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Glossary of Terms
Preservation of Records, Knowledge and Memory (RK&M) Across Generations

Draft — Definitions as of 3 March 2014

The RK&M glossary defines important concepts and terms that are commonly used. It is under continuous development by the project team and represents a peer-reviewed set of terms.

It should be pointed out that some terms may be defined differently from other glossaries in science and technology. The RK&M glossary, however, fits the purpose of achieving a better understanding and more efficient communication of RK&M issues.

The aim of the RK&M glossary is to compile a dedicated, internally consistent, and unambiguous set of definitions. Each definition should not be seen in isolation, but as complementary to the definition of other terms in the glossary.

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GLOSSARY OF TERMS
PRESERVATION OF RECORDS, KNOWLEDGE AND MEMORY (RK&M) ACROSS GENERATIONS

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

active/passive control*

The active/passive wording connected to the word "control*" is not endorsed by the RK&M project. Instead, use "control*".

Commentary

Control* as defined in this glossary, is the function of directing, ruling, regulating, restraining or limiting. As a function, control* is always active — be it performed by people or inanimate objects.

The active/passive control duality has its origins in the active/passive safety terminology in use in reactor systems, and would need to be interpreted in an analogous way.

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.

Commentary

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 record* 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/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 influx of groundwater, the temperature of the near field, the release of radionuclides, etc.

Commentary

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.)

See also control*

contextual data

See metadata*

control

The function of directing, ruling, regulating, restraining or limiting.

Commentary

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* someone/something" is used with the meaning of "to exercise control* over someone/something"

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".

Composite expressions

- Institutional control: Control by an authority or institution.
- Regulatory control: Short for "control by the national nuclear safety authority"

Commentary

Institutional control is broader than, and includes, the regulatory control by the national nuclear safety authority. Various forms of additional institutional control will take place in parallel to regulatory controls strictu sensu, such as controls by advisory bodies to Government/Parliament,by environmental courts and bodies, by other regulators - local and national - than the nuclear safety one, e.g., the occupational safety regulator, the mining safety regulator, by local committees legally entitled to carry out forms of controls. Additional institutional controls may also take place to fulfil international agreements, e.g., on safeguards.

See also built-in/intrinsic control*, active/passive control*

data

Facts and ideas in the form originally collected.

dual-track strategy

Communication strategy based on simultaneous, redundant and independent pathways in order to ensure record* and, ultimately, message* survivability in order to reach future generations.

The strategy relies on both non-mediated and mediated transmission* of records* to a future generation receiver. Non-mediated transmission* makes no reliance on the presence of intermediaries and the record* is delivered directly (e.g., in its original format) 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.

Commentary

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 timescales and different technical means to achieve 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 international cooperation.

Commentary

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 organisations.

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 use 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 will inevitably be diluted as interest fades. Tools / opportunities then need to be devised for knowledge* reconstruction. For instance, the Rosetta Stone proved to be a vital tool for reconstructing the knowledge* of the ancient Egyptian language.

knowledge preservation

See knowledge* (composite expressions)

knowledge reconstruction

See knowledge* (composite expressions)

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 over hundred thousands of years in the case of high-level waste. (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 is placed strategically at or near the site for immediate recognition or for discovery at a later time.

Commentary

In the RK&M dual track strategy, a marker is an object meant to reach out 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 to provide 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. Timescales are in 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 conveyed in concise form, either in written language or as symbols and pictograms.

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., in order 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.

Commentary

Oversight is the new reference concept promoted by the ICRP. Oversight is always by people and has a different, partly broader focus than control*. Oversight 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 complemented by the "built-in controls*" carried out by the technical system itself. The level of oversight has an impact on the application of the radiological protection system (ICRP-122).

Three "levels" of oversight are distinguished: direct oversight, indirect oversight and no oversight, respectively, during the repository* lifetime (see also Fig. 1). In particular:

- 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 licensed nuclear 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 oversight after closure may include monitoring of release pathways under a variety of institutional arrangements. Land use controls* are means to exercise further oversight of the repository* at all times and are part of the protective measures that can be enforced.

See also control*

record

A usually unique and original object or a selected piece of data* / information* that has been committed to a medium and that is kept, together with the appropriate context and structure, for later use.

regulatory control

See control* (composite expressions).

repository

Short for "geological" or "deep underground" radioactive waste repository.

A nuclear facility constructed at several hundred meters depth in which solid radioactive waste is emplaced with a view to final disposal.

Commentary

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 in the order of 100 years.

See also very short term*, medium term* and long term*

systemic approach

A communication approach where, within a strategy of either non-mediated 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.

Commentary

This can be compared to a "defence 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 reservoirs or centres for knowledge* preservation; continuation of oversight* and monitoring; building cultural links between the waste and the site region; use of markers*; etc.

transmission (mediated/non-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 timescales are 10 to 20 years. (see also short term*, medium term* and long term*).

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