Chapter 15
Web Service Evaluation Using Probabilistic Models

S. Zimeras
University of the Aegean, Greece

ABSTRACT
Information system users, administrators, and designers are all interested in performance evaluation since their goal is to obtain or provide the highest performance at the lowest cost. This goal has resulted in continuing evolution of higher performance and lower cost systems leading to today’s proliferation of workstations and personal computers, many of which have better performance than earlier supercomputers. As the variety of Web services applications (Websites) increases, it gets more important to have a set of evaluation criteria that should evaluate the performance of their effectiveness. Based on those criteria, the quality of the services that the Web applications are providing could be analysed. This work represents software metrics that could (or need) be used to quantify the quality of the information that the Web services are providing. These measures could be useful to understand problematic frameworks during the implementation of the Websites and could lead to solutions preventing those problems.

INTRODUCTION
During the last decade, the Web services (websites) are into the centre of managing information. As Web service could be defined tools or applications that could be used to find, manage and share information between business and science via a platform based on a specific language.

Performance evaluation is required at every stage in the life cycle of an information system (like Web applications), including its design, manufacturing, sales/purchase, use, upgrade, and so on. Web applications include product, usage and development characteristics and are subjected to continuous evolution. It is needed to focus on various aspects aiming to contribute in the design and development of Web applications (Figure 1) (Kastania and Zimeras, 2010)

In general the important goal in performance evaluation is to select the right measures of performance, the right measurement environments, and the right techniques. This part will help in making these selections.

Evaluation is close connected with quality of services. The quality measurement of services should be based on the product characteristics that contribute to user satisfaction and on the product functions that can be present or absent. In order to measure quality the user view, the developer view (models to assure the quality of the process,
quality requirements for teleservices), the product view and the value-based view should be considered (Figure 2).

Very different measures are necessary for measuring the effectiveness of an information system. Related to the information systems effectiveness is the DeLone and McLean (1992) work. Cameron and Whetten (1983) have proposed a useful framework for selecting appropriate measures for future information systems research focused on organizational performance. Seddon et al. (1999) propose that the diversity of information systems effectiveness measures is to be encouraged.

This work introduced the reader to software metrics that are used to provide insight about different elements of information systems software. It presented internal metrics that can be applied prior to the release of the product to provide indications relating to quality characteristics, and external metrics applied after product delivery to give information about user perception of product quality (Dhyani, Keong and Bhowmick, 2002).

Software metrics can be used to measure various factors related to software product development. These factors include estimation, early detection and prevention of problems, product assessment, etc. Their utilization within a measurements framework in combination to the use of automated tools can aid towards development process control and higher quality software systems.

From probabilistic point of view, in the Web graph properties could be apply random graph models considering the theory of random networks where statistical distributions could be explain the interactions between different elements. Also...
Related Content

Knowledge Producing Megamachines: The Biggest Web 2.0 Communities of the Future
[www.igi-global.com/chapter/knowledge-producing-megamachines/37751?camid=4v1a](www.igi-global.com/chapter/knowledge-producing-megamachines/37751?camid=4v1a)

Improving Software Agent Communication with Structural Ontology Alignment Methods
[www.igi-global.com/article/improving-software-agent-communication-structural/47026?camid=4v1a](www.igi-global.com/article/improving-software-agent-communication-structural/47026?camid=4v1a)

Experiences in Developing a Micro-payment System for Peer-to-Peer Networks
[www.igi-global.com/article/experiences-developing-micro-payment-system/41726?camid=4v1a](www.igi-global.com/article/experiences-developing-micro-payment-system/41726?camid=4v1a)

High Performance Scheduling Mechanism for Mobile Computing Based on Self-Ranking Algorithm
[www.igi-global.com/article/high-performance-scheduling-mechanism-mobile/2607?camid=4v1a](www.igi-global.com/article/high-performance-scheduling-mechanism-mobile/2607?camid=4v1a)