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NUCLEAR ENERGY AGENCY
RADIOACTIVE WASTE MANAGEMENT COMMITTEE

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NEA Project on Long-term Preservation of Records, Knowledge and Memory (RKM) Across Generations

Glossary of Terms - Draft

The RK&M glossary defines important concepts and terminology for the purposes of the RK&M project. Compiled by the members of the project team, it is intended as a source of terms that are commonly used within the project in order to achieve more efficient communication and thus better understanding of RK&M issues. It should be pointed out that some terms may be used and defined differently in other areas of science and technology. The glossary is a living document: it will be improved upon and grow as it is used.

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English - Or. English

**NEA Project on
Long-term Preservation of Records, Knowledge and Memory (RKM)**

Glossary of Key Terms

Draft

Compiled by Anne Claudel, Nagra, and Claudio Pescatore, OECD/NEA, on behalf of the participants in the RK&M project.

The RK&M glossary defines important concepts and terminology for the purposes of the RK&M project. Compiled by the members of the project team, it is intended as a source of terms that are commonly used within the project in order to achieve more efficient communication and thus better understanding of RK&M issues. It should be pointed out that some terms may be used and defined differently in other areas of science and technology. The glossary is a living document: it will be improved upon and grow as it is used.

Note: The asterisk (*) indicates that the term is defined in the glossary.

Terms in italics indicate that a new definition is proposed at the end of the document.

Phrases in bold indicate an addition to the Glossary since 24 October 2012.

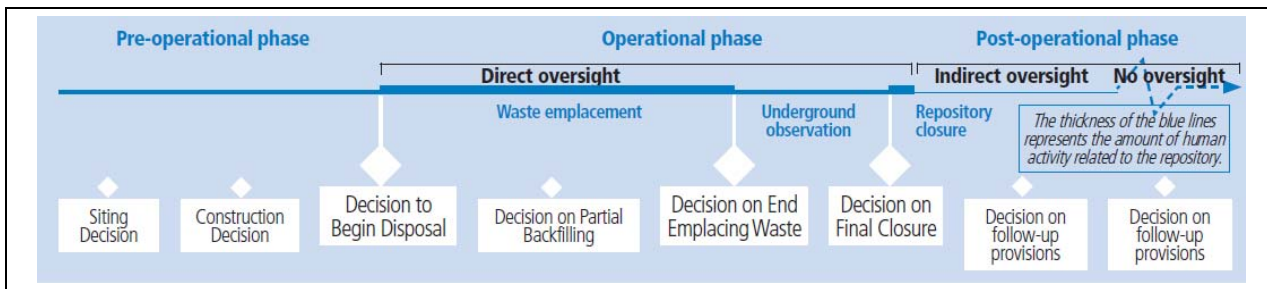


Fig. 1: Repository life phases and examples of associated decisions

<p>archives</p>	<p>Collection of records* that have been selected for permanent preservation due to their continuing administrative, informational, legal and historical value as evidence of the work of the creating organisation or programme. The term “archives” also refers to the building or part of a building in which archives are preserved and made available for consultation, as well as to the agency or programme responsible for selecting, acquiring, preserving, and making available archives.</p> <p>National archives acquire, preserve, and make available for research national records, in particular those created by national agencies. They usually establish policies and procedures for managing these records and assist national agencies in carrying out their records management responsibilities.</p> <p>Archives differ from libraries in the sense that libraries are usually created with the intention of providing public access to collections of published materials.</p>
<p>complementary approach</p>	<p>This approach refers to the implementing of a system where, within a strategy of either straight or mediated transmission of RK&M, the various elements are linked to each other, act as indexes to each other, and reinforce each other by offering redundant functions. This can be compared to a “defense in depth” approach with a series of redundant “layers” of protective measures.</p> <p>For example, a complementary approach to reach out to future generations in the medium term through a strategy of mediated transmission of RK&M may include both national and international archives*; creating tacit knowledge reservoirs; continuation of oversight and monitoring; building cultural links between the waste and the region; use of markers placed visibly and in strategic locations; etc.</p>
<p>contextual data</p>	<p>See metadata*</p>
<p>control (passive / active)</p>	<p>In the RK&M project a distinction is made between oversight* and control. Control can take place with or without the presence of man; oversight can only take place in the presence of man. Control can be active or passive; oversight can be direct or indirect. There is some overlap between the two concepts.</p> <p>Active control requires the presence of a regulator or another organisation. It takes place in the form of inspections, verification of records, verification of quality assurance procedure, verification of safeguards, etc. Monitoring, if used by regulators to verify whether regulations are being met before closure of the repository, is a measure of active control or direct oversight; after closure, however, direct monitoring of the underground facility is likely</p>

	<p>no longer possible, monitoring is then a measure of indirect oversight rather than of active control.</p> <p>Passive control takes place through measures that do not necessarily rely on man. The barriers that constitute a nuclear waste repository do exercise some types of control functions independent of the presence of man. They control the movement of groundwater, the temperature of the near field, the release of radionuclides, etc. These are forms of intrinsic, passive controls.</p> <p>[The distinction between the concepts of oversight and control was developed within the NEA project on Retrieval and Reversibility, www.oecd-nea.org/rwm/rr/. See the final report of the project, NEA/RWM/R(2011)4. The ICRP are implementing this distinction in their guidance on geological repositories to appear in 2013]</p>
data	Facts and ideas in the form originally collected.
dual-track strategy	<p>This strategy refers to the necessity to set up a system relying on simultaneous, redundant and independent <i>channels*</i> in order to ensure records* and, ultimately, message* survivability in order to reach future generations.</p> <p>The strategy relies on both straight and mediated transmission of records* to a future generation receiver. Straight transmission makes no reliance on the presence of intermediaries and the record* is delivered directly from the present time provider to the future receiver. In the case of mediated transmission the record* is passed on from one generation to another (relay* system). Each generation may review the records and undertake the necessary steps to ensure the continuity of readability and understandability. The two tracks may address different target audiences and consider different levels of detail, different time scales and different technical means to achieve message survivability.</p> <p>(see also marker*)</p>
information	Organised data* that may or may not be recorded on a medium.
knowledge	<p>The ability to acquire, understand, interpret and utilize the available data*, information* and records*, as well as the result of this process.</p> <p>Knowledge relies on familiarity, awareness or understanding gained through education, study or experience.</p>
long term	<p>In connection with Fig. 1, this term refers to the period of time with no repository oversight. This period extends over the time of concern in the safety regulations, typically in the thousands of years.</p> <p>(see also very short term*, short term*, and medium term*)</p>
marker	<p>A long-lasting object that indicates an area of influence, power or danger. It may be deployed visibly or placed strategically so that it is discovered at a proper, later time.</p> <p>In the RK&M dual track strategy*, a marker is an object meant to reach to future generations in the medium* to long term*. Any marker is conceived to be immobile (i.e., in permanent association with a site), robust, in order to maximize survivability on its own, and providing messages* that are likely to be understandable across generations.</p>

medium term	In connection with Fig. 1, this term refers to the period of time of indirect oversight* activities that would follow repository closure ¹ . Time scales are of the order of a few hundred years. (see also very short term*, short term*, and long term*)
memory	The awareness of events, people, places and levels of knowledge* in the past.
message	A significant point that is being conveyed in concise form, either in a written form or through symbols.
metadata	Metadata is additional information describing the context, content and structure of a record, as well as its management through time. Contextual data is a subset of metadata.
monument	A visible and complex type of marker*, i.e., a large building or an ensemble of structures. A monument may consist of several visible and less visible markers, e.g., to encircle an area. Like a marker, a monument may bear a message*, e.g. in the form of inscriptions, or be the message itself.
oversight (direct / indirect)	Oversight is a general term for “watchful care” and refers to society “keeping an eye” on the technical system and the actual implementation of plans and decisions. It includes regulatory supervision and control*, preservation of societal records* and societal memory* of the presence of the facility. With reference to Fig. 1, the International Committee for Radiation Protection considers three periods for oversight: <ul style="list-style-type: none"> • Direct oversight: when the disposal facility is being operated and active control is taking place. This timeframe coincides with the pre-operational and operational phases of the disposal facility. It could even extend beyond the operational phase. • Indirect oversight: when the disposal facility is partly (backfilling and sealing of drifts) or fully sealed (post-closure period) so that the waste containers are no longer visible. In this timeframe indirect regulatory or societal oversight might continue for a period and then be supplemented or replaced by indirect institutional oversight (e.g. restriction of land use) to provide additional assurance on behalf of the society. • No oversight: when oversight is no longer exercised because memory of the disposal facility has been lost. Improved information conservation cannot be ruled out completely, even for extremely long time scales. The intent is to provide safety purely by passive measures. This timeframe coincides with the post-closure period in the distant future. The transition between the different timeframes has also to be considered. <p>[This definition is taken from: ICRP, Radiological Protection in Geological Disposal of Long-Lived Solid Radioactive Waste, pre-publication report (thanks to W. Weiss) slated for publication early 2013. The draft report for</p>

¹ At that time environmental and repository monitoring may still be ongoing, even if surface facilities may no longer exist.

	consultation, 21 July 2011, is available on the ICRP web site; the ICRP adopted this concept from the NEA project on Retrievability and Reversibility, www.oecd-nea.org/rwm/rr/ . NEA/RWM/R(2011)4]
record	A selected piece of data* / piece of information* that has been committed to a medium or an object that is kept, together with the appropriate context and structure, for later uses. Records are usually unique and original.
repository	With reference to Fig 1, a repository is a nuclear facility constructed at several hundred meters depth in which solid radioactive waste is emplaced. The facility is built in a geological formation that is carefully selected to be stable and with low groundwater flow. The waste is encased in materials especially selected to be compatible with the host environment and to provide multiple and redundant safety functions along with the natural barrier.
short term	In connection with Fig. 1, this term refers to the period of time that ends with repository closure. This period includes both the pre-operational and the operational phases of the repository. Timescales are of the order of 100 years. (see also very short term*, medium term*, and long term*)
very short term	A period of time consistent with staff stability in role, cycles of organisational change, and regulatory expectations of periodic safety reviews. Typical time scales are 10 to 20 years. (see also short term*, medium term*, and long term*)

New definition proposals as of February 2013 (M. Buser)

channel	Information pathway that must be secured in order for information to reach future generations.
relay	Mechanism (system) ensuring the continuation and transfer of records and knowledge from generation to generation over a defined period [Relay chain, relay station and similar terms are used to characterise communication functions. E.g. a relay point is a specific point in a time chain at which information undergoes retreatment.]