

A Study in Multi Agent Systems and Web Services an Adaptive Workflow in E-Commerce

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ABSTRACT

The agents are communicating with each other by sending messages to each other in an expressive agent communication language in Multi-agent System (MAS). Agent communication language (ACL), defines type of messages and their meaning that agents can exchange [1]. Messages that agents are communicating have a semantic meanings which can be proposition, rules or actions. In other words, multi-agent system is an association of synchronized, autonomous agents, which interact with each other in achieving common goals (objectives). On the other hand, Web services are the services in the shape of software components accessible on the internet, which provide useful information to users, businesses and organizations [2].

The Web service model uses WSDL (Web Services Description Language [14]), an XML (Extensible Mark-up Language [18]) format responsible for the service interfaces description along with the binding details to specific protocols. UDDI (Universal Description, Discovery, and Integration [13]), a protocol responsible for publishing and finding services, services details and descriptions etc. SOAP (Simple Object Access Protocol [14]), an XML message based envelop format which has the bindings to specific protocols e.g. HTTP (Hypertext Transfer Protocol [18]), SMTP (Simple Mail Transfer Protocol [13]) etc [1]. These services are invoked over the WWW (World Wide Web) using the SOAP/XMLP (Extensible Mark-up Language Protocol [18]) protocol. A Workflow can be defined as the automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules. It has many advantages like improved efficiency, better process control, improved customer service, flexibility and business process improvement.

Due to rapid advancements in technology and growing needs of business environment, there is a need of adaptive workflow, which could accommodate

itself with the changes that occur in the business processes. Traditionally, workflow management systems have not been designed for dynamic environments requiring adaptive response.

Currently, the need for adaptive workflow is being driven by the demands of e-commerce in both B2B and B2C space. Adaptive workflows respond to changing conditions through adaptive change.

The aim of this research to suggest an adaptive work flow model that can help in eliminating problems in e-commerce domain by using agent based approach. In e-commerce there is always a problem of searching the right item, as the current system does not support the good search. The customers search each time for the required items and stop their search when they have found the desired item according to their budget, cost and quality attributes with up to date market cost about the required items to purchase.

In e-commerce workflow system, in purchasing the required items, there are processes involved (Order Capture, Order Process, Order Fulfillment) which do not address the adaptability attribute in case of exception or when there is a change in business environment which make changes in the business processes, consequences of which can be in the shape of failure of business objective[3].

The proposes approach how to eliminate the problem described above and suggests an adaptive workflow system by introducing agents with each of the

processes (Order Capture, Order, Process, and Order Fulfillment). A proposes way to design adaptive work flow will be explains with the help of agents.