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Creating A Semantically-enhanced Cloud Services Environment through Ontology Evolution

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Introduction

The Web has altered how people obtain information, but its success and exponential expansion have made it increasingly challenging to locate, access, present, and manage such data for a wide range of users. However, the World Wide Web has grown through time, allowing the traditional Web to be transformed into the Semantic Web - often known as the "Web of Data". It define the Semantic Web (and, more recently, Semantic Technologies) as an extension of the present Web in which information is given a well-defined meaning, allowing machines and people to collaborate in more meaningful ways. The phrase Linked Data was coined as a specification of semantic technologies, and it refers to a collection of best practises for publishing and connecting structured data on the Web. These best practises have been adopted by a number of data providers in recent years, resulting in a major increase in the volume of Linked Data produced and the emergence of a new trend in the field of knowledge engineering. As a result, a large amount of Linked Data has been generated in recent years, necessitating the storage, access, and processing of this data via new service provider models such as Cloud Computing.

Description

Several works have taken use of the application of semantic technologies in cloud computing contexts. Semantic technologies have thus been highlighted in this space as a technique to express resource discovery processes in portable cloud architectures or distributed infrastructures such as grids or clouds, as well as an access control model in multi-tenancy cloud systems. On the other hand, despite the numerous discovered hurdles for the adoption of linked data in corporate contexts, including technological elements as well as social and legal ramifications, the usage of linked data techniques is beginning to gain traction. Recent and relevant projects in this sector include, for example, the integration of scattered environmental and ecological data.

However, new designs for leveraging recent breakthroughs in Semantic Technologies, namely linked data capabilities such as generation and consumption of linked data and its articulation in cloud environments, are still lacking in the present literature. The goal of this special issue is to gather novel and high-quality research articles on the application of cloud computing and grid computing architectures and approaches to leverage semantic technologies. Editors received a large number of entries, all of which were peer-reviewed by industry professionals. Editors chose seven high-quality papers to be published based on the reviews and our reading of the papers. These papers' contributions are summarised as follows: Using ontologies to guide development Shen discuss service-oriented systems in their paper "service-oriented systems."

Ontologies should be at the centre of software development. In distributed component-based systems, with a focus on Service-oriented systems are given special attention. The paper examines the important rules of ontologies in relation to various abstractions layers and the impact they have on the work products. The report also proposes a peer-to-peer service selection system. Demonstrating the architecture of a composing tool, the second contribution is titled "Towards a framework for governance architecture management in cloud environments: A semantic perspective." It discusses the issues of cloud computing governance. The authors provide a cloud governance paradigm that emphasises semantic characteristics. Three primary principles are considered in the approach: business–IT alignment, governance, and cloud computing. With the addition of specialised tools, the concept can be developed into a full framework for managing both traditional and cloud-based IT environments. The model's semantic aspects may make it easier to apply it to more complex architectural settings. "Informal learning recognition through a cloud ecosystem," is the third paper describes the TRAILER project, which aims to make obtaining information on an individual's learning easier so that new approaches to exploit that learning can be presented.

The project is founded on the premise that cloud technologies can help with information collecting and exploitation by facilitating semantic tagging, recognition, and acknowledgment of information learning activities through new architectures, techniques, and workflows. TRAILER includes a cloud-based architecture, a workflow, and a methodology. The services facilitate the transmission of information and knowledge related to informal learning activities such as using social software via widgets, computer gaming, and remote laboratory access [1-5].

Conclusion

The model's semantic aspects may make it easier to apply it to more complex architectural settings. "Informal learning recognition through a cloud ecosystem," is the third paper describes the TRAILER project, which aims to make obtaining information on an individual's learning easier so that new approaches to exploit that learning can be presented. The project is founded on the premise that cloud technologies can help with information collecting and exploitation by facilitating semantic tagging, recognition, and acknowledgment of information learning activities through new architectures, techniques, and workflows. TRAILER includes a cloud-based architecture, a workflow, and a methodology. The services facilitate the transmission of information and knowledge related to informal learning activities such as using social software via widgets, computer gaming, and remote laboratory access.

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Conflict of Interest

The Author declares there is no conflict of interest associated with this manuscript.

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