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## A Study on Cloud Computing and Semantic Web for the E-Learning Era

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**Abstract:** Semantic web is the current emerging technology. This technology is not yet fully in practice. At the same time the cloud is playing the most and vital role in day to day internet world. Also the e-Learning methodology is new learning methodology in e-world. This paper discuss an idea about how the semantic web technology cloud will embed with the e-learning era with help of the Cloud computing technique. <sup>[1]</sup> Now a days the semantic search engines are arrived. Namely like hakia, DuckDuckGo, and Swoogle, etc. butnot yet the semantic searching is fully achieved. This paper provides an idea on how semantic web can adopted to the e-learning.

**Keywords:** Semantic search, e-Learning, intelligent search.

### I.INTRODUCTION

Now a days the w3 consortium is looking for to implement the semantic web technology for the users. The main objective of the sematic web is providing the accurate data and more informative and related pages to the user while they are surfing. Now a days the Google is providing the results based on the page ranking and hit count based and some advanced algorithm to crawling the pages on internet. But in semantic web it uses a RDF and ontology and some other techniques to search. Here this paper focus how the semantic idea can be achieved in the e-learning era with help of the cloud computing.

### II.CLOUD WORKING METHODOLOGY

Cloud computing is the common jargon for the service that involves delivering hosted services over the internet <sup>[2]</sup>. Cloud service are divided in to three major part to serve the user. They are namely

- Software as a service (SaaS)
- Infrastructure as a service (IaaS)
- Platform as a service (PaaS)

#### *Software as a Service (SaaS)*

<sup>[3]</sup>Software as a service (SaaS) is the top range in among the services. It provides an application to a business user or a consumer through the web browser client. The business logic and data for the application run on server living somewhere in the network, the application not running through the user computer, example are Box.net, Google Docs, Microsoft Office 365, Jira and Basecamp.

#### *Infrastructure as a Service (IaaS)*

<sup>[4]</sup>This IaaS provides the user to computing Infrastructure, physical or virtual machines and other resources like virtual-Machine Disk image library, block and file-based storage, firewalls, load balancers, IP addresses, virtual local area network etc.

#### *Example <sup>[5]</sup>*

- Amazon EC2
- Windows Azure
- RockSpace

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## ➤ Google Computer Engine

### Platform as a Service (PaaS)

Somewhere in the middle is **Platform as a Service** (PaaS). The biggest difference between IaaS and PaaS is that PaaS adds support for the development environment (development language and application server technology).

By writing user's own application in this environment you can very easily take advantage of dynamic scalability, automated database backups, and other platform services without the need to specifically code for it. For this reason, PaaS offerings generally support a specific set of programming languages or development environments. PaaS services are usually billed as an incremental cost on top of the IaaS monthly charges.

### Examples

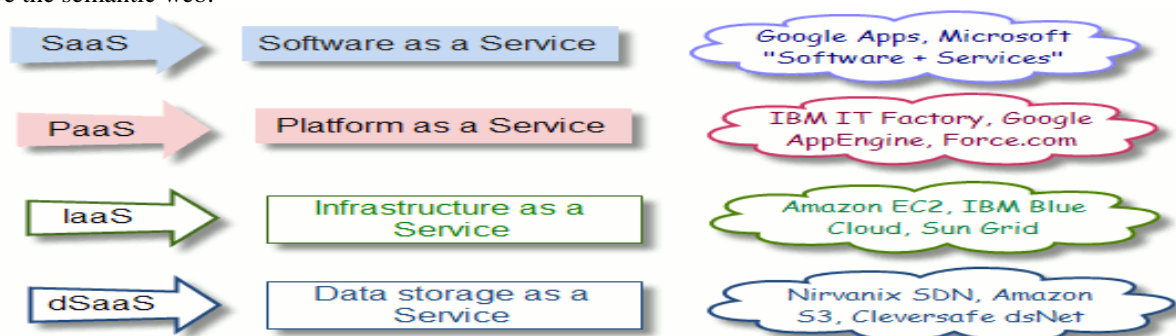
- Amazon AWS Elastic Beanstalk-PaaS built on top of Amazons IaaS infrastructure. Supports Java (on Tomcat), PHP, Python, .Net and Node.js
- Google App Engine - supports a subset of common Java environments as well as Python .
- Cloud Foundry -Owned by VMWare. Supports Java, Ruby, Node.js and Scala.

### Data Storage as a service

<sup>[6]</sup>In dataStorage as a service the third party companies will rent their storage to the people for the storage. The users can buy the storage through the online for the money and they can have the back up of their own data or the company data. In case of any crashes or due to any reason the company or the user has lost their data mean they can easily get the data backup back.

Company or the user should sign a service level agreement (SLA) whereby the SaaS provider agreed to rent storage space on a cost-per-gigabyte-stored and cost-per-data-transfer basis and the company's data would be automatically transferred at the specified time over the storage provider's proprietary wide area network (WAN) or the Internet.

By using of this technology in this paper, we are going to see how the cloud can emerge with the semantic web and to achieve the semantic web.



## III.E-LEARNING

<sup>[7]</sup>Understanding eLearning is simple. E-Learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.

It is not a course delivered via a DVD or CD-ROM, video tape or over a television channel. It is interactive in that user can also communicate with online teachers, professors or other students in e-learning class. Sometimes it is



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delivered live, where user can “electronically” raise his hand and interact in real time and sometimes it is a lecture that has been pre-recorded. ELearning has been proven to be a successful method of training and education is becoming a way of life for many people.

## *Attributes of E-Learning*

- Connectivity-provide the users to access the information in the globalized one.
- Flexibility- Anyone can learn through the internet in any time at any place.
- Interactivity-assessment of learning can be immediate and autonomous.
- Collaboration-use of discussion tools can support collaborative learning beyond the class room
- Extended Opportunities-multimedia resources can make learning engaging, participative, fun.
- Motivation-e-content can reinforce and extend class room-based Learning
- Personalization-adaptable learning path ways.

## *Advantages of E-Learning*

- <sup>[8]</sup>Reduced overall cost
- Learning Time Reduced
- Increased retention
- Consistent delivery
- Expert Knowledge
- Proof of completion and Certification

## *Disadvantages of E-Learning*

- Technology Issus
- Up-front Investment
- Inappropriate Content
- Cultural Acceptance

## IV.MERGE THE SEMANTIC, CLOUD AND E-LEARNING

In traditional web based e-learning mode, system construction and maintenance are located in interior of educational institutions or enterprises, which results in a lot of problems existed<sup>[9]</sup> but cloud computing technique will provide the scalable and fast accessibility when the data or education information's are stored in cloud.<sup>[10]</sup>

Once the tutors are register their websites, using of the RDF and Ontology the contents are given with the unique address with the search engine optimization. This naming technique will help the browser to crawl in the internet in order to find the specified contend.<sup>[11]</sup>

In the semantic web with the help of advanced Algorithms and RDF schema the Addresses are classified and categorized, Now if the user search the content with the help of the semantic web, the semantic search engine will provide the required content. Almost the semantic search in the E-Learning Era may Satisfied.

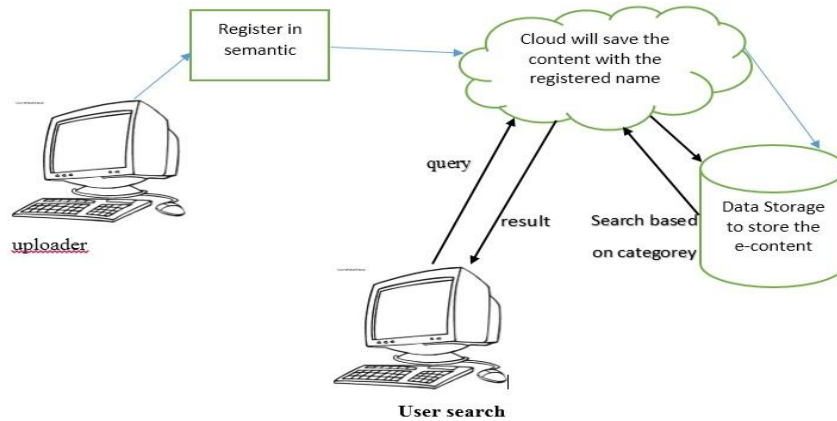
The following diagram shows how the semantic web can be achieved with the help of the cloud technique and the semantic search. In this diagram the online tutors are launching their web site to the online while they are launching they are required to register their website in semantic registration with its type of its service, once the website is registered in semantic, with the help of ontology and RDF Schema the website URLs are categorized and grouped as the various domain. Tutors can have their own websites without having their own servers by having storage in cloud.

After all this completed the semantic web can be done In the E-Learning. If the user wants to have the any content in the online they can get the accurate results and more relevant and related information to the topic.

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Semantic web and cloud technique in E-Learning

## V.CONCLUSION

This paper presented an idea for the improvement of the e-learning technique in semantic web. Here the semantic web aspects can be fulfilled in e-learning era. The advanced algorithms and RDF schemas and searching technique can be done here and bring out semantic in e-learning.

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