**Introduction to Ontology**

**What is an Ontology**

In computer science and information science, an ontology encompasses a representation, formal naming, and definition of the categories, properties, and relations between the concepts, data, and entities that substantiate one, many, or all domains. (Wikipedia : <https://en.wikipedia.org/wiki/Ontology_(information_science)>)

Ontologies were first defined as **“explicit formal specifications of the terms in the domain and relations among them”** (Gruber 1993) and, more specifically, **“a formal, explicit specification of a shared conceptualization”** (Studer et al. 1998) and are used in a number of applications, including the following, as specified by Noy and McGuinness (Noy and McGuinness 2001):

* **To analyze domain knowledge.**

Ontologies are the tools to provide comprehensive description of the domain of interest with respect to the users’ needs

* **To share common understanding of the structure of information among people or software agents.**

It is something that we see when, for example, medical information is published on, several different websites. If these websites share the same underlying ontology of the terms they all use, then computer agents can extract and aggregate information from these different sites and use it to answer user queries or as input data to other applications.

* **To reuse domain knowledge.**

If we want to build a large ontology, we can integrate several existing ontologies describing portions of the large domain. And on the contrary, we can reuse a general ontology to describe our domain of interest.

* **To make domain assumptions explicit makes it possible to change these assumptions easily if the knowledge about the domain changes.**

Hard-coding assumptions about the world in a code makes these assumptions not only hard to find and understand but also hard to change, in particular for someone without programming expertise. Besides, explicit specifications of domain knowledge may help learner to get oriented in the domain.

* **To separate domain knowledge from operational knowledge.**

We can describe a task of configuring a product from its components according to a required specification and implement a program that does this configuration independent of the products and components themselves.

(Ontology Development 101: A Guide to Creating Your First Ontology Natalya F. Noy and Deborah L. McGuinness Stanford University, Stanford, CA, 94305 noy@smi.stanford.edu and [dlm@ksl.stanford.edu](mailto:dlm@ksl.stanford.edu))

<https://medium.com/sciforce/ontologies-and-semantic-annotation-part-1-what-is-an-ontology-1de10caf2c77>

**What is the difference between ordinary web and semantic web?**

The term “Semantic Web” says more about how the technology works than what it is. The goal is a data Web, a Web where not only documents but also individual data elements are linked. That’s why the effort to encourage adoption of Semantic Web techniques is called the Linked Data Initiative. (See http://linkeddata.org/ for more information.)

RDF and the Semantic Web The next step toward true Web-scale data federation must be the Resource Description Framework (RDF), which incorporates lessons from XML and improves on relational data. RDF is one of the primary Semantic Web standards, which also include RDF Schema (RDFS), Web Ontology Language (OWL), and the Semantic Protocol and RDF Query Language (SPARQL). RDF, RDFS/OWL, and SPARQL are among a number of well thought-out standards that take the page-to-page relationships of the document Web and use them to establish a method for relationships between things. This approach is much more granular and potentially powerful than the document Web.

(https://www.pwc.com/cl/es/publicaciones/assets/pronostico-de-tecnologia.pdf)