Usability and Accessibility Framework for Digital Libraries

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Abstract

Libraries have always tried to remove obstacles to information access. A poorly designed digital library (DL) is certainly a barrier to users; therefore the need exists for a specific usability and accessibility framework for the design and evaluation of DL's, which if adopted can help ensure enhanced usability of a service. The framework consists of three stages - query techniques, user testing and expert evaluations, and embodies the need for assessment after each stage. The framework also defines the techniques and methodologies to be conducted at each of these stages. Usability and accessibility evaluations of four DL services clarified our view that the specific dimensions of these services can be better evaluated via the adoption of this framework.

1   Introduction

Traditional "bricks and mortar" libraries provide managed collections of information that enable users to increase their knowledge. Modern DL's endeavour to provide the same services, but deliver information over the Internet or an Intranet, therefore they operate in the intersection between traditional libraries and the information superhighway. As demand for this information resource has increased, issues of complexity have presented themselves to end-users. Therefore, the need for comprehensive usability and accessibility evaluations of DL's has become ever more important. We propose that the most effective way to guide these evaluations is by establishing a framework, something that has up to now been omitted. The framework we propose supports the development of better design solutions, thus enabling users to fully explore the benefits of DL's.

2   Nature of Digital Libraries

A crucial factor for libraries is that the information they preserve and deliver is effectively organised. With regards to DL's, Arms (2002) notes that a '[d]igital stream of data sent to earth from a satellite is not a library. [However] the same data, when organised systematically, becomes a digital library collection' (Arms, 2002). Effective cataloguing, organisation and structuring of information therefore separates DL's from other web services where the information architecture and navigational mechanisms have no particular justification. Another key dimension of DL's is the end-users' information seeking behaviour. Web-sites are often designed to support more specific browsing activities, whereas DL's need to support task orientated navigation. 'The main distinction between navigation and browsing is based upon user goals. In browsing, users explore the available hypertext to get a general idea about one or several topics. Whereas, in navigation, user have a specified goal in mind.' (Helander & Vora, 1997).

3   Framework

We regard the most important aspect in evaluating a system to be the identification of real user problems; therefore our framework plays specific attention to evaluation techniques that involve current and perspective users. Expert evaluation methodologies supplement user evaluations, and address areas that are not covered by the previous stages. After each stage the findings must be assessed, enabling appropriate design and modification of the techniques in the next stage of the framework, thus ensuring maximum effectiveness.
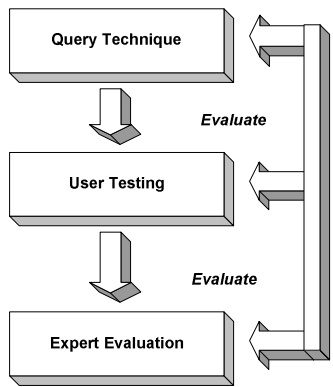
The framework can be broken down into seven key steps:

1. Conduct Query - Requirement Gathering
2. Analysis
3. Perform Empirical (user) Evaluations
4. Analysis
5. Expert Evaluations
6. Analysis
7. Iterative Process

Figure 1: Digital Library Usability/Accessibility Framework

The evaluation techniques applied to each stage of the framework also address the highly organised and task based nature of DL's. In our evaluations of four DL services provided by the Joint Information Systems Committee (JISC), the protocol for the methodologies was designed with these two dimensions in mind.

Table 1: Techniques and Methodologies Applied to Framework

Query Techniques	User Testing	Expert Evaluations
Questionnaires Interviews Focus groups	Formal Retrospective	Heuristic evaluation Cognitive Walkthrough

4   Conclusions

The framework and associated techniques focus upon task based information-seeking behaviour and the highly organised informational content of DL's. Our evaluations showed that use of this framework in an iterative evaluation process clearly identifies problems specific to the nature of DL's. The framework could also be applied to the evaluation of other similar services.

References

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