HORIZON 2020
The EU Framework Programme for Research and Innovation

ANNETTE

Grant Agreement Number: 661910

H2020 – NFRP-2014-2015

ANNETTE PROJECT

Advanced Networking for Nuclear Education and Training and Transfer of Expertise

DELIVERABLE D 1.3

CONCEPT OF AN ADVANCED DATABASE
FOR NUCLEAR E&T AND VET

Nature of the deliverable		
R	Report	X
P	Prototype	
D	Demonstration	
O	Other	

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Date of issue: 02/05/2017   1st   Reporting   Period
Start date of project: **01/02/2016**   Duration: **48** Months

Project co-funded by the European Commission under the Euratom Research and Training Programme on Nuclear Energy within the H2020 Programme, Call NRFP 2014-2015		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the partners of the ANNETTE project	
CO	Confidential, only for partners of the ANNETTE project	

DISTRIBUTION LIST

Name	Number of copies	Comments
European Commission	Electronic copy via email	
All Partners	Electronic copy via website	

Scope	ANNETTE / WP1	Version:	1
Type/No.	Deliverable Report 1.3	Total pages	14
Title:	Concept of an advanced database for nuclear E&T and VET	Chapters:	5
Access:	Public	Appendices	1
Filename:	WD1.3 Report on the ANNETTE database	Suppl. pages:	0
Internet	http://www.enen.eu/en/projects/annette.html		

RESPONSIBLE BENEFICIARY: ENEN Association

DOCUMENT TRACKING

	Name	Follow-up Email to Coordinator	Date
Prepared by	Tom Clarijs		02/05/2017
Reviewed by Referee(s)	Project partners		05/06/2017
Quality assurance (QA leader)	Leon Cizelj		20/11/2017
Approved by Coordinator	Pedro Diéguez Porras		15/02/2018

ABSTRACT:

This report describes a possible concept of an advanced database for nuclear E&T and VET as a tool for information exchange to enable sustainable and advanced networking between different disciplines in nuclear.

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DELIVERABLE D 1.3   3/14
Dissemination level: PU
Date of issue of this report: **02/05/2017**

List of abbreviations

ANNETTE	Advanced Networking for Nuclear Education, Training and Transfer of Expertise
CPD	Continuous Professional Development
E&T	Education and Training
ECTS	European Credit Transfer System
ECVET	European Credit System for Vocational Education and Training
ENEN	European Nuclear Education Network Association
ENETRAP	European Network for Education and Training in Radiation Protection
EQF	European Qualifications Framework
EUTERP	European Training and Education in Radiation Protection Foundation
IAEA	International Atomic Energy Agency
ISCO	International Standard Classification of Occupations
KSC	Knowledge, Skills and Competences
LLL	Lifelong Learning
LO	Learning Outcome
OJT	On-the-job-training
VET	Vocational Education and Training

Objectives of the ANNETTE WP1 (survey and coordination of networking in E&T and VET in nuclear areas)

The main objective of WP1 is to provide input for the coordination, design and implementation of academic nuclear education and training (E&T) and vocational learning (VET) for professionals involved in different nuclear fields. In particular, following objectives were defined:

- Perform a survey of the state-of-the-art in education and training (E&T) and vocational (VET) learning activities in nuclear topics, highlighting potential duplications and gaps
- Define sustainable and advanced networking mechanisms in nuclear E&T and VET and transfer of expertise
- Study of tools for information exchange, with the aim to define (and implement) the optimal approach supporting advanced network mechanisms
- Exploring the possibility to improve European Master of Science in Nuclear Engineering diffusion and to promote similar certifications in nuclear areas other than the engineering one
- Proposing quality criteria for evaluating E&T and VET activities
- Performing a survey of available nuclear facilities to support lifelong learning (LLL)

This document describes a possible concept of an advanced database for nuclear E&T and VET as a tool for information exchange to enable sustainable and advanced networking between different disciplines in nuclear.

Concept of an advanced database for nuclear E&T and VET

1.1   General concept

The advanced database should act as a central point of information of existing E&T and VET opportunities in the relevant nuclear fields. It will gather information on the following items: E&T and VET activities (courses), academic and vocational opportunities (internships, thesis work, jobs, …), educational materials, facilities open for E&T activities and E&T organisations (academic institutions, research centres, other training providers,...).

It allows a focused search and a user-friendly interface to enable an easy overview customized to the interest of the end-user.

In order to avoid duplicate information, the advanced database can make a connection towards other existing databases for E&T initiatives, such as IAEA, EUTERP.

1.2   Users of the advanced database

Three user groups are identified for the advanced database:

1. Training providers (including higher education institutes) and professional organisations offering exchange opportunities. These users can add content to the advanced database in a direct (through a login to the advanced database) or an indirect way (through information which was linked in another database coupled to the advanced database). If a contribution is made directly to the database, a login based on a username (or email address) and a password must be available.

2. End-users which will only <u>consult</u> the database in search for E&T and VET opportunities (training courses & exchange opportunities). This can be any individual from a student level (e.g. looking for specific courses in selected topics or a place to perform an internship or a thesis) up to a professional level (e.g. looking for a CPD opportunity or job). No login is required for this user level; all information is publically available.

3. An administrator who has full access to the data in the database, including access to the login credentials and able to create new users. For backup purposes more than one person with administrator rights is recommended.

1.3   Front end

1.3.1 General interface & functions

The front end of the advanced database consists of a general interface where end-users can view the limited information about E&T and VET activities in a chronological order (e.g. date, title, organiser, country). The activity which is taking place close to the date of consultation of the database will be displayed on top ('upcoming' items). After the date of the activity has passed, the activities can still be consulted through the search function.

In order to organise the content, the general interface is subdivided in multiple tabs. 5 major categories are identified:

1. (Academic) E&T and vocational E&T (VET) activities

2. Opportunities (thesis on BSc, MSc or PhD level, post-doc research, internship, OJT, scientific visits, jobs,…)

3. Educational materials

4. Facilities open to E&T activities

5. Organisations

The details of each item can be consulted by clicking the item in the list. This will redirect to a separate page dedicated to that item, where all fields will be visible. Annex I summarizes the different fields of each item.

The content of the organisations will be mainly based on the user profile of the content providers. The information on the E&T facilities can be based on the input from the ANNETTE survey from WP1: list of facilities, including contact details and main area of scientific focus.

The database (front and back end) language will be English. Database development should also support special characters (e.g. €, @, Ç).

The front end website should enable a dynamic response: the web interface should automatically adapt according to any screen or device (PC, laptop, tablet, smartphone).

1.3.2 Search function

A search function enables the display of specific activities according to the interest of the end-user. Ideally, this search function should enable to perform searches based on the following fields when searching for categories 1 (activities) and 2 (opportunities) mentioned above:

- Type of activity
- Target audience
- Date

- Organiser (organisation)
- Title (based on keywords)
- Keywords
- Language
- Country

The results will appear in a chronological order starting with the activity which is offered closest to the date of the consultation by the end-user. For opportunities this is the application deadline which is closest to the date of the consultation by the end-user. After the date of the activity (or application deadline for an opportunity) has passed, the activity is archived and can still be consulted through the search function.

When searching for educational material (category 3), a search based on the following fields should be possible:

- Title (based on keywords)
- Organisation
- Country
- Language
- Type of educational material
- Topic

When searching for E&T facilities (category 4), a search based on the following fields should be possible:

- Name of the facility
- Name of the organisation of which the facility is owned by
- Country
- Main area of scientific focus of the facility

When searching for organisations (category 5), a search based on the following fields should be possible:

- Organisation name
- Country
- Type of activity
- Area of activity

The design of the database should enable application programming interfaces (API) to allow integration of the output in local websites, when necessary.

1.4   Back end

1.4.1 General interface & functions

The back end of the database consists of a restricted section where new contributions can be added to the database or existing contributions can be changed. Information in the user profile can be modified as well.

After login, a user interface is visible where 4 different options are available:

- Add new content
- Display content added by the organisation
- View/change the user profile of the organisation
- Logout of the back end of the database

1.4.2 User management

Organisations who want to contribute content to the database can request a login.

An administrator (super user - highest user level) can grant access to a new organisation by mailing them new login credentials. The ANNETTE project needs to decide whether any user can request a login to this database, or whether certain restrictions are in place (e.g. organisation needs to be a member of a certain group or association, or need to pay a fee for advertising courses in the database).

A login should be available for each organisation who wants to contribute E&T and VET activities and opportunities. This login consists of a username/email and a password.

1.4.3 Access

The login screen of the back end of the database can be reached via a link which is available on the front end (public part). When an organisation has lost their password, an automatic email containing new login credentials can be sent (upon request) to the email which the organisation used for their initial registration (depending on security features, the use of these login credentials may be limited in time). This automatic email can be triggered by activating a link on the login screen and after providing an email or username already coupled to an existing account of an organisation.

Password requirements should be set to the normal security levels (minimum 8 characters including alphabets, upper- and lowercases, and numbers).

1.4.4 Input of data

When selecting 'add new content', users view the different fields to add information on their activity (or opportunity, E&T material, facility respectively). Some of these fields are mandatory in order to get the content published online. Ideally, an option 'intermediate save of information' should be possible in order to build up new activities before publishing. Publish will allow the item to be published online.

An archived item is not displayed anymore in the list, but can still be consulted through the search function. As stated in 1.3.2, an automatic archiving function is foreseen when the date of the activity (or application deadline for opportunities) is passed. Manually archiving an item is also possible, if the item should be archived before the date of the activity (or application deadline for opportunities).

Each activity or opportunity (content categories 1 and 2) can have a validation date. When this validation date is surpassed, the item will no longer be published online. This feature will probably be most used with the opportunities (when application deadline has passed).

1.4.5 Disclaimer

To specify or delimit the scope of rights and obligations that may be exercised regarding e.g. IPR and the provision of information, various items must be stated as a disclaimer.

Below is an example of a disclaimer which can be used for such purposes.

Access to the information products and services contained in the ANNETTE database site is provided as a public service by the ANNETTE project partners. The information presented does not necessarily reflect the views of the ANNETTE project partners or other providers of E&T activities, opportunities, training material or E&T facilities and, as such, is not an official record.

The ANNETTE project make no warranties, either expressed or implied, concerning the accuracy, completeness, reliability, or suitability of the information. Neither does it warrant that use of the information is free of any claims of copyright infringement.

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A link to this disclaimer should be visually available at all times.

Interactions with other databases

Due to the use of similar fields and metadata, the database should be compatible with other international databases, such as ENEN (https://enen.eu), IAEA (https://nucleareducationdb.org) or EUTERP/ENETRAP (http://euterpdb.org).

The data in the ANNETTE database could be managed in such a way that they can be compatible with the above databases, and relevant content from these databases could also be made visible on the ANNETTE database front end page. In order to allow this data-transfer, the data fields must be matched to a common metadata scheme such as the one available from IAEA. It could be envisaged that this ANNETTE database could be developed as the updated version of the current ENEN database.

Link with other initiatives developed in the ANNETTE project

This advanced database can also contain (and highlight) all ANNETTE exchange opportunities (Approach, methodology and communication on the exchange opportunities developed in WP4) and ANNETTE training courses, such as:

- Advanced programme for CPD: pilot courses (WP2)
- Summer courses: pilot courses (WP2)
- Training courses in the field of nuclear safety culture (WP5)
- Fusion specific training courses (WP6)

Implementation of the database

The "raw frame" of a database with features as described above could be available from another E&T FP7 project (ENETRAP III). However, it has to be customized to the look & feel and specific content details desired by ANNETTE and/or ENEN. The frame is intentionally constructed in such a way that this customization can be done relatively easily by project partners and does not require high level ICT knowledge.

In the 1st Progress Meeting, ENEN proposed a distributed model of databases based on the free software provided by IAEA to ENEN and other organizations. The use of this software would allow all the databases to be interconnected and allow for crossed queries in multiple databases.

ENEN is discussing with IAEA on the implementation of the new and last version of its Integrated Database for the ANNETTE and ENEN Database.

Annex 1: Used fields in the ANNETTE database

Visibility:

The front end is publically visible: 'overview page' refers to the information available on a page with an overview of activities/opportunities/E&T material/facilities/organisations.

Detail page refers to a page where all details are available about a specific activity/opportunity/E&T material/facility/organisation.

Back end refers to information which is only visible when logged into the database.

Training courses/activities (E&T and VET)

Field	Description	Visibility
(course/activity ID)	Unique identification number for each item	Only back end
Title	Free text field Title of the course/activity	Overview page – detail page
Provider (organisation)	Dropdown list of organisations (link to category organisations)	Overview page – detail page
Country	Dropdown list of countries	Overview page – detail page
Language	Dropdown list of languages	Overview page – detail page
Dates (start date – end date)	Calendar option	Overview page – detail page
Venue	Text field: can contain full address	Detail page
Target audience	Can indicate the target audience (e.g. students, scientists, safety engineers, regulators, …)	Detail page
Duration	Free text field: duration of the training course (can differ from start and end-date)	Detail page
Extra information	Free text field (course/program details)	Detail page
Learning outcomes	Free text field Preferentially written in terms of knowledge, skills and competences. (autonomy/responsibility)	Detail page
Modality	Dropdown list (face-to-face, online, blended learning)	Detail page

Type of program	Dropdown list (initial, specialization, refresher, OJT,…)	Detail page
Level	Dropdown list (undergraduate, postgraduate, MSc, BSc,…) Possible link with EQF level.	Detail page
Registration (website)	Free text field (mainly URL where registration can be done)	Detail page
Deadline for application	Calendar option	Detail page
Application requirements (diploma, experience,…)	Free text field	Detail page
Tuition/registration fee	Free text field	Detail page
Additional costs	Free text field (e.g. accommodation)	Detail page
Contact person name	Free text field	Detail page
Contact person email	Free text field	Detail page
Contact person phone number	Free text field	Detail page

Opportunities:

Field	Description	Visibility
(opportunity ID)	Unique identification number for each item	Back end
Opportunity title	Free text field	Overview page– detail page
Type of opportunity	Dropdown list (thesis on BSc, MSc or PhD level, post-doc research, internship, OJT, scientific visits, jobs, other)	Overview page – detail page
Organisation	Dropdown list of organisations (link to category organisations)	Overview page – detail page
Country	Dropdown list of countries	Overview page – detail page
Language	Dropdown list of languages	Overview page – detail page
Website	Free text field: URL	Detail page
Venue	Free text field	Detail page
Description	Free text field	Detail page

Further information	Free text field	Detail page
Application requirements	Free text field	Detail page
Deadline of application	Calendar option	Detail page
Contact person name	Free text field	Detail page
Contact person email	Free text field	Detail page
Contact person phone number	Free text field	Detail page

Educational material

Field	Description	Visibility
(Educational material ID)	Unique identification number for each item	Back end
Title	Free text field	Overview page – detail page
Organisation	Dropdown list of organisations (link to category organisations)	Overview page – detail page
Country	Dropdown list of countries	Overview page – detail page
Language	Dropdown list of languages	Overview page – detail page
Topic	Dropdown list (To be determined in line with other major databases where a link is foreseen)	Overview page – detail page
Description	Free text field	Detail page
Website	Free text field: URL	Detail page
Type of educational material	Dropdown list (online course, e-book, document, video, other)	Detail page

E&T facilities

Field	Description	Visibility
(Facility ID)	Unique identification number for each item	Only back end
Name	Free text field Name of the facility	Overview page – detail page

Organisation	Free text field Name of the organisation of which the facility is owned by. (link to category organisations)	Overview page – detail page
Country	Dropdown list of countries	Overview page – detail page
Main area of scientific focus of the facility	Free text field or dropdown list of activities if a common list of metadata is available between databases.	Overview page – detail page
Contact person name	Free text field	Detail page
Contact person email	Free text field	Detail page
Contact person phone number	Free text field	Detail page
Address	Free text field	Detail page
Web-address of the facility	Free text field: URL	Detail page
Short description of the facility	Free text field	Detail page

Organisations

Field	Description	Visibility
(Organisation ID)	Unique identification number for each item	Only back end
Name	Free text field Name of the organisation	Overview page – detail page
Country	Dropdown list of countries	Overview page – detail page
Area of activity	Dropdown list of activities	Overview page – detail page
Address	Free text field	Detail page
Website	URL	Detail page
Email (generic)	Email field	Detail page
Contact person name	Free text field	Detail page
Contact person email	Email field	Detail page
Contact person phone number	Free text field	Detail page
Type of activity	Free text field or dropdown list of activities if a common list of metadata is available between databases.	Detail page