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A Novel Approach to Improve Quality of Web Service Discovery

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***Abstract*—** Web services have amazing role on the Web for supporting the distributed service-based economy on a global scale.There are number of web services are discovered but they face serval problems like isolation of services and lack of social relationship between related services has been known as reason for poor uptake. To overcome such kind of issues and to provide quality of web service we propose the isolated sevices into the global social service network to improve the services scalability on the global scale. we proposed linked social service-specific principles based on linked data principles for publishing a services on to the open Web as linked social services. Then, we consider a new framework for designing the global social service network based on linked social service-specific principles based on complex network theories. Further an approach is suggested to enable the exploitation of a global social service network, providing Linked Social Services as a Service.

Keywords *- Global social service network, linked data principles, positive negative feedback, link-as-you-go*

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I INTRODUCTION

A Web service is a method/process of communications between two electronic devices over the World Wide Web. It is a software process/function provided at a network address over the web with the service always on as in the concept of utility computing.

Many organizations have been using different software systems for management. Different software systems often need to exchange data with each other, and a web service is a process of communication that allows two software systems to exchange this data over the internet. The software system which requests data is called a service requester, whereas the software system which would process the request and provide the data is called a service provider. We can identify two major classes of Web services:

Representational State Transfer(REST)-compliant Web services, in which the primary purpose of the service is to manipulate XML representations of Web resources with the help of a set of stateless operations; and Arbitrary Web services, in which the service may provide an arbitrary set of operations.

To overcome such drawbacks of the previous system, we need to provide web discovery methodology. So in this paper we propose innovative methodology from isolated Services to global social service network .In this services are interlinked to related services. Moreover to connect isolated services to the linked social service and that proposed to connect global social service network with social link based on linked social service specific principles Finally an effective service discovery approach called link as you go has been proposed.

Here, main idea is to implement link as you go system where user can put the criteria of his interest so that he can navigate to their interested service from the web. In existing system user is not involving in the search process called as black box browsing or searching but with this approach user can able to search or navigate with their own interest called white box browsing. Another most important thing is that previously user is not able to provide their feedback about system but with new enhancement user can able to give their opinion as positive or negative and able to see how many people have positive or negative response for the services returned by the system with the help of bar chart.

In this paper a study about the related work and its background is done in section II, the implementation details. In section III where we see the system architecture, modules description, mathematical models, algorithms and experimental setup. In section IV we discuss about the results and at last we provide a conclusion in section V

II. RELATED WORK

Web services are having very strong effect on service based economy. In general case number of web services are available on the open net are less than what we are expecting [1].

As well as there are number of web services are published on web are not yet used and only few of them are discovered and used [2]. There are number of approaches are based on UDDI,web API or ontology web language for services but they considers the services as isolated functions and there is no link to related services as well as they knows about themselves but not the peers that they want to work with .And unfortunately they hamper the service discovery and composition.[3].

Services are considering only in the terms of their own functional and non-functional properties but not considering the social behavior [4].So in such cases it becomes very important to consider services social behavior like services past interaction for future user/reference.There are some approaches which is built to use social service network to enable GPS like support service discovery and its composition [5].But this services suffer from Constructing single social service network dynamically.

The work which is said to be discovery mechanism tries to retrieve the resulting mechanism not only applicable to web services, but also web-based or other software based components in general. This might require introducing some additional specifications about the platform, the system requirements etc. Many more approaches have been proposed using different view-points alike centralized approach, Universal Description, Discovery, and Integration(UDDI) based mechanisms are very important. Web service discovery mechanisms are more important than the web searching.

III. PROBLEM DEFINITION

To design the services scalability for enhancing the quality of service discovery, the global social service network is constructed by considering not only the services own functional and nonfunctional details but also the services past social interaction and popularity, to provide a network model having properties that reflect social reality.

IV EXISTING SYSTEM

Web services were expected to have a very large impact on the Web, as a potential solution for supporting a distributed service-based economy on a global scale. First, all the approaches based on current service descriptions, such as WSDL, Web APIs / Ontology Web Language for Services, only consider services as isolated functional platform with no links to related services: unfortunately, this degrades the service discovery and composition. Nowadays, services published on the Web based on current service description approaches know only about themselves, but not about the peers/related services that they would like to work with in composition or that they would compete against for service selection. These isolated service platform mean that service discovery is confronted with the following issues. One of them is that most approaches to service discovery lack consideration of interactions with the service consumers, so the usability threshold value for service consumers is still high. Service consumers cannot discover services by following links that interest them, as they do when navigating Web pages. Another issue is that in most cases, service consumers are not limited to using a single service, but want to locate different services that can work together. However, guiding service consumers to discover services, starting from a service at hand and extending to peer services, which can be combined into more complex functions, is still a challenging issue because current services are isolated. Second, services are considered only in terms of their own functional and nonfunctional properties; and the service's social activities, defined as engaging in significant social interaction with peer/related services via network models, are ignored. Web services are intended to be composed with related services in mind, and their functionality and non-functionality are interdependent, controlling services' social behavior .

Demerits
1.Lack of consideration of interactions.
2. Usability threshold value is high.
3. Need to locate a multiple services for a single service

Existing System Architecture

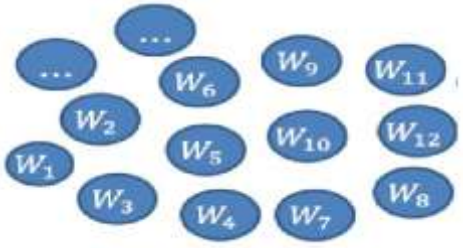

Fig 1: Existing System Architecture

In above figure ,we can see that there are very large number of web services are available but these are isolated one .As there is no link to one service to another service there is need to locate multiple services for single request. There are number of services are published every day on the open web but most of the services are not used and only few of the services on the web has been discovered ,composed and invoked. Such services are WSDL, UDDI etc.

V PROPOSED SYSTEM ARCHITECTURE

A. *System Overview*

Architecture Of Proposed system is as follows:

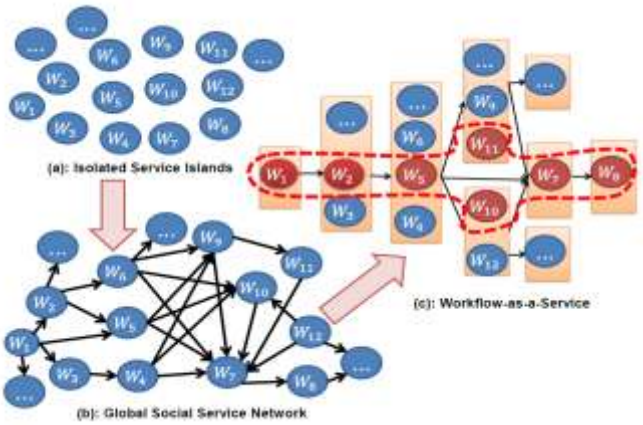

Fig 2: Proposed System Architecture

In order to overcome those limitations, drive an innovation from service islands to a global social service network to support services social activities. Linked data technology provides the benefits of machine understandable data from the Web and improved data discovery by using links between data items. The semantic annotation is done using a lightweight ontology because it is economic and efficient annotation and deployment of linked data are enabled. First, Linked Social Service-specific principles based on linked data principles has been proposed for publishing isolated services as linked social services vice on the open web. A new platform has been proposed for constructing global social service network to connect isolated service islands for supporting services social activities. An effective service discovery approach called link as-you-go has been proposed to provide exploring service -to- service based on global social service network.

There are risks inherent in online social networking, though there are many potential benefits. Social networking

can provide opportunities for new relations of the links as well as strengthening existing one.

Our approach is to develop GSSN to conduct the social influence aware social service recommend platform .In global social service network services are interconnected to similar/related services from different sources around the web .To connect isolated services ,linked social service is proposed. That to connect services into global social service network with social link by following linked social service specific principles. Finally potential service discovery approach called link as you go has been proposed.

System consisting of following modules:

Loading Dataset:

A data set is a collection of data, it lists values for each and every variables, like height and weight of an object. The query used to generate a particular data set from the selected connection or flat text file. You can create multiple data set definitions for the same profile in order to prepare different data set instances. To improve classification accuracy, insignificant parameters and patient data could be removed from the data set.

To load Data Set schema information from an XML document, you can use either the Read Xml Schema or the Infer Xml Schema method of the Data Set.

Read Xml Schema allows you to load or infer Data Set schema information from the document containing XML Schema definition language (XSD) schema, or an XML document having inline XML Schema. Infer Xml Schema allows you to infer the schema from the XML document while ignoring/deleting certain XML namespaces that you specify.

Compute Properties:

To connect distributed services into GSSN, social links are formed between isolated services. However, instead of simply connecting related services, we use the pattern of social link to make typed statements that link arbitrary services. Here we define the social link pattern that represents the functional relationships between resource service and desired services based on service data correlations, which are data mappings between the input/output attributes of services.

Form a Peer social link:

To make typed statements to link peer services that can be worked together , Peer social links proposed to connect services that can be combined to provide a more complex service. Peer social link can be illustrated by the below rules, including sequential, parallel and conditional routing.

Checking Quality:

Here in this module we are checking the quality of links by computing the parameters such as DSR(Dependency Satisfaction Rate), QoS Preference(Quality of services), SP(Sociability Preference) and PSC(Preferential Service Connectivity).

Global Social service Network:

To design a global social service network for better service discovery, we must consider four generic criteria of the global social service network. First is a growth aspect. A global social service network is open, created by the contineous addition of new services; thus, the number of vertices, N, increases throughout the lifetime of the network, just as the www grows exponentially in time by the addition of new Web pages and the research literature tremendously grows because of the publication of new papers. Second is a Preferential Service Connectivity aspect. In a GSSN, the probability that two vertices are connected is not random and uniform, but exhibits PSC : there is a higher probability of linking to a vertex that already has a large number of connections. Third is a competitive criteria , as each node has an intrinsic ability to compete for edges at the expense of other nodes.

Link As You Go:

In this module we are providing links to user so that he can able to navigate the services as per his wish. Traditional web service discovery approaches are black box only, means user are not involving in discovery process. But by using Link as You Go approach we can eliminate traditional discovery approach drawback.

VI. IMPLEMENTATION DETAILS

A. Algorithm

Algorithm : Recommend Social Services

Input: G<V,E> threshold λ, resource service S, Q(R, Tn), m

Output: A set of m social services {Sm}

Variables: service has Social Link S.L, input of service S.I,

Output of service S.O, service set {S1}, {S2}, {Sss}

1. It selects a set of social service candidates for R according to the QDSR, which has a threshold λ to ensure the functionality quality.
2. First, the Cluster social link candidates are recommended according to QDSR ; then service sets that have strong functionality relationships with the R are selected.
3. Based on the service sets, it divides/classifies the social service candidates according to their patterns of social link including L(<||), L(←), and L(<Φ).
4. Finally selects m social services with higher qualities of social link to ensure the quality of social service.
5. And returns the set of related services to the user.

*B. **Mathematical Model***

System S={I,P,O}

Where, I-Input , P-Process and O-Output

Input I={.owl file}

Output O : Set of m services $\{S_m\}$

Process P :

- **Quality Checking**

$Q(R,T_n)=<Q_{DSR}(R,T_n),Q_{QOS}(R,T_n),Q_{SP}(R,T_n),Q_{PSC}(R,T_n)>$

- Based on quality checking,we also analize the quality of social link as:

$$Q(R,T_n)= (\eta iki)/\Sigma j\ (\eta jkj)$$

ηi is calculated as :

$$\eta i=(w_{DSR}\ Q^2{}_{DSR}(R,T_n)+ w_{QOS}\ Q^2{}_{QOS}(R,T_n)+ w_{SP}\ Q^2{}_{SP}(R,T_n))$$

C. Experimental Setup

The proposed system is using Java (jdk 1.8 version) on Windows platform. The Net beans (version 7.2.1) is used as a development tool. There no any specific hardware required to run, so any standard machine is capable of running the application. The system analysis is carried out on datasets consisting of files.

VII RESULT AND DISCUSSION

Following gives idea about results obtained from the scheme proposed

Fig 3: Selection of .owl as a input to the system.

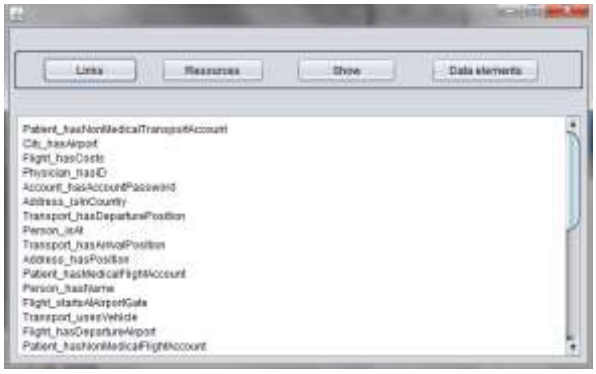

Fig 4: Links Extraction

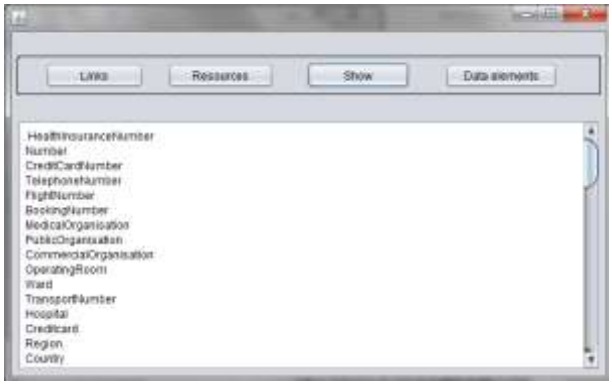

Fig 5: Resources Extracted

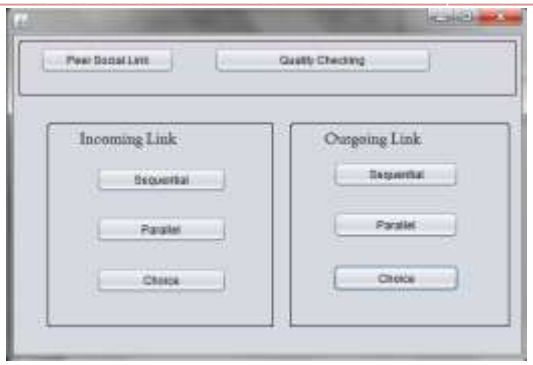

Fig 6: Formation of Peer Social Link

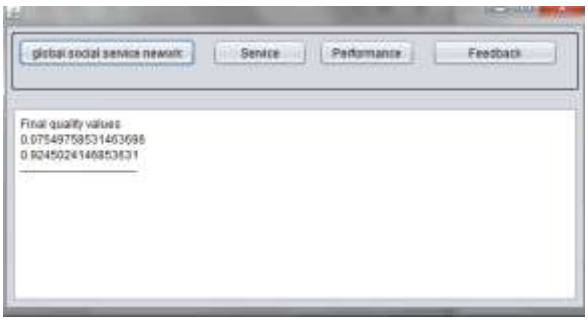

Fig 7 :Final Quality values of GSSN

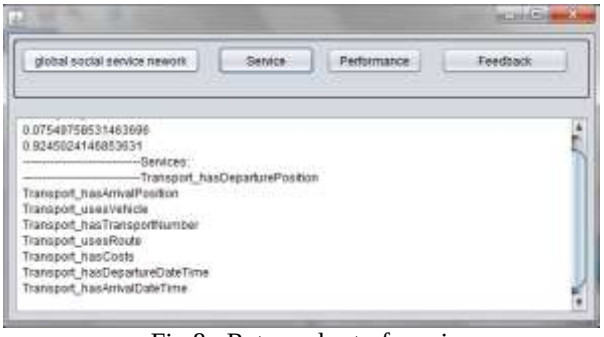

Fig 8: Returned set of services

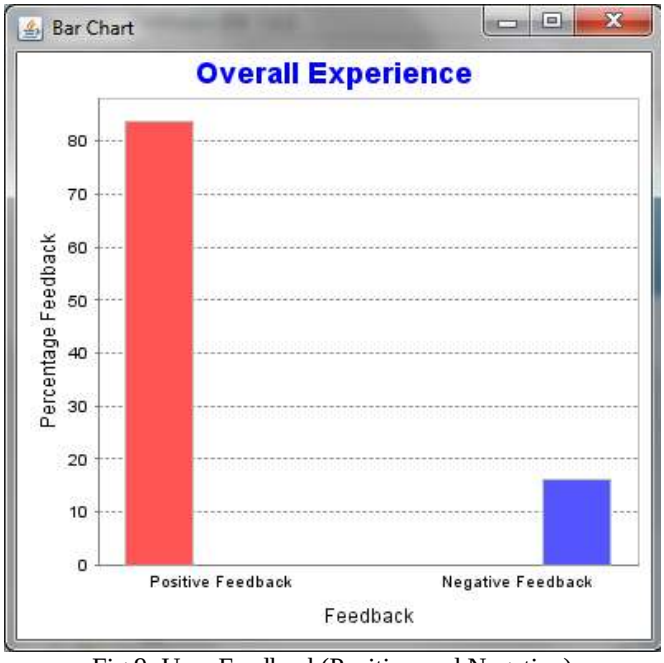

Fig 9 :User Feedback(Positive and Negative)

Fig 10 :Link As You Go System : entering criteria for searching desired services

Fig 11 :Link As You Go System : Returned possible target services.

No.Of Services	Service Discovery Time (s) for Existing System	Service Discovery Time (s) for Proposed System
1	100	25
2	200	30
3	300	50
4	400	80
5	550	82

Table 1: Discovery time for services

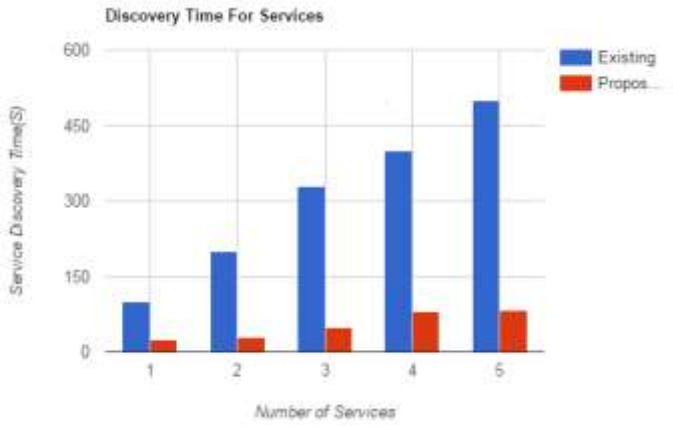

Fig 9 Discovery time for services

VII CONCLUSION

The proposed system improves the quality of web service discovery with invention of isolated services to the linked social service network. In existing system does not involve user feedback but with proposed system this drawback has been removed by adding user feedback and showing graphically to the user. Link As You Go system will remove the burden of black box searching .User can able to involve in the process of discovery so called white box browsing which improve the performance of the system and user can able to navigate to get desired service.

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