

A Study of Future Internet Applications based on Semantic Web Technology Configuration Model

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Abstract

The need for future Internet applications based on semantic web technology should ensure the growth of industrial technologies by developing practical ones. The design direction for a next generation web based industrial application systems may be a system design that can solve the problems of semantic web, especially intelligent system, knowledge acquisition and engineering, and knowledge representation. The proposed framework aims to be used for technical engineering for industries and it could be a system design for manufacturing products, developing services, and analysis and sales. A system design should develop a framework available for real industrial fields, not just for academic research purposes. The range of an integrated design for related technologies includes the integration and redesign of existing technologies for web utilizing and the new technology design. This research proposes a configuration model of future Internet applications based on semantic web technology for logical system and adaptation to standardization theory as the conceptual model of neutral theory.

Keywords: Future Internet Application, Network Technology, Ontology Web, Semantic Web Technology

1. Introduction

The next generation web services are recognized as the next generation of web technologies in web 3.0-based services from the semantic web. The growth of the industry to ensure the next generation of Web technology need for integration framework. The technology will change dramatically over the next 10 years of human life is the next generation of web technology. Developed countries are already in the next generation of web industrialization and commercialization stage, but the country is spread development commercialized novice level. This is because domestic industrialization and commercialization of the next generation of web technologies is slow why is it necessary to develop a number of different technologies, each time before the next generation of web commercialization. The massive development costs associated with technology integration is required as a private enterprise. Eventually one of the alternatives to

address the underlying problem that troubled industrialization causes of individual enterprises. For example, the semantic web, distributed DB, natural language processing, artificial intelligence, autonomous agents, information security technology such as technology. The factors that increase the burden of the development is that the development of these technology and interworking. The reason why the next generation of web technical industrialization and commercialization is harsh conditions such as the size is the poor level of technical and capital. Since the implementation of technology must be integrated with different criteria when developing independent technology. We present a semantic web based information technology integration framework model design method for the adaptation of the logical framework and theory standards in neutral conceptual structure theory study. The organization of this paper is as follows. Section 2 introduces the background of future web internet. Section 3 discusses structural design of the

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Future Internet application technology. In section 4, we conclude this paper.

2. Background

2.1 Future Internet Concept

Future society internet can accommodate a variety of needs and demand caused by economic, social and cultural. It encompasses a new innovative services such alternative technique, converged services, intelligent services, smart work to overcome the structural limitations of the current Internet and future Internet. Internet technology and environmental is newly re-design by new concept and structure that the environment constantly provided by optimum services that any time, and anywhere individual circumstances all fused by broadcast, communication, computing, sensor networks. There are two kinds of approach of innovative and progressive to the future internet. Table 1 is described the existing and future internet.

- Gradual approach (5-10 years): The next generation of internet concepts is gradually supplemented current technology. Maintaining compatibility with existing Internet based on an existing broadband communication network, and a gradual improvement of the technique.
- Innovative approaches (15 years later): Introducing a completely new approach to innovative technology, the Internet changes the paradigm to the new re-designed Internet.

2.2 RDF and Ontology Web Language

Ontology language are based on W3C by Semantic Web Technology such as RDF, RDF-S (RDF Schema) and DAML+OIL, WOL. The very basics RDF, which is a XML

Table 1. The existing and future internet

Section	Existing Internet	Future Internet
Concept	Network role is simply to connect only	Intelligent computer of one entire Internet
Formation	Uniform configuration for IP-based communication protocols	Composed of different service networks
Immediate Cause	Limited service center network technology	Service oriented network of suitable to market requirement

based framework for describing the metadata for a particular resource. The concept called 'Triple' key is different from the conventional methods and have been treated as a single unit of a record technique is treated as a unit of a resource the attributes, the attribute value is the core of the RDF. This sophisticated technology made it possible for resources due to fragmentation of the resource attribute expression. The property (Predicate) is over an infinite to set up relationships between resources. Each resource will have a unique identifier by URI. And a statement describing the resources also prevents collisions between means using the defined by a unique URI in the XML Namespace attribute. Because the attributes and the attribute values for the resources can be re-charged may be assigned a different URI and the value of the attribute, the attribute values specified by the back of the resource is also being described.

2.3 Semantic Web and RDF design

There is no expression with a number of different structures, such as XML structure, and in terms of the advantages of RDF. Therefore, the result is only one interpretation for such information. Is that there is a problem with XML tag names in the overlap and ambiguity still insufficient in terms of meaning to implement the semantic Web is that on the other hand, the RDF¹. This is the same as XML to different tags, but may be in fact the same meaning². As XML is the same as the tag. However, other means may be used in accordance with the user.

3. Future Internet Application Technology Architecture Design

3.1 The Next Generation of Web Technology Architecture

Integration of the next generation web technologies are the methodology for designing a practical model framework for industrialization of next generation web related technologies including Web Semantic. The target products, services development, analysis, system design required for the sale of this framework model are proposed. This is not scientific research purpose but to develop for available frame works in industrial environment. The range of design technologies is the integration of existing technologies, redesign web application of existing technologies, and new technology design information.

The design for interworking with the related technology is interworking with the next generation and the existing web, interworking between web technology, adjusting the control of the entire system, interworking system operation.

- The integrated design target is largely web services technology, XML, Ontology, RDF, web service technology. The service technologies and messaging protocol technology standard on standardized web technologies. The designed methodology of develop by comprehensive framework is the next generation web area integrated framework.
- Analysis of the life cycle processes of the semantic web services, and development of framework for the semantic web service to support it, and to establish the technical elements for the development and application of research.
- Derive for the framework of analyzes the semantic web service of the factor technology in the web service and characteristics and trends.
- Present the development direction of the semantic web service application system and formulated the framework architecture for building the semantic web service system.

3.2 The Basic Design Procedure

The distributed component model for the access and use of the Web environment, using the Internet standard protocol for remote web objects in XML-based Web services are reusable. When we use the web service, the web service should be accessed via by the program. Should use the same criteria for the e-commerce, the agent application web services are both consumers and producers should be established as a part of Web services standards. The basic design procedure for technical characteristics step of the next generation web analysis, technical demands step of the next generation web investigation, technical design set goals step of the next generation web, design framework step of the next generation web, technical interworking design step of the next generation web. The basic design standard consists of the integration and interworking function of basic architecture. The basic features design are the semantic web, the distributed DB, the natural language processing, the artificial intelligence, autonomous agents, the information protection design, the integrated features design is based on the basic features design of six area to integrated system. The interworking

function design is the interworking design between integration function and technology, the interworking design between the next generation web and traditional web.

Table 2 is described the basic design procedure. The standardized design is the integrate function and the interlock function to design the national and international standards models. The automation process design is the integration function and the interlock function to design automation processing framework.

3.3 Basic Technology Structure

- Technical studies for the Semantic Web is Mainly in charge of the W3C standard for Web can be divided into ontology techniques based on RDF (Resource Description Framework) and Topic Maps technology with a focus on the ISO. Will be described in comparison to HTML and XML is as follows. HTML defines the output format. XML creates a well-defined document compared to HTML. Another one is the tag name defined freely for the meaning information that indicates. While implement difficult to semantic web representations of XML is only provides structural definition of the document element, and does not define the relationship between the information resources of semantic. May be defined by the DTD or XML schema rules on the use of tags.
- Network Infrastructure Technology: Ultra wideband wired and wireless converged networks, Construct hardware such as Object intelligent network and effective network operation for Logical program and virtualization.

Table 2. The basic design procedure

Step	Procedure name
Architecture	Hardware, software and network architecture
Algorithm	In technical concept architecture area, the algorithm principle
Technology Association	Relevant the next generation web technology of relationship features
Web mechanisms	Mechanisms differences between the existing web and the semantic web.
Ontology	System type, building coverage, building ontologies according to the target
Search Engine	Next-generation web search engine sub-system structure
Technology interlock	Technology between the interlock phenomenon and function.

- Structured technical architecture: Technical requirements for Future Internet and implement service with network layer for the communication and management.
- Applied Technical Services: Implementation of new application service such as implement service for new environmental personalized conditions and context cognition, realistic, smart, continuous, green services.
- Basic architecture: Consists of integrated functions, features two interlocking architectural sector.
- Basic functional design: The semantic web, distributed DB, natural language processing, artificial intelligence, autonomous agents, information protection design.
- Integration Design: Integrated system design features of the six basic areas.
- Interworking Function Design: Interlock design between integration technologies, interlock between next-generation Web and existing web.
- Standardized design: Integration, national and international standards designed to model the interlock function
- Automated process design: Integration, process automation framework design of interlocking functions

3.4 Semantic Web Application Framework

In the semantic web environment is relatively static structure for RDF ontologies to describe resources and narrative knowledge. On the other hand, it is responsible for the dynamic role of the mining and processing of the information provided to meet the needs of the user, based on this information resources and knowledge agents. Therefore, the agent technology and semantic web technology through synergistic complementary to make activation of agent technology and realize from semantic web.

- Semantic web redeveloped technology is understanding of information means and operation, based on technology, center technology of information processing method, Standardization, understanding of information means and operation is understood information and operation by software and program or agent. The center technology of information processing methods are ontology engineering, knowledge representation and technology standardization by ISO with W3C.
- The use of open standards and protocols

- Information security through the limited information access control
- Optimization of system resources and works with existing database
- Select a consideration of the future expansion of the organization
- Ensure reliable features for business transactions

Framework structure design is Hardware architecture and software architecture, the operating system, database structure, networking architecture, protocol architecture and like six categories. Framework technology design consist of inter-system integration technology, interlock between systems technology, hardware configuration, software configuration, operating system configuration, database technology, protocol technology. Framework features design consists of adjust control, integrated function, interworking, QoS, traffic processing, diagnostic analysis, and security features. Framework procedures consist of the diagnostic system design, requirements analysis, design goals, structure design, feature design, verification test. Table 3 is described the basic technology structure.

4. Conclusion

The next generation web application system design is described by dividing the like software system design, network design, security system, database design. The next generation web application integration technology

Table 3. Basic Technology Structure

Section	Existing web	Semantic Web
understanding of information means and operation	Passively load the search results and decision.	Software or agent
Based on technology	Traditional information technology	Artificial intelligence techniques
center technology of information processing method	the database processing and information processing of individual programs	Ontology Engineering and knowledge representation
Standardization	Traditional information technology	ISO and W3C, W3C: RDF, RDF (S), OWL released.

design goals are set as follows. Application system design direction is designed for the activation of intelligent system of semantic web, acquisition knowledge and engineering, solving issues for knowledge representation. Design of semantic web shall be able to give a fundamental solution to the two problems. It is possible to reduce the effort of the acquired knowledge, thereby use agent that automated program that can handle many information that provided by users in web environment. Especially, automated program called agent has been key to activation of critical success. Such as the web increases with the number of users in a distributed computing environment, a rapid increase in users get a full-fledged commercialization of agent technology. It premise to that distributed environment and autonomy function. Agent technology is resulting in expansion of the various new demand that shorten the development time and web based software system and adapt more quickly than in web environment.

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6. References

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