ABSTRACT

This research work aims at developing a Dynamic and Proactive Business Logic Evaluation Model for Web Service Change Management. This work has been primarily motivated by the scorching issue that the Business Analysts cannot have direct control over the business logic and thus cannot make changes efficiently by themselves without depending on the IT staff. So it is considerably strenuous to adopt emergency changes over the services without breaching the established business policies by the analysts. Hence, a model which endows them the ability to handle importunate changes and which caters maximum run time support and degree of automation eventually ruling out the necessity of proffering the change requests to the IT staffs, is very much needed. In this respect, the goals of this research are derived as to extend the support to the Business Analyst to manage the changes over the service logic and to assess and evaluate the changes effectively as follows:

I. To provide a standardized method and procedure for efficient and prompt handling of all changes over the web services in order to reduce the maintenance cost and time, and improve the service quality.

II. To support business analyst to manage the changes effectively in order to meet the expected business outcome.

The first goal aims at handling all changes over the services by following standardized procedures and methods facilitating the reduction of the maintenance cost and time. The second goal aims at providing the required support to the business analyst to manage the changes in a competent manner. The use of Finite State Machine in our research enhances the reduction in time and space complexity and alludes that the business outcome is effectively met. The research involves the evaluation of the identified properties of business logic like computability, traceability, dependency, accessibility and configurability, providing enhanced run time support. If all these properties are met for the target business logic then it is decided that the service logic is manageable. This is followed by the evaluation of various change factors such as Order of Execution, Similarity Measure, Code Consistency, Schema Validation, Business Policy Enforcement, Time Complexity, Space Complexity and Mapping Function, which aids in deciding if the changes performed are competent enough to be committed.
These evaluations are performed by adopting the dependency analysis approach and by representing the business logic entities such as rules, functions, parameters and policies. Albeit this ensures that all changes are assessed, implemented and evaluated in a controlled manner, inorder to make the model sagacious enough, the impact and predictive analysis are performed over the evaluated properties and change factors using Cellular Automata to determine the risk associated with the changes and to make the Business Analyst comfortable to attain the excepted business outcome.

The experimental study analyzing the performance of the proposed model has been accomplished. The intention of the analysis is to provide the justification of why a Business Logic Evaluation Model is essential for web service change management precisely. The outcomes and the promising results of the experiments have proved the proficiency of the proposed model and on the other hand, have necessitated the need for enhanced investigations in the projected line of research.