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DYNAMIC SERVICE INTEGRATION USING SOA WITH CENTRALIZED ORCHESTRATION

S. Jayanthi[1], M.Revathi[2]

Assistant Professor, Department of CSE, Agni College of Technology, Chennai.

Abstract: In the service oriented computing domains, web service composition is an effective solution for rapidly changing business requirement. As the number of services and the size of data involved by workflow increases, Centralized orchestration technique is needed to avoid unnecessary data transfer. A common workflow task is to change the output data from one service into a slightly different format to use an input into another service. This will affect the performance of workflow. Data transformation engine solve this problem by integrating all the services. Web service composition is composite different university and verify certificate. Universities are produces different output and Data transformation algorithm to helps displaying university data.

Keywords: *Service Oriented Architecture,orchestration, Data Transformation, Workflow, Qos.*

I.INTRODUCTION

Service-oriented architecture (SOA) is a client/server software design approach in which an application consists of software services and software service consumers (also known as clients or service requester). The communication can involve either simple data passing or it could involve two or more services coordinating some activity. Some means of connecting services to each other is needed. Services are software modules that are accessed by name via an interface, typically in a request-reply mode. Service consumers are software that embeds a service interface proxy (the client representation of the interface).

A software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a format that machines can process (specifically WSDL).Other systems interact with the Web service in a manner prescribed by its description using SOAP messages, typically conveyed using HTTP with XML serialization in conjunction with other Web- related standards (W3C).

The Web services architecture is based upon the interactions between. Three primary roles: service provider, service registry, and service requestor. These roles interact using publish, find, and bind operations. The service provider is the business that

provides access to the Web service and publishes the service description in a service registry. The service requestor finds the service description in a service registry and uses the information in the description to bind to a service.

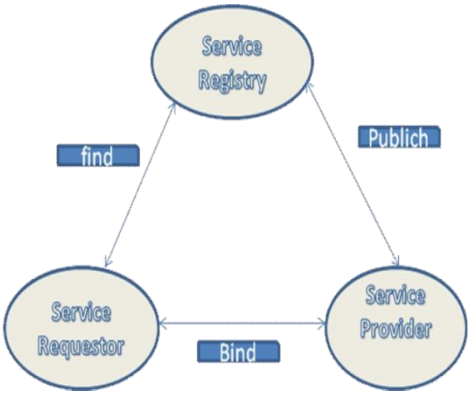

Fig. 1 To find, publish &bind the services.

There are different element used for SOA like Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI) and Web Services Description Language (WSDL).SOAP is a simple XML- based protocol that allows communicating applications information over HTTP without the dependency of OS platform. SOAP uses HTTP and XML as the mechanisms for information exchange.

Universal Description, Discovery and Integration in short UDDI is a web based distributed directory like traditional phone book's yellow and white pages that enables businesses to list themselves on the Internet and discover each other. It defines a registry service- a Web service that manages information about service providers, service implementations, and service metadata – for Web services and for other electronic and non-electronic services. The service providers can use UDDI to advertise the services they offer while service consumers can use UDDI to discover services. The WSDL refers to Web Services Description Language, is an XML based protocol used for sending and receiving the information through decentralized and distributed environments. WSDL is an integral part of UDDI that was developed jointly by Microsoft and IBM.

It defines what services are available in its Web service and also defines the methods, parameter names, parameter data types, and return data types for the Web service. The WSDL document is quite reliable and applications that use web services accept it.

II.WEB SERVICE AND COMPOSITION

Composition of Web services has received much interest to support business-to- business or enterprise application integration. There are two type of composition

1. Static Composition

2. Dynamic Composition

The Static Composition means that the requester before starting the composition planning should build an abstract process model. The abstract process model includes a set of tasks and their data dependency. Each task contains a query clause that is used to search the single WS to fulfill the task. Thus, just the selection and binding of single WS is done automatically by software. Dynamic Composition, creating process model and selecting single WSs are done automatically. The requester has to specify several constraints, such as the user's preference.

III.RELATED WORK

Service-oriented architecture (SOA) is a client/server software design approach in which an application consists of software services and software service consumers (also known as clientsor service requester). Services are software modules that are accessed by name via an interface, typically in a request-reply mode. With the adoption of Web 2.0- like technologies services composition are becoming more and more viable and attractive.

Web 2.0 enables capabilities such as interactive information sharing, online collaboration, user- oriented applications, and content-integration. Service composition, service execution, and service control are active research and engineering areas and covered by various standards organizations such as W3C, 3GPP, and OASIS.

The Web Services concept has been widely used in order to provide interoperability between different software applications running on various platforms. A Web Mashup, on the other hand, is a content aggregation technology that combines data from two or more external sources to create some new value. Mashups and Web Services have been utilized by several service creation platforms [3, 4 and 5]. Web Services, mashups and SOA technologies have been developed for Web environments and their applicability in Telecom world is complex. Different approaches have been adopted to address these challenges for Telecom industry and usage of SOA for Telecom environment[8].

OMA Service Enablers(OSE) and Service Environment Provider (OSPE) are Open Mobile Alliance (OMA) [6] initiatives for open SDP (Service Delivery Platform) and have SOA concepts at their core. The Service Delivery Framework (SDF) [9] defines a framework that unifies servicedesign, creation, composition, deployment, activation, provisioning, execution, etc. Under a common logical view. The SDF integrates network resources and service capabilities using an SOA approach. IMS is a standard-based IP connectivity and service control architecture that enables various types of multimedia services to end-users using common Internet based protocols for next-generation networks [10].

NGN OSE (Open Service Environment) has been proposed by ITU-T SG13 as one of the NGN capabilities [26]. The primary goal of NGN OSE is to enable a service environment for flexible and agile service creation, execution and management based on an open NGN service platform .Describes a distributed multi agent workflow enactment service, where the workflow (represented as a dialogue framework expressed in the Lightweight Coordination Calculus) along with its current state plus a set of "common knowledge" is communicated between participating agents via individual message exchanges.

IV.PROPOSED FRAMEWORK

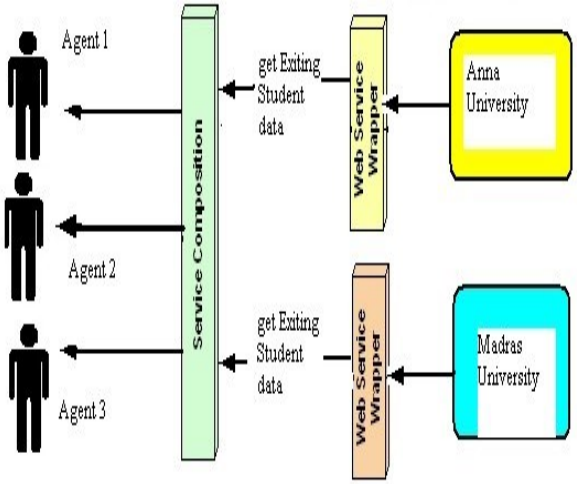

Fig. 2 Service Composition of data

As per architecture from user enter the input and send to the Dynamic service composition. The Service composition have workflow engine. Workflow engine will be executing business process as per requirement and based on user input it invoke corresponding application. Every application have own XML Schema data and that applications are distribute data to workflow engine. Workflow engine received data from applications and send data to Data Transformation.

4.1.Workflow Engine

Workflow engine design a common algorithm. This algorithm executed business process and invokes workflow proxy. Each service doesn't having separate code base for invoking services. The workflow engine to getting input from workflow and inject invocation handler algorithm. Workflow proxy runtime it is decide which application I can invoke. So future adding or modify the services should not be change existing invocation handler algorithm.

4.2.Data Transformation

Data transformation engine is parsing XML schema into user view format. Data transformation algorithm to support various output format XML data. XML schema template format design based on the user view .It is support different kind of view format and services design their own format data. So reduce development, deployment and maintenance for integrating multiple applications and adding new application (services) into existing integration.

4.3.Output XML Schema

Output XML is design as well-format and this format XML should possible to inject different data. Applications are produced different output based on well-format XML schema template. It is easy parse data and display user view.

XML Schema Template

<?xml version="1.0"?>

<Data>

Engine.

4.4. Centralized orchestration engine

The engine integrates different services and helps in avoiding unnecessary data transfer. Centralized orchestration engine has a lot of advantages like reducing data transfer, less-intrusive and robustness. Centralized orchestration engine to integrate different application and produced different XML Schema. Data transformation: It is support and parses different service output XML data.

<!-- Set Normal data with header-->

<horizontal-Data>

<!-- here include data -->

<horizontal-Data-list>

<!-- sub Group of data include here -->

<horizontal-Data-list>

<horizontal-Data>

<!-- Set Group data with header-->
<horizontal-Data-list>
<!-- Group of data include here -->
<horizontal-Data>
<!-- sub data include here -->
<horizontal-Data>
<horizontal-Data-list>

</Data>

4.5 Qos

One of the crucial factors in Web service one of the crucial factors is fulfill appropriate QoS level such as price, reliability, trust, reputation, execution cost and efficiency.

Table 1: Comparison of different standards

	Service connecti vity	Non- functional properties	Composition correctness	Automatic composition	*Composition scalability*
BPEL	Yes				*Avera ge*
OWL- S	Yes	Yes			*Avera ge*
components	Yes		Yes		Low
π- calculus	Yes		Yes		Good
Petri nets	Yes		Yes		Low

All composition approaches offer connectivity, without connectivity if would be impossible to integrate a set of services. Connectivity is an absolute minimal requirement for a composition approach. The ability to handle non- functional properties (or Quality of Service attributes) of services is desirable, for example to assess the speed or error probability of a proposed composition.

When the correctness of a composition is verified, the service and composition specifications are used to assess whether the composition will behave as required under different circumstances. Automated composition is a part of the semantic web vision. Some kind of intelligent Composition engine processes the specifications of the services and the requirements of the composition to be designed. A

composition is then generated without any human involvement. University web service composition algorithm automatically identified the service, so this composition to easily access service and to avoid unnecessary data. Data transformation engine run time decide the displaying view. It will reduce code and future service integration.

V.IMPLEMENTATION AND RESULT

In this implementation discuss with for step like develop university service, registry service, composite algorithm and consumer web application with data transformation. First step create university service .This service to produces output based on the XML template.XML template to fit into the different kind of data. University service must me register one portal .Portal kind of web application and it allow to register all universities.

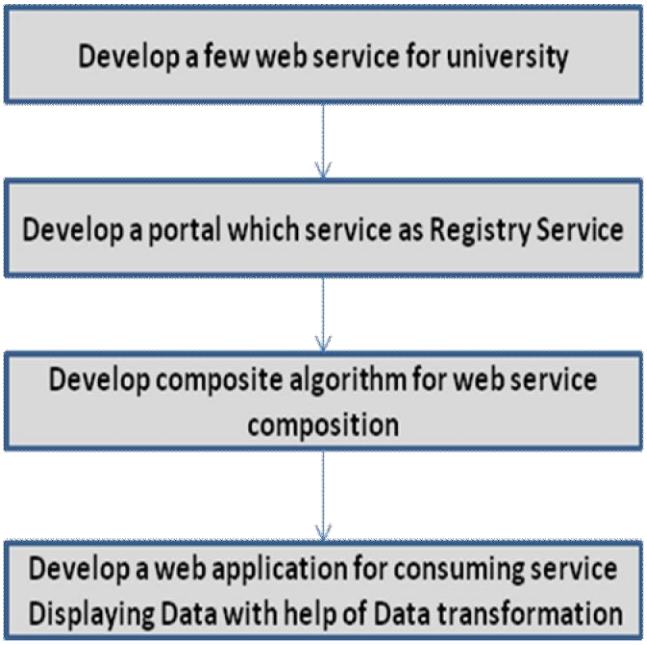

Fig. 3 To Display data with help of Data Transformation

Composite algorithm is composite all University. University to register into portal based on the portal input composite algorithm works. It is dynamically select particular university and invokes service. Finally to develop web application for consuming university service.. It is invoking web service and displaying data. In this web application having data transformation algorithm .Data transformation algorithm to parsing xml template and displaying data. This Data transformation engine is automatically decide the displaying output data format.

VI.CONCLUSION AND FUTURE WORK

Web Services concept has been widely used in order to provide interoperability between different software applications running on various platforms. Integrating new services into exiting service the cost of impact (code change) is more. Centralized orchestration engine to create workflow and integrates different services.

This is helps in avoiding unnecessary data transfer. This engine reduces data transfer, less-intrusive and robustness. Each service produced different XML data format. Data transformation engine support and parses different service output XML data. Data transformation engine has to integrating all services output. This two engine help to reduces more cost in future.

Future work includes the following challenges.

Architecture evolution: Although this paper has discussed a Web services-based implementation, centralized is a general architecture and mappings could be providing to multiple back end technologies. This would allow multiple technology sets to be optimized and orchestrated via a standard work flow language and workflow engine. This architecture also opens up a rich set of additional optimizations with respect to dynamic workflow engine deployment i.e., load balancing depending on network traffic. The Data transformation would allow multiple technology sets to be optimized and parsing XML template.

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