EVALUATING WEBSITES

Introduction

This paper aims to promote an evaluation process whereby websites can be improved as a medium for communicating research to an international audience. It argues that previous evaluations of the Internet in relation to development have failed adequately to consider the usage of the medium, and proceeds to outline a **methodology** for the **evaluation of websites**. The paper is an output of a DfID-funded project to examine the usage of eight websites disseminating urban development research (see 'Note' on page 5).

Authors writing on the relationship between the application of Internet technologies and poverty alleviation have tended to generalise the nature of the technologies available. In doing so they have failed to comprehend that the effect of the Internet is mediated by the appropriateness of the technologies being used.

Kemly Camacho (2001) sets out to look at how access to the Internet – in terms of cost, infrastructure and personnel – has affected the programme activities of NGOs in Central America. But there is little in his methodology regarding the specific experience of NGO users viewing actual websites. This leads Camacho to base his evaluation upon an inductive methodological approach, relying heavily upon economic and cultural theories to assess the impact of the Internet.

The results are broad assumptions about the ways in which the mechanics of the Internet 'mirror the hegemony of the developed world, since the Internet is dominated by proprietary US software, the English language and Western styles of presentation.' Such conclusive arguments have precluded a discussion of the ways in which **websites can be improved** as a mechanism for transferring information between civil society organisation (CSO) users globally.

Scott McConnell's paper (2000) presents a refreshing exception. McConnell attempts to evaluate the impact of the Internet upon African NGOs, by examining the effectiveness with which Internet-equipped NGOs use the technology to assist their unconnected partners. McConnell confirms that access to the Internet is not an 'On-Off' issue. However, his behavioural approach to the research – looking at the activities of individual knowledge gatekeepers – prevents him from reflecting upon how the effect of the Internet is, in part, contingent upon the **nature** of the **technologies** being used.

Where evaluators have conducted an assessment of the medium and associated technologies they have tended to conduct a quantitative assessment of website statistics: counting hits or the number of pages requested.

Whilst any estimate of site activity must refer to **log-file statistics**, taken alone, such techniques are now widely recognised to be a misleading measure of website performance. In isolation quantitative evaluations ignore qualitative factors such as the **experience** of users and the **quality** of website content.

Other website evaluations, such as those undertaken by Victor Sandoval (2000) at the Cole Central, Paris, have adopted an eclectic methodology to examine both quantitative and qualitative indicators of website performance. Yet Sandoval's methodology cannot be taken as a model for other evaluators to follow, since the quantitative aggregation of ill-defined criteria such as 'user friendliness' and 'first impression' leave us guessing as to the appropriateness of the questions being asked.

The same could be said of another well-intentioned study, namely the evaluation methodology proposed by Batsirai Chivhanga (2001) at the Internet Studies Research Group, London. Chivhanga claims that users of the ISRG web resource can evaluate the impact of their website using a predefined checklist. However, evaluators attracted by the simplicity of the approach are left wondering how in reality one can measure and assess concepts such as website 'usability' or 'stability'. Simply asking questions, such as, 'Is content thoughtfully collected?' is insufficient. To whom are we asking the questions? By what method? And what tests can we design to ensure that we collect meaningful data for analysis?

The Evaluation of Eight Websites Disseminating Urban Development Research

Given that so few documented evaluations have been undertaken, there is clearly a need for CSO websites to be evaluated in order for website **design** can be improved to meet the requirements of CSO users and so that a worthwhile **methodology** for the evaluation of websites can be defined. This must take place before any informed discussion of the actual or potential impact of the Internet on poverty alleviation can move forward.

The remaining sections of this paper are based upon an applied evaluation of eight websites disseminating development research (see 'Note'). The findings of the study are outlined in the form of a set of **website design guidelines**, whilst the **methodology** used to undertake the research from the perspective of an international audience is also described.

The evaluation was undertaken by breaking down each website into its component parts, and, using Observation, Automated Tests, Usability Tests, a User Survey, a Webmaster Survey and Interviews, answering a series of normative questions about each website component. The purpose of the study was to make conclusions regarding **key qualities** associated with the **constituent components** of each website. Taking each component in turn:

- **ARCHITECTURE** refers to the structure of the website and the logic by which the pages interconnect. This component is examined in order to assess the site's **navigability**.
- **TECHNOLOGY** refers to issues around the quality of the code and the appropriateness of any technologies used. This component is assessed in relation to how **accessible** and **available** the site will be to an international audience with different software and hardware capabilities.
- **STYLE** refers to the **appearance** of the website and issues around the layout and display of text and images.
- **CONTENT** refers to the quality, authority, readability, relevance and timeliness of text and images, and the degree to which **user interaction** is supported.
- **STRATEGY** refers to the degree to which the site has met **stated objectives** concerning its target audience or market.
- **MANAGEMENT** relates to the human and financial resources that the site has at its disposal.

Design Guidelines

By assesing each component from the perspective of an international audience, the review was able to define a set of website features appropriate to the dissemination of development research. These findings are structured according to the components of website production previously outlined (with the exception of the 'Management' component). Where appropriate, findings are supplemented with a note on website design taken from Willard (2001).

Architecture
- Sites containing a detailed navigable menu repeated on each page are preferable since they allow visitors to navigate between sections on different pages.
- Sites including a hyperlink in the website's Logo repeated on each page are preferable since visitors can reach the home page from any page on the site.
- Sites featuring a visual cue within the site menu are preferable since they orientate users navigating between sections.
- Each file's title needs to be unique and meaningful. The title should be a maximum of 50-100 characters in length and be written with the first letter of each word in upper case. Each individual webpage should have a unique and meaningful URL, which unambiguously reflects the contents of that page. Avoid long and complex URLs that can be degraded if sent in an e-mail. . All HTML

files should end in the same suffix, <.htm> or <.html>.

Technology
- Sites using hypertext alternatives to navigable images are preferable because they can be navigated when images are disabled in the browser, thus reducing download times.
- Sites where documents cannot be downloaded in standard file formats, such as HTML, RTF or Word 6.0 exclude some users. All downloads should show the size of the file.
- Sites where the HTML does not meet specified W3C standards exclude users using older browsers.
- Avoid using Frames, JavaScript and other code not compatible with basic browsers. Check which technologies work in which browsers by using a browser compatibility table. Advanced features can reduce download speeds, whilst Frames can hinder navigation or prevent book-marking.
- Avoid excessive use of large and numerous images that may reduce download times. Aim to keep each file size under 55k. Image files can be reduced through file compression at: http://www.savei.net/gifcruncher.html

Style
- Websites where the layout and formatting is consistent between pages score high points for appearance.
- Use a template device, such as Cascading Style Sheets (CSS) to format all text, headers and graphics. CSS will save time maintaining your website, since only one file needs to be changed in order to update the look of the entire site.
- NOTE: Each colour used in your site should represent only one category of information. Bright background colours are distracting for readers since text is not always easily distinguishable.

Content
- Sites where posted articles feature the author's contact details recorded greater levels of user interaction.
- Ensure that the webmaster's contact details are available, as above. Website contact details should be repeated on each page according to the same layout.
- Sites featuring a 'date of last-production' stamp repeated on each page are preferable since they allow users to assess the timeliness of information.
- Ensure that each page is appropriately titled with a meaningful, context-independent reference. This will help visitors arriving deep within the website to orientate themselves.

Each page title should correspond exactly with the file name for that page.
- Ensure that the semantics of all hypertext is meaningful independent of context. Given that some users will posses text-only browsers provide links-as-text as an alternative to navigable images.

Strategy
- Sites using keyword 'meta-tags' in their website's definition document tend to attract more users.
- Each file should have up to 10 keywords or phrases to identify the content. These should be separated by a comma followed by a space. Each file should also have a description of up to 250 characters. This description is the text that appears with the title in the results of a search in some search engines. Meta-information should include unique titles for each page as a minimum.

Methodology

The research methods adopted to evaluate each of the development research websites mentioned previously are outlined below. An **Evaluation Framework** (appended) details the specific research questions asked, and the appropriate research methods employed, in order to assess the key qualities associated with each website component. The activities described were used to evaluate existing websites, carried-out over a six to eight week period.

Observation
A high proportion of the questions shown in the Evaluation Framework were answered by the evaluator whilst **browsing** the website concerned. Each question was based upon a set of normative assumptions about what a 'quality' website should contain, but their interpretation was corroborated with other information gathered.

In most cases the questions are simple and unambiguous, but the questions concerning 'directory structure', 'document downloads' and 'meta-tags' warrant further explanation.

In computer file systems, a directory is a named group of related files that are separated by the naming convention from other groups of files. The question concerning a website's directory structure seeks to find out whether the different groups of related files – or webpages – within the website are uniquely identified within the site's directory. In effect, this means 'Does each webpage have a unique URL (Uniform Resource Locator)?'

Websites that uniquely identify each webpage can be navigated by using the browser's 'Address' field. More importantly, users wanting to direct other people to a specific webpage within a domain may do so by passing on the unique URL. This will direct new users precisely to the desired page, rather than to the root URL for that website.

By asking the question, 'In what format can documents be downloaded?' information can be obtained about whether the format used is appropriate for the document's intended audience. The large file size of PDF (Portable Document Format) files or the fact that not all users have the latest version of Microsoft Word, for example, is likely to prevent a significant proportion of users from accessing documents of these types.

'Meta-tags' are keywords or search terms contained within a website's definition document. Used appropriately they can help promote your website in search engines. An evaluator can check for their existence by using the 'View: Source' function on their browser.

Automated Tests

For certain mechanical aspects of website performance a web-based analysis tool was used. Automated analysis methods have been criticised by writers on the topic, since they tell us nothing about the actual behaviour and experience of real users, but they are useful to evaluate purely mechanical aspects of a website that would be tedious or impossible to measure by eye.

The HTML (Hypertext Mark-up Language) validator available from http://validator.w3.org/ was used for free to test the validity of each website's HTML, against versions 3.2 and 4.01.

Tests for spelling errors and the compatibility of technology with particular browsers was undertaken using the website analysis tool 'Dr HTML'. An analysis of a single webpage was run for free at http://www2.imagiware.com/. Xenu's Link Sleuth at http://completelyfreesoftware.com/ was used to check the status of each website's links.

Using software to test for compatibility errors between each website's code and particular browsers required the use of the browser compatibility table available at: http://hotwired.lycos.com/webmonkey/browserkit. This shows browser type against coding standards for HTML, JavaScript and Frames.

To measure the download time for each home page – using a 28,000 baud modem – the free website analysis tool *Bobby* was used, available from http://www.cast.org. The response times

measured, however, were only a rough indicator of the time experienced by users, and actual times are likely to be greater than those recorded. Times are dependent not only upon the type of modem used, but on the throughput of the server, the type and quality of the connection to the Internet, and the rendering speed of the user's browser and processor. A benchmark of 20 seconds can be used to assess whether a page's download time is excessive.

Usability Test

Testing of users undertaking **specified tasks** is considered to be one of the best methods for evaluating websites. For the eight websites evaluated, five INTRAC colleagues volunteered to complete a task-based questionnaire. Their objective was to record how many clicks it took them to locate a specified piece of information. This figure was then compared to the minimum number of clicks necessary to find that information.

The data collected using this test is a measure of website navigability, in that if the actual number of clicks taken by users is greater than the minimum number of clicks possible, it could indicate that information is difficult to find on that website.

In order to conduct a similar usability test, simply pick out some memorable text from within your website and, starting at the home page, note the minimum number of clicks it takes to find that information. Then construct a question that effectively leads people to find that information, by encouraging them to make associations between the thing requested and the categories that might be used to describe it. For example, when evaluating the FHDC website, users were asked to find the name of the *barrio* in the Barrio Design Participation Project. A logical user, following a logical website structure, might look for this information by browsing the 'Projects' section and checking the 'Design Participation' sub-section.

User Survey

Writers on website usability have been critical of the use of online surveys, since there is often little relationship between what a user says they do in a survey and their actual behaviour online. However, a user survey was used in this research since a survey remains the most appropriate means of gathering information about the profile and experiences of users located internationally.

To conduct an online survey, questions need to be coded into a form so that responses can be submitted to the evaluator or another computer programme. The survey used for the evaluation of the eight websites mentioned was a variation of the questionnaire at:

http://www.urbandevelopmentforum.org/WebsiteEvaluation/UserSurvey.html This survey was automatically rendered as a webpage following its definition in an XML (Extensible Mark-up Language) document. Submissions were transported as an XML file to a survey aggregator that produces basic descriptive statistics for each data set. This service is available for use by contacting jutaylor@tinyonline.co.uk

Each of the websites evaluated placed a link from their site to the survey on the project's domain for six weeks. Those sites placing a prominent link to the survey, with the offer of an incentive, received the most responses.

Webmaster Survey
Participating webmasters were asked to complete a short questionnaire for their website concerning log-file data and a number of internal organisational issues.

Log-file data can be a **misleading measure** of site performance, since taken alone it provides little information about the exact number, identity and experiences of users. A fundamental rule of log-file analysis is to be precise and consistent when making use of any log-file data terms.

Terms commonly used in the analysis of log-file data are 'page requests' and 'unique visitors'. A **page request** is defined as a series of hits that successfully retrieve the collection of files constituting a single webpage. This statistic is an indicator of the level of activity around a website.

A **visit** refers to the number of consecutive page requests made from a client to a server in a single session. This information is used to make an *estimate* of the number of people who have viewed the website. Some log-file software disaggregates this information according to the number of *unique* visitors in a 24-hour period. But in all cases an interpretation of log-file data regarding visitor numbers should be made cautiously, since for most software a 'visitor' includes other software programmes or the same 'people' more than once.

A common mistake noted during this evaluation was for the number of **hits** to be taken as a measure of site activity. But, given that one hit refers to one recorded request for a single file, and that a single webpage containing numerous files will return several hits, the unit is clearly a very imprecise measure of the number of unique visitors.

Webalizer is a free Open Source Software log-file analysis tool available at: http://webalizer.dexa.org/.

Telephone Interviews
Finally, a semi-structured interview of a member of each website team was used to develop an understanding of the **organisational processes** by which website content was selected and edited.

Resources
Camacho (2001) *Evaluating the Impact of the Internet* http://www.acceso.or.cr/publica/telecom/frmwkENG.shtml
McConnell (2000) *A Champion in our Midst* http://www.telecommons.com/reports.cfm
Sandoval, V. (2000) *Website Evaluation Methodology.* Unpublished Paper
Chivhanga (2001) *Impact Assessments of Websites* http://www.soi.city.ac.uk/research/isrg/isrgmembers.htm
Willard (2001) *Communicating Sustainable Development on the Web* http://www.iisd.org.
The **project's website** http://www.urbandevelopmentforum.org/WebsiteEvaluation.
The **Appropriate Website Factory**, an Open Source Software website production system that implements the design guidelines featured in this report http://www.appropriatesoftwarefoundation.org/AppropriateWebsiteFactory.
Evaluation and Repair **Software for Web Accessibility** http://www.w3.org/WAI/ER/existingtools.html
Articles on **website evaluation methods** http://www.useit.com/.
Note
The following websites were evaluated as part of the research: Community Development Society http://comm-dev.org, European Network for Sustainable Urban and Regional Development Research http://www.european-association.org/ensure, Forum: Habitat in Developing Countries http://www.forumhabitat.polito.it, Global Development Research Centre http://www.gdrc.org, Network Association of European Researchers on Urbanisation in the South http://www.naerus.org, Resource for Urban Design Information http://www2.rudi.net/rudi.html, United Nations International Environmental Technology Centre http://www.unep.or.jp, DFID-Urbanisation http://www.lboro.ac.uk/garnet/UrbanKaR/DFID-KAR-URBAN.html.

Appendix: Website Evaluation Framework
A Guide for Evaluating Websites Disseminating Development Research

COMPONENT	QUALITY	QUESTION	METHOD
Architecture	Navigability	Does the website feature a table of contents, site map, or equivalent?	Observation
Architecture	Navigability	Can visitors reach the home page from any page?	Observation
Architecture	Navigability	Can visitors in one section move to another without returning to the home page?	Observation
Architecture	Navigability	Does the website's directory structure and syntax facilitate navigation?	Observation
Architecture	Navigability	Is there a search feature?	Observation
Architecture	Navigability	Does the site feature a relational navigational cue?	Observation
Architecture	Navigability	How easy do you find this website to browse?	User Survey
``	``	Very easy	``
``	``	Fairly easy	``
``	``	Not easy	``
Architecture	Navigability	Can users easily find a specified piece of information on this website?	Usability Test
Technology	Accessibility	Is the site navigable when images are disabled in the browser?	Observation
Technology	Accessibility	In what format(s) can available documents be downloaded?	Observation
Technology	Marketing	Does the website's definition document contain meta-tags for search engines?	Observation
Technology	Accessibility	Does the code contained within the site's definition document meet W3C standards?	Automated Test
Technology	Accessibility	Is the site's home page compatible with popular browsers?	Automated Test
Technology	Availability	What availability requirement do you have for your website?	Webmaster Survey
Technology	Availability	What is the capacity of your host to guarantee the level of availability you require?	Webmaster Survey
Technology	Accessibility	Is the load time for the website's home page excessive?	Automated Test
Style	Appearance	Is the formatting of textual content consistent?	Observation
Style	Appearance	Is the website's look consistent?	Observation
Style	Appearance	How do you think the website looks?	User Survey
``	``	Unattractive	``
``	``	Fairly attractive	``
``	``	Very attractive	``
Style	Appearance	What do you think about the graphics?	User Survey
``	``	They are distracting	``
``	``	They are a little distracting	``
``	``	They are not distracting at all	``
Content	Interactivity	Can users submit content to the website?	Observation
Content	Readability	Does the textual content contain spelling mistakes?	Automated Test
Content	Timeliness	Is the date of last update provided?	Observation
Content	Interactivity	Can users subscribe to a newsletter?	Observation
Content	Authority	Is textual content referenced, where appropriate?	Observation
Content	Interactivity	Are the contact details of authors provided?	Observation
Content	Interactivity	Is there facility for users to comment on the site's textual content?	Observation
Content	Interactivity	Does the website feature a user survey?	Observation
Content	Navigability	Are the site's hyperlinks functioning?	Automated Test

Content	Editing	By what process is content selected?	Interview
Content	Editing	By what process is content edited?	Interview
Content	Relevance	How useful do you find the site's links?	User Survey
``	``	Very useful	``
``	``	Fairly useful	``
``	``	Not very useful	``
Content	Interactivity	Have you ever contributed to the content of this website?	User Survey
``	``	Yes	``
``	``	No	``
``	``	If 'yes' what form did this contribution take?	``
Content	Relevancy	Has this website helped improve your understanding of (...state issue)?	User Survey
``	``	A lot	``
``	``	A little	``
``	``	Very little	``
Content	Relevancy	How useful do you find the content of this website for your work?	User Survey
``	``	Very useful	``
``	``	Fairly useful	``
``	``	Not very useful	``
Content	Interactivity	Have you ever passed information from this website on to a colleague?	User Survey
``	``	Yes	``
``	``	No	``
Content	Interactivity	Have you ever contacted a contributor to this website?	User Survey
``	``	Yes	``
``	``	No	``
Content	Quality	How do you rate the standard of writing on this website?	User Survey
``	``	Excellent	``
``	``	Adequate	``
``	``	Poor	``
Strategy	Clarity	Does the site contain a definition of its target audience?	Observation
Strategy	Clarity	Does the site contain a statement of purpose?	Observation
Strategy	Marketing	Can the website be found within the top 10 listings of a major search engine by searching under the website's name or type of business?	Automated Test
Strategy	Marketing	In what type of country are you based?	User Survey
``	``	Northern	``
``	``	Southern	``
Strategy	Marketing	What type of organisation are you from?	User Survey
``	``	NGO	``
``	``	Academic	``
``	``	Independent	``
``	``	Governmental	``
``	``	Commercial	``
``	``	Multi-lateral	``
``	``	Other	``
Strategy	Marketing	How did you find out about this website?	User Survey
``	``	Another website	``
``	``	Via an electronic newsletter or e-mail	``
``	``	An off-line publication	``

		Word-of-mouth	``
Strategy	Marketing	How regularly do you visit this website?	User Survey
``	``	Weekly	``
``	``	Monthly	``
``	``	Less than once each month	``
Strategy	Marketing	What do you use this website for?	User Survey
``	``	Networking	``
``	``	Research dissemination	``
``	``	Research	``
``	``	Keeping informed	``
Strategy	Marketing	What is your role or job title within your organisation?	User Survey
Strategy	Marketing	How many page requests have you had over (...state period)?	Webmaster Survey
Strategy	Marketing	Have many documents have been downloaded over (...state period)?	Webmaster Survey
Strategy	Marketing	How do you promote your website?	Webmaster Survey
``	``	Search engines	``
``	``	Directories	``
``	``	Links	``
``	``	signatured correspondence	``
``	``	e-newsletters	``
``	``	Off-line leaflets	``
``	``	Off-line presence at events	``
Strategy	Marketing	How many unique visitors have you had over (...state period)?	Webmaster Survey
Strategy	Marketing	How many subscribers do you have?	Webmaster Survey
Strategy	Marketing	What two areas of your website, in addition to the home page, received most traffic over (...state period)?	Webmaster Survey
Management	Interactivity	Are person and organisation contact details provided for the website?	Observation
Management	Financial Resources	What is the total annual budget for the website?	Webmaster Survey
Management	Human Resources	How many total staff hours are devoted to your website each week?	Webmaster Survey
``	``	Under 8	``
``	``	9 to 16	``
``	``	17 to 40	``
``	``	41 to 80	``
``	``	Over 81 hours	``