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AUTOMATIC DETECTION AND RECOVERY OF DATA CONFLICTS IN WEB SERVICE COMPOSITION FOR BANKING APPLICATION USING GRAPH PLANNING METHOD

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Abstract: Web service composition is an aggregate of service collectively composed to automate a particular task for business process. In existing system, searching composition service gets the user requirement, when the data is transferred and consumed by target service the data misinterpretation will occur. BPEL(Business Process Execution Language) manually detect conflict and fulfill requirements of the user and produce corresponding output .In proposed system the banking system is used which consists of different type of web services namely, travel booking service, ticket booking service and online shopping service , hotel booking service. In the services commonly faced conflict is representation conflicts such as date format, shortcuts used in providing information, different units of currency, length, weight. These are the conflicts that occur in the banking service and they are detected and recovered automatically using reconciliation algorithm .then the recovered web services are composed using BPEL4WS(business process executive language 4 web service) process and provide valid service to the user.

Keywords: BPEL, BPEL4WS, Banking System Service

I. INTRODUCTION

Web service composition is an aggregate of service collectively composed to automate a particular task or business process to quality as a composition at least two participating service plus one composition initiator need to be present. FPDS-NG consists of two functional domains and one administrative domain. The two functional domains, Data Collection and Business Intelligence/Reporting, are depicted in Data Collection: This domain provides multiple mechanisms to feed contract award data from procurement systems throughout the federal government to FPDS-NG. Emphasis is on real-time integration to shorten the lag time between contract award and data availability in FPDS-NG, and to increase data quality by removing batch interfaces and the need to re-key data into agency systems. Business Intelligence/Reporting: This domain provides multiple mechanisms to report FPDS-NG data to a wide spectrum of interested parties.

The reporting mechanisms include canned, ad hoc, and OLAP analysis reporting which are delivered based on the format and schedule preferences established by the user. System Administration: This domain manages user profiles, user authentication, reference tables, and other system functions such as purging old error records, and monitoring data quality. Service Oriented Architecture the FPDS-NG system architecture, show, is based on a Service-Oriented Architecture (SOA) platform. The choice of a SOA is based on the requirement of GSA to produce a web service based application that will allow integration of FPDS-NG with agency systems. All identifiable system functions are published as services that external systems invoke using open standards over a network. This architecture exposes all system functions including business logic, GUI screens, and reports making them all accessible to agency systems.

The value of a SOA-based approach is realized in the reusability of the components. Reusability offers the government tremendous savings of time and money as software development is leveraged by many systems without the need for additional development or redundant efforts. Reusability also provides the government with the ability to construct authoritative services for vital information (e.g. NAICS codes, vendor data, etc). SOA is the architectural structure underpinning web services and is developed to the J2EE standard. The technologies used to invoke web services promote interoperability. These technologies include: XML, which defines a universal way of representing data SOAP, which provides the transport mechanism for web services WSDL, which describes a web service definition UDDI which allows users and applications to locate or publish web services in a registry.

The Federal Enterprise Architecture Program Management Office (FEA-PMO) recommends a J2EE/Web Services approach in White Paper 1.3 published in October 2002. The white paper provides a framework and guidance for the technology standards. Main purpose of our project is developing reducing conflicts in web services methodology, the goal is to the data file was fragmented and the fragments are dispersed over multiple users in the bank truncation.

Web services are well defined, self described and reusable software components that can be used over the web using the most silent and stable technologies such as Simple Object Access Protocol (SOAP) as a communication framework, Web Service Definition Language (WSDL) and Universal

Description, Discovery and Integration (UDDI) that provides a mechanism to clients to find services. A web service is a set of related functions that can be accessed through programming over the web. The key feature of the web services is that they are loosely coupled, allows ad hoc and dynamic binding and are reusable software components. Web services can be divided into three categories and three entities. The categories are publish, find and bind, while the entities are service requester, service provider and the registry. The roll of facilitator of service outsourcing is one of the most significant aspect of the web that can reduce the overhead of companies and flourish the business. WSDL is the emerging language for describing the present web service technology and presents the syntactic description of the web services. It only present the structure of the data sent and received through the web, but is unable to present the meaning of the data.

This makes the automated web service composition difficult as composition, semantic description and execution of web services is necessary for automatic discovery. Existing techniques for web services provides only the syntactic description which as a result, makes it difficult for requester and provider to interpret the meaning of the input and output. Semantic web services are the combination of web services and the semantic web. In the domain of semantic web, Web Ontology Language for Services (OWL-S) and Web Service Modeling Ontology (WSMO) are two prominent techniques used for service composition. Semantic web services are the extension of the existing web services where the information is represented in a well-defined way. Large amount of data over the web is understandable only by the humans and the custom software. The target goal of semantic web is the medium where the data could be shared easily and processed automatically.

The key technology for such concept is the web services. Normal web uses HTML for presenting information, issues, images and active links which makes it is easy to understand for human beings but difficult for the Discovery and Integration (UDDI) that provides a mechanism to clients to find services. A web service is a set of related functions that can be accessed through programming over the web. The key feature of the web services is that they are loosely coupled, allows ad hoc and dynamic binding and are reusable software components. Web services can be divided into three categories and three entities. The categories are publishing, find and bind, while the entities are service requester, service provider and the registry. The roll of facilitator of service outsourcing is one of the most significant aspects of the web that can reduce the overhead of companies and flourish the business. WSDL is the emerging language for describing the present web service technology and presents the syntactic description of the web services. It only present the structure of the data sent and received through the web, but is unable to present the meaning of the data.

Machines to understand the presented information. But, semantic web which is the advance form of the normal web and refers to the ontology languages, development frameworks and development tools; it uses semantic annotation (web pages with structured data to facilitate the software / intelligent agents to process the data) for describing some of the parts of the web and the meaning of the message of the web services. With the help of annotations semantic web services infer inherent properties to identify services that meet to the requesters demand during the discovery process. Semantic web services are used for combining data and services from different sources without losing their meaning. Through the discovery and assembly of web services, semantic web services provide the value-added services to complete the domain tasks.

Web services can be combined to provide the unified service with some additional extra values. To find out the most relevant service among functionally similar that meet the requirements of users is the key issue in the web service discovery; however there is a need to define a set of well defined quality of services criteria and user preferences. Especially the users of business to business application would like to discover the services which meet their non-functional requirements. Typically web services are defined in their functional parameters i.e. input, output parameters, whereas QoS parameters are used to define the behavior of the service.
Moreover QoS resolves the issue of best service among the functional similar services by ranking and selection based on non-functional requirements. Hence QoS can be used as main factor for ranking the web services. In selection process the service with high QoS value will be selected first and this step is performed after the functional matching step.

Four steps are necessary for successful composition of services: i. Data and control flow model among entities should be created. ii. For process activities, the services that discover the matched service with the criteria form the service registry should be bounded. iii. In order to be available to the clients, the composite services should be published in UDDI. iv. Control and data flow should be managed during the composite service invocation. Although semantic web is gaining popularity, the supporting technologies are still far from the final product, making it an emerging field of research. Since the last decade, considerable work has been done on semantic web services composition but more research is required to address the issue of heterogeneity in automatic (minimal user intervention) web services composition as web services provided by different companies (having their own business rules) provide heterogeneous results. In this paper, we compared and categorized such approaches into two categories; semantic web composition approaches with Quality of Services (QoS) support and semantic web composition approaches without QoS support. The objective of this paper is to identify the best approach that can be used for semantic web services composition.

II. MATERIALS

A. Dataset

The dataset is in the form of web page obtained for the purpose of project work in web page they have used data sets like account number ,amount, date for transferring amount and start date, train name, gender these data sets for booking ticket in online.

III. METHODOLOGY

A. Creating the web services for banking application

Web service is used as a method of communication between two electronic devices over a network so in the first module we have

created different web services namely travel booking ,ticket booking ,online shopping *and* hotel booking are services created where in money transfer web services the user can transfer money by providing information like account number ,sender name, country, city, amount, bank name ,city, date. And the ticketing web service is used for booking the train ticket using online banking application the user can access this web service by providing the information like journey date ,gender, ticket type ,train name ,coach company. Hotel booking is another web services where the people can book the hotel by providing the information like hotel name, timing, number of rooms, adults ,amount etc. these web service are created using glassfish server.

B. Identifying the conflicts

When a data is transfer the annotated service will describe the source and the target service after describing the source and the target service is annotated with the context to determine the possible context conflicts all the modified context need to be examined by determining the modified values we can identify the context conflicts

In my implementation we have used three web services here for booking ticket the user will type the date, gender ,amount ,train name for transferring the amount it will user the money transfer web service so while transferring the data the format are changed and it is identified by the reconciliation approach where in this approach it will compare the current data with modified data

Example r1 and r2 are the date they are annotated to concept of data of ontology date has modified date format with another value in context of r1 and r3 "dd/mm/yyyy "for r1 for r3 mm/dd/yyyy as result context conflicts is occurred when the data is transferred so by using the modified value the conflicts is detected.

C. Recovering the conflicts

The conflicts can be recovered using the reconciliation approach where can be evaluated using both qualitative and quantitative approach in my paper I have used the qualitative approach it is used for finding what type of data interpretation is it and it is used for the key feature comparison of data.

Once the conflicts is detected while transferring the data next step is recovering the conflicts using reconciliation algorithm the reconciliation algorithm here while transferring Data it automatically convert source context into target context .when a context conflicts involved in only one modifier it can be reconciled using the predefined automatic conversion example context conflicts r1 involves modifier date format of date concept .here it is easy to identify automatic conversion rvt date format that can reconcile r1The conversion is obtained by substituting the input data element date.

In this project while transferring date from one service to the other service reconciliation approach will apply the modified value and recover the conflicts where the mm/dd/yyyy conflict date format is recover as dd/mm/yyyy.
Likewise short form in provide information is compared with modified data and recovered as male. Thus finally the reconciliation approach automatically recovers the conflicts.

D. Web service composition

Web service composition is an aggregate of web services to automate a particular task or a business process to quality as a composition at least two participating service plus one composition initiator need to be present. Where in my base paper they have used the fuzzy predicate pets for the automatic web service composition .here in my project I have used the BPEL4WS(business process executive language WS4) where it automatically composite the web service
BPEL4WS is used for communicate with the other web services and its ability to access and modify data received and it use the correlations sets for interaction between the services here the correlation process maintain the scale of iteration at the process of iteration correlation allow the incoming message to reach the right process.

Hence the conflicts are removed and automatic composition is done and provides the valid service to the user. The web service composition help the user to access within the single webpage instead of going to the different webpages for the accessing the data here I have composed the three web services namely money transfer, online ticketing, mobile recharge for the better service to the user.

IV.FIGURE AND ABBREVIATIONS

A. Figure and table

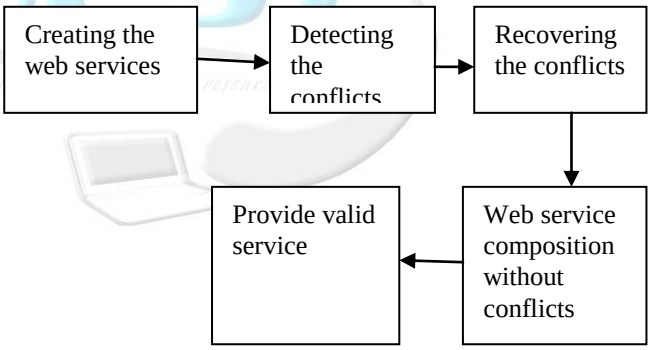

Figure 1: Process of the detection and recovering of conflicts

In this figure it explain the process of the automatic detection of conflicts and recovering the conflicts in web service composition for banking application .First the web services is created for bank like money transfer ,online shopping ,ticket booking ,travel booking and hotel booking after creating the web service during the web service composition there will be conflicts while transferring data so first it is detected using the reconciliation approach after detecting the conflicts its recovering process is done using the reconciliation approach where it will recover the conflicts by referring the modified code with the current code after recovering. the recovered web service composite automatically using BPEL4WS process and composition the valid service is provided to the user.

B. Abbreviations

BPEL 4WS - Business process executive language 4ws

OWL - web ontology language
SOA - service oriented architecture
WSDL - web service definition language
WSMO - web service model language

V. CONCLUSION

This work consider detection and recovering of conflicts automatically using the reconciliation approach and the recovered web service is composited automatically done using the business process executive language 4ws and provide the valid service to the user .future work in automatic composition of web service it can include quality of service .quality of service defines the quality provided by services in reference with context ,here the challenges lies in selecting the appropriate service out of many services that are available.

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