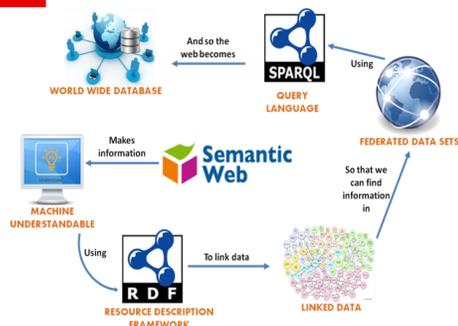


What is Semantic Web?



Semantic web, known as the third generation of the web, is an extension of the traditional web that aims at converting the current web dominated by unstructured and semi-structured documents into a web of data. It has been originally proposed by Tim Berners-Lee with the vision of information that can be interpreted by machines, so that machines can perform most of the tedious work involved in finding, combining and acting upon information on the web not only for display purposes, but also for automation, integration, and reuse of data across various applications [W3C].

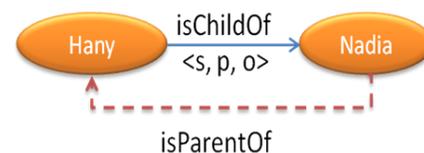
Adding semantic web support to websites helps to maximize the utilization and value of the website content by discovering the deep relations among data. This will serve in enhancing user experience by semantically enriching the website contents and increasing its relevance. Search results will be improved as well by enabling semantic-based search instead of the traditional keyword-based search.

How to Adopt Semantic Web?

In order to adopt semantic web, the most important thing is to be able to define and describe the relations among data on the web. Resource Description Framework (RDF), a W3C specification, is the core representation format for semantic web that aims at organizing data on the web. The main principle upon which RDF is built is that everything is a resource. A resource is a uniquely named thing identified using Uniform Resource Identifier (URI). Each resource has a type, properties, and relations that link it with other resources on the web and that are described in the form of triples <subject, predicate, object>.

As a result of organizing data on the web in such a structured way, searching data distributed all over the web

(Federated Data Sets) becomes easier and more efficient using SPARQL Protocol and RDF Query Language (SPARQL); a SQL-like language that is used to query RDF. Moreover, by using reasoners machines can infer new facts to the represented data. However, this inference will require more semantics to be added to data representation. Here comes the role of RDF Schema (RDFS) and Ontology Web Languages (OWL), two W3C data representation models that are added as additional layers to the semantic stack for more intelligent representation of data. For instance, if Hany isChildOf Nadia a new triple can be inferred that Nadia isParentOf Hany only if it is stated that the two properties isChildOf and isParentOf are inverse properties. Such inference



is not possible by just using RDF for data representation.

Using RDFS and OWL, one can create a standardized description of a domain by capturing the domain knowledge in an Ontology. The Ontology is an instrument to get a common understanding of domain knowledge by defining common vocabulary so that different independent developers using the same vocabulary can speak the same language and thus their products will be able to interoperate.

Semantic Web in SECC

As reported by Gartner on 2013, around 80% of the data on the web is unstructured leading to billions being wasted every year due to the inability to locate and retrieve information. A study performed by Yahoo proved that websites with semantic support shows 15% increase in the Click Through Rate (CTR) which leads to enhanced visibility of products and hence has positive impact on commerce. Unfortunately, there are no clear statistics on the adoption of semantic web in the Egyptian market. With the objective to raise the competency of Egyptian ICT companies in semantic web technologies, [Software Engineering Competence Center](http://www.secc.org) (SECC) provides a specialized support to integrate semantic technologies to websites. This is achieved by helping organizations to exploit the benefits of semantic web through training courses as well as providing hands-on-experience on how to practically implement and integrate semantic web in real-life projects through consultation services. The provided services help ICT companies to leverage their skills to build innovative and state-of-the-art solutions that support their business. For more information visit <http://www.secc.org/RECOCAPE/>.