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Glossary of Terms
NEA Project on Long-term Preservation of Records, Knowledge and Memory (RK&M) Across Generations

Draft - Definitions as of 31 October 2013

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.

Please send any queries regarding this document to claudio.pescatore@oecd.org

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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.

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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.

This document reflects the current state of the glossary as of 31 October 2013.

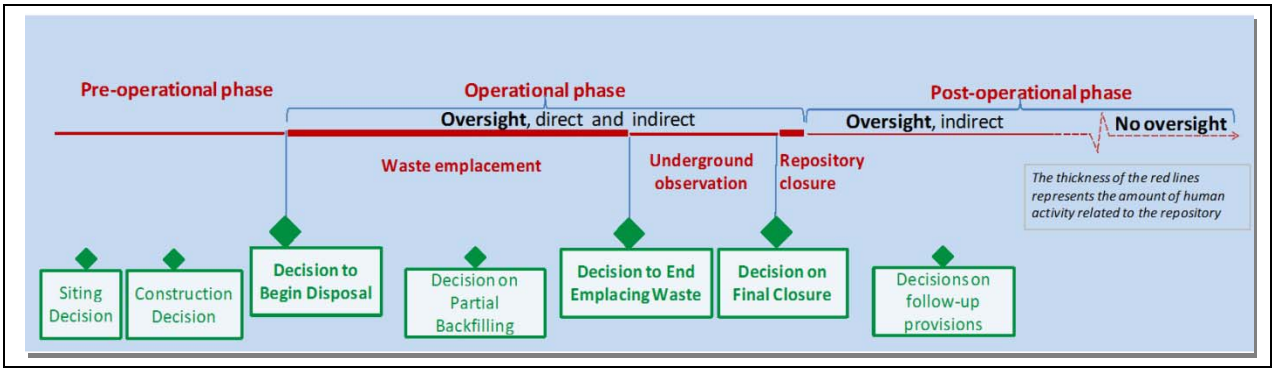

Fig. 1: Repository life phases and examples of associated decisions

active/passive control	See control* (Composite expressions)
archives	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. 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. Archives differ from libraries in the sense that libraries are usually created with the intention of providing public access to collections of published materials.
built-in control	See control* (Composite expressions)
contextual data	See metadata*
control	The function of directing, ruling, regulating, restraining or limiting. Control can be carried out by individuals, groups of individuals, institutions and inanimate objects. These are referred to as “controllers”. Control implies not only checking or monitoring something but also ensuring that corrective or enforcement measures will be taken. Control is about influencing people or (features of) a technical system. The transitive verb “to control so./sth.” is used with the meaning of “to exercise control over so./sth.” Care should be taken not to confuse the following: (A) control as a function (i.e. the function of controlling), (B) the controller (i.e. the subject/object that exerts control), (C) the means of control (i.e. the device or resource that the controller employs to exert control). While all three can be and have, occasionally, been termed “control” in the past, this glossary definition applies to (A) only. For instance, markers and archives do not perform control functions; therefore they are not “controls”. (see also oversight*) Composite expressions *institutional control / regulatory control* This group of composite expressions is characterised by an appositional term derived from a body capable of exercising control. In this case, the

	appositional term denotes the controller. • Institutional Control: Control by an authority or institution [adapted from IAEA Safety Glossary]. • Regulatory Control: Control applied to geological repositories by a regulatory body for reasons relating to radiation protection or to the safety or security of the system [adapted from IAEA Safety Glossary]. *built-in control / intrinsic control* This group of composite expressions is characterised by an attributive apposition describing a representative characteristic of the control, e.g. where or how it takes place. • Intrinsic Control: Control that is exerted by components of the system itself (e.g. buffer, barriers) over technical features of the system such as the access of groundwater, the temperature of the near field, the release of radionuclides, etc. • Built-in Control: Same as Intrinsic Control. Preferred terminology depends on context. “Built-in” calls attention to human intentionality, but could detract from control by geological features and be misinterpreted as control that has been “built” also literally—while literally, what is “built” is the controller, i.e. the barriers. [The concept of “built-in controls” constitutes a cornerstone in the new ICRP-122 reference terminology. It complements the concept of “oversight”*, which is a function carried out by people, with a control function carried out by system components.] *active/passive control* > USE “control” The active/passive control duality originates from the active/passive safety duality in reactor systems and would need to be interpreted in an analogous way. Since control, as a function, is always active – be it performed by people or inanimate objects – this active/passive wording is **not** endorsed by the RK&M project.
data	Facts and ideas in the form originally collected.
dual-track strategy	This strategy refers to the necessity to set up a system relying on simultaneous, redundant and independent pathways in order to ensure records* and, ultimately, message* survivability in order to reach future generations. 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. 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. (see also marker*)
information	Organised data* that may or may not be recorded on a medium.

institutional control	See control* (Composite expressions)
International mechanism	A mechanism for RK&M preservation that has international influence, scope or support and is based on cooperation among international actors. An international mechanism can be governmental (IGM) or non-governmental (INGM). An IGM consists of entities and activities that are based on mutual agreements between a number of national governments; an INGM consists of entities and activities that bring together non-governmental, private or commercial actors.
intrinsic control	See control* (Composite expressions)
knowledge	The result of learning processes. Once acquired in a particular field, knowledge provides insights and skills. It results in the ability to understand, interpret and utilize the relevant data*, information* and records*. **Composite expressions** • knowledge preservation: Preservation of knowledge in a particular field is about maintaining or creating learning processes in that field. An example over the medium-term* would be the funding of a university chair; another example over the medium-term* would be facilitating the passing of skills from one generation to another. knowledge reconstruction: Over the long-term*, knowledge may inevitably be diluted as interest may fade. Tools / opportunities need then to be devised for knowledge reconstruction. For instance, the Rosetta stone proved to be a good tool to reconstruct the knowledge of the ancient Egyptian language.
long term	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 (see also very short term*, short term*, and medium term*)
marker	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. 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.
medium term	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

[1] At that time environmental and repository monitoring may still be on-going, even if surface facilities may no longer exist.

	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	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 (such as control* and inspection), institutional control* (e.g. monitoring), preservation of societal records (such as archiving), and societal memory keeping of the presence of the facility. Oversight is always by people and has a different, partly broader focus than control*. Two types of oversight are distinguished during the repository* lifetime (see also Fig. 1): • Direct oversight of the technical system refers to oversight of the repository*, when the waste is accessible (without disproportionate effort; depending on system design, this could be equivalent to "gallery not yet backfilled"). Thus, direct oversight implies the availability of measures comparable to the control* functions at other nuclear licensed facilities that handle similar radioactive materials. • Indirect oversight of the technical system refers to oversight of the repository*, when the waste is no longer readily accessible. This will take place when sections of the repository* or the whole of the repository* are sealed. Any measurement of the state of the technical system is then by remote or indirect means. It should be noted that there is a period of overlap between direct and indirect oversight of the technical system, namely while the repository* is being developed and not all its parts are yet fully backfilled and sealed. Indirect means of oversight after closure may include monitoring of release pathways under a variety of institutional arrangements. Land use controls are means to exercise further oversight on the repository* at all times and are part of the protective measures that can be enforced. [Oversight is the new reference concept promoted by the ICRP. Three "levels" of oversight are distinguished: direct oversight, indirect oversight and no oversight, respectively. The level of oversight has an impact on the application of the radiological protection system (ICRP-122). Oversight is complemented with the "built-in controls*" carried out by the technical system itself.] (see also control*)
record	A usually unique and original object or a selected piece of data* / piece of information* that has been committed to a medium and that is kept, together with the appropriate context and structure, for later uses.
regulatory control	See control* (Composite expressions)
repository	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	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*)

systemic approach	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. For example, a systemic 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 site region; use of markers placed visibly and in strategic locations; etc.
transmission (straight / mediated)	See dual-track strategy*
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*)