CONTEMPORARY SEMANTIC WEB: THE PRIMARY SOCIAL AND TECHNICAL CHALLENGES

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ABSTRACT

The web is all about connecting, storing and retrieving documents .In this internet era the data is growing with a rapid speed and the technology to process this data has to face many challenges to catch the same phase. The web is huge collection of unstructured and scattered data all around the globe in numerous formats .The need to explore and exploit the information from this unstructured web is in raise. The semantic web is the solution to explore the information from such unstructured web.   This paper explores the evolution of the web and various factors that influenced the conceptualization of the Semantic Web. It analyzes these social and technical challenges based on research data from established industry experts, semantic web community and other online resources. Key among these challenges are the lack of established standards and specifications, deficit in trust and resulting privacy issues are some of the challenges which have hindered this technology from gaining traction in the web world. Its widespread acceptance among general public and corporate is dependent on how these challenges are tackled over the next few years.

Keywords: *Semantic web, challenges, RDF, Structured Data, Ontology*

1. INTRODUCTION

The semantic web is a concept and technology that allows machines to understand data and the core is RDF. A set of standards defined by W3C that allows describing data across a distributed system, builds on the basic success of internet which we have today probably like OWL, web of documents that gives that capability for exploring data much as we do today.This flexibility of data, needs to present data and gives us the ability to grow data across many distributed systems. what we find is that distributed data, when your are distributing across so many systems or in internet the peanuts of internet network proves to be the first difficult situation to clean data, what we do is we accumulate data that are being distributed among many systems and put it in to a single system and do analysis and reasoning methods .Even , we find systems today can handle this kind of reasoning skills too large or queries that are too compact.[1] The web what we know today is web of documents , the semantic web in contrast is interconnected interoperable web of data it provides a frame work for comparing the context of information that the machines and humans can understand and tries new way for discovering information. The semantic web is about giving structure to the data which is on the web and making its meaning more obvious .We want to make connections on which is on the web and which are not explicit, which are for humans obviously who search for the net.

The present day web is huge collection of HTML documents connected to each other by hyperlinks [12]. The main goal is to provide information to the user and assimilate the contents and make a proper use of it. The search engine is used widely to access large amount of data present on the web .However search engine have limitations they find it difficult to keep track of the index that maps the key words that need to be updated to the set of relevant documents thus our ability to access information purely depends up on the capability of the search engine .in addition search engine finds hard to extract the semantics behind the key words searched ,the context and content of the search is left with no meaning thus making a way for new standards termed as semantic web technologies .It is believed and widely accepted that adopting these technologies would take us forward making better sense of information present in the web interoperate with different information sources and represent knowledge from various diverse domains on Internet .

The information present on the web is huge and it is increasing in a rapid way, but the tools and technology to process this information is not. The reason behind increase of this information is of various factors like transaction based data, unstructured data streaming from social media, online business applications, unstructured text documents ,emails, videos, audios, stock exchange finical transactions. The main reason of its exponential growth because the web can be accessed all around the world, irrespective of language, religion and environmental boundaries. The computers, tools and technology have not yet advanced to handle such a huge exponential growth of data.

Semantic web was an initiative of W3c (world web consortium) which was envisioned by its founder Tim Berners Lee[12]. Since the introduction of this technology several research and development have been conducted which have resulted in a set of standards and tools to help support this vision.

According to Tim Berners Lee the goal is not to make computers understand the human language, but to define a universal model and a set of rules that a machine can understand easily and process the information in a way as if they really understood it. The semantic web has the potential to overcome the present day web by integrating with various resources ,contents and with many platforms .The components of the semantic web like RDF, OWL, XML were developed to describe the web semantically .It is widely believed by many researchers, companies, institutes that the semantic web will have the same impact as the present web.

Need for contemporary semantic web

Even though the present day web is a big success.It lacks user support in finding, combining and extracting information, it also lacks interoperability, personalization and true portability. The Semantic web has emerged as the result to overcome all the pitfalls in the present day web.

Today, most of the contents on the web are designed for humans, not for computers to interpret or manipulate its meaning. Searching a relevant information on the present web itself is a big task.The information that we returned may not be accurate.To get the relevant information on has to go through many irrelevant. Information. Thus, searches are cumbersome and mostly return pointers to thousands of pages and it becomes even worse as the web grows.

As the web grows along with it unstructured and unreliable information grows.Thus making it difficult to maintain the consistency of data with the same old web tools. Thus an emerging need to provide a solution to overcome all the problems faced by present day web.To fix all the problem we need to develop a machine that understands the semantics for all the information present in the web.The solution called "semantic web, enables a machine to understand and potentially satisfy user requests by processing the meaning or semantics of information.

If a computer could understand the meaning behind the user query, it can learn to interpret what a user really wants and interested in .It can understand the relationship between things and even can recognize the place, products, people, events, etc. This technology is known as Semantic web technology.

2. SEMANTIC WEB CHALLENGES

There has been an increasing rise in the conferences held on semantic web for keen followers; several communities have been formed to discuss the business potential, market analysis, issues, and several other factors; a number of groups have been formed on social networking sites such as LinkedIn, Twitter and even Facebook. These forums have been useful for people to answer their research questions, technical issues, finding answers to alternative tools, etc. Another vision of the semantic web is the collaboration between researchers and corporate industries to reduce costs and increase the profit (VARLAN, 2010). Hence market leaders such as Apple have been utilizing this standard to integrate various services seamlessly into their latest generation iPad and iPhone 5 to operate their 'Siri' platform for web search and speech recognition (Lowensohn, 2011) (The Brunei Times/Asia News Network, 2011). However, the future of semantic web is challenged by several social and technical aspects [3].
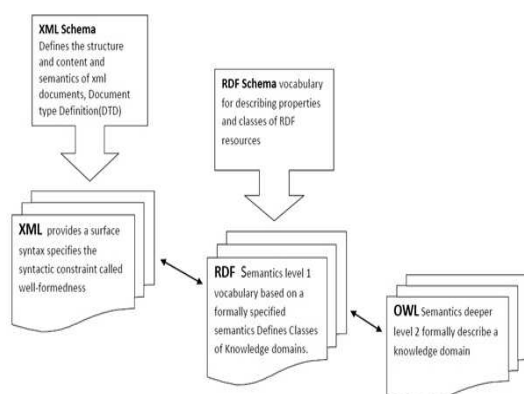
Figure 1: Semantic Web Technologies

3. TECHNICAL CHALLENGES AND SOCIAL CHALLENGES

This paper is focused on finding the social and the technical challenges facing the contemporary Semantic Web. Following the Literature review, the research methods have been discussed, followed by the analysis and findings section which explores the different issues and limitations that act as the potential challenges facing the Semantic web. The paper concludes, based on the analysis done on the views and perspectives from different resources.

A few years ago if someone talked about finding information on the web, it meant that information was searched on the web by means of hyperlinks or via search engines. Today, people talk about different versions of the web namely Web 2.0, Web 3.0 or the semantic web. Most people are unaware of the difference between the versions.[2] There are some misconceptions about their similarities or differences and biggest misconception being the terms Web 2.0 and semantic web mean the same (Beal, 2010). If 10 people are asked about Web 2.0, one is likely to get 10 different definitions for the term was never clearly defined (Spivack., 2012). The web has evolved through different stages, each being capable of an additional functionality to make life much easier. The first stage, (Davis, 2008) i.e. the Web or Web 1.0 getting on the internet and connecting information; Web 2.0 is a social thing (Beal, 2010), it focuses on people collaboration and sharing information online like facebook which was launched in 2004 and Twitter which was launched in 2006 (Wong, 2011); In terms of the technology there are minor differences between Web 1.0 and Web 2.0 (Fensel, Facca, Simperl, & Toma, 2011);whereas, Web 3.0 is open and structured data

(Macmanus, 2009) constituting a web which is more intelligent.

The semantic web technology has an equal number of challenges as there are opportunities. They can be categorised as Technical challenges and social challenges.

3.1 Ontology Development

Ontologies play a vital role in developing semantic web. (Lu, Dong, & Fotouhi, 2002).

- Adaption
- Standardization
- Management

3.1.1 Adoption:

Ontologies evolve overtime and it is of big concern to extend and to update the ontologies that exists as of today. (Lu, Dong, & Fotouhi, 2002).This also includes editing, searching of ontologies in ontology based library system.

3.1.2 Standardization:

According to Lu et al, since semantic web is still at a very early stage of its development it would be too early to impose any standardization. Ontology development is very essential as they carry the meaning contained in the semantic web (Benjamins, Contreras, Corcho, & Gómez-Pérez, 2002).The developers of ontology must be highly skilled and also it takes many years of knowledge that needs to be coded, maintained and also reused which is an issue. The general public cannot participate in the development of the ontology which translates into higher costs and also results in longer development times as compared to the original web (Alesso & F. Smith, 2009).

3.1.3 Management:

The purpose of using ontologies is to be able to share knowledge and re-use. Therefore, an ontology based library system should be able to support the identification, organization, open storage, versioning. Open storage in an ontology based library system enables the management and access of the ontologies. Ontologies evolve over time and hence it is very important to maintain the versioning of the ontologies [5].

3.2 Open Issues about SW Technology

- Content availability
- Interoperability
- Language standardization and stability
- Scalability

- Large-scale adoption

- Privacy

3.2.1 Content availability:

The existing content on the web is unstructured format. To convert this format online into a format that can be understood by the computers is not an easy task. Several technologies have aimed at structuring the data. The majority of the data on the web is dynamically generated. For example: When the RDBMS (Relational Database Management System) data are converted into RDFS (Resource Description Framework Schema), synchronization and the inconsistency problem arise. This is because whenever RBBMS is updated, the RDFS should also be updated (Janev & Vraneš, 2011).

3.2.2 Interoperability:

Interoperability has been a concern for any of the open systems (Lu, Dong, & Fotouhi, 2002) especially with the semantic web since it has to be scalable. According to Valentina and Sanja Interoperability has been one of the most challenging issues. As per the authors, one of the tasks of the semantic web ontology engineering is to integrate the ontologies to build a common ontology for the web and consumers in a particular domain. The ontologies available often exhibit various conceptualizations of similar or overlapping domains hence leading to the issue of interoperability (Janev & Vraneš, 2011).

3.2.3 Scalability:

One other issue with the semantic web is the scalability issue which was identified quite early in the semantic web research (Janev & Vraneš, 2011).It results from the need to classify and to arrange the data even when it is expanding rapidly. "Despite the huge number of semantic applications, advanced Semantic web technologies as the reasoning under the open world assumptions are not applicable in real time on the web scale" (Janev & Vraneš, 2011).According to Alesso & Smith, the semantic web is a collection of ontology based annotated pages which are linked in such a way that the liking represents the structure. But this linking does not exploit the basic semantics completely. Using indexes to group the content of the semantic web can be considered as one good approach for an easy development of applications. However, according to the authors, aggregating the content on a global scale would be a very difficult challenge. Two main challenges have been identified by Benjamin et al, one is storing and organizing the semantic web pages and the second issue is related

to finding the information easily on the semantic web. According to the author, there should be a mechanism for finding the semantic.

3.2.4 Globalism:

The widespread adoption of semantic web technology has become a problem since the existing technologies have already proven to be useful. Additional investments are required to mature Semantic web by optimizing the reasoning and querying strategies (Janev & Vraneš, 2011).

3.2.5 Privacy:

A web that gives out a vast amount of information about everyone and everything is a big drawback. Information that is so easily accessible to anyone is a big threat to privacy. Most likely we would notice that e-commerce websites will be better at finding out just what we would want next (Simmons, 2007).Many researchers believe that the semantic web has the capability to bring meaning to the data which is already available on the web. By referencing various sources of information in the attempt of bringing meaning to the information, the semantic web can pose threat to a person or group (Fildes, 2006).These problems already exist in today's web although this would be more complex. For example, there might be multiple personas of a single person on the web which might allow him to separate his personal and professional day to day activities. If someone accesses this information and publishes it in the semantic web environment which can be done as FOAF, which means friend of a friend file, any search of this kind would link one person to the other. This makes the anonymity of the web insecure (Shabajee, 2006).

3.4.6 Research Scope:

The scope of the research is confined to finding the social and technical challenges of the semantic web. The research will investigate the challenges and issues that the researchers face in trying to make the semantic web a reality.

4. RESEARCH METHOD

The research methods are the techniques which are used to collect data such as questionnaires, interviews or observations. It is not an easy task to collect information using questionnaire for an empirical study since Semantic web is still in the very early stage of adoption (Joo & Lee, 2009).

Hence, the collected data is secondary data taken from multiple sources like the journals, conference proceedings, academic journals, literature and

books on Semantic web, library databases, internet searches and other documents.

The learning from the literature reviews, academic papers would serve as a useful technique to carry out the research. The research question was a result of the findings that were carried out for a company called SimX limited which is a small company based in Manchester, United Kingdom. It is a consultancy and research based company which specializes in modelling and simulation. They also provide services to companies in Europe and UK.

The research question was framed with an objective to conduct an in depth analysis of the challenges faced by semantic web technology.

This is a qualitative research study. The qualitative research uses different kinds of methodologies which are: fieldwork, observing participants, unstructured interviews, textual analysis, life histories, and discourse analysis (Auerbach & Silverstein, 2003). The methodology used for this research is Discourse analysis [6].

4.1 Discourse Analysis

Discourse analysis is a qualitative method of reading: documents, conversations and texts that explore the relations between communication, knowledge, power, language and social practices (Muncie, 2006).

To carry out this analysis, multiple sources of data were collected from the journal articles and sites which are dedicated to the research and development of semantic web technology.

Three categories of sources were targeted to find out the issues and limitations they face in their own respective areas. The audience were: i) The Industry experts; ii) The Semantic web community and iii) Other online resources. The texts were collected and segregated into relevant source. Then the texts which narrated the same ideas were grouped together placed under respective sources. The texts were then analyzed to derive codes and these codes were then grouped under a theme. The themes were then analyzed from the point of view of the industry experts, semantic web community and other resources. The issues were analyzed and supported with literature where ever necessary. This method of analyzing data is called open coding [7].

Table I explain the categorization of codes into Technical and Social Issues.

4.2 Analysis and Findings

In this section, the data were analyzed to identify the challenges which currently plague the success of semantic web. Five themes were derived through qualitative discourse analysis. The themes have been listed out with the corresponding codes.

Data will be analyzed to find out the limitations or challenges of semantic web technology from the viewpoint of the Industry experts; Communities who study and discuss about semantic web and other social media such as the discussion forums, conferences proceedings and websites. The reason for choosing these three categories is because semantic web technology is still in its nascent stage. Only researchers in this field will have the required expertise to analyze possible limitations, issues and challenges of the semantic web. These findings have been analysed broadly on 2 categories – technical and social.

No interviews and questionnaires were analysed in this research because the knowledge about semantic web is limited to the researchers and experts in this field. Several papers, community updates and conference proceedings were carefully read and analysed to gain insight on important points [12].

4.3 Issues With RDF And RDF Stack

4.3.1 Industry experts: One limitation is that RDF stack hides complexity instead of reducing it. For instance, some frameworks for RDF allow programmers to work with RDF even after the implementation. While doing so they tend to hide the benefits of RDF like dealing with data structures that is not known at the compile time. The RDF stack is part of the semantic web stack which forms the basic layer of the semantic web. The RDF stack comprises of the RDF and the RDFS schema which is explained in the Literature Review.

4.3.2 Semantic web community: Another issue with RDF is that it is time consuming to map all data into the RDF format. RDF is very flexible (it follows a graph data model and each object is mapped in sets of triples - "Subject", "Property" and "Object") in order to promote the underlying theme of interoperability among different systems and software. Due to this processing RDF data is slower than other comparable systems.

RDF's are also complicated and they cannot be understood by non technical people. In the process of making RDF more flexible, developers, end up with documents that are complex and difficult to analyze. It is verbose and difficult to be read or

written by humans. The developers use the RDF tools to read and write. RDFs are also expensive and it cannot be implemented in a lightweight form (Byrne & Goddard, 2010). Large firms like the

BBC may be able to work their way up the semantic web stack, but for many start up firms investment in the new technology framework will be a huge commitment[13].

TABLE I: Codes Categorized Into Technical And Social Issues

THEME	TECHNICAL	SOCIAL
Issues with RDF	• Improper planning • Hidden complexities • The RDF stacks slower than other systems • RDF format is complicated • Complicated documentation • Flawed concepts • Difficult to implement	• Insufficient popularity • RDF expensive to run • High learning curve • Lack of awareness • Lack of common initiative
Standardization	• Complex standards • Errors due to high complexities • Standard technology issue	• Multilingualism
Lack of Knowledge	• Unable to explain propositions	• Fading popularity • Yet to deliver results • Setting incorrect expectations • Fading confidence in the potential • Lack of business focus • Lack of awareness of semantic web • Over-hyped by start-up firms. • Lack of common language
Privacy and Trust	• Accuracy of information	• Excessive trust in the data available on the internet • Misuse of information • Can keep track of consumer behaviour • High risk of fraud • Lack of privacy
Humans are Irreplaceable	• Machines improve productivity productive • Machines cannot perform unless told • Semantic web cannot match humans	• Human memory • Semantic web v/s human thoughts

4.3.3 Other online resources: There is a general lack of awareness among the developers regarding semantic web. There is no initiative taken to solve the fundamental problems. A fundamental problem is the issue of querying RDF data (Arenas, Gutierrez, & Perez, 2009). The RDF data represent a collection of "Subject", "Property" and "Object" which is also called triples. The RDF queries involve a lot of self –joins over the triple table (Yan, Wang, Zhou, Qian, Ma, & Pan, 2008). When the number of triples becomes very large and it becomes very difficult to cache in memory each time it is filtered. There is still a need of finding a

new indexing scheme and storage that can make the relational database efficient to support the RDF queries (Yan, Wang, Zhou, Qian, Ma, & Pan, 2008).

Getting to the core of the RDF technology is as complex as it gets. Swoogle –the semantic web search engine estimates that of the RDF files harvested by them at least one-third of it contains errors. Additionally, the conversion of RDF poses a unique challenge to the Linked data, community due to the complexity of the document. (Byrne & Goddard, 2010).

From all the perspectives mentioned above, it can derive that RDF is posing several issues in different contexts. There are problems with complexities, efficiency and conversion. Taking into account all the issues mentioned above, it can be said that RDF issues can be stated as one of the challenges facing semantic web [11].

4.4 Standardization

4.4.1 Semantic web community: Semantic web standards are complex. For data representation and structuring the Semantic web uses OWL and RDF standards. According to some critics RDF standard is quite complex to be able to implement. For example, the conversion of RDF is one of major concern of the Linked data community. It is a big task for the organizations to convert all the existing data into RDF since there will be a huge amount of unstructured data and very few experts who specialize in metadata.

4.4.2 Other online resources: Following a common language also means following one particular standard. Similarly, in order to attain interoperability, it is necessary to follow a common standard.

Multilingualism is one of the issues faced by the Semantic Web community. It is a known fact that the web is full of documents which are updated by millions of active users worldwide. These documents will be in different formats and languages. Hence, there are certain issues to be tackled for a multilingual semantic web. Some issues are, for example: a) Words with different meanings; b) Words that convey meaning change over time and distance; c) Meanings depend on the context; d) Managing definition of semantics over a period of time (Bryan, 2003).

Words with Different meanings: Words can have different meanings depending on the grammatical context they are used in. For example: Sheep is a noun which can be both singular and plural. Same words in different languages can have different meanings.

Words that convey meaning change over time and distance: Words that define the meaning can also change over time. It can be due to technical or cultural reasons. For example: In Science, Plants have scientific names and also formal names, the scientific names are given by the formal system of naming the species of plants, whereas the formal names or common names are given at a later date. The same word can have different meaning depending on the geographical location. For example: The word "Boot" is used in the USA and

UK, but the meaning of the word is different in both these locations (Bryan, 2003).

The meanings depend on the context: The meaning of the word depends on the context in which it is used. For example: The bus "runs" on wheels; The River "runs" through the valley; The machine "runs"..The word "runs" has different meaning in different context. Thus, the meaning depends on what you are referring to.

Managing definition of semantics over a period of time: Concepts change over time. The people responsible for defining the concepts also would be different from the people identifying the instances of those concepts (Bryan, 2003).

The above information helps us realize that maintaining technical standards or language standards is one of the challenges that semantic web needs to overcome so that the users world over can benefit from it. Various possible solutions have been suggested by researchers to overcome these issues and it would be a long wait till the solutions work and the results are visible [14].

4.5 Lack Of Knowledge

4.5.1 Industry experts: Lack of knowledge in general can be defined as ignorance. In this context, it would only be specific to the knowledge of the latest technology or the lack of it.

Just like people have not been able to see any benefits of 'artificial intelligence', so has Semantic web failed to deliver any evidence that it has the capabilities to become the next generation web. It is a fact that any new technology takes a significant amount of time to establish itself and start showing results. While doing so, it is liable to face many challenges. In the case of Semantic web, the gestation phase has been more than a decade, yet there are hardly any practical benefits visible due to this concept. One reason can be that there are not many people who know about the technology or the standards are too complex and it would take even the developers a lot of time to understand them. As there are very few people who understand the concepts, there will even less knowledge sharing. Also, people outside of the research circles would not want to commit to a single standard since it is most likely to be surpassed by another standard that is not compatible[8].

4.5.2 Semantic web community: Simple method such as word counting using analytics on unstructured data has caused confusion in the market and set wrong expectations.

There is no clear view as to when the semantic web would become a reality. It is a challenge to explain

the technicalities to the users, investors as to what is happening within the community. It is a long process which takes time. This in turn results in losing both the users and the investors. There is a lack of basic business sense and knowledge to be able to answer some of the simple questions which the non semantic applications can do, which can be reason for not being able to come up with a killer app for Semantic web."Killer apps are the technologies that have the capability of creating new markets and widespread behavioural patterns" (O'Hara, Alani, Kalfoglou, & Shadbolt, 2005).

4.5.3 Other online resources: People in general lack the understanding of the concept itself. People might not even know the meaning of the word semantic let alone Semantic web. Some start up firms, venture into the new technology and over hype the expectations of the consumers without even having the focus required for a new technology.

From the analysis above it is evident that there is a lack of knowledge about with the public and also the communities.

4.6 Privacy And Trust

4.6.1 Semantic web community: Excessive trust or reliability of the data found on the internet. It is a tendency of the people to believe whatever data they find on the internet as reliable and trustworthy. With Semantic technology trying to link data to provide accurate information to users, it also tends to give out too much information which can raise issues of privacy. For instance, due to the increase in social networking sites like Facebook, Flickr, people tend to put their personal information, pictures and views etc on the web without having full control of the information that can be leaked out or misused. Blogging about meetings is a violation of not only personal information, but also the corporate policies; but this has occurred many a time over the past decade.

 Another limitation can be losing accuracy of the search results. This relates to the web being accessible by everyone, where data can be modified, shared and retrieved by individuals at any given instance.

4.6.2   Other online resources: There is an increase in invasion of privacy due to the decrease in anonymity. There are a lot of disadvantages of the web that publishes a vast amount of information. People are always ready to make quick money misusing the information available on the web. For example, eCommerce, business like Amazon keeps track of the customers' purchases

and suggests items that you may want to buy in the future and also suggests what other people bought or looked into. Even if a person visits a website casually with an intension of buying products and ends up not purchasing, the website comes to know of the customer's interest and then sends contextual ads on any website the customer visits. This has been raised as a serious concern by web users worldwide.

The Semantic web is all about linking data on the internet. The increase in the level of access to information, use of connected devices, sharing and integrating data sources will introduce a privacy concern for business and consumers. (Baumann, 2009). There can be several applications created as a result of trying to make the machines understand data and exchange it. For example, machines will be able to exchange and compile the list of the sites that a user visits, his or her online purchases and personal hobbies and interests. (Kim, Hoffman, & Martin, 2002).

Personal information about an individual can be easily found out by anyone and this could prove to be very risky and can lead to increases in cyber crime.

Thus, it can be said that although the aim of semantic web is to be able to gather information quickly and efficiently, it may do so by posing a threat to the society due to its potential to link and retrieve data. This can be one of the challenges that semantic web technology needs to overcome or find a solution to become a "web of trust worthy data".

4.7 The Humans Are Irreplaceable

4.7.1 Industry experts: Humans have a memory of their own to understand, interpret and convey the meaning of things they see, feel or do. Machines (computer or programs) on the other hand cannot do anything on their own. Humans acquire knowledge from things they learn and see over a period of time. The challenge, therefore, would be to put this knowledge into the machines. To bring in the human factor into machines is agreed to be impossible in the current state, hence programming software that can address all the nuances of a situation that can be perceived by a human is impossible with the current processing power.

4.7.2 Other online resources: One of the features of the Semantic web is that it enables machines to use web content and understands the meaning of the content i.e. the semantics of the content. This does not mean that the machines will be able to perform the tasks on their own if they understand the meaning of one content. Even this would

require a programmer or human to make it possible. Semantics can be different for different programmers. This can lead to confusion unless it is defined globally. Therefore, it can be assumed that machines always need human intervention to perform a task or a function and hence they cannot be replaced with humans[10].

Machines were invented by humans to in turn help humans perform better. They do not have a mind of their own and they can be only told what to do.

From the above analysis,it is clear that machines cannot replicate human behaviour or understand their behavioural patterns completely because they are very dynamic. Machines, on the other hand have no emotions and are built to perform only specific tasks when required.

[5] CONCLUSION

Although the researchers haven't given hope, there is an ongoing effort to bring about the practical benefits of this idea which is still in its conceptual stage. In order to identify the various challenges, specifically on the social and economical fronts, it is important to analyze information from various sources. Due to its nascent stage of implementation, the most accurate information utilized to derive our conclusions has been from industry experts, semantic web forums and other credible online sources This analysis helps us realize that the lack of standards deeply plagues the success of semantic web. The multiple fronts of operating this standard and the idea of trying to accommodate every kind of data without strict rules to abide by has made the whole RDF format complicated. This has created problems in the seamless integration of semantic web into practical areas of application. As far as accuracy of such information is concerned, there is still a long way to go because the Web is accessible by everyone all over the world and it gets updated with relevant and irrelevant data at all times. Therefore, it is a far reach to be able to keep a tab on the data that gets updated on the web. The claims made about machines replacing humans as a result of the development of the semantic web are not possible in reality simply because the machines were human invented and they cannot perform any tasks without them. Rather, it can be said that machines can become more efficient to reduce the effort required by humans. There is no doubt that the technology is very tough to achieve. There is no evidence that it would become the next generation web over the coming year, but the promises built up all these years are still a good reason to work towards it. There needs to be a number of successful projects

that can convince the public and the organisations to be able to move forward. The above raised challenges need to be addressed sincerely in order to realize all the benefits of a semantic enabled web.

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