

## **Constructing Memory: Competence Maintenance, Education and Training Working Group on the Implementation of Geological Disposal of the Radioactive Waste Technology Platform**

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### **Introduction to IGD-TP's overall vision and link to competence maintenance**

The Implementing Geological Disposal of Radioactive Waste Technology Platform (IGD-TP) community, with over 115 participants in 2014, according to its Vision 2025 (IGD-TP, 2009) aims to proceed to obtaining licences to construct and to safely operate deep geological repositories for spent fuel, high-level waste, and other long-lived radioactive waste in their respective countries. The commitment to Vision 2025 includes developing joint means to facilitate access to expertise and technology, and maintain competences in the field of geological disposal in Europe.

### **Working Group on Competence Maintenance, Education and Training**

In 2012, IGD-TP launched a Working Group on Competence Maintenance, Education and Training (CMET), as one of its permanent joint activities for addressing its commitment to maintain competences (Palmu et al., 2013a). In 2013, this permanent organisational working group convened for its first meeting and started working with the support of the IGD-TP Secretariat (i.e. Euratom FP7 project SecIGD2).

The CMET Working Group's main objectives currently are:

- Reviewing the present state of the art of strategies and activities for CMET related to the implementation of Vision 2025, the Strategic Research Agenda (SRA) (IGD-TP, 2011). Furthermore, the group wishes to promote awareness about the existing approaches and ongoing activities. At the core is the requirement to identify what the specific CMET needs are for implementing the SRA and the IGD-TP's first Deployment Plan until 2016.
- Developing both the quality assurance of training programmes aimed at new and experienced professionals in the field of geological disposal; and confidence in the learning outcomes (LOs) of individuals. These approaches require the development of the related quality assurance procedures and criteria: i.e. in practice a voluntary accreditation scheme for training (and education) in the sector. The work that is ongoing includes a feasibility study for an accreditation scheme for informal learning, which can also be applied within the formal educational framework and become complementary to the existing education and training (E&T) accreditation solutions. The basis for this scheme is derived from the European Credit system for Vocational Education and Training approach (ECVET).

- Further identification of the existing and relevant content of training. I.e. a type of “curriculum or curricula” for professionals in geological disposal is needed for addressing the competence needs for the different stages of repository development. This requires pooling joint training efforts or alternatively engaging educators and trainers to address the E&T needs derived from IGD-TP’s research, development and demonstration (RD&D) work and to support it further. The identification of the prevailing state of curricula already developed and existing for geological disposal are the starting points of the CMET work towards this objective. Mapping them in relation to the generic stages of repository development identified in the SRA 2011 is needed.

And finally, the CMET group by co-operating on the work towards these objectives and by accomplishing them:

- Contributes to ensuring indirectly both the sustainability of providers and the necessary infrastructures/facilities for CMET, and new personnel and their development in the future. A voluntary pooling of resources for the required development and implementation is foreseen to strengthen the sustainability of expertise supply in various forms.

### **A tool for knowledge transfer over the different repository development stages: ECVET**

The work on competence maintenance within this IGD-TP’s working group is first of all focusing on benefiting from and promoting the ECVET approach’s application in geological disposal and in future competence building of the community (Palmu et al., 2013b). ECVET approach identifies the LOs that need to be mastered by professionals to carry out their work – starting from the early stages of a waste management programme to running the nuclear waste facilities safely and efficiently.

LOs are defined in terms of knowledge, skills and competence (KSC) in ECVET (“attitude” is the corresponding term used by the International Atomic Energy Agency). In their different job functions or tasks the professionals carrying out their work need to master these KSCs at specified European Qualification Framework qualification levels (European Qualification Framework (Palmu et al., 2013b) or International Standard Classification for Education (UNESCO, 2011) according to the job’s requirements. The ECVET approach is useful for higher education and continuous professional development, too, not just for vocational education and training, when the different qualification levels are taken into practice. The acknowledgement of the LOs is also independent of any means for acquiring them. In geological disposal the individual who is learning exploits many different means and learning paths. All these LOs can be demonstrated and acknowledged on an equal basis when the required qualification level is reached.

The systematic process of identifying and documenting the KSC needed by the geological disposal community job holders serves as one approach to the community’s memory keeping over long timeframes, which is characteristic for the development of a repository. The importance of using all available approaches to prevent the loss of competence, now that our community is faced with the imminent retirement of the professionals who have worked on geological disposal since the beginning, should not be undervalued.

### **Closing remarks or the beginning?**

The CMET strategy and action plan under preparation is based on the identification of existing European initiatives and recommendations in geological disposal. The document is now in its editing stage by this voluntary group with members from 13 European countries. The document addresses all of the CMET group’s objectives, not only the

feasibility of the voluntary accreditation scheme based on ECVET. The working group remains open for all interested stakeholders to participate on a voluntary basis to its work.

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### **Selected references (IGD-TP publications available on [www.igntp.eu](http://www.igntp.eu))**

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