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A Quality Framework For Web Site Quality: User Satisfaction And Quality Assurance

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ABSTRACT

Web site developers need to use of standards and best practices to ensure that Web sites are functional, accessible and interoperable. However many Web sites fail to achieve such goals. This short paper describes how a Web site quality assessment method (E-Qual) might be used in conjunction with a quality assurance framework (QA Focus) to provide a rounded view of Web site quality that takes account of end user and developer perspectives.

Categories and Subject Descriptors

H5.2 [User Interfaces]: Benchmarking

K4.2 [Social Issues]: Handicapped persons/special needs

General Terms

Measurement, Human Factors, Standardization.

Keywords

Web site quality, quality assurance, standards, best practices.

1. INTRODUCTION

Digital library development programmes often require compliance with open standards and best practices to ensure that project deliverables are functional, widely accessible and interoperable. Within the UK, for example, the JISC (Joint Information Systems Committee) have produced a standards catalogue [1] to support JISC's development activities. In practice, however, projects do not necessarily always implement recommended practices. To a certain extent this may be acceptable: new standards are still being developed; standards may fail to take off; etc. However now that the Web is acknowledged as the main delivery mechanism for digital library programmes and XML as the underlying format it is now crucial that technical requirements are implemented correctly in order to ensure interoperability.

The adoption of quality assurance procedures will undoubtedly be of value in ensuring that standards are adhered to in the interests of Web site quality in general and interoperability in particular. However, a rounded view of quality should also take account of user satisfaction, i.e. the subjective perceptions of quality resulting from actual usage of a Web site. In this paper we propose a combination of E-Qual, a Web site quality assessment method, and QA Focus, a lightweight quality assurance method, to create a quality framework that incorporates supplier quality responsibilities and user satisfaction.

2. E-QUAL METHOD

The E-Qual approach to the assessment of Web site quality was developed by Barnes and Vidgen [2] and has been tested in many domains, including online bookstores, auction sites, knowledge sharing and e-Government [3]. E-Qual [4] uses a 23 item survey instrument to capture the subjective perceptions of users. Analysis of E-Qual survey data has revealed three prime components: usability, information quality and service interaction quality. Each has implications for the supplier of a Web site. *Usability* includes items such as "easy to navigate" and "easy to learn and operate" and points to a requirement for an organization to conduct usability tests of its Web site. *Information quality* (e.g., "believable information", "accurate information", "timely information") requires that an organization has defined content management procedures. *Service interaction quality* is concerned with how an organization presents itself and conducts business in a virtual world. A key factor in service interaction is trust, as reflected by items such as "my personal information feels secure". E-Qual is thus a comprehensive and tested framework for assessing a user's perceptions of Web site quality.

3. QA FOCUS METHOD

JISC funded the QA Focus project from 2002-4 to develop a quality assurance (QA) framework to support JISC's digital library programmes. A QA framework together with a support infrastructure was successfully developed and has been described elsewhere [5].

The remit of QA Focus was to develop a framework which would help ensure that project deliverables complied with standards and best practices. The framework aims to maximize JISC's investment in development work by ensuring that project deliverables are suitable for use across the diverse environments to be found in the higher and further educational communities, can be deployed easily into a service environment and can be repurposed and reused by new initiatives in the future. The areas covered by QA Focus include digitisation, Web, metadata, software and service deployment.

Following discussions with a number of projects it became clear that, although the importance of a QA infrastructure in these areas was appreciated, it was recognised that a bureaucratic, heavyweight framework would be inappropriate. It was also felt appropriate to develop a self-assessment framework rather than deploying external checking agencies. A lightweight framework was developed which recommends that projects should develop technical policies governing the project's technical infrastructure together with accompanying systematic procedures to ensure the policies are being implemented correctly.

3.1 Policies

The policies for Web sites should cover the document formats to be used (HTML, CSS, etc.) together with other aspects relating to the services provided. For example, there should be linking policies which could address the policies on linking to the site (which often, but not always allows this) and links from the site.

In addition documented policies should also cover Web site accessibility. Addressing accessibility on its own could, however, result in the usability of the Web site being overlooked, so similar policies should be developed for usability. The policies should also describe the technical architecture which is being used to implement the policies. If, for example, the Web site should be in XHTML 1.0 Strict, then it would clearly be inappropriate to use Microsoft Word as the authoring tool!

The policies should also document permitted exceptions. For example, a Web site containing information about presentations may contain links to PowerPoint slides. If only the PowerPoint slides are to be made available, or if non-compliant HTML files derived from PowerPoint are to be made available, this should be stated. It is important to note that the policies should be based on *achievable* aims and not unachievable aspirations.

3.2 Checking Procedures

It is important to define systematic procedures which will ensure that the policies are being implemented successfully. The QA Focus Web site, for example, has made use of W3C's Log Validator tool [6] and a URI interface to checking tools [7]. Not all compliance tests can be carried out using automated tools. Testing the accessibility and usability of a Web site will require manual testing. However there will still be a need to document what such manual checking processes will cover.

4. WHERE TO FROM HERE?

The current World Wide Web has many flaws, with a great many resources failing to comply with HTML standards. As we move towards a richer, more structure Web based on XML it will be essential that quality assurance is built into development processes – unlike HTML, XML applications formally require string adherence with the standards and may fail to render if this is not the case. However, even when a resource does comply with standards it does not mean that the user experience will necessarily be a happy one. Thus, a combination of supplier QA and user satisfaction assessment are needed. However, linking the subjective perceptions of users with the QA practices of suppliers is not a simple task. The next stage of work is to model the relationships between user satisfaction and supplier initiatives (such as QA procedures). One way in which this might be done is through quality function deployment (QFD): “a structured and disciplined process that provides a means to identify and carry the voice of the customer through each stage of product and or service development and implementation” [8]. However, issues of standards and interoperability suggest that the relationship between user satisfaction and QA will not be a unidirectional and linear one but more likely a two-way interaction in which each of the aspects form and shape the other. One potential area of work for applying the procedures outlined in this paper is Web

accessibility. Approaches to checking Web accessibility for compliance with WAI Web Content Accessibility Guidelines (WCAG) are well documented (e.g. see [9]). However there is a need to establish how well compliance with WCAG relates to positive subjective perspectives by users with disabilities. We are currently exploring possibilities of applying our methodologies in this area in the domain of local government e-services.

5. CONCLUSIONS

This short paper has proposed a quality framework that comprises user perceptions of Web site quality (E-Qual) with a lightweight quality assurance framework (QA Focus). The main contribution of this paper is the recognition of a need to combine user and supplier views of quality and QA into a coherent, lightweight, end-to-end framework for Web site quality. A further contribution is the recognition that Web accessibility standards implemented by suppliers need to be supplemented with a subjective evaluation by users with disabilities.

6. ACKNOWLEDGMENTS

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