Chapter VII
A Semantically Adaptive Interface for Measuring Portal Quality in E–Government

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ABSTRACT

This chapter introduces a semantically adaptive interface as a means of measuring the quality of e-government portals, based on user feedback. The interface is semantic as it uses ontologies in order to formalize well defined semantics about the adaptation criteria used. Furthermore it is adaptive as three axes of adaptation are applied: based on real-time feedback from users, based on problems encountered by the user and based on metadata of the pages visited by the user. The authors hope that applying the proposed adaptive interface as a means of measuring e-government portals' quality, will not only allow more focused and targeted assessment of quality, but will also increase users' response rates.

INTRODUCTION

E-government is the use of information technology to support government operations, engage citizens, and provide government services (Dawes, 2002). Many governments have created portal sites for their citizens. In the United States the main portal is USA.gov, in addition to portals developed for specific audiences such as DisabilityInfo.gov; in the United Kingdom the main portals are Directgov for citizens and businesslink.gov.uk for businesses (Wikipedia, 2007).

Citizens possess different access possibilities, skills, expectations and motivation, thus they face different problems during their navigation to an e-government portal while searching for a public e-service or during the actual service provision. This variety in citizens' skills, expectations and in problems they face has as consequence that each citizen has different perceptions concerning the quality of public e-services.

Another source of variation is the level of importance of each quality factor among users. For example, for some users without web experience—who are often lost in the information space of a portal - quality is related mostly with a clear and easy to follow portal structure, or the provision of help information related to the completion of submission forms. On the other hand, experienced users put more emphasis on advanced features like automatic recalling of user's personal data within portal's submission forms or on some technical characteristics of the portal.

Considering the aforementioned variations, it is apparent that a "one fits all" e-government services' assessment is not efficient. For example an experienced user must perform the evaluation without being bothered with irrelevant information. On the other hand an in depth examination of the various quality factors is needed by other groups of users that face problems. Besides citizens, an evaluation that is targeted to problems is very important also for the analysts, because such an approach supports them in the decision procedure about the planned actions for improvement.

For e-government services' assessment to be efficient, the evaluation should be organized in a way to serve every citizen individually. For the realization of such a customized and adaptive evaluation of e-government services, an intelligent, semantic-based platform is needed which allows each citizen to put emphasis in quality dimensions related with the problems he/she faces, depending on his/her skills and expectations (Magoutas, et. al, 2007). In that way

quality assessment of e-government services will become more proactive offering more and better data that can be used as input for the support of decisions towards the improvement of services to citizens.

This chapter presents a semantically adaptive interface for measuring portal quality in e-Government. The chapter is structured in 5 sections. After this brief introduction, we present in section 2 the related work on the area, while in section 3 the motivation of this work is discussed. Sections 4 is the main section of the chapter and includes an overview of our approach, the ontologies that are responsible for providing the semantics upon which the adaptation is based, the functional description and technical specification of the system, as well as user scenarios and screenshots of the adaptive interface. Section 5 includes our conclusions and possible topics for further work, while section 6 describes future research directions and trends.

RELATED WORK

A research area which is very close to our work refers to adaptive hypermedia. An Adaptive Hypermedia System (AHS) tries to adapt information for a user based on a model of that particular user. Examples of adaptive hypermedia systems include AHA! (Bra et. al., 2003), ELM-ART (Brusilovsky et. al., 1996), and Adaptive Engine 3 - AE3 (Keeffe et. al., 2005). These systems use adaptive techniques in order to provide the adapted hypermedia for a user. There are four such techniques, which are adaptive navigation, adaptive presentation, structural adaptation, and historical adaptation (Tallon, 2005). Our approach uses the idea of adaptive presentation for quality measuring of e-government portals and services. Adaptive presentation is intuitively related to how the hypermedia is presented to the user. The hypermedia or content is adapted towards the user model provided. In our approach the adaptation

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