ESTABLISHMENT OF TRAINING CENTER FOR VVER TECHNOLOGY

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Projects description

CORONA I project (2011-2014) "Establishment of a Regional Center of **Co**mpetence for VVE**R** Techn**o**logy and **N**uclear **A**pplications" - co-financed by the EC Framework Program 7

CORONA II Project (2015-2018) "Enhancement of training capabilities in VVER technology through establishment of VVER training academy" - project has received funding from the *Euratom research and training programme 2014-2018* under grant agreement No 662125

http://corona2.eu/

Participants

Kozloduy NPP – Bulgaria (coordinator)

Institute for Nuclear Research and Nuclear Energy (INRNE) of the Bulgarian Academy of Sciences

Engineering Support and Intellectual Solutions (ESIS) – Germany

TECNATOM – Spain

Centrum výzkumu Řež (CV REZ)– Czech Republic

Moscow Engineering Physics Institute (MEPhI) - Russia

Risk Engineering (REL) – Bulgaria

Budapest University of Technology and Economics (BME) - Hungary

European Nuclear Education Network (ENEN)

Main objectives

- Development of VVER training infrastructure
- Preservation and further development of expertise in the nuclear field by improvement of higher education and training
- Integration of VVER education and training with the European education and training in nuclear safety and radiation protection
- Preparation for integration and mutual recognition of the educational and training programmes in order to improve mobility and competitiveness
- Establishment of good practices e.g. exchange training courses, remote interactive learning (e-learning and distance)

CORONA I Activities

The project aims to provide a special purpose structure for training and qualification of specialists for serving VVER technology. It is based on three general pillars:

1) Training schemes for VVER nuclear professionals; for non-nuclear specialists and subcontractors, involved in nuclear sector; and for students;

2) VVER related knowledge management system, which will accumulate information regarding design data, operational experience, training materials, etc.; and

3) Specialized Regional Training Center (RCC) for supporting VVER customers with theoretical and practical training sessions, training materials and general and special assignment training tools and facilities.

Development of training schemes, programs and materials

Four target groups:

- Group A: Specialized training on specific VVER technology aspects for nuclear professionals and researchers;
- Group B: Basic training on VVER technology specifics for non-nuclear professionals and subcontractors;
- Group C: Specialized technical training on VVER technology for students studying nuclear disciplines;
- Group D: Safety culture and Soft skills training for nuclear professionals and personnel of nuclear facilities contractors and subcontractors.

The training schemes were developed according to the Systematic Approach for Training (SAT).

The European Credit System for Vocational Education and Training (ECVET) principles were embedded in the development of an accreditation/certification structure for the training schemes.

Development of training schemes, programs and materials (cont.)

For each target group the following was done:

- Development of training programs and training materials (theoretical training, practical training, on-job training and simulator training):

for group A - 3693 training hours

for group B - 88 training hours

for group C -177 training hours

For group D -101 training hours

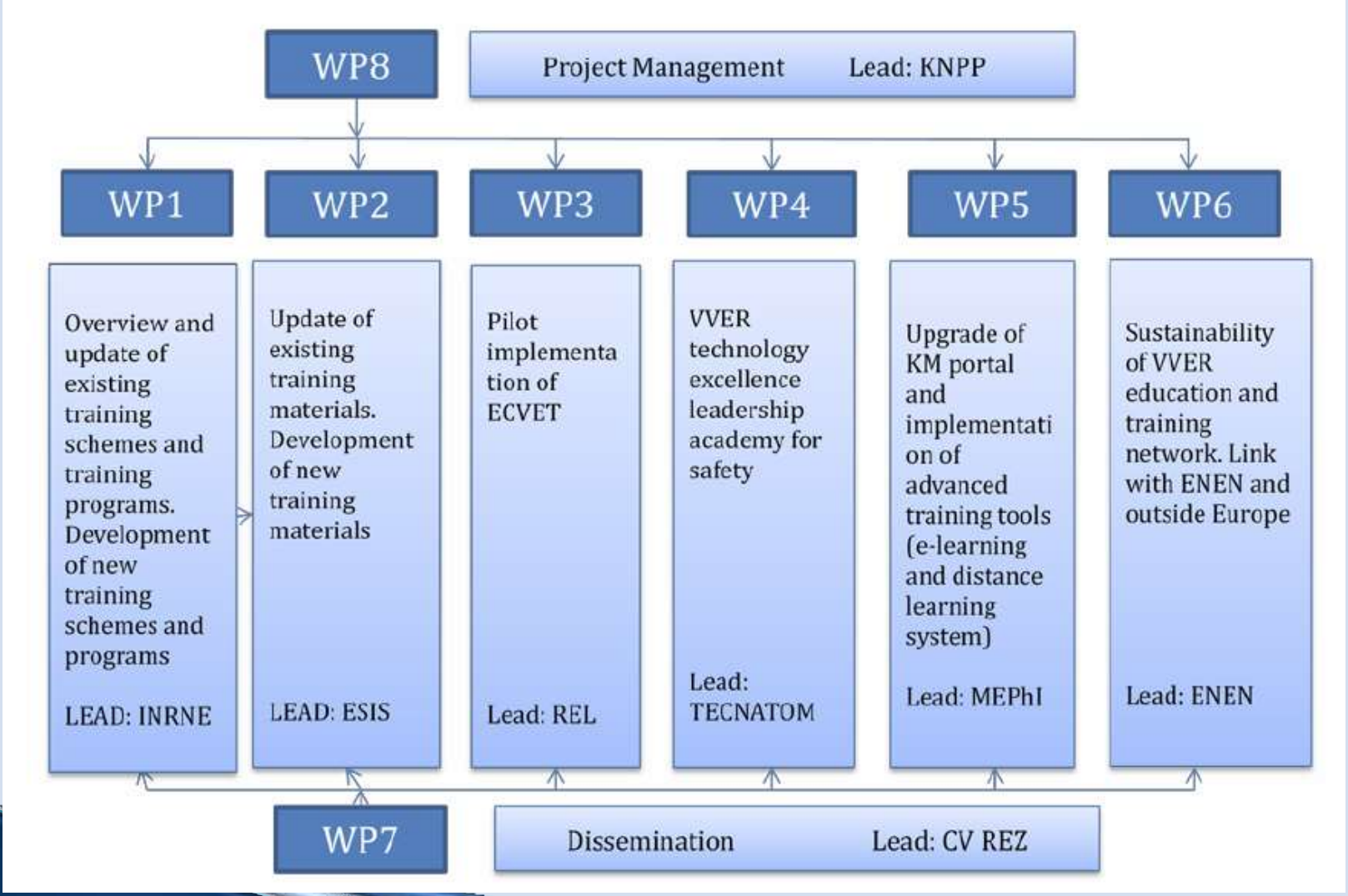
- Deliver a pilot training –

five pilot courses were conducted

- Validate the training program.

Safety Principles of Nuclear Facility
Nuclear Facility theory/technology
Nuclear Facility Components/ Equipment and Systems
Nuclear Facility procedures to perform work
Radiation Protection
Radiation Monitoring
Radioactive Waste Management
Decommissioning of NPP
NPP Safety Concepts
Emergency Planning and Emergency Preparedness
Organizational culture and safety culture
Human performance tools
Soft skills
Leadership skills

CORONA II Activities



Development of new training schemes, programs and materials

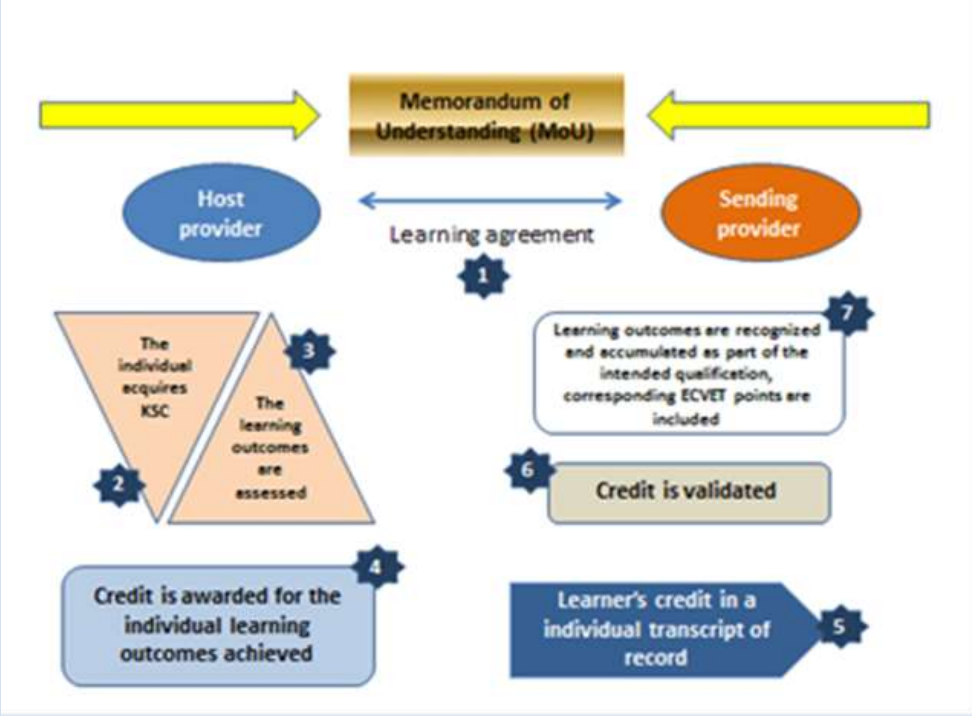
New topics and topics that a not fully covered and will be considered for inclusion into the existing training schemes are:

- Spent fuel and radwaste management (not fully covered);
- Advanced VVER technology introduction – not fully covered;
- Assessment of plant residual life time and plant life extension (not fully covered);
- Decommissioning (not-fully covered);
- Deterministic and probabilistic analyses;
- Risk-informed decision making;
- Seismic qualification and seismic risk analysis;
- Special topics for regulatory body training;
- Nuclear security culture;
- Non-proliferation;
- Basics course of radiation protection;
- Advanced course of radiation protection in VVER NPPs.

Development and application of a system “Train the trainers”.

Implementation of ECVET principles

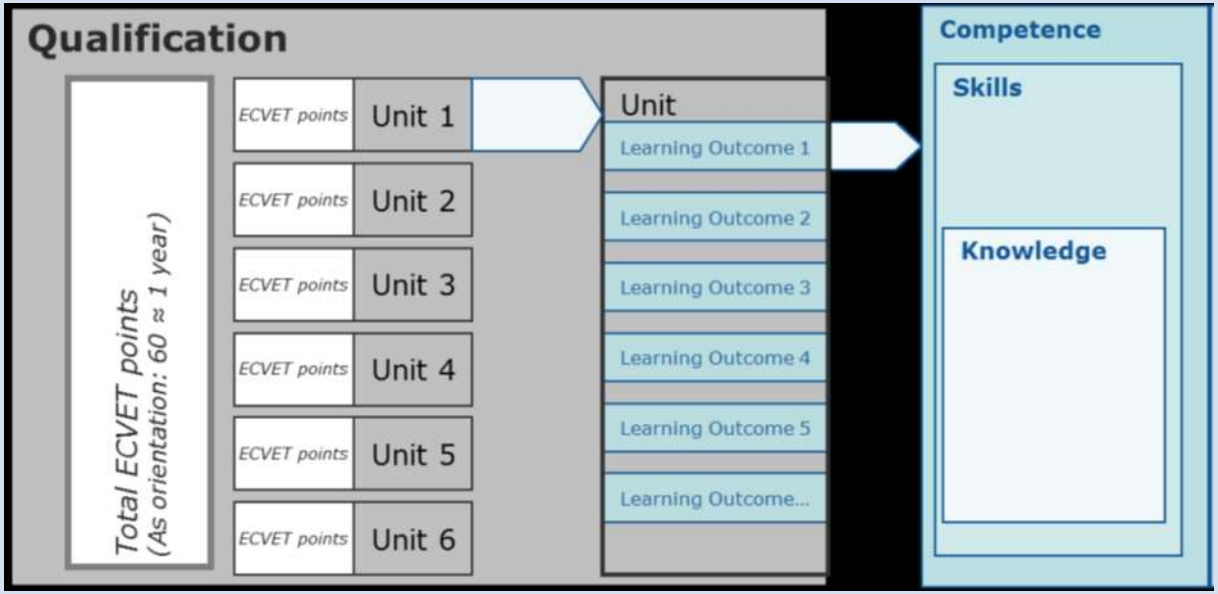
- Select one particular qualification for pilot implementation, which is subject to increased mobility – Radiation Protection Worker:
- Define competence requirements for this qualification;
- Select appropriate training scheme for this qualification, based on the defined units of learning outcomes;
- Select two utilities playing the roles of sending and host provider and organization playing the role for competent authority;
- Perform at least one pilot training on selected course;
- Evaluate results and propose corrective measures



Implementation of ECVET principles (cont.)

ECVET adopts an approach based on learning outcomes as key element for the definition and description of qualifications.

- Learning outcomes, which are statements of knowledge, skills and competence that can be achieved in a variety of learning contexts
- Units of learning outcomes that are components of qualifications. Units can be assessed, validated and recognised



Knowledge management portal development

Knowledge Management portal needs to identify, capture, store, organize and present nuclear knowledge

Information	Education
i. News ii. VVER Reactor Information	i. Training resources from Project CORONA ii. Links to external training and education providers iii. Knowledge Resources
Collaboration	**About Project CORONA**
i. Discussion Forums ii. Blogs iii. Social networks	i. Overview ii. Work Packages iii. Project Participants iv. Achieved Results v. Reference Documents vi. Contact Us

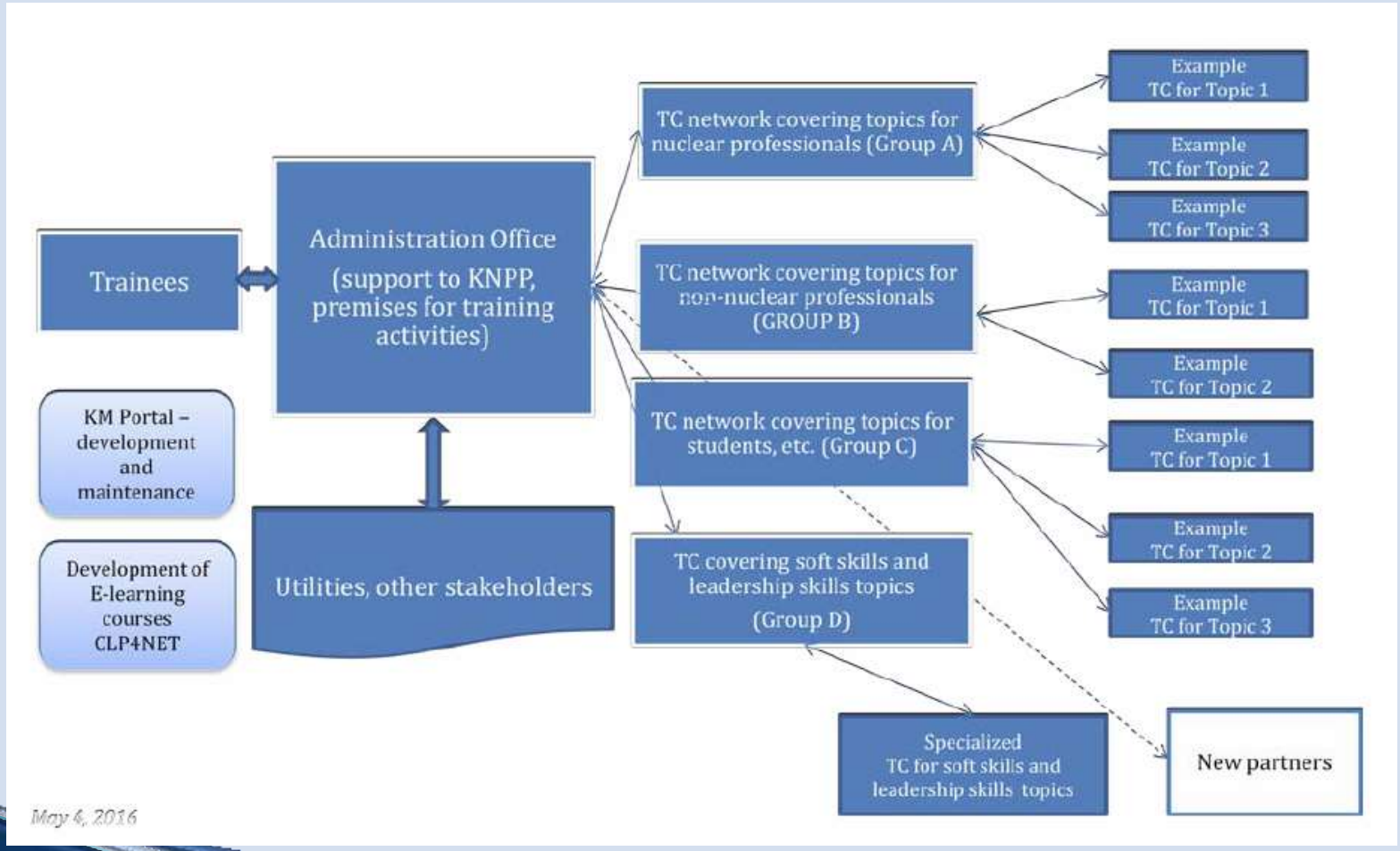
Establishment of VVER Training Academy

Based on the results of CORONA I project it was concluded that the idea for VVER Training Center has a great potential for development and has to be explored further.

Training center ⟹ Network of virtual centers (CORONA Academy)

- Better access to different information materials from different European regions;
- Saving resources for the construction of additional training facilities;
- Benefit from the availability of best trainers in the subject matter;
- Reduction of training expenses;
- Fast access to current information about interested areas;
- Providing opportunity for wider use of training materials prepared within CORONA project.

Organizational structure of CORONA Academy



Conclusion

The CORONA I project was focused on building the VVER competence.

Its continuation CORONA II project will aim to maintain and enhance VVER competence through significant improvement of the concept of the training center for VVER technology.

This includes, but not only, improvement of the training schemes and training programs, inclusion of new appropriate partners and countries, establishing of VVER training network, inclusion of additional training tools.

The project will ensure the development of competences in the VVER area by providing access to the knowledge and best practises available across the world.

The specialists from the countries operating VVER reactors will have the possibility to continuously improve their expertise

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THANK YOU!