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To Automate the Services Life Cycle of Cloud Using Semantic Technologies

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***Abstract*: Cloud computing is an emerging computing paradigm in which resources of the computing infrastructure. As promising as it is, this paradigm also brings forth many new challenges for data security and access control when users outsource sensitive data for sharing on cloud servers in which they are not in the same domain as data owners. To retain delicate user data privileged against untrusted servers, survive solutions commonly uses cryptographic methods by disclosing data decryption keys only to authorized users. In Proposed prototype, the service attributes are like service cost, backup rules, storage size, and service availability. Specification details like quality of data, security levels that are accepted for the service software. To show however this life cycle will change the usage of cloud services, we have a tendency to describe a cloud storage epitome that we have developed. We have divided the IT service life cycle into five phases those are requirements, discovery, negotiation, composition, and consumption.**

***Index Terms*- Semanticweb technologies, lifecycle, web-based services, ontology design.**

I.INTRODUCTION

In information technology (IT) as a service released to the consumer is an archetype that is fast changing the way businesses looks at the role of IT within the organization. The service is mainly based on an as-needed basis and can be termed as demanded service. Commonly, the service is placed on a cloud or a computing grid and is delivered to the organization via the Internet or mobile devices. College and university IT organizations are expected to keep up with a long list of demands that are competing, such as: Deploying applications and delivering web-based student services at a rapidly accelerating rate, often without a proportionate increase in budget for hardware, software, and personnel. Maintaining a traditional IT infrastructure increasingly unable to accommodate the growing number of personal devices including tablets, smart phones, and laptops that students bring into the campus environment Offering sufficient bandwidth to accommodate huge swings in network usage.So many numbers of providers always combine together in order to create only one service for an institution. In some another times business can select only a single provider but also utilizes the services of another service provider. In such cases the releasing service is moving from one provider to many number of service providers which is composite within the cloud. So that service is composite and that service is virtualized in cloud which is a suitable method for releasing the IT Service. The virtualized released model also enlarges to IT Enabled Services that contain more human element. The main purpose for evolving this is that customer is having number of choices for service providers. Now at present days many services are giving only a single functionality. The responsibility is on the customer to obtain web services and integrate them based on the requirements. While the time of creating the brokers, consumers should perform some work. Nevertheless the brokers work for limited and fixed time only so that the broker cannot satisfy the requirement of customer as they needed so it is better to take the virtualized services and it is essential for customer to recognize all the conditions of a service that are to be satisfied to customer a long with the specification. To maintain virtualized services that are released on cloud is an challenge. This type of services is composed of small pieces that are gathered based up on needs. Here the proposed architecture can automatically measure the quality of virtualized services on delivery system. The architecture can implement how to involve hard metrics which are measured during last time of delivery of service where as soft metrics are measured at the forth age stage when customer contacts with service. These virtualized services are applicable for IT services.

The proposed methodology will enable practitioners to create, plan, and deploy virtualized services prosperously. The main reason to have a semantically rich approach to describe cloud attributes and service-level agreements

(SLA) is to permit distributed clients and cloud service providers to automate the process of acquisition and consumption of services. Proposed system used W3C standard Semantic web technologies, such as Web Ontology Language (OWL), Resource Description Framework (RDF), and SPARQL, to develop our prototype system since they enable us to build the vocabulary (or ontology) of our service life cycle using standardized languages that support our design requirements, which also include sound semantics, interoperability, web integration, and the availability of tools and system components. The OWL language has a well-defined semantics that is grounded in first-order logic and model theory. It is possible to embed RDF and OWL knowledge in HTML pages and several search engines (including Google) will find and process some embedded RDF.

II. RELATED WORK

Cloud computing and virtualization has gained much momentum and has become a more popular phrase in information technology. One of the main reason to develop this paper is at present researcher son cloud are up to a particular extent and explains only a particular aspect of life cycle like service composition, service discovery, quality of service. Especially there is particular method that covers the entire part of the life cycle .More over greatest part of the work is up to some extent and it does not include all service software components and also service processes or human agents in which these are major for IT services. So the development of integrated methodology for IT service management has been developed. We made use of the semantic web technologies to evolve service life cycle and prototype that we evolved. In terms of W3C semantic web gives a similar structure that makes users to share data and also to reuse the application.

1 .Managing the Quality of Virtualized Services

In this paper, we tend to propose a framework to live and semi-automatically track quality delivered by a Virtualized service delivery system. The framework provides a mechanism to relate onerous metrics generally measured at the backstage of the delivery method to quality connected onerous and soft metrics tracked at the front stage wherever the buyer interacts with the service.

2) Good Relations: Ontology for Describing Products and Services Offers on the Web

In this paper, we tend to analyze the quality of

product description on the linguistics internet and outline the Good Relations metaphysics that covers the eidetic wants of typical business situations for goods merchandise and services.

3) Ontology-based methodology for e-service discovery

Service discovery may be a vital side within the Service destined Computing approach. A model, a technique and a tool setting supported ontologies are projected during this paper. The requester and supplier views are mentioned, each to support the service publication part and therefore the search part.

4) Quality Driven Web Services Composition

In this paper, we have a tendency to propose a quality-driven internet service composition methodology for omnipresent computing atmosphere. Our methodology evaluates the standard of internet services in 3 dimensions-quality of services, quality of contexts and quality of devices.

5) A Spiral Model of Software Development and Enhancement

This article opens with a brief description of package method models and also the problems they address. later sections define the method steps concerned within the spiral model; illustrate the appliance of the spiral model to a package project, exploitation the TRW package Productivity Project as Associate in Nursing example; summarize the first benefits and implications concerned in exploitation the spiral model and also the primary difficulties in exploitation it at its current incomplete level of elaboration; and gift ensuing conclusions.

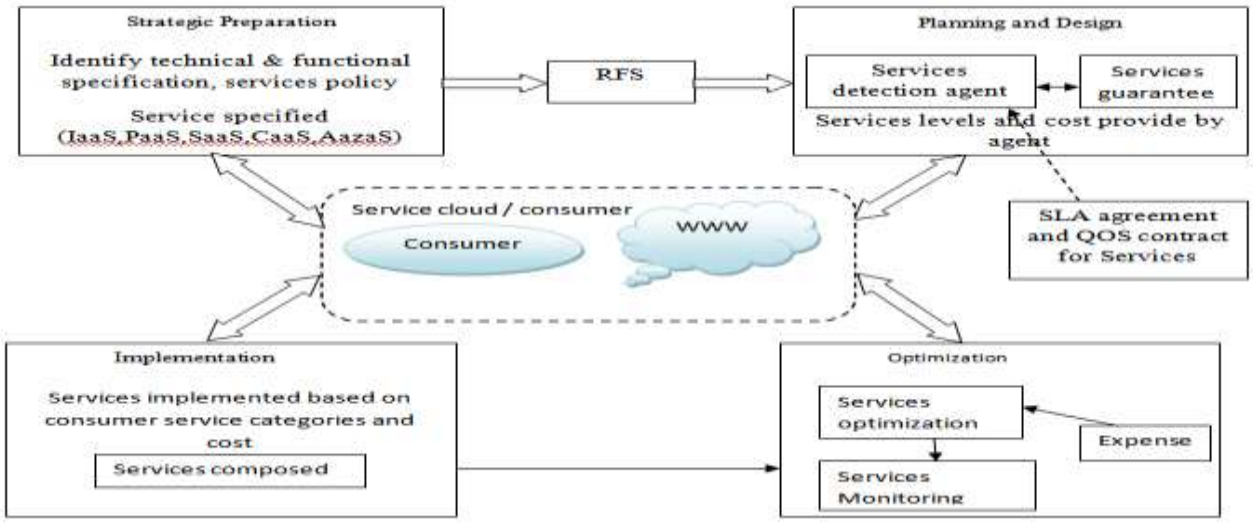

Fig 1: System Architecture

III. System Architecture

We divided the lifecycle of IT services into 5 phase's which explains the Planning a workflow of individual service types, locating services from a service registry, i.e., finding service instances Selecting the best candidate services based service agent for deployment and execution Executing the selected services. When an exception occurs during execution, services might have to be retried or the planning and selection stages might have to be redone.

1. Service Requirement Phase:

In this service requirements phase, the customer explains about the aspects of the service needed like functional specifications and technical specifications. Service agreement aspects like certificates, standards that are to be compulsory etc are should be noticed. The technical specifications are nothing like language support, software, hardware, standered applications in which a service should provide. If the customer has noticed all these then they can generate an Request For Service(RFS). RFS is issued by using semantic web technologies in a machine readable format.

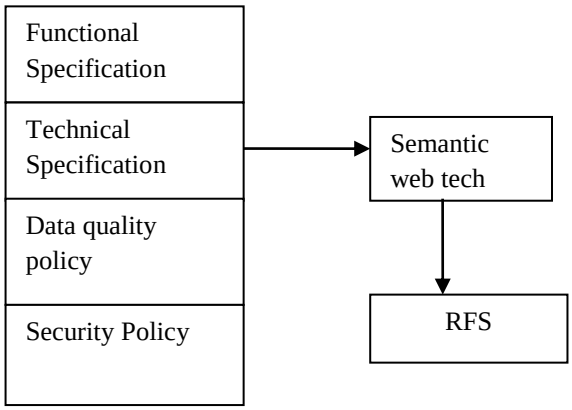

Fig 2: Service requirements

2. Service Discovery Phase:

In this service discovery phase, providers are found based on the specifications that the consumer has given along with RFS. Here it has condition that customer details like security budget data quality policy and also specifications are to be satisfied. At the same time it can fetch for the possible dealer in the internet. At the time of fetching the provider, a cloud broker has been found. The responsibility of cloud broker is detected by the cloud server. The cloud broker pass query to the services that are already registered in the registry and then matches data types, service details , technical specifications, functional specifications and then gives the answer with service providers and returns the result of highest number of requirements are matched .

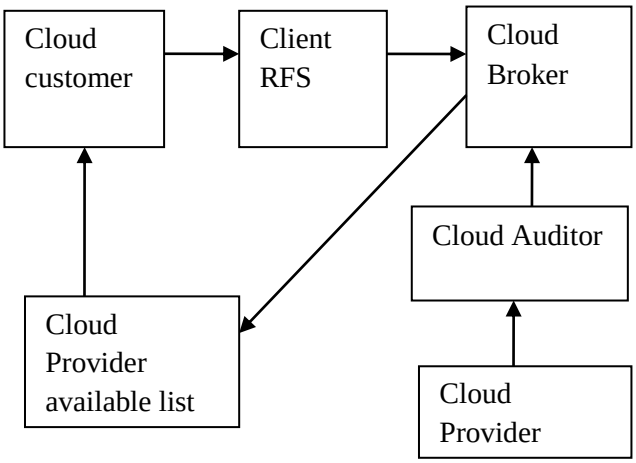

Fig 3: Service discovery

3. Service Negotiation Phase

In this phase it covers about agreement between the service provider and customers about its acceptance. The steps for this phase are as follows:

1. Customer sends an RFS to the provider specifying the non functional and functional requirements.
2. The provider then responds to the RFS any one of following ways:
   a. Indicates the customer that it does not provide the service, and then terminating negotiation.
   b. Informs that the service matches all the requirement exists and then sends the quote with SLAs.
   c. Informs that requirements are matched partially and then sends the matching constraints quote with SLA file listing.
3. The consumer receives and considers the quote.
4. Then the customer replies to the quote in any one of three ways:

a. The customer relaxes the service conditions if there is a partial match quote and/or functionality and again resends the RFS to the provider. The provider again repeats the actions in step 2.
b. The customer is satisfied if there is full match response with the offer then negotiation is regarded complete. The customer agrees and then sign to this offer and returns with an SLA.
c. The customer cannot accept the service and terminate.

5. The provider responses to RFS in any one of the following two ways:

1. At some times provider cannot provide the service, and rejects the agreement, by terminating negotiation phase.
2. If the provider accepts with the conditions, and the similar RDF file consists of the SLA now exists with both parties.

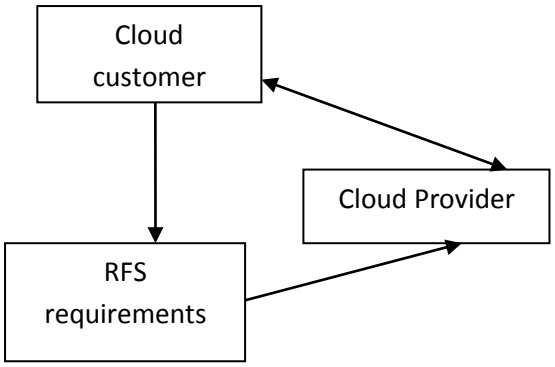

Fig 4: Check Service availability

4. Service Composition Phase:

In Service Composition phase, single or many number components that are given by single or more providers are joined together and released as a singular service to the service consumer. Service composition decides the order of service ingredients. Service Composition (SC) requires computer program to automatically integrate, select and invoke multiple web services in order to achieve a user-defined objective the composite service is composed of human agents providing the service. The three elements i.e. software, agents and dependent services are to be monitored to maintain the overall quality of the service. The service class takes inputs from the service-level agreement specification, service contracts classes defined in the earlier phases to decide the composition of the various ingredients.

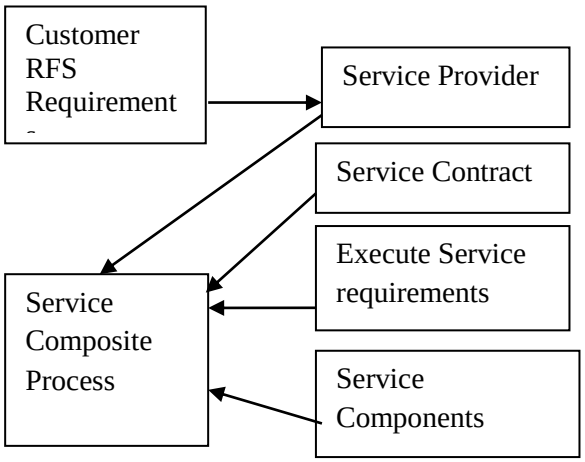

Fig 5: service composition

5. Service Consumption:

Service delivery is made to the customer depending on the mode of deliver accepted in negotiation phase. After delivering the service to customer payment to the service is made depending on the model of pricing accepted in SLA. The customer then starts consuming the service. In cloud environment usually the service lies on remote machines which is maintained by providers of the service. A tool is needed to the consumer to monitor the quality of service if necessary. This will include alerts to automatic termination or humans depending on policies using quality ontologies. Monitoring the service measures the quality of service and compares it with levels of quality as described in SLA. As performance monitoring is a joint responsibility of this phase, so, it spans both customer and cloud areas. If the customer is not satisfied with the quality of service then he/she can terminate the service and payment of service is stopped.

After the consumer has login to his/ her particular account then after the Service requirements page will be as follows in which the consumer has to specify the entire details i.e. requirements of the service. Based on the requirements the service is delivered to the consumer.

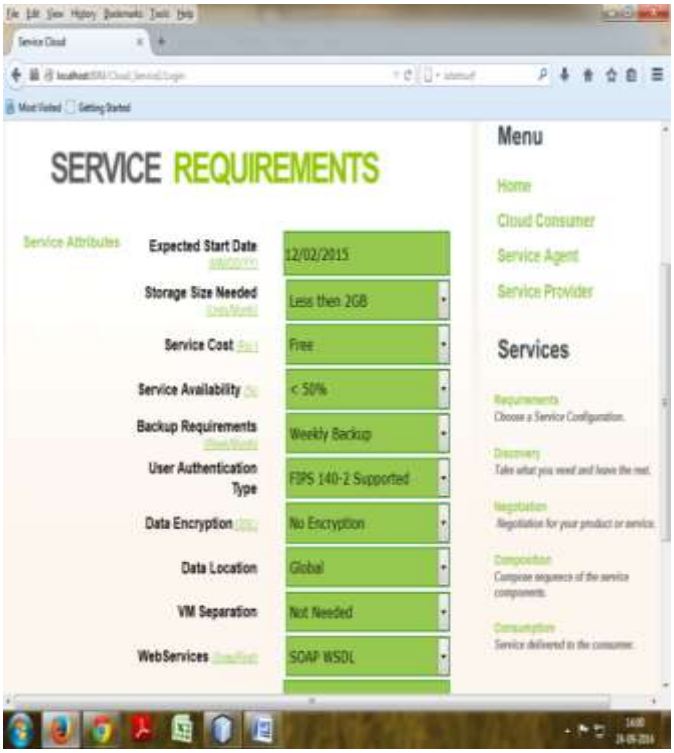

Fig 6 :Cloud Service Requirement

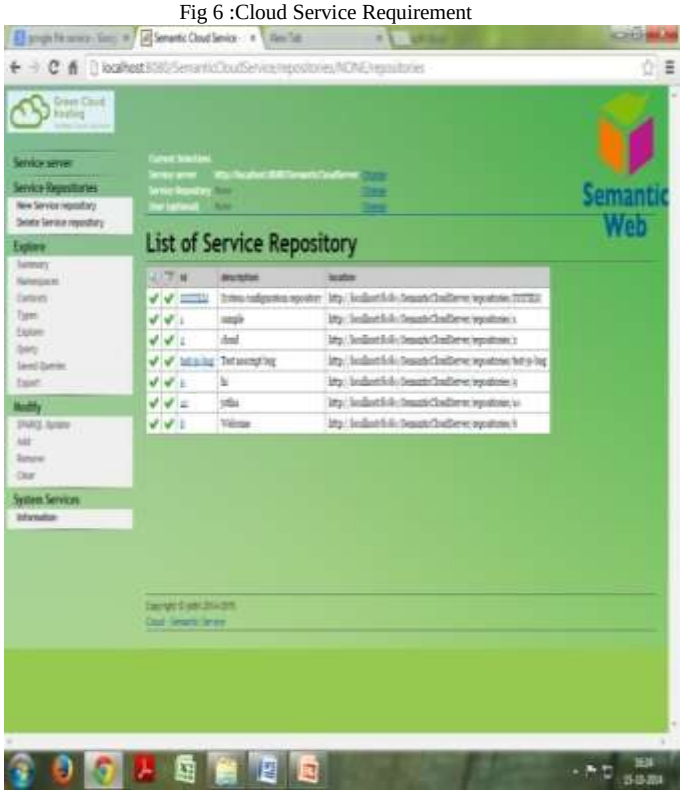

Fig 7 :Cloud Service Discover

IV.Conclusion:

In this paper, we have got outlined associate integrated metaphysics for processes required to modify IT services life cycle the cloud. To the simplest of our information, this can be the primary such effort, and it\'s essential because it provides a holistic read of steps involved in deploying IT services. Our approach enhances previous work on ontologies for service descriptions in that it is centered on automating the processes required to procure services on the cloud. The methodology is referenced by organizations to see what key deliverables they can expect at any stage of the method. We also hope that it will modify the academe and therefore the trade to be on the "same page" once they talk about IT services on the cloud. The tool that we have a tendency to engineered with methodology success incontestible however our is wont to considerably modify the acquisition and consumption of cloud-based services thereby reducing the big time needed by firms to discover and procure cloud-based services.

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