ABSTRACT

Service Oriented Architecture (SOA) is one of the web service platform applied in the Information Technology (IT) applications. Framing SOA architecture, is a difficult task for many complexities and challenges arise. Moreover, SOA architecture is useful, to improve the security, reliability and availability of web services. Therefore, a new Heterogeneous Offer Agreement Generation (HOAG) system for web services based on SOA with three layer technology is proposed in this thesis. They are namely Analyzer Security Originator, Classified Filter and Fuzzy Based Offer Agreement Generator. In first layer, user requests are gathered and executed for secured key generation and in the second layer authenticated requests are classified to reduce the over load. In third layer, the classified data are further sent to service providers, to generate the Service Level Agreements.

Initially, the proposed HOAG process starts its execution by gathering requirements with Analyzer and Security Originator. This is the starting and active layer to collect all user requested transactions. From the collected information, the credential data like service Id, password, transaction Id and amount are gathered with the Information Packages (IP) and are matched with Extracted Database (ED). Once the user registered details are matched, then the collective authenticated process is started. In this layer, the secured key generation was executed with the proposed Enforcer algorithm. To take over the secure processing, the proposed Enforcer algorithm has been categorized as Enforcer Encryption E1, Enforcer Encryption E2 , Enforcer Decryption D3 and Enforcer Decryption D4. The reason behind designing such authenticated execution is that it will condense hacking transaction keys from the third party. Enforcer Encryption E1 is

processed with password and transaction Id and Enforcer Encryption E2 encrypts the cipher text with user login time. Next Enforcer Decryption D3 executes with the encrypted cipher text of Enforcer Encryption E2 with the user login date. Finally, Enforcer Decryption D4 decrypts the cipher text with the cipher text of Enforcer Decryption D3 and with the service Id. The specialty of this proposed Enforcer algorithm is to perform the secure generation with the processing of user accessing date, time, password, service Id and transaction Id.

From information received from layer 1, the process moves to layer 2 execution namely Classified Filter. In this layer, the over loaded transactions are classified and balanced with the proposed algorithm called Efficient Trim Down (ETD) classification. The algorithm is executed with three parameters called Empirical estimation, Risk analysis and data Complexity. At first, Empirical estimation of the received information is estimated and matched with the predicted results. Based on the estimated data, the risk factors are measured and calculated. The Complexity of data is calculated using the probability measure for the estimated data. Based on these three parameter measurements, the final accuracy has been compared with existing classifiers named Collective Group classifiers (CG). The proposed ETD classification algorithm's accuracy is compared with the existing CG classifier. The accurate credential information is finally sent to the service providers in layer 3.

The accurate measure is received by the service providers for generating service agreements based on the customer requirements. The customer priority requirements gathered initially in layer 1 are finalized with Decision Manager (DM). The Decision Manager is the deciding authority to finalize the agreement with cross verification of User Oriented Database (UO-DB), Expert Advice (EA) and User Requirements (UR). The prepared

agreement is generated using fuzzy logic to provide better flexibility in agreement generation. After generation of the proposed Fuzzy Based Agreement, it is sent for Customer Approval. Once the customer's are satisfied with the agreement they acquire services or they discard it.

The main contribution of this proposed HOAG system is the facility of concurrency so that the services are accessed by more number of customers at a time leading to increase in number of service transactions. The usage of system will reduce the customer's search time while selecting the best offer based services at a stipulated period of time. Therefore, the main advantages of the proposed system include reliability, efficiency, security and reduction in search time.