian target groups. The content of the website of the project will address topics specific to the partners of the project but also a variety of communication means appropriate to the target groups from public at a large to media, local authorities, policy makers, students, NGO and a forum to collect the feedback from all the target groups.

The WP on “Knowledge Management” will develop and will agree a proposal on management of knowledge acquired during the project development (including intellectual property).

The database to be developed will include all the deliverables produced along the project, the technical and progress reports as well as other background information as a support to further developments based on the project results.

Similar projects, and links to the relevant websites will be available on the project website already established: www.ronen.ro . Link to the project website will be active on all partner websites and a short presentation of RONEN also.

RONEN is an open initiative to all the eligible institutions which intend to join the project as a “user group” based on clear rules available on the website.

Communicating nuclear science will be a priority for the communication team .An inter-institutional team made by experienced experts with more than 20 years of experience in communicating science will be involved in the project.

Even before the start a leaflet will be issued and the project proposal will be made available to the nuclear community.

A4.4 ETHICAL ISSUES

The project participants conform to current legislation and regulations in our country and to all relevant EU legislation mentioned in Guide for proposers – Coordination and Support Actions, EURATOM Call 2010. Participants also respect the international conventions and declarations mentioned in the same document as well as all the items of the Treaty establishing the European Atomic Energy Community and in particular Articles 7 and 10 as contextualised in the following decisions: Council Decision 2006/970/Euratom of 18 December 2006 concerning the Seventh Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011) and Council Decision 2006/976/Euratom of 19 December 2006 concerning the Specific Programme Euratom for nuclear research and training activities (2007-2011).

ETHICAL ISSUES TABLE

Research on Human Embryo/ Foetus		YES	Page
*	Does the proposed research involve human Embryos?		
*	Does the proposed research involve human Foetal Tissues/ Cells?		
*	Does the proposed research involve human Embryonic Stem Cells (hESCs)?		
*	Does the proposed research on human Embryonic Stem Cells involve cells in culture?		
*	Does the proposed research on Human Embryonic Stem Cells involve the derivation of cells from Embryos?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	*	

Research on Humans		YES	Page
*	Does the proposed research involve children?		
*	Does the proposed research involve patients?		
*	Does the proposed research involve persons not able to give consent?		
*	Does the proposed research involve adult healthy volunteers?		
	Does the proposed research involve Human genetic material?		
	Does the proposed research involve Human biological samples?		
	Does the proposed research involve Human data collection?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	*	

Privacy		YES	Page
	Does the proposed research involve processing of genetic information or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?		
	Does the proposed research involve tracking the location or observation of people?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	*	

Research on Animals		YES	Page
	Does the proposed research involve research on animals?		
	Are those animals transgenic small laboratory animals?		
	Are those animals transgenic farm animals?		
*	Are those animals non-human primates?		
	Are those animals cloned farm animals?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	*	

Research Involving Developing Countries		YES	Page
	Does the proposed research involve the use of local resources (genetic, animal, plant, etc)?		
	Is the proposed research of benefit to local communities (e.g. capacity building, access to healthcare, education, etc)?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	*	

Dual Use		YES	Page
	Research having direct military use		
	Research having the potential for terrorist abuse		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	*	

A4.5 Consideration of gender aspects

The project pays attention to the gender equality issue and participation of women is actively encouraged.

The reality is that in the Romanian research community women are very well represented, most of the technical institutions having more than 50% females.

UPB one of the most valuable partner in the project has a woman as Rector as well as one of the most representative NGO, AREN. Romanian branch of WIN will play an important role in the development of the project, many researchers, teachers and trainers involved in RONEN will be women.

Creating the network of excellence will permit direct and free access to nuclear education for any Romanian student, male or female without discrimination.

As a matter of fact at present time the enrolled students at Romanian Universities are almost 50% females.

Communication and dissemination activities involve an important number of females, most of the actual information networks and communicating nuclear activities being coordinated by women at a high level.

RONEN References

1. Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations
2. Euratom FP7 research & training projects
http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=KINA23580
3. Nuclear Education and Training: Cause for Concern ?
ftp://ftp.cordis.europa.eu/pub/fp5- Euratom/docs/h_cce_fission_maintain_competence.pdf
1. Nuclear energy research The sustainability challenge
http://bookshop.europa.eu/is-bin/INTERSHOP.enfinity/WFS/EU-Bookshop-Site/en_GB/-/EUR/ViewPublication-Start?PublicationKey=KI7809613
2. A poster on three ENEN FP7 projects on European Fission Training Schemes (EFTS)
ENEN-III, PETRUS II and ENETRAP II
<http://www.enen-assoc.org/data/document/2008398-poster-efts-michele.pdf>
3. SNETP Vision Report
http://www.enen-assoc.org/data/document/sne-tp_vision_report_eur22842_en.pdf
4. BNEN Website
<http://www.sckcen.be/bnen/index.html>
5. How to Maintain Nuclear Competence in Europe
ftp://ftp.cordis.europa.eu/pub/fp5- Euratom/docs/h_cce_fission_maintain_competence.pdf
6. Euradwaste '08 Conference Proceedings
http://ec.europa.eu/research/energy/pdf/euradwaste_08_en.pdf
7. Euradwaste '08 Conference Proceedings
ftp://ftp.cordis.europa.eu/pub/fp7/docs/fin-266- Euratom-web-jun09v02_en.pdf
8. Euradwaste '09 Conference Proceedings
ftp://ftp.cordis.europa.eu/pub/fp7/fission/docs/hleg_report_2009_en.pdf
9. High Level and Expert Group Report: European Low Dose Risk Research Radiation Protection
ftp://ftp.cordis.europa.eu/pub/fp7/fission/docs/hleg_report_2009_en.pdf
10. The Sustainable Nuclear Energy Technology Platform - A vision report
ftp://ftp.cordis.europa.eu/pub/fp7/docs/ Euratom-fission_ev20070921_vision-report_en.pdf

11. Euratom FP6 Research Projects and Training Activities - Volume III
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom-fission_eur22385_en.pdf
12. Off-site nuclear emergency management and restoration of contaminated environments
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom-fission_eur21927_en.pdf
13. FISA 2009
http://cordis.europa.eu/fp7/euratom-fission/fisa2009_en.html
14. Euratom Fission Training Schemes (EFTS)
<http://www.enen-assoc.org/en/training/for-nuclear-community/efts-fp7.html>
15. ENEN-II (FP6)
<http://www.enen-assoc.org/en/activities/for-universities/enen-ii1.html>
16. Eurotrans (FP6)
<http://www.enen-assoc.org/en/activities/for-universities/eurotrans.html>
17. Sustainable Nuclear Energy Technology Platform (SNE-TP)
<http://www.enen-assoc.org/en/activities/future-activities.html>
18. Implementing Geological Disposal of Radioactive Waste
http://www.igdtp.eu/Documents/VisionDoc_Final_Oct24.pdf
19. Reactor systems
http://cordis.europa.eu/fp7/euratom-fission/reactor-systems_en.html
20. Euratom Fission Training Schemes (EFTS) in all areas of Nuclear Fission and Radiation Protection
<http://www.enen-assoc.org/data/document/2008398-poster-efts-michele.pdf>
21. Council Regulation laying down the rules for the participation of undertakings, research centres and universities in action under the Seventh Framework Programme of the European Atomic Energy Community and for the dissemination of research results (2007-2011)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/calls/euratomrules_en_pdf.zip
22. Council Decision concerning the specific programme implementing the Seventh Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/calls/euratomsp_en_pdf.zip
23. Council Decision concerning the Seventh Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/calls/euratomfp_en_pdf.zip

-
24. Work Programme 2009: Euratom for nuclear research and training activities (European Commission C(2008) 6800 of 17 November 2008)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom_work_programme_2009_1108v_en.pdf
 25. Update to Euratom Work Programme 2008 (European Commission C(2008) 4522 of 22 August 2008)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom_wp_update_2008_en.pdf
 26. Work Programme 2008: Euratom for nuclear research and training activities (European Commission C(2007) 5750 of 29.11.2007)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom_wp_2008_en.pdf
 27. Work Programme 2007: Euratom for nuclear research and training activities (European Commission C(2007) 564 of 26.02.2007)
ftp://ftp.cordis.europa.eu/pub/fp7/docs/wp/euratom/v_wp_200701_en_pdf.zip
 28. Funding opportunities and legal status options for the future European Sustainable Nuclear Fission Industrial Initiative of the Strategic Energy Technology Plan
<ftp://ftp.cordis.europa.eu/pub/fp7/euratom-fission/docs/deloitte-gen4-022010-full-report.pdf>
 29. EUR 24040
http://ec.europa.eu/research/energy/pdf/euradwaste_08_en.pdf
 30. EUR 23580
ftp://ftp.cordis.europa.eu/pub/fp7/docs/fin-266-euratom-web-jun09v02_en.pdf
 31. EUR 23884
ftp://ftp.cordis.europa.eu/pub/fp7/fission/docs/hleg_report_2009_en.pdf
 32. EUR 22842
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom-fission_ev20070921_vision-report_en.pdf
 33. EUR 22385
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom-fission_eur22385_en.pdf
 34. EUR 21927
ftp://ftp.cordis.europa.eu/pub/fp7/docs/euratom-fission_eur21927_en.pdf

LETTERS OF INTEREST



ROMANIA
MINISTRY OF EDUCATION, RESEARCH, YOUTH AND SPORTS
 NATIONAL AUTHORITY FOR SCIENTIFIC RESEARCH
CABINET OF THE PRESIDENT

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Bucharest, April 1st, 2010
 No. 457

Letter of Intent

To whom it may concern

Subject: RONEN- Romanian Nuclear Higher Education and Training Network Setup

This is to certify our interest and support for the initiative of the RONEN consortium to evaluate and coordinate the Romanian nuclear education and training offer and needs and to set up a national network as a "mirror group" of European Education and Training Network (ENEN) and as a corporate adviser and support for the National Authorities and Beneficiaries.

RONEN intends to comply with other European initiative in the field of nuclear higher education and training, to implement EURATOM requirements and to harmonize the Romanian nuclear E&T system with the European methods and practices in order to assure its quality validation and recognition.

Taking into account the provision of the National Nuclear Program which presume the development of NPP as the future solution to assure the security of energy supply in Romania, we consider this initiative necessary and valuable for the assurance of a high qualified human resources for our future needs in nuclear power, nuclear fuel cycle and nuclear research development.

As one of the potential beneficiary of the results of the project we appreciate RONEN initiative and we express our interest and our support for its implementation.

Sincerely yours,

President
 Adrian CURAJ



