Survey on an Enhanced Framework for Service Governance in Cloud of Things

Sandhiya.B[1] Dr. Chakaravarthi. S[2]
[1]M. E. Student [2]Assistant Professor
[1,2]Department of Computer Science & Engineering
[1,2]Velammal Engineering College Chennai, India

Abstract— Cloud of Things offers an operational Internet of Things framework for home and industrial appliance manufacturers and service providers. There is no need to build or develop your own Internet of things solution; they provide a working solution out-of-the-box. In this paper we analyze the elements which were used for IOT such as web services. The survey deals with 2009 to till date. Various authors view were described and tabulated. The survey gives superior result for the service governance but they not contain ontology and structured data and also they contain SOAP web services process. The protocols and web domains used for the web service oriented applications also discussed here. The discussion deals with service on Ontology and its effects too. Those hazards will rectified by awesome proposal using RESTFULL API web services.

Key words: Cloud of Things, Web Services, Restful API, Mobile Integration

I. INTRODUCTION

A. *Web Services*

A Web service is a service offered by an electronic device to another electronic device, communicating with each other via the World Wide Web. SOAP (Simple Object Access Protocol) is a messaging protocol that allows programs that run on disparate operating systems to communicate using Hypertext Transfer Protocol (HTTP) and its Extensible Mark-up Language (XML).

B. *Soap*

SOAP provides the Messaging Protocol layer of a web services protocol stack for web services. It is an XML-based protocol consisting of three parts: First is an envelope, which defines the message structure and how to process it. Second is a set of encoding rules for expressing instances of application-defined data types. Third is a convention for representing procedure calls and responses. SOAP has three major characteristics:

- Extensibility that is security and WS-routing are among the extensions under development.
- Neutrality that is SOAP can operate over any protocol such as HTTP, SMTP, TCP, UDP, or JMS.
- Independence that is SOAP allows for any programming model.

C. *Restfull API*

A RESTFUL API is an application program interface (API) that uses HTTP requests to GET, PUT, POST and DELETE data. Representational state transfer (REST), which is used by browsers, can be thought of as the language of the Internet. Which is an architectural style for networked hypermedia applications; it is primarily used to build Web services that are lightweight, maintainable, and scalable. A service based on REST is called a RESTful service.

The traditional services contain the model-driven service with the process of information modelling, information configuration and information interaction in semantic level process and as to facilitate mobile services development. In this paper going to discuss about related works for the new development and also discuss about disadvantages of the existing works.

II. RELATED WORKS

There are many plans and technologies for end users to develop and personalize mobile applications. In this paper we discuss about varies type of reference with their intelligence approaches.

Hongming Cai,et al..[2] Proposed method not only a semantic-driven method but also a semantic conception and reasoning mechanism. It gives the business process model for the mobile application development and also End User Development provides a typical development for web-based applications. The application scenario construction based on ECA (Event- Controller- Action) rules. The system components of mobile sale application are RESTful services. Further research will focus on ontology evolution and so as to provide a continuously mechanism for service governance. It contain static execution in future will focus on dynamic execution after application development for different types of devices.

Timothy Banach, et al..[7] The proposed method contains Data Retrieval for Client Projects. And details the analysis of open source data, rather than internal data. The advantages of the proposed model contain saving time and improving diversity. The applications contain Ontology Mapping Component, Data Matching Component and Relevance Assessment. Term frequencies are used to calculate weight.

A. *Weight Calculation*

The Mapper calculates the weight (W) of each Keyword (k) using the normalized term frequency (TF) and the corresponding ontology level (R).

The following formula defines the assignment of weights:

$$W(k) = \Sigma d \in D \; TFd / Rd \; 2$$

D = {all pages having k as a keyword}, d is a single page in set D.

The limitation of this paper contains local access and selecting pages using cosine similarity.

Rupasingha A. H. M. Rupasingha,et al..[6] contain Similarity Calculation process in Web Service using Ontology Learning with Machine Learning. It support vector machine for calculating similarity in achieve

ontology instead of edge count base method. It use to analysis subclass-Superclass relationship, Property relationship, Data property relationship and Object property relationship. SVM(Support Vector Machine) method is apply for ontology use to calculating Web service similarity using machine learning will give better results. This approach more efficient than the previous event count based, HTS and CAS approaches and more runtime. But this approach not better result of clustering.

- Hasan, S. et al..[1] Approximate Semantic Matching for the Internet of Things of Events is realized based on the use of distributional semantics relatedness measures, a matching model rooted in uncertain schema matching; a probability model for uncertainty management. The model can contribute to the middleware layer of IoT to support application developers and to users specifically with low-to-medium prior knowledge of event semantics. The proposed algorithm which we call Top-k by an Evolving Frontier. The limitation of matching events which lack some contextual information and approximate matcher tackles uncertainties about missing values.
- Miguel et al.. [4] Ontology-based annotation and retrieval of services in the cloud present a semantically-enhanced platform that process of discovering the cloud services. The approaches use to reduce the amount of mistakes created by the manual extraction of semantic information and also use to increase the amount of knowledge gathered. The approach able to manage multiple ontologies and also provide support for both ontology evolution and document evolution. TF-IDF algorithm use to calculate Weights. The first phase involves the annotation process and the second phase semantic annotations. Third phase semantic search itself. But this approach contains limited in keyword-based queries.
- Yinghui Huang,et al..[8] Rough Ontology Based on Semantic Information Retrieval system named as ROSRS not only from actual ontology also semantically information from rough ontology and constant information can be gotten. The functional module divided into three modules: Knowledge management module, Information management module and Semantic retrieval module. The proposed semantic information model, software development platform and the query interaction interface of ROSRS are built by Java and Eclipse. The results are obviously superior to the syntax and precise ontology based semantic retrieval.
- Zhang, H.et al..[10] This paper use to modeling the web service development process based on MDA (Model driven architecture). It gave blueprint and procedure for web service development. This paper followed SOA based system development lifecycle. It contains three structures: concept structure, logic structure and implementation structure. The advantages of MDA and web service use to solve interoperability and integration of heterogeneous systems. In future will focus to combine three-layer structure and also develop software tools to support the modeling.
- Yuangang Yao,et al..[9] Research in Integrated Environment of Enterprise on Ontology-based Multi-source Engineering Information Retrieval the framework consists of ontology module, document analysis module and query processing module. The framework contains Engineering Knowledge Base use to retrieval information depends on the user query. It use to improve the efficiency and precision of retrieval. In future will focus on heterogeneous database to be store and to be consider how to embed EIR framework into existent multisystem.
- Jibran Mustafa, et al..[3] Previous information retrieval techniques based on context of the concept(s) .The proposed Semantic Information Retrieval based on Ontology techniques based on the thematic similarity approach. This technique searching is performed based on the meaning of the keywords.

B. Ranker

Used to sort the documents according to their relevance to the user's queries. Freq ij be the raw frequency of the triple ti in the document dj

$$tf_{ij} = \frac{freq_{ij}}{\max_i (freq_{ij})}$$

idfi be the inverse document frequency for ti given by:

$$idf = \log(\frac{N}{n_i})$$

The final tf. idf weight of triple i to document j is calculated as :

$$W_{ij} = tf_{ij} \times idf_i$$

RDF (Resource Description Framework) technique used instead of keyword matching technique. The disadvantage of this paper contain unstructured data in future will focus on to convert unstructured data into structure manner.

- Mukhtar, M.A.O.et al..[5] Proposed method enhanced approach for developing web applications. They used Model Driven Architecture (MDA) to develop web applications. QVT(Query\View\Transformation) use to transaction language to automate the mapping specification from PIM to PSM. This method called as WSDMDA(Web Site design Method using MDA) generates structural annotation in different structural element semantics in explicit way.

III. EXISTING WORKS

The above related papers all give superior result for the service governance but they not contain ontology and structured data and also they contain SOAP web services process. In propose system will focus on RESTful API web service application for adaptive dynamic execution among different types of devices.

IV. PROPOSED SYSTEM

The proposed approaches containing ontology and also structured oriented data. The RESTfull API gives fast performance, high security, fast transaction and cost optimization to the processes.

A. System Architecture

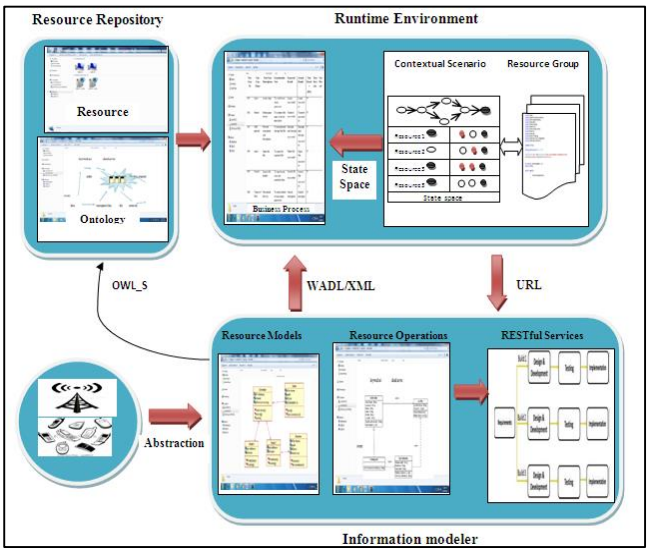

Fig. 1: System Architecture

B. System Description

The system architecture consists of three modules, which are Information Modeler, Resource Repository and Runtime Environment.

1) Information Modeler

It contains Resource Models, Resource Operations and RESTful Services. Resource Operations are actions the cluster can perform on a resource by calling the resource agent. Resource agents must support certain common operations such as start, stop and monitor, and may implement any others. The proposed model to manage the data in Semantic level. RESTful service gives the dynamic execution for different type of devices after application development.

2) Resource Repository

The Resource Repository module for Information configuration. It uses to connect Information modeler and runtime Environment. Based on the ontology, these resources are organized and dynamically managed with semantic relationship. The resource models from different resources are mapped and configured. It aims to facilitate and promote collaborative research between academics and information professionals. A Resource is a source or supply from which benefit is produced. Benefits of resource utilization may include increased wealth or wants, proper functioning of a system, or enhanced well-being. Ontology often deals with questions concerning what entities exist or may be said to exist and how such entities may be grouped, related within a hierarchy, and subdivided according to similarities and differences. Although ontology as a philosophical enterprise is highly theoretical, it also has practical application in information science and technology, such as ontology engineering.

3) Runtime Environment

Runtime Environment for information configuration. It use to configure execution of business application environment and rules. Software development programs often include an RTE component that allows the programmer to test the program while it is running. This allows the program to be run in an environment where the programmer can track the instructions being processed by the program and debug any errors that may arise. It contains Contextual Scenario and Resource Group to give state space for Business process. Business process is a collection of related, structured activities or tasks that produce a specific service or product for End User.

V. Conclusion & Future Work

The survey gives superior result for the service governance but they not contain ontology and structured data and also they contain SOAP web services process. In this paper, we propose a web service application for ontology evolution for intelligent application which gives fast performance and transaction, security and cost optimization. And also focus on dynamic execution for different types of devices after application development. Future work will focus on to develop web service application using PHP and the communication between server end and client end by web services such as SOAP/Restful API.

References

[1] Hasan S, Edward Curry, Approximate Semantic Matching of Events for the Internet of Things, ACM Transactions on Internet Technology, 2014, Vol.14, No.1

[2] Hongming Cai, Yizhi Gu, Vasilakos .v , Model-Driven Development Patterns for Mobile Services in Cloud of Things, IEEE Transactions on cloud computing, 2016, Vol.1,pp.1-14.

[3] Jibran Mustafa, Sharifullah Khan, Khalid Latif, 'Ontology Based Semantic Information Retrieval',4th International IEEE Conference on Intelligent Systems 2008, Vol.22,pp.14-19.

[4] Miguel Miguel Angel Rodriguez-Garcia , Rafael Valencia-Garcia , Francisco Garcia-Sanchez , Javier Samper-Zapater .J, 'Ontology-based annotation and retrieval of services in cloud', Elsevier, 2014 Vol.56, pp.15-25.

[5] Mukhtar M.A, Mohammed Abdalla Osman Mukhtar, Mohd Fadzil Hassan B, Jafreezal Bin Jaafar, Rahim A, 'Enhanced Approach for Developing Web Applications Using Model Driven Architecture', International Conference on Research and Innovation in Information Systems, 2013, pp.145-150.

[6] Rupasingha A. H. M. Rupasingha, Calculating Web Service Similarity using Ontology Learning with Machine Learning',IEEE International Conference on Computational Intelligence and Computing Research, 2015.

[7] Timothy Banach, Fanjia Kong, Ziding Liu, Dinesh surapaneni (2016), 'Data Retrieval for Client Projects: Matching Data Onto an Ontology Map to Produce a Relevance Assessment', IEEE Systems and Information Engineering Design Conference, pp.227-232.

[8] Yinghui Huang, Guanyu Li, Qiangqiang Li, Rough Ontology Based Semantic Information Retrieval, IEEE Sixth International Symposium on Computational Intelligence and Design, 2013 pp.63-67.

[9] Yuangang Yao, Lanfen Lin, Jinxiang dong, Research on Ontology-based Multi-source Engineering Information Retrieval in Integrated Environment of Enterprise, IEEE International Conference on Interoperability for

Enterprise Software and Applications China, 2009, pp.277-282.

[10] Zhang H,Jianbin Liu,Liwei zheng (2012), Modeling of Web Service Development Process Based on MDA and Procedure Blueprint, IEEE/ACIS 11th International Conference on Computer and Information Science, 2012, pp.422-427.

