Applying evaluation criteria to New Zealand government websites

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Abstract

Criteria for the evaluation of Government web sites were adapted from Eschenfelder, Beachboard, McClure, and Wyman ((1997) *Gov. Inform. Quart*. *14*(2), 173) and applied to a sample of five websites of NZ government entities. Issues that arose in applying the criteria are examined, and lessons for designers of government websites explored. In particular, it is important that websites provide orientation information, that conditions for re-use of information be made clear, that privacy concerns be addressed, that print materials be properly adapted to the web environment, that materials be kept current, that contact details be available, that metadata be used effectively, that external links be made appropriately, that pages be accessible to users with disabilities, and that help information on search engines and other facilities be made available to users. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

How can we evaluate the effectiveness of the information and services provided by websites? With growing interest in the evaluation of Internet information resources, many sets of criteria have been proposed for evaluation of websites (for instance Smith, 1997). Many sets of criteria are available on the web, and are linked from the author's evaluation criteria website (Smith, 1999). However relatively little work has been done on how the criteria can be applied, and on the lessons to be drawn in the design of websites.

This paper arises from a project carried out for the NZ Audit Office in December 1998, to develop criteria for evaluation of government websites, and apply these to the websites of five NZ government entities. The Audit Office has the responsibility of evaluating the outputs of NZ government agencies, and increasingly websites are being used by the agencies to provide

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information and deliver services. The aim of this paper is to discuss the practical application of evaluation criteria to government websites and issues in government website design that arose in applying the criteria.

The five websites evaluated covered a wide range of government functions, being mounted by government entities concerned with the environment (The Department of Conservation), issue of identity documents (The New Zealand Passport Office), border control (The New Zealand Customs Service), intellectual property (The Intellectual Property Office of New Zealand—formerly the Patent Office), and housing regulation (The Tenancy Services Division of the Ministry of Housing). The sites ranged from relatively simple passive sites, to an interactive database. It should be stressed that though specific criticisms are made of the sites evaluated, informal examination of other government websites indicates that the five evaluated in depth were representative at the time of the general quality of NZ government websites. This article will illustrate the issues involved in evaluating government websites by discussing the sites as they were at the time of the evaluation in 1998, but it should be noted that the sites have changed, in some respects as a result of the evaluation. Specific comments made in this article are given as examples of the issues that arise in designing and evaluating Government websites, and may not reflect the current state of these specific websites. While there are differences in the approach of the NZ Government to provision of electronic government information compared with other governments, such as that of the US (Hernon, 1998), it is likely that the issues identified are also of concern in countries other than NZ.

2. Methodology

The current study took place in two stages:

- Development of a set of criteria appropriate for evaluating NZ Government websites.
- Testing the applicability of the criteria by evaluating the websites of five NZ Government entities.

The evaluation involved using the sites in the same way as a user would, following links and noting features that related to the different criteria. No attempt was made to evaluate internal workings of the website, for instance by scrutinising server logs. In the case of the Intellectual Property Office site, a user-id was provided so that the evaluator could access parts of the site that were restricted to subscribers. In several cases a user with subject knowledge of the site was "walked through" the site, and asked for their impressions (for instance an ex Tenancy Adjudicator was asked to examine the Tenancy Tribunal site, and the impressions of a patent attorney were given about the Intellectual Property site). However, this was an informal adjunct to the evaluation, and the evaluation was not a user evaluation per se.

3. Criteria

The criteria used in evaluation of the five government websites follow, with discussion of the issues that arose in applying them. These have been adapted from Eschenfelder, Beachboard,

McClure, and Wyman (1997). Criteria are divided into two groups:

1. Information content criteria.
2. Ease-of-use criteria.

In applying the criteria, some changes to the Eschenfelder criteria were found to be necessary. In some cases, extra features were found to be worth assessing. For instance the Eschenfelder criteria did not mention sitewide search engines, but it was felt necessary to add a specific criterion 2.5.7 on search engine capability, since this has become a common feature of websites. In some cases the Eschenfelder criteria were rearranged, for instance criterion 2.5.1 "Content is organised logically throughout the website and by anticipated user need" was classed as a navigability issue rather than a content issue as in the Eschenfelder criteria.

Some additions reflect rapid change in Web technology—the Eschenfelder section "Bibliographic control" was renamed "metadata", and criterion 1.4.1 "Appropriate metatags are provided" added to reflect the growing concern with this aspect.

In the following discussion, the criteria will be discussed along with issues that arose in evaluating the five government entity websites.

3.1. Information content criteria

The criteria in this section evaluate the nature of the information and services provided by the website (Table 1).

Section 1.1, "orientation to the website", is important because a user entering the website should be easily able to establish the purpose of the website, and determine what kinds of information and services they will be able to access. It is important that the origin and status of information is made clear, particularly for official information. This orientation information should be accessible on the initial home page of the site, or within one link from it. In the sites evaluated in the current project, little information about the objectives and audience of the website was given.

Most lists of criteria for websites suggest that orientation information is provided at the site, for instance a statement of the purpose and scope of the website. This type of information was largely

Table 1

1.1 *Orientation to website*

1.1.1 A website overview is provided: States purpose/mission of website; appropriate to entity's overall mission.
1.1.2 Scope of website is clearly stated: Type and origin of information, audience, dates of coverage, etc.
1.1.3 Services and information provided at the website are described.
1.1.4 "What's new" section: alerts frequent users to changes in content, services, etc.
1.1.5 Instructions for the use of the website are provided: Instructions should avoid being platform/ browser specific.
1.1.6 A liability/status statement warning the user of the nature of information provided at the site, and through any links made from the site, is provided: e.g. whether the information is suitable for access by children, what the official status of information is, that important information may be available through other channels, degree of responsibility for incorrect information, etc.
1.1.7 Copyright statements are provided: Identifies owner of intellectual property on site, and conditions for re-use, linking, etc.

absent from the websites evaluated. Only one entity (the Intellectual Property Office) had an overview of the purpose and content of the site, and none of the sites provided a statement of the official status of the information or the liability of the entity for errors at the website.

In some cases, issues arose as to the target audience. For example, the Department of Conservation (DOC) site provided what it called a "DOCtionary", a glossary of corporate jargon that might have been more relevant to its own staff than to external users: the language and level was more appropriate for this purpose. Cases like this indicate that government entities need to consider their target audience in designing their websites, and to be aware of the distinctions between Intranet information and information available on the wider Internet.

Criterion 1.1.5, "Instructions for the use of the website are provided: Instructions should avoid being platform/ browser specific", is a difficult area for website designers to judge: the extent of instruction required depends on the level of competence and the computing platforms of the target audience. Many sites give instructions which are targeted to particular operating systems, and may confuse other users. It is best to give instructions that are specific to the particular site. These are more useful than instructions on generic skills (how to go back to the last page visited, how to pick an item from a drop-down menu, etc.). More sophisticated sites may require special instructions—for instance the Intellectual Property site included database features that required special information and training (which was available for registered users) for effective use.

In New Zealand, as in Britain and in most Commonwealth countries, the Crown retains copyright in government information, so criterion 1.1.7: "Copyright statements are provided: Identifies owner of intellectual property on site, and conditions for re-use, linking, etc", is important in view of confusion about intellectual property issues on the Internet, and the rights of users to make use of Internet information resources. If the entity does not want information on its site to be re-used, stored, linked to, etc, this should be clearly stated on the site. While two sites had a basic copyright statement on their pages, no conditions were stated for re-use or copying of the information. Material from the NZ Customs Service site had been copied to the site of a commercial customs broking firm, but without specific attribution (Table 2).

Table 2

1.2 *Content*

These are criteria that specifically relate to the information content provided on the site.
1.2.1   Match the purpose/mission.
1.2.2   Match needs of stated audience.
1.2.3   Includes only necessary and useful information.
1.2.4   Coverage does not overlap: within the site, or with other agencies.
1.2.5   Amount of information is significant, and balanced.
1.2.6   Contains direct information resources: rather than indirect. For example the text of document, rather than abstract and instructions on how to obtain information in another format.
1.2.7   Clear and consistent language style that matches audience: Plain English, use of Maori, Pacific islands and Asian languages if appropriate.
1.2.8   Positive professional tone: Avoids jargon, inappropriate humour, condescension, accusation and chit chat.
1.2.9   Content does not show bias: Racial, cultural, political, commercial
1.2.10 External links are to appropriate resources, connected with the business of the entity.

The criteria under 1.2 relate to the content of the site: that it relates to the purpose and mission of the entity, is significant and balanced, is free of redundancy, is in an appropriate style, etc. A common source of content for a government website is printed material produced by the entity. For instance, much of the content of the Tenancy Services and the NZ Customs site was derived from printed pamphlets. However, there are issues that arise in transferring material from print to a web. The Tenancy services material had undergone considerable restructuring for the Web environment: hypertext links were added within each document and to related material elsewhere on the site; large documents were broken into smaller, faster loading web pages; content was in most cases rationalised with other similar information on the site. However in the case of the NZ Customs Service site it appeared that print documents were simply converted to HTML files, and placed on the website. This meant that the full advantages of the web medium were not realised, and redundancies and contradictions arose between different documents on the site. For instance, information on prohibited CFCs and on UN Sanctions appeared in several places, when this could have been rationalised in a hypertext environment.

In some cases, the difference in updating requirements for print and web information was not appreciated. Print material is regarded as being fixed at the time of publication, while users expect websites to be up-to-date. In a number of cases, it appeared that web documents were only updated when the equivalent print document was revised. For example, the NZ Customs Service site had material on import prohibitions, trademarks and copyright which did not mention the removal of prohibitions on parallel importing, which occurred in May 1998.

The NZ Customs Service provided an online version of the Act that governed its operations, but this was a three year old version that did not include significant amending legislation. The Tenancy Services site, on the other hand, provided links to a copy of its governing Act at a commercial information provider. This provided an up-to-date version, but the user could be disoriented by being taken out of the entity's website without being alerted to the change of environment.

Criterion 1.2.10 is that "External links are to appropriate resources, connected with the business of the entity ". For government entities, links made outside the site raise difficult issues. For instance the Department of Conservation site had links that led quite quickly to the party constituency pages of the Minister of Conservation—understandable, but raising issues of the political independence of the agency. In the case of the Intellectual Property Office, it might have been useful for links to be made from the website to the contact details of patent attorneys—this information is given in the print communications of the Office. While a comprehensive print listing of practitioners can be seen to be unbiased, a web based list would arguably include links to those attorneys with email addresses and websites, which could be regarded as favouring these more "connected" attorneys. A commercial website maintained by a customs broking firm provided up-to-date and comprehensible information about the operations of the NZ Customs Service. At the time, this could have been more useful than the information provided on the NZ Customs Service site, and it would have been useful for users to be directed to these sites. While considerations of bias may have influenced decisions about the appropriateness of external links, it was surprising that two of the entities contained no link to either the website of their parent body or to NZ Government Online (http://www.nzgo.govt.nz/), the overarching government locator site (Table 3).

These three currency criteria, that pages are up-to-date, have been reviewed recently, and bear a date of update/review, are difficult areas for maintainers and evaluators. One element of a page

Table 3

1.3 *Currency*

Websites are seen as a way of providing very recent information. Currency criteria are sufficiently important to be considered separately from content.

1.3.1 Content is up-to-date.This could be evaluated by looking at the dates of update of pages, and by checking for information that is known to have recently changed or made available.

1.3.2 Pages have been reviewed recently, e.g. in past three months.

1.3.3 Last update/review date appears on pages with substantive content.

may be updated without an overall review of information on the page, and this may not be obvious to the user. On the other hand, complete reviews of information content are onerous (although necessary) for maintainers. In several cases significant recent changes were not reflected on the websites. For instance, the Department of Conservation information on alpine huts did not include the information that cooking stoves and fuel had been recently removed from some huts, which could be significant to overseas mountaineers using websites to plan their trips. Update/ review dates (criterion 1.3.3) are an important way of informing users of the currency of content. None of the websites evaluated in the current exercise consistently included dates of update/review on their pages (Table 4).

The term "metadata" is used in criteria 1.4 "Metadata is provided in HTML ⟨meta⟩ tags, and the broader metadata contained in document titles, section headings, etc should be considered". Metadata has a broad meaning of information about the document—cataloguing data for a book, or a data dictionary entry for a database element. In the context of web pages, metadata refers to tags added to the HTML document containing descriptive information that does not appear in the document body. Metadata can be used by resource discovery tools—search engines etc—to increase the relevance of information retrieved in searches. Coordination of metadata and adherence to common standards can be used to facilitate access to information, as is being done in the US Federal Government Information Locator Service (GILS) at http://www.fedworld.gov/gils/, but currently the NZ Government does not have metadata standards for its websites. Nonetheless, it is important that website pages contain useful metadata, added at the creation of the page and maintained to reflect changes in content. The existence of metadata can influence the effective retrieval of the site by search engines.

Designers of the evaluated sites did not appear to consider metadata issues and the retrievability of sites through search engines. The Department of Conservation and Passport Office sites could not easily be located through search engines because the name of the entity was not included in appropriate metadata or in the text of the pages. The name only appeared as a graphic element, without an alternative text ⟨alt = ⟩ tag. The Intellectual Property Office site was the only one that provided metadata beyond basic ⟨title⟩ tags. Even here detailed metadata were created for one set of pages, and then copied to other parts of the site without alteration, so that the metadata attached to these pages are completely inappropriate—for instance pages with trade mark information include the metadata keyword "motor vehicle" because the same system also handles motor vehicle registration. On the Department of Conservation site, a high level paper on environmental strategy had the ⟨title⟩ tag "Old Man's Beard"—the name of a noxious plant—presumably because the writer had copied HTML code from an unrelated document (Table 5).

Table 4
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1.4 *Metadata: Facilitates retrieval, navigation*
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Metadata is provided in HTML ⟨meta⟩ tags, and the broader metadata contained in document titles, section headings, etc should be considered.
1.4.1 Appropriate metatags are provided, e.g. title, author, description, keywords (with consistent descriptors)
1.4.2 Headings are clearly phrased, descriptive, and understandable
1.4.3 Each page is titled clearly
1.4.4 Terminology and layout are consistent within the headings throughout the website
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Table 5
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1.5 *Services*
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Different from provision of information resources—involves actions by agency in response to a request from client. These may allow supply of products or services, or, in the government context in particular, an alternative way to submit applications etc.
1.5.1 Availability of services: open to everyone on Internet, or require fees, restricted to particular sector groups.
1.5.2 Meet needs of user
1.5.3 Fully operational
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Section 1.5.1 mentions "Availability of services: open to everyone on Internet, or require fees, restricted to particular sector groups". In all the sampled websites, the services were openly available; although the Intellectual Property Office provides some advanced search features and delivery services for registered users that are not available to casual users of the website.

Another aspect of services is interactivity. Interactivity was not widely used in the sample sites. The Intellectual Property Office site provided for online registration to use its database and planned to provide for online submission of applications. The New Zealand Customs Service ran an Electronic Document Interchange (EDI) system that is not web based, but was mentioned on the web site. The Passport Office allowed the intermediate technology of downloading application forms in PDF format from its website—in this case quite a useful facility as the forms could be required by NZ citizens overseas (Table 6).

Accuracy (criteria under 1.6) can be tested by examining the internal consistency of information at the site, and by checking against information in other places. In the context of the current exercise, it was not possible to test accuracy to the degree that could be desired. Where possible, some sample information was checked against other sources, for instance against print communications from the agency, or by asking subject experts to review the website. However, a relatively small proportion of errors could affect the usability of the site, and may not be detected by sampling. Subject experts bought in as external assessors may bring their own biases to the assessment.

No clear examples of inaccuracy were found, other than minor typographical errors and issues relating to currency as noted in section 1.3. Users quite reasonably have high expectations of the accuracy of government information. In some cases, information was not present that might have

Table 6

1.6 *Accuracy*
1.6.1 Information provided is accurate
1.6.2 Statement of status of document/website provided: e.g. "under construction" "sample data only"
1.6.3 Sources of information are cited (accurately)
1.6.4 Typing, spelling, grammar, and consistency errors are absent.

Table 7

1.7 *Privacy*
1.7.1 Users' privacy rights are protected
1.7.2 Explicit statement on how users' privacy rights are protected: e.g. extent to which site-use information is provided to others, or made public.
1.7.3 Exchanges of information with users are encrypted. Information of concern could be personal information about users, and information about the searches that they have carried out at the site.

been expected—for instance recent legislative changes and court rulings in the entities' areas of responsibility (Table 7).

The protection of users privacy rights (criteria under 1.7) is a particularly sensitive area with government websites, both because of government intrusion into individuals' personal lives, and also because government agencies should be seen to be setting a "good example" in privacy matters. None of the sites had a specific statement on privacy; although in most cases the level of interaction was such that privacy considerations were minimal (Table 8) .

External recognition measures of how the site is regarded by users and the wider Internet community (criteria under 1.8) are frequently quoted as evidence of the success of a website, but must be interpreted with care. Awards are often given for technical virtuosity, rather than for information content and utility.

Evaluation based on number of hits requires access to server logs (Bertot, McClure, Moen, & Rubin, 1997), and interpretation is complex (Hightower, Sih, & Tilghman, 1998). In the current exercise, server log data were not evaluated.

A possible way of evaluating the overall influence of a website is to consider the number of pages that link to the website, measured by search engines such as AltaVista. This is analogous to measuring citation counts, a method used in the evaluation of print publications. Ingwersen (1998) has proposed the use of a Web Impact Factor, the ratio of the number of links to a site divided by the number of pages at the site. Impact Factors were calculated for the sites in the current exercise, but the number of links and pages indexed by AltaVista for the assessed entities was relatively small. As a result the Web Impact Factors were not considered significant. Page Ranks, a measure of the "importance" of a page as determined by the number of links to a page, are used by the Google search engine (http://www.google.com) as a ranking factor. Page Ranks could provide information about the perceived importance of a site on the wider Internet, but are not explicitly displayed by Google.

Table 8

1.8 *External recognition: ways in which the value of the site is recognised by users, wider Internet community*

1.8.1 Reviews, awards
1.8.2 Number of links/ impact factor
1.8.3 Hits: at top level, follow through to lower levels, origin of hits

3.2. Ease-of-use criteria

The second section of the criteria evaluates the ease of use of the website: links, feedback, accessibility, design, and navigability, rather than the information content (Table 9).

Section 2.1 evaluates links, for instance whether links are updated, whether the destination is clearly indicated, etc. In some evaluated sites, links within the site could have been used more effectively. The search pages for the Intellectual Property Office database of trademarks had links to help information about the search engine, but not to background information about trademarks, which was held on another part of the site. This background information would have been useful to a searcher unfamiliar with trade mark regulations.

Another form of linking is the integration of print and electronic information. Examination of print communications produced by the entities showed that in many cases there was no reference to the website (although references in the other direction were made): it would seem reasonable to expect that print and electronic communication media originating from an entity would refer to each other (Table 10).

The sites illustrated a number of potential problems with the provision of feedback mechanisms for users on websites. All the sites gave at least an email contact for the organisation, except for the Department of Conservation, which only gave non-Internet contacts. From the Passport Office site, it was difficult to find contact information (phone, physical mail address, etc) for the Office, and email sent to the Passport Office email support address was not replied to (Table 11).

The speed of response (criterion 2.3.1) is the time required for response to an information request, and is often used as a benchmark for evaluation of online systems. For an Internet service, response time is largely dependent on the bandwidth between the user's computer and the server, although design decisions about the size of images etc. on the page can also influence the response time. The bandwidth between the user's computer and the server is largely out of the control of the website provider. Response time may be dependent on processing at the server, particularly if information has to be generated from a database. While more specific numeric benchmarks could be established, for the current exercise it was decided that speed would be adequate if a user on a 28.8 K modem (more or less the norm for a phone connection at this time) was largely limited by the speed of their modem, rather than by other factors.

By and large the speed of response at the evaluated websites was adequate. The NZ Customs Service site used a large graphic on most pages for the page title, logo, and name of the entity. Since these graphics contained similar information content, they could have been rationalised so that the common elements were transmitted only once (Table 12).

Design (criteria 2.4) includes whether the design facilitates understanding and navigability, whether pages are clear and uncluttered, whether standard HTML is used, and whether the design

Table 9

2.1 *Links*

2.1.1 Links are updated: don't lead to deleted pages or re-directs.
2.1.2 There are shortcuts for frequent users.
2.1.3 There is a warning if link leads to large file.
2.1.4 There is an indication of restricted access for link.
2.1.5 Link text indicates nature of target.
2.1.6 If a document or concept is mentioned, reference is linked to any relevant pages on the site.

Table 10

2.2 *Feedback mechanisms: for users to provide comments, request clarification, suggest improvements and corrections to site.*

2.2.1 Contact details for entity and website maintainer are given on website
2.2.2 Link to page maintainer given on each page
2.2.3 Where appropriate, forms etc are provided for user to enter data
2.2.4 Instructions on feedback mechanism are provided for users where necessary
2.2.5 Feedback mechanisms are fully operational

Table 11

2.3 *Accessibility*

These criteria evaluate whether information can be accessed efficiently, and whether the site can be located using standard resource discovery tools.
2.3.1 Speed of response is adequate: for a high proportion of the time, users at 28.8Kbps should only be limited by the speed of their connection, not that of delivery from the server.
2.3.2 The site can be reached a high proportion of the time, and at times when the audience is likely to access it.
2.3.3 Existence of website is made known through search tools (e.g. the main NZ web directory, Te Puna Web Search; Government Web Pages; search engines) and other publicity (e.g. entity's print publications)
2.3.4 There is a backlink to the parent entity and/or NZ Government Online (http://www.nzgo.govt.nz/) from the website initial page
2.3.5 Name of entity is reflected in URL, titles of documents, and metadata.
2.3.6 URL is not over complex, or likely to be confused or mistyped.

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makes the site accessible at low bandwidth and to users with less advanced technology or with disabilities. Design issues can be a matter of debate, since compromises have to be made (for instance in exploiting the latest technology while at the same time catering for the widest possible range of users). Design compromises must meet the needs of the identified audience and the technology that is available to them.

Bobby (http://www.cast.org/bobby/) is a web-based service that identifies the extent of compatibility of a web page with HTML standards (criteria 2.4.4). Bobby also evaluates whether people with disabilities can use the page—see criterion 2.4.7. Currently, relatively few websites in the commercial or government area achieve the stringent Bobby criteria for full accessibility for users

Table 12

2.4 *Design*
2.4.1 Format and graphic design is appropriate to subject matter and functionality. Good design directs users towards information, rather than distracting from it.
2.4.2 Pages are an appropriate length, uncluttered, and clearly laid out: Function of different areas is clear. Directional pages should appear in one screen on most browsers—content pages may be longer.
2.4.3 Consistent format through website
2.4.4 Standard HTML is used, and site is compatible with main browsers (Netscape, Internet Explorer, Lynx). The Bobby Rating (http://www.cast.org/bobby) can be used to check this.
2.4.5 Alternatives to higher level technology are provided where appropriate: e.g. Frames, forms, JavaScript. Site can be used without graphics.
2.4.6 Site is usable at low bandwidth (Images and documents are small to facilitate loading).
2.4.7 Site is accessible to users with disabilities—can the site be "Bobby approved"? This is an ideal: and may be audience dependent.

Table 13

2.5 *Navigability*
2.5.1 Website is organised logically and by anticipated user need.
2.5.2 Navigation options are distinct and spelled out
2.5.3 Conventional navigation models are used: e.g. navigation menu on left hand side in frame or bar
2.5.4 Navigation links are provided from all pages: e.g. to homepage and other key pages, to previous page, top of page in long pages
2.5.5 Browsing is facilitated by, for example, menus and/or a site map
2.5.6 Can reach any point in an appropriate number of links: For an average sized site, should be able to reach any point in 3 links.
2.5.7 Search engine provided: Explicitly states what it covers, help is provided with search commands.
Typical search capabilities:
Relevancy ranking
Phrase searching
Boolean logic
Browsing indexes
Field searching
Truncation
Controlled vocabulary
Date/range searching
Refining of initial search

with disabilities. A survey (Copp, 1998) indicates that only one third of NZ government websites meet the Bobby standards for accessible websites. Of the sampled sites, only the Tenancy Tribunal site was given a clear pass by Bobby. All the others indicated problems of some kind, usually relating to the lack of alternate text for images. Bobby is a very useful tool for evaluation, however it also sets a very strict standard (Table 13).

Navigability criteria (2.5) evaluate how easily users may move around the website and find the information that they require: whether the site is organised logically, whether conventional models

are used, how many links are required to get from one point in a site to another, and what search options the site provides. Users need to have different methods of navigation available to them: menus and links for browsing, and search engines for identifying specific information. Search engines can be made more efficient by including metadata such as descriptors in the site pages.

The Intellectual Property Office and the Department of Conservation had their own search engines, and the content of the Passport Office site was indexed by the search engine of the parent body (the Department of Internal Affairs). The Intellectual Property Office offered a very sophisticated search facility, customised for the trademarks database held at the site. This has now been extended to include patent and design registration information. The other two search engines were relatively unsophisticated: the Department of Internal Affairs search engine timed out on fairly simple two term queries; the Department of Conservation search engine had no documentation about its search syntax, and appeared to include older versions of the website in its database. The latter point raises an issue for website designers—a search engine may inadvertently make material available that was not intended for public access.

4. Conclusion

What lessons arise for government website designers from this study? While all the criteria offer guidance to designers, the following appear to be areas that require attention:

- Sites should provide orientation information—a statement of scope and purpose of the site, the legal status of information at the site. Designers should be clear about the intended audience: lay members of the public, practitioners who have professional knowledge of the entity's activities, or members of the entity's own staff. Any limitations in the accuracy and currency of the information should be made clear.
- There should be a clear statement of conditions for reuse and copying of information, beyond a simple copyright statement.
- In view of the sensitivity of citizens' interactions with government entities, there should be a statement informing users about the entity's policy on the privacy and security of their interactions with the site.
- When information on the website is converted from print publications, attention should be paid to restructuring the information for the hypertext environment, and to regular updating.
- Update and review dates should be clearly stated on all pages.
- Entities should coordinate their print and web communications so that they complement and refer to each other.
- Contact details (electronic and conventional) for the entity should be easy to find on the website.
- Metadata should be used effectively: names and subject keywords should be present as text that can be indexed by search engine robots. Metadata should not be copied between pages without being edited.
- Sites should be submitted to relevant search engines and web directories.
- Government website designers should develop policies regarding external links from the site, and make it clear when users are leaving the entity's website. Links to parent organisations and overall government web locator sites should be made.

● Designers should take account of guidelines for making pages accessible to users with disabilities, particularly with respect to provision of ⟨alt = ⟩ tags for images.
● Where search engines are provided, the database should be kept up-to-date, and search syntax information provided for users.

While this paper has highlighted a number of issues with the surveyed websites that existed at the time of the survey, there were many positive qualities in the websites. Thanks to the efforts of the designers, users in remote areas have access to extensive information about the government entities. Information is being made available in languages other than English. Overseas users can access detailed information to help in planning their visit to New Zealand. Detailed policy and discussion documents are being made available to concerned citizens. Most important of all, the government entities concerned are showing that they are prepared to experiment with and exploit the new medium of the Internet.

Acknowledgements

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