Chapter 1
An Overview and Technological Background of Semantic Technologies

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ABSTRACT

The Semantic Web concept is an extension of the web obtained by adding semantics to the current data representation format. It is considered a network of correlating meanings. It is the result of a combination of web-based conceptions and technologies and knowledge representation. Since the internet has gone through many changes and steps in its web versions 1.0, 2.0, and Web 3.0, this last call of smart web, the concept of Web 3.0, is to be associated with the Semantic Web, since technological advances have allowed the internet to be present beyond the devices that were made exactly with the intention of receiving the connection, not limited to computers or smartphones since it has the concept of reading, writing, and execution off-screen, performed by machines. Therefore, this chapter aims to provide an updated review of Semantic Web and its technologies showing its technological origins and approaching its success relationship with a concise bibliographic background, categorizing and synthesizing the potential of technologies.

INTRODUCTION

It is believed that in the future there will be no barriers, where the knowledge will be available any-where, regardless of language, geographical location, social level, or intellectual ability. Technology will be responsible for the legacy that people (users) will leave for future generations and for the change in social, economic, and environmental relationships that the world needs so much. The main question for the future is not about the best man or the best technology, nor even which of the two can perform a particular task with the greatest excellence; the main question is what is the best form of cooperation between people and technology (Biundo & Wendemuth, 2017; Sheridan, 2016; Ying, 2017).

In the current scenario where the written media is moving, where the amount of information is copi-ous, in the form of texts, photographs, videos, it becomes necessary to have at hand any kind of tool that helps to catalog. At the same step that effective research of all this huge wealth of multimedia content allows professionals not to get lost in long tedious processes, and can perform tasks as efficiently as possible. In this sense, all solutions based on semantic enrichment technologies that arise oriented to the said tasks of cataloging, processing and analyzing information are of particular importance, so that the means do not lose efficiency, buried by such level of information. These technologies offer a whole range of possibilities for professionals, so that they can make the most of dynamic content, and all with less time spent (Bolívar, 2018).

A digital memory common to humanity is in the process of being formed. However, the exploitation of this memory is limited by problems of semantic opacity, difficulty in establishing classification systems and due to linguistic and cultural fragmentation, since it involves questions of languages, ontologies, storage, and retrieval of information/knowledge. These semantic technologies aim to provide additional intelligence to all processes that are performed in the media, including self-cataloging, enrichment, research, and content retrieval. These features include diffuse searches, natural language queries, or multilingual searching, among others. A whole range of tools that facilitate and improve the daily work of both documentation and writing staff, always for the sake of effectiveness and accuracy (Horrocks et al, 2016; Gyrard et al, 2017; Monteiro et al, 2019).

Semantic technology is the foundation for Web 3.0, also known as Semantic Web. Just as social networking paved the way for Web 2.0, semantic technology will enable Web 3.0. However, there is a fundamental difference between these two "revolutions". Semantics can be applied to any type of text and will revolutionize the way that is interacted with information stored on the Internet or in any application. Semantic technology will enable Web 3.0, but applies to any other information process, whether on the web or in a personal document folder. True semantic technology is a fundamental piece of artificial intel-ligence and allows the user to extract or produce knowledge from any text-based information. The idea is basically to assign meaning to content on the Internet, no longer searching for information in isolation or keywords, but in a way that the web can build a more elaborate response from various relationships (Gretzel, 2015; Algosaibi et al, 2015; Hiremath & Kenchakkanavar, 2016).

One of the great motivations that promoted the growth of this theme was the growth and extension of the Web beyond traditional computers. At the time it was created, its purpose was primarily to display documents, with any page of content, linked together manually. Today, what it's seen is a huge field through which the Internet has expanded. Most everyday devices have network access, whether pocket-sized or attached to other functional objects. The Internet is ubiquitous. As such, it is not too difficult to note that the governing standard for the beginning of the Web no longer applies today. Several different

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