NeOn Glossary of Processes and Activities

- ***Ontology Aligning.*** This term refers to the activity of finding the correspondences between two or more ontologies and storing/exploiting them. A synonym for this activity is Ontology Mapping.
- ***Ontology Annotation.*** It refers to the activity of enriching the ontology with additional information, e.g., metadata or comments.
- ***Ontology Assessment.*** It refers to the activity of checking an ontology against the user's requirements, such as usability, usefulness, abstraction, quality.
- ***Ontology Comparison.*** It refers to the activity of finding differences between two or more ontologies or between two or more ontology modules.
- ***Ontology Conceptualization.*** It refers to the activity of organizing and structuring the information (data, knowledge, etc.), obtained during the acquisition process, into meaningful models at the knowledge level and according to the ontology requirements specification document. This activity is independent of the way in which the ontology implementation will be carried out.
- ***Ontology Configuration Management*** [Gómez-Pérez et al., 2003]***.*** It refers to the activity of recording all the versions of the documentation, software and ontology code, and of controlling the changes.
- ***Control*** [Gómez-Pérez et al., 2003]***.*** It refers to the activity of guaranteeing that the activities scheduled in the ontology development process are completed and performed in the manner intended.
- ***Ontology Customization.*** It refers to the activity of adapting an ontology to a specific user's needs.
- ***Ontology Design Pattern Reuse.*** It refers to the process of using available ontology design patterns in the solution to different modelling problems during the development of new ontologies.
- ***Ontology Diagnosis.*** It refers to the activity of identifying parts of the ontology directly responsible for incorrectness and incompleteness. Ontology diagnosis is triggered by ontology validation.
- ***Ontology Documentation.*** It refers to the collection of documents and explanatory comments generated during the entire ontology building process.

  Examples of the documents external to the implemented ontology include ontology requirement specification document, sources used for acquiring knowledge, ontology conceptualization document, design and decision criteria, etc.

  The information inside the implemented ontology includes natural language comments, ontology metadata, and implementation code.

  In summary: anything that could be useful to help users, who did not build the ontology, to understand and learn how the ontology was built. Note that the level of granularity of descriptions can help the understanding of the ontology.
- ***Ontology Elicitation.*** It is a knowledge acquisition activity in which conceptual structures (e.g., T-Box) and their instances (e.g., A-Box) are acquired from domain experts.
- ***Ontology Enrichment.*** It refers to the activity of extending an ontology with new conceptual structures (e.g., concepts, roles and axioms).
- ***Ontology Environment Study.*** It refers to the activity of analyzing the environment in which the ontology is going to be developed.
- ***Ontology Evaluation.*** It refers to the activity of checking the technical quality of an ontology against a frame of reference.
- ***Ontology Evolution*** [Stojanovic, 2004]**.** It refers to the activity of facilitating the modification of an ontology by preserving its consistency.

Ontology Evolution can be seen as a consequence of different activities during the development of the ontology.

- ***Ontology Extension.*** It is an ontology enrichment activity for stretching the ontology in width.
- ***Ontology Feasibility Study*** [Gómez-Pérez et al., 2003]***.*** It refers to the activity of answering questions such as "Is it possible to build the ontology? and/or "Is it suitable to build the ontology?"
- ***Ontology Formalization*** [Gómez-Pérez et al., 2003]***.*** It refers to the transformation of a conceptual model into a formal or semi-computable model according to a knowledge representation paradigm (e.g., description logics, frames, and rules).
- ***Ontology Forward Engineering*** [Gómez-Pérez and Rojas-Amaya, 1999]***.*** It refers to the activity of outputting a new implementation of the ontology on the basis of the new conceptual model.
- ***Ontology Implementation.*** It refers to the activity of generating computable models according to the syntax of a formal representation language (e.g., RDF(S), OWL, and FLogic).
- ***Ontology Integration.*** It refers to the activity of including one ontology in another ontology.
- ***Knowledge Acquisition for Ontologies.*** It comprises activities for capturing knowledge (e.g., T-Box and A-Box) from a variety of sources (e.g., documents, experts, data bases, etc.). We can distinguish between Ontology Elicitation, Ontology Learning and Ontology Population.
- ***Ontology Learning.*** It is a knowledge acquisition activity that relies on (semi-) automatic methods to transform unstructured (e.g., corpora), semi-structured (e.g., folksonomies and html pages) and structured data sources (e.g., data bases) into conceptual structures (e.g., T-Box).
- ***Ontology Localization.*** It refers to the adaptation of an ontology to a particular language and culture.
- ***Ontology Mapping.*** It refers to the activity of finding the correspondences between two or more ontologies and storing/exploiting them. A synonym for this activity is Ontology Aligning.
- ***Ontology Matching.*** It refers to the activity of finding or discovering relationships or correspondences between entities of different ontologies or ontology modules.

  Ontology Matching can be seen as the first stage of Ontology Aligning.
- ***Ontology Merging.*** It refers to the activity of creating a new ontology or an ontology module from two or more, possibly overlapping, source ontologies or ontology modules.
- ***Ontology Modification*** [Stojanovic, 2004]***.*** It refers to the activity of changing the ontology without considering the consistency.
- ***Ontology Modularization.*** It refers to the activity of identifying one or more modules in an ontology with the purpose of supporting reuse or maintenance.

  We can make distinctions between: Ontology Module Extraction and Ontology Partitioning.
- ***Ontology Module Extraction.*** It refers to the activity of obtaining from an ontology some concrete modules that could be used for a particular purpose (e.g., to contain a particular sub-vocabulary of the original ontology).
- ***Ontology Module Reuse.*** It refers to the process of using available ontology modules in the solution of different problems
- ***Ontology Partitioning.*** It refers to the activity of dividing an ontology into a set of (not necessary disjoint) modules that together form an ontology but that can be treated separately.
- ***Ontology Population.*** It is a knowledge acquisition activity that relies on (semi-) automatic methods to transform unstructured (e.g., corpora), semi-structured (e.g., folksonomies and html pages) and structured data sources (e.g., data bases) into instance data (e.g., A-Box).

- ***Ontology Pruning.*** It refers to the activity of discarding conceptual structures (e.g., part of T-Box) of a given ontology that are not or no longer relevant.

  Pruning can be used in combination with ontology learning methods to discard potentially irrelevant learned concepts/relations.

- ***Ontology Quality Assurance*** [Gómez-Pérez et al., 2003]***.*** It refers to the activity of assuring that the quality of each and every process carried out and each an every product built (ontology, software and documentation) is satisfactory.

- ***Ontology Reengineering*** [Gómez-Pérez and Rojas-Amaya, 1999]***.*** It refers to the process of retrieving and transforming a conceptual model of an implemented ontology into a new, more correct and more complete conceptual model, which is re-implemented.

- ***Ontology Repair*****.** It refers to the activity of solving errors (incompleteness, incorrectness) in the ontology. This activity is triggered by ontology diagnosis.

- ***Ontology Requirements Specification.*** It refers to the activity of collecting the requirements that the ontology should fulfill (for example, reasons to build the ontology, identification of target groups and intended uses). Such requirements may be reached through a consensus process.

- ***Non-Ontological Resource Reengineering.*** It refers to the process of retrieving and transforming an non-ontological resource[1] (data bases, controlled vocabularies, etc.) into an ontology.

  This process could be compared with the ontology learning activity with the difference that in this activity the knowledge is only transformed into conceptual structures, whereas in the process of reengineering non-ontological resources the sources can be transformed into conceptual structures and instance data.

- ***Non-Ontological Resource Reverse Engineering.*** It refers to the activity of analyzing a non-ontological resource in order to identify its underlying components and creating a representation of the resource at higher levels of abstraction.

- ***Non-Ontological Resource Transformation.*** It refers to the activity of generating an ontological model at different levels of abstraction from the non-ontological resource.

- ***Ontology Restructuring*** [Gómez-Pérez and Rojas Amaya, 1999]***.*** It refers to the activity of correcting and reorganizing the knowledge contained in an initial conceptual model, and detecting missing knowledge.

  This activity contains two different tasks: analysis and synthesis. The goal of the analysis is to evaluate the ontology technically, that is, to check that the hierarchy of the ontology and its classes, instances, relations and functions are complete (contain all the definitions required for the domain of chemical substances), consistent (there are no contradictions in the ontology and with respect to the knowledge sources used), concise (there are no explicit and implicit redundancies) and syntactically correct. On the other hand, the synthesis task seeks to correct the ontology after the analysis phase and to document any changes made.

- ***Non-Ontological Resource Reuse.*** It refers to the process of taking the available non-ontological resources (data bases, controlled vocabularies, etc.) for the development of ontologies.

- ***Ontological Resource Reuse.*** It is defined as the process of using available ontological resources[2] (ontologies, modules, statements, or ontology design patterns) for solving different problems (e.g., the development of different ontology-based applications, the activity of ontology aligning (as background knowledge

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[1] *Non-ontological resource* is defined as a knowledge resource whose semantics has not yet been formalized by means of an ontology. Elements in this set are glossaries, dictionaries, lexicons, classification schemes and taxonomies, and thesauri.

[2] *Ontological resource* is defined as a set of elements extracted from a set of available ontologies in order to solve a need. Elements from this set can be ontologies, ontology modules, ontology statements or ontology design patterns.

- ***Ontology Reuse.*** It refers to the process of using available ontologies for solving different problems.
- ***Ontology Reverse Engineering*** [Gómez-Pérez and Rojas-Amaya, 1999]**.** It refers to the activity of outputting a possible conceptual model on the basis of the code in which the ontology is implemented.
- ***Scheduling*** [Gómez-Pérez et al., 2003]**.** It refers to the activity of identifying the different activities and processes to be performed during the ontology development, their arrangement, and the time and resources needed for their completion.
- ***Ontology Search.*** It refers to the activity of finding candidate ontologies or ontology modules to be reused.
- ***Ontology Selection.*** It refers to the activity of choosing the most suitable ontologies or ontology modules among those available in an ontology repository or library, for a concrete domain of interest and associated tasks.
- ***Ontology Specialization.*** It is an ontology enrichment activity for extending the ontology in depth.
- ***Ontology Statement Reuse.*** It refers to the process of using available ontology statements in the solution of different problems
- ***Ontology Summarization.*** It refers to the activity of providing an abstract or summary of the ontology content.

  The summary can include, for example, a couple of top level concepts in the ontology class hierarchy (perhaps a graphical representation of these top-level concepts and lthe inks between them).
- ***Ontology Translation.*** It refers to the activity of changing the representation formalism or language of an ontology to another.

  Ontology Translation can be part of an ontology reengineering process.
- ***Ontology Update.*** It refers to minor changes carried out in an ontology that could not be considered an upgrade.
- ***Ontology Upgrade.*** It refers to the activity of replacing an ontology with a new version.
- ***Ontology Validation.*** It is the ontology evaluation that compares the meaning of the ontology definitions against the intended model of the world aiming to conceptualize.

  It answers the question “Are you producing the right ontology?”
- ***Ontology Verification.*** It is the ontology evaluation that compares the ontology against the ontology requirement specification document (ontology requirements and competency questions), thus ensuring that the ontology is built correctly (in compliance with the ontology requirements specification).

  It answers the question “Are you producing the ontology right?”
- ***Ontology Versioning*** [Stojanovic, 2004]**.** It refers to the activity of handling ontology changes by creating and managing different versions of the ontology.