WP1 – Survey and coordination of networking in E&T and VET in nuclear areas

Work Plan

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Kick-off Meeting of the ANNETTE Project
February 9-10, 2016 – University of Pisa, Italy

This project has received funding from the EURATOM research and training Work Programme 2014 – 2015
Objectives

- Perform a survey on E&T and VET learning activities in nuclear topics, highlighting (with the aim to detect) potential duplication and gaps

Remark:
Nuclear topics = nuclear engineering (ENEN, NUGENIA, SNETP, ...), waste and disposal (PETRUS, IG-DTP,...), radiation protection (ENETRAP, EUTERP, MELODI, ...), 3S (ESARDA, ...), decommissioning (EC group), emergency preparedness, radioecology, ...

ANNETTE = coordinate, “umbrella”
Objectives

- Perform a survey on E&T and VET in nuclear topics, highlighting potential duplication and gaps
- Define sustainable and advanced networking mechanisms in nuclear E&T, VET, and transfer of expertise
- Study tools of information exchange
- Explore the possibility to improve EMSNE diffusion and promote similar certifications
- Propose quality criteria for evaluating E&T and VET activities
- Perform a survey of available nuclear facilities to support
### Partners

<table>
<thead>
<tr>
<th>Partner short name</th>
<th>WP1 effort</th>
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<tr>
<td>ENEN</td>
<td>3</td>
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<tr>
<td>CEA</td>
<td>1</td>
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<tr>
<td>SCK•CEN</td>
<td>4.5</td>
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<td>UPC</td>
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<td>CIRTEM</td>
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<td>JSI</td>
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<td>UU</td>
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<td>JRC</td>
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<td>UNIPV</td>
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Tasks

• T1.1 Survey on state of the art in E&T and VET in nuclear (EUTERP → ENEN/SCK•CEN)
• T1.2: Explore the possibility for the implementation of sustainable advanced networking mechanisms in nuclear education, training and transfer of expertise (CIRTEN)
• T1.3: Study of tools for information exchange (SCK•CEN)
• T1.4: European certifications for E&T and VET in relevant nuclear domains (UPC)
• T1.5: Quality criteria for evaluating E&T and VET activities (JSI)
• T1.6: Survey of available nuclear facilities to support LLL (JRC)

This project has received funding from the EURATOM research and training Work Programme 2014 – 2015
T1.1: Survey

Task leader: ENEN/SCK•CEN, Task partners: BfS, UL, CIRTEN, UPPSALA, UNIPV, JSI, JRC

Objectives:

• Identification of existing initiatives in E&T and VET in nuclear fields
• Identification of efficient networking mechanisms of E&T and VET initiatives
• Identification of gaps in nuclear E&T

This project has received funding from the EURATOM research and training Work Programme 2014 – 2015
T1.1: Survey

Means:

• E-survey (software from SCK•CEN to be used)
• Personal interviews with selected stakeholders in nuclear knowledge transfer and competence building
T1.1: Survey

- Study of existing information ongoing
- Preparation of questionnaire content started by SCK•CEN; all partners to further contribute
- Determination of target public: contribution of all partners to set up the list of mail addresses to send questionnaire to
- Implement in questionnaire software and send (SCK•CEN)
- Collect answers (chase!)
- Determine additional parallel pathways: telephone, personal interviews, conference like NESTet, ...
- Analysis; final report

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T1.1: Survey

Survey available for all partners: inform us with your questions that can advance your specific task/WP

Before February 29, 2016
T1.1: Survey
Milestones & deliverables

• M1.1.1: Defining the questions, setting up the questionnaire (M3)
• M1.1.2: Collect answers (M6)
• M1.1.3: Analyze the return (M9)
• M1.1.4: Write the report (D1.1) (M12)
• D1.1: Survey on E&T and VET in the nuclear fields in Europe (SCK•CEN)

This project has received funding from the EURATOM research and training Work Programme 2014 – 2015
T1.2: Networking mechanisms

Task leader: CIRTEN, Task partners: UL, SCK•CEN, UPPSALA, UNIPV, BfS

T1.2 EXPLORE THE POSSIBILITY FOR THE IMPLEMENTATION OF SUSTAINABLE ADVANCED NETWORKING MECHANISMS IN NUCLEAR EDUCATION, TRAINING AND TRANSFER OF EXPERTISE

Mechanisms for effective and sustainable interaction with existing networks, groups, platforms, etc. dealing with E&T in nuclear areas will be studied. The E&T landscape for communication with will be the outcome of T1.1. It will be investigated to which extent the establishment creation of an advanced networking mechanisms, bringing together all nuclear E&T initiatives, can give an added value to effective nuclear knowledge transfer, competence building, and can facilitate information exchange on relevant E&T issues such as organisation of specific courses, and also policy related matters, cross border mobility, European certification and endorsement of courses and/or learning pathways, etc. Depending on the outcome of this investigation, a methodology for the functioning of this advanced networking scheme will be set up and first steps towards an effective implementation will possibly be taken.

Task leader: CIRTEN, Task partners: UL, SCK-CEN, UPPSALA, UNIPV, BfS

<table>
<thead>
<tr>
<th>D1.2</th>
<th>Sustainable Advanced Networking in Nuclear E&amp;T</th>
<th>WP1</th>
<th>7 - CIRTEN</th>
<th>Report</th>
<th>Public</th>
<th>48</th>
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</table>

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### T1.2: Networking mechanisms

#### Milestones

<table>
<thead>
<tr>
<th>Milestone number</th>
<th>Milestone title</th>
<th>Lead beneficiary</th>
<th>Due Date (in months)</th>
<th>Means of verification</th>
</tr>
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<tbody>
<tr>
<td>MS5</td>
<td>M1.2.1</td>
<td>7 - CIRTEN</td>
<td>12</td>
<td>Methodology for effective interaction between relevant E&amp;T networks, Means of verification: Written proposal of networking mechanisms</td>
</tr>
<tr>
<td>MS6</td>
<td>M1.2.2</td>
<td>7 - CIRTEN</td>
<td>24</td>
<td>Investigation for the added value of a sustainable advanced network, Means of verification: Summary of discussions with stakeholders</td>
</tr>
</tbody>
</table>

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T1.2: Networking mechanisms

- Establishing an efficient networking pattern will be one of the important outcomes of the project
- Some steps are being made:
  - Initial steps in coordination moved after stimulus of MELODI
  - PETRUS-III project: merging the PETRUS Consortium within ENEN
  - Tight contacts between ENEN and the CMET Group of IGD-TP
  - “Trust” expressed by SNE-TP in ENEN for E&T in the nuclear field
  - Tight contacts especially with NUGENIA
  - Cooperation with the ETKM WG of ENS/Foratom: joint actions soon
  - Tight relations with IAEA (agreements signed in 2009 and 2013)
  - MoU with FuseNet for relevant interfaces
- All these actions should lead to a novel scheme of coordination
T1.2: Networking mechanisms

- CIRTEN as a task leader will involve the partners UL, SCK•CEN, UPPSALA, UNIPV, BfS and the stakeholders in elaborating interaction schemes for the different areas:
  - ESARDA, MELODI, PETRUS, ENEN
  - ENS/Foratom, IAEA, Platforms and their E&T WG

- Possible outcomes:
  - ENEN Working Groups: if it will be considered appropriate to make use of the structure of ENEN to constitute an “umbrella”
  - ANNETTE Coordinating structure, whose sustainability can be assured by ENEN as one of its actions

- IMPORTANT: avoiding multiple and duplicating actions, promoting synergies and cross-pollination

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T1.3: Tools for information exchange

Task leader: SCK•CEN, Task partners: ENEN, CIRTEN, UL, JRC, UPC

Objectives:
• Implementation of an advanced database for nuclear E&T and VET
• Concept of the ANNETTE platform/website
• Effective and sustainable communication with national networks

• Tasks are clear, design on paper no problem, runs over entire project duration (timing=OK)
• Problem: no budget for implementation of the website or database / how to create something practical, of real use?

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T1.3: Tools for information exchange

• M1.3.1: Propose design of the advanced database (M12)
• M1.3.2: Implement prototype of the advanced database (M24)
• M1.4.1: Creating the concept for the website for information exchange (M12)
• M1.4.2: Implement a prototype of the platform and the DMS system (M24)
• M1.4.3: Designate the responsibility for update and use of the website, the DMS and the database (M24)
• M1.5.1: Setting up the contacts with the national networks (M12)
T1.3: Tools for information exchange

ANNETTE website:

• Overview of relevant existing initiatives (“maze” of networks)

• Include summary of most important results of nuclear E&T projects, link to the project websites

• Include database for courses, other E&T opportunities, facilities, ...

• ...?
T1.4: European certifications for E&T and VET

Task leader: UPC, Task partners: INSTN, UL, ENEN, SCK•CEN

Actions proposed: 3 steps
Step 1

- Analyse the reasons for the non-uniformity of applicants: geographical distribution...
- Identify barriers to the dissemination of the certification
- Areas to actuate (analysis)
  - Radiation protection
  - Geological disposal of nuclear waste
  - Nuclear safety
  - Nuclear security and safeguards
- Contact / analyse stake holders
  - Industry
  - Authorities
**Step 2 Implementation**

- Suggest new methodologies/actions to promote certifications
- Contact with all sectors (education centers, industry and authorities) to promote the actions and methodologies

**Step 3 Monitorisation of implementation**

- Develop a procedure to compare the improvements applied
- Analyse the results
- Propose the possible certifications reconsidered based on results obtained

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T1.5: Quality criteria for evaluating E&T and VET activities

Task leader: JSI, Task partners: CIRTEN, SCK•CEN, ENEN, UL

Different steps:

• Review the procedures and experience with quality assurance of E, T in ENEN and VET within ANNETTE partners
• Propose a preliminary set of criteria and evaluation procedures for E, T, VET
• Verify proposals with ANNETTE WP2 partners
• Verify proposal with selected platforms/organizations [depending on their interest, WP7]
• Finalize proposals

This project has received funding from the EURATOM research and training Work Programme 2014 – 2015
T1.6: Survey on facilities for LLL

- Task leader: Emtethal Kassim (Emtethal.KASSIM@ec.europa.eu), JRC
- Task partners: ENEN, UPC
Is there already such a survey available?

OECD Database (not specifically for LLL)

- NEA initiated a study on *Research and Test Facilities* required in nuclear science and technology which resulted in the publication of a comprehensive database released in Feb 2008 and available for *public access* via the NEA website [www.nea.fr/rtfdb/](http://www.nea.fr/rtfdb/)

- It contains over 700 nuclear research and test facilities existing in the OECD countries including those linked to *Education* (but not so much details on type of LLL are given)

- List of facilities was established using previous reports and database (when available) from: NEA, JRC, IAEA and others

- Database is easily accessible by public, via guest login without the need for registration.

- A user can search by: *facility name*, *facility type* (reactor, accelerator, etc.), *country* and/or *application* (ADS, fuel research).

- The search results in a summary of the facility (Record Details) and a link to the website of the facility in both the original language and in English (when available)
Is there already such survey available?

IAEA Database

- Out of all 5 departments webpages (nuclear energy, nuclear safety & security, nuclear science & application, nuclear safeguards and technical operation) IAEA-NE provides most of the databases.

- IAEA-NE has over 20 publicly available databases on nuclear power and nuclear fuel cycle and waste technology [https://www.iaea.org/OurWork/ST/NE/Main/databases.html](https://www.iaea.org/OurWork/ST/NE/Main/databases.html)

- Most of the databases are on countries nuclear power profile, nuclear power plant designs, simulation software of reactors, and a library of training courses, workshops, meetings and conferences on nuclear energy.

  - Teaching/Training Facilities database is available only for Research Reactor Database

ENEN Database

- Database covers: education and training courses, master programs, proposed PhD topics, opportunities (Scholarship, Postdocs, Internship, Job opportunities)

- ENEN is a possible host for the database on nuclear facilities for E&T
T1.6: Proposal on how to approach the task activities

Scope
- Perform a survey of the available nuclear facilities
- Restrict survey to facilities in direct relation to nuclear energy
- Restrict survey to facilities directly linked to education and training
- Exclude facilities for research only and without E&T dimension
- Distribute survey to the list provided by the ANNETTE consortium (the list of ANNETTE contact persons is needed)
- Gather sufficient information in order to construct a comprehensive database of nuclear facilities for E&T (the database could be hosted on the ENEN website?)

Phase 1 aims to gather general information on the facility including:
- Area of application (Gen II / III reactors, Generation IV, fuel development, fuel reprocessing, waste management, etc.)
- Area of scientific focus (structural and clad materials, fuel, thermal-hydraulics, chemistry, neutronics and nuclear data, design validation, safety assessment, etc.)
- Contact person(s) (for future update and direct contact (e.g. for phase 2), name of facility, name of owning institute, country and location)
- Short description of the facility as well as internet address/link if available
T1.6: Proposal on how to approach the task activity

• **Phase 2** aims to gather more detailed information for analytical assessment of the current facilities including:
  • **Main end-user of the facility**
    – students or professionals, academic or industry
  • **Access procedure**
    – restrictions, ease of access, health check requirements, security procedures, courses to be completed prior use, etc.
  • **Access time**
    – term time, summer break, week, days, hours of work, overnight experiments, etc.
  • **Finance**
    – maintenance of the facility, fees for consumables, budgets, grants provided for end-user, etc.
  • **Overall learning outcome**
    – skills gained, contribution to nuclear science (project, reports and publications), etc.
  • **Technical support**
    – Supervision provided by the facility to the user and freedom of use

• **Phase 3**
  – Addresses the lack of facilities and support needed for existing facilities

• **Deliverable**
  – D1.6 Report on available nuclear facilities in support of LLL