



Unclassified

NEA/RWM(2014)2

Organisation de Coopération et de Développement Économiques  
Organisation for Economic Co-operation and Development

26-Feb-2014

English - Or. English

**NUCLEAR ENERGY AGENCY  
RADIOACTIVE WASTE MANAGEMENT COMMITTEE**

NEA/RWM(2014)2  
Unclassified

### **Vision Document for the Radioactive Waste Repository Metadata Management (RepMet) Project**

*This document supports item 10.e of the proposed agenda of the 47th session of the RWMC, to be held 26-27 March 2014*

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**JT03353183**

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English - Or. English

## **VISION DOCUMENT FOR THE RADIOACTIVE WASTE REPOSITORY METADATA MANAGEMENT (REPMET) PROJECT**

### **BACKGROUND on DATA and METADATA**

#### ***Data***

Data and related records have to be collected and managed so that future generations of specialists both within and outside waste management institutions will still be able to make sense of them. Non-specialist audiences are also very much interested in radioactive waste repository information, especially information concerning radiation protection and environmental safety and those that retrace decisions made in the past.

The relatively long time scales involved call for management practices of data and related records that are robust and, as far as possible, future-proof. Data must be preserved in a manner that continues to be intelligible, accessible and searchable in the future despite the inevitable changes in personnel and technology within organisations. Robustness also requires resiliency to future operational and societal changes, such as the advent of new organisational structures and evolutions in the decision making environment.

Typically, a national radioactive waste management programme has several systems of data, information, and/or records management, including databases that serve the needs of different communities. Subjects covered include:

- Geoscience;
- Engineering;
- Waste management;
- Context aspects, etc.

With data being used for a variety of purposes including:

- Site characterization and site selection;
- Numerical modelling;
- Repository design and construction;
- Repository operation;

- Repository licensing;
- Waste packaging and conditioning;
- Environmental impact assessment;
- Quality assurance;
- Financial, political, legislative... etc.

### ***Metadata***

National radioactive waste repository programmes are collecting large amounts of data to support the long-term management of their nations' radioactive wastes. The data and related records increase in number, type, and quality as programmes proceed through the successive stages of repository development: pre-siting, siting, characterisation, construction, operation and finally closure. Regulatory and societal approvals are included in this sequence.

Some programmes are also documenting past repository projects and facing a challenge in allowing both current and future generations to understand actions carried out in the past.

The available data, information and records are accessed and updated according to management systems, with the underlying repository allowing users to locate what they require through searches of full text or the associated metadata<sup>1</sup>.

Metadata allows context to be stored with data and information so that it can be located, used and re-used. It can also help a waste management organisation demonstrate that their programmes are appropriately driven. Context setting information may among the others include information on:

- Quality checking or approval;
- Provenance;
- Ownership etc.

### **Aims of RepMet**

The basic tenet of long-term data, information and records management is that “data are being collected and managed for others to use them”. Individual scientists and research teams, as well as managers and communications specialists, need to be aware of this and document their work accordingly. This initiative will facilitate their task by bringing about a better understanding of a key aspect of data management, namely the identification and management of metadata within the field of radioactive waste disposal. By carrying out this work at an NEA level, organisations will benefit from an internationally

<sup>1</sup> RepMet makes reference to the glossary of the OECD/NEA RK&M project for its terminology.

harmonised approach which has been developed in association with sister organisations. Over the course of time, the project will create specific registries on subjects of common interest based on the practices currently in use nationally, and on the exchange of experience amongst project members and discussions with external experts and constituencies. The final reference registry should serve the purpose of consistency and completeness checks in the same vein as the current NEA FEP database.

Advantages of such an approach include easier and/or better:

- Auditability, verification and, if needed, modification of data,
- Support for the management of the long term memory within projects (including after the closure phase),
- Migration of records and data through different archival systems nationally and internationally,
- Recording of data and knowledge, and sharing with co-workers,
- Understanding of data and their reuse by users with various types of background and expectation,
- Integration, operation and maintenance for diverse data and knowledge in a standardised format and manner,
- Harmonised knowledge management systems based on robust formats of data and records.

*The aim of this initiative is to create sets of metadata that can be used by national programmes to manage their repository data, information and records in a way that is both harmonised internationally and suitable for long-term management and utilisation, e.g., in safety cases. It will also formulate a consistent set of guiding principles for capturing and generating metadata. The RepMet project fills a unique and important niche in the broader programmes on knowledge management that are conducted nationally and internationally*

*RepMet will have a strong connection to the OECD/NEA RK&M project and will be affiliated to the NEA IGSC. The IGD-TP, under the auspices of the EC, will be an important interlocutor*

It is expected that a common basis for metadata would give guidance towards organising data in a common fashion between members.

## **Scope of Work**

The scope of the RepMet project is the:

- Identification of methods and procedures for the data and metadata gathering and management.
- Justification of the sufficiency of the set of metadata describing the identified data.

- Relationship to safety assessment models. The metadata required for the information captured 'in the field' will differ from that required for the analysed and derived data that are often used within safety assessment models.
- The role of metadata in 'handshake' protocols between data providers (e.g. site characterisation or waste producers) and data users (e.g. modellers or strategic decision makers).
- Identification of methods, protocols, etc. to guarantee the persistence of the above procedures in time.
- Feasibility of the identified procedures.
- Guideline for proposed data/metadata management.
- Discussion, and possibly joint recommendations, on critical terms that are used by the member organisations.
- The role of controlled vocabularies and policy as a means of ensuring consistency and reliability of data and its cataloguing.
- Data auditability, verification methods and if needed modification.

#### **Milestones – 2013 through 2015 (Phase I)**

- Terminology; collaboration on the definition and consistency of terms with the RK&M project.
- Arrive at a common understanding of, and then document, the systems of metadata that are used or planned today in WMOs. Focus will be on the topic of "Waste packages ready for disposal".
- Collect and analyse existing metadata standards or recommendations in other fields. Discuss and document applicability to geological disposal.
- Identify the current inventory of methods/recommendations on how to select metadata in order to be confident in its continued applicability.
- Formulate guiding principles for metadata generation which ensure, as far as possible, that it is also suitable for long-term management.
- Start work on categorization of metadata, e.g. by subject or use, to aid searching be informed on emerging trends.
- Start considerations on how to code entries so that they are human-language independent.
- Establish strong cooperation between RepMet and the NEA RK&M project, because the set of information handled by the RK&M project is derived from data handled by the RepMet project.

Additionally the RK&M has a specific glossary and will soon make available a wiki platform that can be of use to RepMet, including for its contents.

### **Milestones – 2015 through 2017 (Phase II)**

- Continue work on Phase-I tasks that need to be completed;
- Common understanding and documenting inventory of metadata that is used or planned today in WMOs. Focus topic: “The near field and the far field of the repository”;
- Continue and complete work categorization of metadata with a view to propose one or more metadata registry;
- Publication of
  - the compiled guideline(s)/recommendation(s),
  - the inventory of metadata used in today’s practice
  - the RepMet suggested reference registries of metadata, so far.

### **Modus operandi**

Members will meet twice yearly; back to back meetings with the RK&M will be considered, especially when workshops will be taking place. In general, synergies will be sought with the RK&M initiative<sup>2</sup> (access to the RK&M wiki, joint workshops, sharing of lessons, etc....)

Inter-session work will be carried out mostly by a consultant who will consolidate information collected in the project and will help summarise our findings. Experts who can bring knowledge of metadata from other fields will also be used. Some inter-session work will have to be carried by project members, e.g., for collecting those organisations’ existing metadata lists and for reviewing draft documents.

### **Management**

A group of 3 people will steer the project. Claudio Pescatore, Zoltán Nagy and Alexander Carter are the current members of the steering group. Claudio Pescatore is the project co-ordinator and contact at the NEA. They will prepare the next meetings of the project.

Gloria Kwong, the Secretariat of the IGSC, and other NEA staff will work with Claudio Pescatore on the NEA side.

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<sup>2</sup> <http://www.oecd-nea.org/rwm/rkm/>

## **Funding**

This initiative will be funded through grants to the NEA. The amount of the grant is 5,000 €/year (plus 6.3% OECD overhead) per participating organisations over a four year period. In-kind contributions will also be acceptable when grants are not possible. In this case, the organisation providing an in-kind contribution will make available one of its staff to perform work for the RK&M project.

The funding is expected to start in 2014.