

Keys to Access

Accessibility conformance in VET

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Executive summary

Accessibility is the term used to describe the ease that a person with a disability (physical or cognitive) or with a technological or social disadvantage can access online products and services.

It is estimated that 19% of the Australian population has some kind disability. If we include the number of people who have low speed Internet access, or use poor quality or old versions of computer technology, constructing inaccessible online products and services may be denying equal access to a significant proportion of the population.

Vocational Education and Training (VET) has energetically embraced the Internet to promote and publicise its services, and uses it to deliver numerous online courses. All TAFE Colleges and most independent providers have web sites. Many teachers are utilising a range of online technologies to deliver their training. Significantly, 39% of those people using the Internet from home use it for education and training purposes.

In this research, we aimed to investigate what VET training providers have achieved in terms of accessibility conformance; to reveal and understand the obstacles that may be blocking conformance and suggest strategies that will speed conformance.

In May 1999, the World Wide Web Consortium (W3C) agreed on a set of Guidelines for online products and services. Called the *Web Accessibility Initiative (WAI) Web Content Accessibility Guidelines 1.0*, these Guidelines specified a number of Checkpoints that an online product or service had to satisfy in order for it to be accessible. Most countries have adopted these guidelines as the standards around which to design and construct online products and services.

In Australia, the *Disability Discrimination Act 1992* makes it is unlawful to discriminate against people with disability. However, the Act is not specific about online accessibility. It does not, for instance, include reference to the *WAI Guidelines* as does the US Section 508 of the *Rehabilitation Act*. Under the *Disability Discrimination Act 1992*, a complainant needs to inform the Human Rights and Equal Opportunities Commission (HREOC) of the issue, and HREOC investigates the complaint and may request that action be taken to rectify the situation before any legal action would be taken against the organisation for non-conformance.

All Australian State Governments and Territories are actively promoting accessibility conformance for web sites managed by their departments and

agencies. All have policies and guidelines in place, and some, such as the Australian Capital Territory, have very strict guidelines where they recommend or mandate all of the essential *WAI Guidelines*.

There are numerous resources online about accessibility conformance created in Australia and overseas available to assist practitioners in achieving accessibility.

However, according to tests conducted in this research, many TAFE and independent provider web sites are generally not conforming with the *WAI Guidelines*; some even at the most basic levels. Failure can be as simple as not providing alternative text tags for images which are necessary for the site to be navigated using assistive technologies. We found that the majority of web sites have significant obstacles that would make it difficult for disabled people to use.

This research revealed a number of reasons for this failure to conform, including:

- the lack of specific accessibility policy guidelines and implementation strategies at the provider level;
- insufficient identification and allocation of responsibility to staff to ensure accessibility conformance;
- lack of professional development and training;
- practitioners being unaware of the *WAI Guidelines*;
- practitioners being unsure how to implement the *WAI Checkpoints*;
- web sites using content and learning management systems that may not permit the creation of accessible pages;
- web sites having many old (legacy) pages that were not made accessible;
- the transitory and somewhat confusing nature of the *WAI Guidelines*; and
- the use of invalid testing methodologies (tools and techniques).

There is no technical reason why VET provider web sites should not meet the highest levels of accessibility. The accessibility standards need to be considered in the same way as building regulations. In this analogy, the W3C *WAI Guidelines* form the foundations of good design and programming on which attractive and informative web sites can be created.

Unfortunately, it appears that accessibility implementation may often be considered on the basis of a risk analysis (is it likely a person will complain?),

whereas it should be seen as providing an opportunity to open up training to people with disability or disadvantage.

Some learning materials also fail to meet accessibility requirements, although at the commissioning level, there has been a determined effort to make them accessible.

Accessibility conformance for learning materials is sometimes more complicated to achieve. Many learning materials require a high degree of interactivity, and depending on how these are developed, may conflict with the some WAI Checkpoints. There have been different approaches taken across VET to accommodate this conflict, from those who believe that conformance is mandatory to those who are inclined to tailor learning materials individually for students with disability, thereby skirting the accessibility requirements.

This report suggests how specific conflicts that may arise between interactivity and the *WAI Guidelines* may be resolved. It recommends that learning materials should satisfy the highest levels of accessibility, and developers justify which specific WAI Checkpoints they are unable to achieve if these should hinder the pedagogical approach required by the learning outcomes.

In both web site and learning materials development, accessibility conformance is related directly to practitioner awareness and training. The overwhelming demand by practitioners (revealed in this research) was for more professional development. This report recommends a general accessibility awareness course and a specialised practitioner course that focuses on technical aspects in meeting the accessibility requirements.

The process of accessibility implementation needs to be actively managed by the institution, particularly in the larger TAFE colleges. Implementation has cost implications, particularly where there are legacy pages and non-conforming content management systems. This implementation will require:

- policy development and online accessibility guidelines built around access and equity policy;
- independent audits of the current web sites and content management systems (and accommodating the consequent costs of rebuilding);
- a cross-institution unit that monitors and supports accessibility implementation;
- an awareness campaign for teaching staff and practitioners; and
- professional development to ensure that they know how to develop online resources that meet the accessibility requirements.

By attending to principles of universal access, VET will increase the opportunity of those with disability and social disadvantage to participate in their training programs, and thereby, improve potential employment prospects for these people.

Introduction

Accessibility is the term used to describe the ease that a person with a disability (physical or cognitive) or with a technological or social disadvantage can access online products and services. (For a clear exposition of the disability issues, see <http://ncam.wgbh.org/cdrom/guideline/tools.html>)

Accessibility of online products and services (web sites and learning materials) is very much a hidden feature in Internet usage. It is not easy to comprehend that when an online product is constructed and the practitioner does not follow certain specified design standards, some people will not be able to access it, or at least, access it in an equal way to others. Similar to other social access circumstances, these users find another way around the obstacle – they find another path, they use another tool or technology, they seek another source, or they simply, give up.

Organisations tend to use this hidden aspect of Internet usage to avoid or ignore standards conformance and continue to produce online products and services that are inaccessible.

It took some time for the understanding of online *usability* to seep into the consciousness of online practitioners: for them to design and construct online products that are easy, effective and efficient to use. The attention to this is not surprising as users complain when an online service is not usable. User feedback and expert criticism came back hard and strong, and the designers were forced to reconsider designs and make their online products and services usable. It was not difficult for practitioners to argue for more time, additional training and extra funds when it was obvious that significant numbers of users were complaining, or were going elsewhere. It made good (economic and social) sense to make their online products and services usable.

Online accessibility, it seems, is the poor second cousin of usability. It is more difficult to see the economic and social sense of expending the time and effort in constructing products and services that are accessible. What are the returns on investment? Are the demands of accessibility conformance too high? Is it clear to practitioners what needs to be done to achieve accessibility? Will other criteria be satisfied as a result of meeting accessibility requirements? Does meeting accessibility impact on or contradict other organisational objectives?

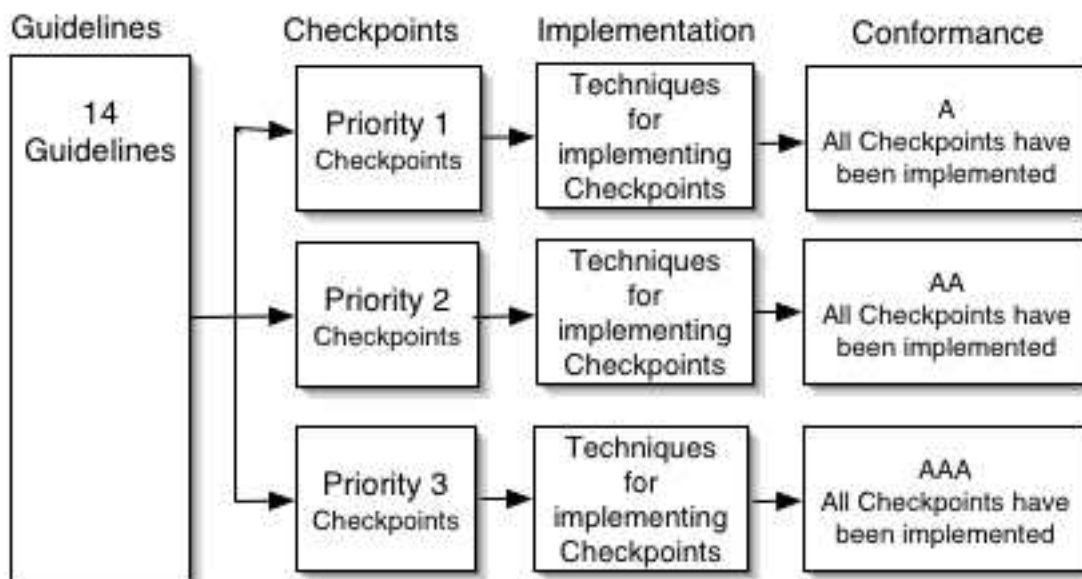
Different to other media (radio and television), there is an inherent inequality in using the Internet as a publishing network. In the main, if the listeners are in range of its signal, one person's reception of a radio station is not much different from another's. For the Internet, there are many technological factors influencing user 'reception': computer, browser, modem and Internet connection. As the tools to create online products and services became more

sophisticated in what can be published on the Internet (animation, audio, video), so too the difference between user's 'reception' becomes even wider.

With computer technology came a series of specific tools that could extend the experience of those people with some kind of disability who had been denied regular media access. These tools are called assistive technologies; screen readers (literally reading out loud what is on the screen), screen magnifiers, keyboard adapters, and so on. However, these devices hit a technological obstacle: the very way in which online services and products were designed and constructed, prevented or made difficult, the effective use of the devices.

In May 1999, in order to come to terms with the issues of online accessibility, the World Wide Web Consortium (W3C) agreed on a set of Guidelines (<http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>) for online products and services.

Figure 1: Flowchart showing relationships between Guidelines, Checkpoints, Implementation and Conformance of the W3C Accessibility standards as presented in the WAI Guidelines - Web Content Accessibility Guidelines 1.0.



These Guidelines specified a number of 'Checkpoints' that an online product had to satisfy in order for it to be accessible. Some of these Checkpoints were very technical; they stipulated the way in which the code that allows a resource to be published on the Internet, is written. Other Checkpoints were concerned with the way in which the user interface is designed (for example, colour differentiation addressing those who may be colour blind) and even the style of writing (to ensure that it is written appropriately for various levels of user comprehension abilities).

In August 2000, the requirement to meet accessibility standards was given legal impetus in Australia when a person with a visual disability brought a case of discrimination against the Sydney Olympics Games Committee for discrimination under the *Disability Discrimination Act 1992*, and was successful. This sent a liability message to every online service provider, and many Government departments and agencies created policies and guidelines to meet the W3C accessibility standards. In June 2000 for instance, ministers from the Commonwealth, State and Territory Governments agreed to a common minimum web site accessibility standard (http://www.dcita.gov.au/Article/0,,0_1-2_1-4_15092,00.html).

Since that time, practitioners have had to come to terms with accessibility conformance.

The objective of this research is to find out how far we have conformed to the W3C accessibility standards in Vocational Education and Training (VET).

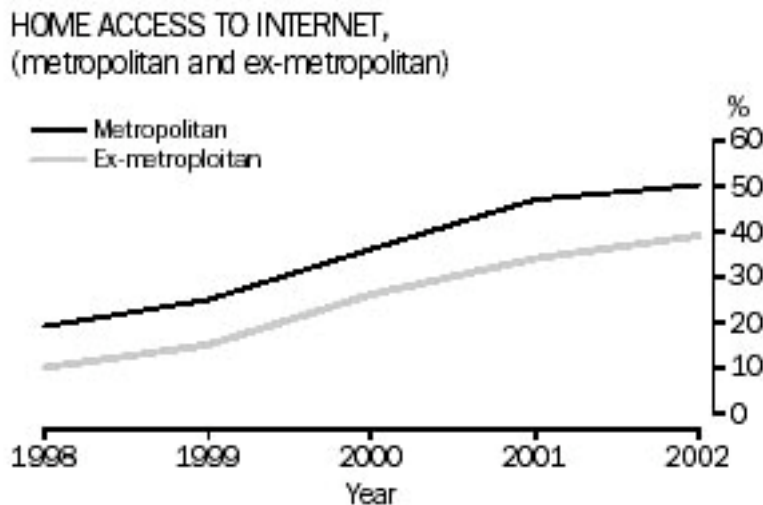
VET has embraced the online reality with a high degree of enthusiasm and resource investment. In New South Wales for example, a capital expenditure program of \$48 million was diverted into online training. Every TAFE organisation and most private Registered Training Organisations have their own public web sites. Thousands of online learning products have been developed, commissioned by agencies such as TAFENSW, TAFE frontiers (in Victoria), and the Australian Flexible Learning Framework Toolbox project. Countless numbers of online learning resources have been published by VET teachers; some for their own individual students and others more generally across the faculty, department or campus.

In this research, we aim to capture where VET is currently in achieving accessibility conformance, to reveal and understand the obstacles that may be blocking conformance and suggest some strategies that will speed conformance.

Definitions of accessibility

This study adopts the broadest definition of accessibility – that of *universal access*. This follows on from the important perspective provided by the Australian National Training Authority *Access and Equity Project*. (<http://www.flexiblelearning.net.au/archive/accessequity/content/introduction.asp>) The project identified three user types and their relationships to accessibility: Aboriginal & Torres Strait Islanders, people with disability and people with low literacy. This project confirmed that disability is only one component of the accessibility equation, and how important it is not to downgrade the continuing issue of technological access, as reflected in a number of studies, including the *Digital Divide* (Waddell, 1999).

The inequality inherent in technology hardware, software and bandwidth is still apparent in Australia, particularly in regional and rural areas. According to the *Household Use of Information Technology* published by the Australian Bureau of Statistics, there is a significant difference in Internet usage in metropolitan and non-metropolitan areas.



Courtesy of Australian Bureau of Statistics, *Household Use of Information Technology*, 9/03

However, it is the speed of access to the Internet that indicates real difference in user experience. According to the Australian Bureau of Statistics report entitled *Internet Activity March 2003*:

The vast majority of subscribers continue to utilise dial-up access technology with over 4.6 million subscribers (an increase of 10% or 403,000 subscribers from the end of September quarter 2002); this represents 91% of all subscribers. By contrast, the number of subscribers with a non dial-up

connection has increased by over 120,000 subscribers (34%) to 470,000 at the end of March quarter 2003; this encompasses 9% of all subscribers. This represents a slight slowing in the rate of growth seen in non dial-up connections since the end of September 2001 (p. 10).

The World Wide Web Consortium (W3C) has had a consistent approach to accessibility, articulated by the founder of W3C, Tim Berners-Lee, who stated that, "the power of the web is in its universality". (1994)

This principle is expanded formally in W3C's objectives:

Today this [web] universe benefits society by enabling new forms of human communication and opportunities to share knowledge. One of W3C's primary goals is to make these benefits available to all people, whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability.

(<http://www.w3.org/Consortium/Points/>, accessed 1/8/2003)

These principles positively affirm the Internet as a means of bringing those with disability and disadvantage into a new way of communicating (and learning). The irony is that, in too many cases, the technology of delivery has become a vehicle of exclusion.

It is on the basis of these principles that the Web Accessibility Initiative (WAI) Guidelines were framed. The often quoted and most apt description of the objectives of accessibility is provided in the *WAI Guidelines*, which state:

For those unfamiliar with accessibility issues pertaining to Web page design, consider that many users may be operating in contexts very different from your own:

They may not be able to see, hear, move, or may not be able to process some types of information easily or at all.

They may have difficulty reading or comprehending text.

They may not have or be able to use a keyboard or mouse.

They may have a text-only screen, a small screen, or a slow Internet connection.

They may not speak or understand fluently the language in which the document is written.

They may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).

They may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

(<http://www.w3.org/TR/WCAG10/>, accessed 27/7/2003)

Many other studies have also adopted this approach to universal access.

In a paper entitled, “Dispelling the Myths - Web Accessibility is for All” (Arch, 2002) for instance, Arch identifies that over half of the WAI checkpoints apply to a broader community of users – not just those with disabilities.

The Australian Human Rights and Equal Opportunities Commission included the aged as a very important group with accessibility issues. “Accessibility of electronic commerce and new service and information technologies for older Australians and people with a disability, March 2000”

Taking this broader view (that is *not* focussing on people with disability in the design of web sites and resources) establishes a different paradigm in which to understand and implement the accessibility standards. This we will look at in more detail in other sections of this report.

Implementation framework

This Report is concerned not only with to what extent accessibility conformance has been achieved in VET, but also to provide a set of strategies that can assist in making accessibility conformance more achievable across the system.

In researching accessibility implementation in VET, the project team constructed an investigation and implementation framework involving policy, awareness, knowledge and skills at various interlocking levels.

This implementation framework can also be viewed as a process, although the order is not necessarily hierarchical or sequential, as the lead can come from one level and impact on others. This process therefore is iterative and interdependent. The six levels can be articulated as:

1. *Accessibility framework.* This includes the *WAI Guidelines*, Legislation, Government policy and institutional policy.
2. *Accessibility awareness.* This is at the level of administrator and practitioner - understanding the need and requirements of accessibility conformance.
3. *Knowledge of the WAI Guidelines.* This is at the level of practitioner to understand the implications for web sites and resources in complying with the *WAI Guidelines*.

4. *Capacity to implement techniques to comply with the WAI Guidelines.* This is at the level of practitioner, to know how practically and technically to design, write and build learning materials and web sites that comply.

5. *Capability to use appropriate tools and testing techniques to assure conformance.* This is at the practitioner level in knowing how to effectively use a range of tools and techniques to demonstrate product conformance, and to develop an accessibility assessment methodology.

6. *Keeping up to date with new developments.* This is at all levels, and incorporates policy, new guidelines, developments in tools, techniques, assistive technologies and testing devices and the continuing ability to monitor progress in achieving access targets and changing strategies and emphasis.

In this study, we have investigated both the public institutional web sites, and a selected set of online learning materials.

Research questions and objectives

The purpose of this research is to investigate the online accessibility conformance and policy implementation in VET, analyse the drivers and obstacles in conformance, and suggest implementation procedures that assist conformance.

The research questions that have informed this project include:

1. What is the level of understanding of accessibility conformance at the institutional level - administrators, managers and content developers?
2. To what extent has policy formulation been actively developed and promoted in the organisation?
3. What training in accessibility conformance does the institution provide?
4. How does the policy formulation impact on the content development teams in the institution?
5. What is the level of understanding of accessibility conformance in the content development teams?
6. How do the members of content development teams see their responsibility in achieving accessibility conformance?
7. How do administrators, managers and content developers believe that conformance levels can be achieved and maintained?
8. How has accessibility conformance been addressed in similar training sectors in the UK, Canada and USA?

9. What is the level of accessibility conformance in the VET sector? More specifically: How do conformance levels of VET institutional web sites and e-learning materials rate against the Priority levels of the Accessibility Guidelines?

Methodology

The methodology employed in this research comprised the following:

1. Interviews

A phone interview was conducted with one or two people from 54 TAFE institutes in Australia, totalling 65 people altogether. The positions of these people varied: web administrators, online learning managers, etc. The interviews were based around a questionnaire (Appendix 11) and generally took between 15 to 30 minutes. We also conducted interviews with 10 people from the independent providers whose web sites passed a *Bobby* test.

2. Consultations

More than thirty face-to-face consultations were conducted – again with a range of people – managers, developers, web administrators and disability officers. These interviews were recorded and transcribed, and generally took between 30 minutes to one hour.

3. Testing techniques

We tested every TAFE institute web site (65) across Australia using a variety of testing techniques listed below. There is not one specific tool that will test for conformance (see below), so a number of tools were selected that provide different measures of accessibility. We tested at least three pages of each web site (the home page, course information and enrolment information).

42 independent provider web sites were tested across Australia, with 5 or 6 from each State and Territory. Some were registered to provide training in more than one State and they all delivered the Business Training Package, with 5 or 6 from each State or Territory. We conducted a *Bobby* test, an Image-off test and a download speed test (see below) on each of these sites.

The *WAI Guidelines* specify a range of conformance levels: Priority 1 (what a practitioner *must* satisfy, otherwise one or more user groups will find it *impossible* to access information); Priority 2 (what a practitioner *should* satisfy, otherwise one or more user groups will find it *difficult* to access information) and Priority 3 (what a practitioner *may* satisfy, otherwise one or more user groups will find it *somewhat difficult* to access information).

In meeting all the WAI Checkpoints at Priorities 1, 2 or 3, it is deemed that a web resource conforms to an A, AA or AAA levels respectively. The Guidelines may be found at: <http://www.w3.org/TR/WAI-WEBCONTENT/>

The tools and techniques included:

a) A standard browser (IE5) with images switched off to test for some Checkpoints at Priority 1. This is a quick test to see whether images and buttons have been provided with text alt tags allowing navigation and generally reading site content. Borderline cases are those where images are not provided with text alternatives, but do not affect the ability to move through the site.

b) A standard browser with the Cascading Style Sheet (CSS) switched off to test for some Checkpoints at Priority 2 and 3. This is a test to see whether the site is still viewable in lower version browsers and assistive technologies that have no capacity to render style sheets.

c) A White on Black monitor to test for some Checkpoints at Priorities 2 and 3. This is a quick test to see that text is clearly readable on the screen with no interference from background colours.

d) A Flesch Index test to test for a Checkpoint at Priority 1 (“Use the clearest and simplest language appropriate for a site's content”). This is a test that measures appropriate levels of readability. Several pages of each web site with information for a prospective student was tested, and the score for each was averaged.

The Index applies a formula $206.835 - (1.015 \times \text{ASL}) - (84.6 \times \text{ASW})$ where ASL = the average sentence length (number of words divided by the number of sentences) and ASW = the average number of syllables per word (the number of syllables divided by the number of words).

The Flesch Index advises that for most general readers, one would aim to achieve a score of 60-70 (8-9). In this test, a fail was determined at the level of a score of 40 (12.0) or less. A pass was determined at 50 (9.4) and above. A borderline result was defined within these two limits (40 – 50).

e) *Lynx* - a text only browser - to test for some Checkpoints at Priorities 1, 2 and 3. This is a thorough test to see whether a site or resource can be navigated fully using a text only browser and keyboard functions. It also reveals whether tables and frames have been constructed correctly. It effectively replicates the navigation of a screen reader. Borderline in this category is indicated when it is possible to navigate and read the pages, but where blank tags are not provided for spacers, shims, dividers and lines making it difficult to read.

g) *Bobby* to test for some Checkpoints at Priorities 1,2 and 3. In this test, we used only its automated feature that reveals certain coding issues, such as alt tags, percentage values, script, event handlers, table and controls. To validate

accessibility conformance at Priority 1, 2 or 3, *Bobby* needs to be supplemented by other manual and automated testing techniques.

There are other commercial products used to test accessibility conformance such as *Aprompt*, *InFocus* or *Cynthia Says* that may be more versatile and accurate than *Bobby*. However, *Bobby* was used in this study because it is highly prevalent in VET sector as a testing tool, and in some States, resources are expected to be *Bobby* compliant. *Bobby* has also been legitimised to some degree as it was used in the case of Maguire V SOCOG as the method to determine whether the SOCOG site was accessible.

h) An HTML validator to test for some Checkpoints at Priority 2. These Checkpoints require that coding complies with an HTML standard, and this avoids propriety code that may not be read by some assistive technologies.

This is a technical test to validate the HTML code to ascertain W3C conformance using the W3C Markup Validation Service. The tool was used to check that HTML code corresponds to the HTML standard. If a character set error was found, a setting was made to appropriate character type, and tested again. If a DOCTYPE wasn't found, a setting was made to HTML 4.1 transitional, and tested again. Version 4.1 transitional was selected as it allows presentation attributes and elements (that will be phased out as support for style sheets mature) which, it was assumed, developers would be currently using.

i) Sighted navigation to test for some Checkpoints at Priority 2 and 3. This is a manual test to check whether the page layout/navigation is consistent and whether a site map is provided. Borderline cases were those that had a consistent structure, but whose second and third level navigation hierarchies were overly complex.

j) Check for a Site Map to test for some Checkpoints at Priority 2. A site map is necessary to assist navigation. Borderline cases were those where the content hierarchy and linkages in the site may was poorly constructed.

j) Vary text size to test for Checkpoints at Priority 2. This is a quick browser test to determine whether the site or resource allows the text on screen to be expanded (for users with visual impairment). Borderline cases are those using images for their navigation bars, where these cannot be expanded by the browser view mechanism, but the text content can be expanded.

k) Keyboard controls to test for some Checkpoints at Priorities 2 and 3. This is a quick keyboard test to determine whether a non-mouse device would allow

navigation through the site or resource. This is conducted using the tab, scroll, enter/return, up/down keys. (Most assistive technologies do not use a mouse).

l) Download speed. (This is not related directly to the *WAI Guidelines*) This is a test to determine the speed of page download. This provides an insight into users using slower Internet connections and modems. For this test, the online tool www.cyberjunkie.com was used. Download speeds were recorded for 28.8, 56 and 128DSL/ISDN simulated connections.

A note on testing techniques:

In testing the web sites and resources for this study, we based our methodology on the W3C “preliminary review” guidelines. It was not necessary for the purposes of this study to conduct a W3C “comprehensive evaluation”. A comprehensive evaluation is used as a guide when conducting a thorough audit on a particular web site or resource, to determine what precisely needs to be re-engineered for the site to be compliant. (See <http://www.w3.org/WAI/eval/>) This study investigates the *general* level of conformance across the sector to advise national and institutional strategies to meet accessibility conformance.

4. Literature search

An extensive literature search was conducted to identify how accessibility is being considered in Australia, the European Union and the United States of America and to uncover examples of best practice within these countries. (Appendix 1, International Approaches). We have also sourced a number of resources that may be helpful for practitioners in achieving accessibility conformance. (Appendix 10).

5. Project research blog

A project research blog was implemented to carry all documentation and collaboration. A blog allows members of the research team to publish ideas, findings and documents directly to an Internet site, and these items can be edited or discussed by anyone in the team. The project blog is available at: <http://131.170.9.29/onlinelearning/stories/>.

Members of the Reference Committee were also provided with access to the blog and they participated in the discussion about the issues raised. These comments were incorporated, where relevant, into the research findings and recommendations. A project research blog is an excellent “action research” tool.

6. Reference Committee

A Reference Committee was established to assist with the formulation of research conclusions. The Committee was provided with all project documentation, and in particular, invited to comment on 19 theses proposed by the research team. (See <http://131.170.9.29/onlinelearning/stories/>) They were also provided with drafts of the Report to comment on as it was being written.

Members of the Reference Committee were:

Ben Fennessey - TAFE frontiers

Chris Edwards - Royal Victorian Institute for the Blind

David Turner - Director, i.d.e.a.

John Smith - Canberra Institute of Technology

Pasquale Stella - Toolbox Projects

Bruce Wallace - CCID Unit, Victoria University

Izabella Bartosiewicz - Library, RMIT

Melanie Sorensen - WestOne

Leigh Blackall - ITALIC, Hunter Institute

Findings

State and Territory accessibility policies and guidelines

The context at the State level was examined to identify the factors that impact on the formulation and implementation of policy with regard to accessibility at the VET training provider level.

In brief we found that:

- States generally have policies underpinned by *WAI Guidelines*;
- Universal access is an ideal expressed in some of the policies, but all subscribe to Access and Equity;
- The Disability Discrimination Act 1992 is a key motivating driver the of policies;
- Risk assessments are a strategy used to determine the necessity for levels of conformance;
- Impediments to policy implementation exist and that these affect the VET sector;
- States have different approaches to the implementation of accessibility; and
- Professional development is conducted on an ad hoc basis.

Australian Capital Territory

The *ACT Web site Guidelines* were developed by the ACT Department of Information Management (ACTIM) and endorsed by the Chief Minister's Office in mid-2001.

All seven Government departments and 40 or so agencies are bound by its mandatory or recommended requirements. According to the ACT Web site Policy, the Guidelines are also applicable to "organisations contracted to develop web sites on behalf of the ACT Government are also required to comply with this policy and associated guidelines".

(ACT Web site Guidelines, 30/11/01, p. 1)

There has been no Government-wide audit of the current levels of site accessibility conformance, but each agency is responsible to ensure that they monitor conformance, and to make appropriate corrections if necessary. ACTIM believes the level of agency attention to conformance by has picked up in the past 4 or 5 months. As the Guidelines cover a whole range of design and construction issues, including accessibility, individual department audits have thus far concentrated on permissions, links to Government home page, rather than on accessibility as such.

All department and agency IT people were informed of the Guidelines when they were promulgated, but no professional development or training was provided to support the Guideline implementation. However, resources such as W3C and *Bobby* were referenced in the Guidelines where web administrators could seek advice and assistance.

Although audits have not been conducted, ACTIM is confident that most Government department sites meet Priority 1 conformance. The most likely facets to cause accessibility problems are the continuing use of PDF documents (which are required to secure documents) and alt tags for images. ACTIM holds the opinion that Acrobat Reader 5 creates pages that are accessible to more recent screen readers. With respect to alt tags, they consider this to be a time and attention to detail issue.

The current Guidelines are under review.

The ACT Government is about to call for tenders to develop a program for usability and accessibility advice and education for departments and agencies.

The full policy documents - ACT Government Web site Policy and Web site Guidelines- are available at: <http://www.publishing.act.gov.au/pubserv/index.html>

The Guidelines state:

11.5 Accessibility

MAXIMISE THE ACCESSIBILITY OF INFORMATION AND SERVICES.
[REQUIRED]

ACT Government web sites must support all users irrespective of their physical limitations (eg vision, hearing, mobility, literacy, or cognitive impairment), environmental limitations (eg noise), and / or technical limitations (eg slow modems, older browser versions, low resolution displays, and monochrome monitors).

COMPLY WITH THE WEB CONTENT ACCESSIBILITY GUIDELINES.
[REQUIRED]

The Web Content Accessibility Guidelines, developed by the World Wide Web Consortium, are aimed at making web sites accessible to all users – particularly

those with a disability. ACT Government web sites must satisfy all Priority 1 checkpoints and where possible Priority 2 and Priority 3 checkpoints.

References:

Web Content Accessibility Guidelines:
<http://www.w3.org/TR/WAIWEBCONTENT/>

World Wide Web Access: Disability Discrimination Act Advisory Notes, Human Rights and Equal Opportunity Commission:

http://www.hreoc.gov.au/disability_rights/standards/www_3/www_3.html

PROVIDE A TEXT-BASED VERSION OF THE WEB SITE.
[RECOMMENDED]

Web sites often incorporate objects (eg graphics and multimedia) that are slow loading or inaccessible to text readers or browsers with graphics turned off. Consider providing a text-based alternative of the web site for users of slow Internet connections and text-only browsers.

PROVIDE NON-ENGLISH VERSIONS OF INFORMATION AND SERVICES.
[RECOMMENDED]

Consider providing access to non-English versions of information and services based upon demand and the ethnicity of the client base.

Numerous translation tools are available that automatically convert material into various languages. Although these tools are capable of producing good results, they should not be relied in situations where a high degree of accuracy is required.

(See full document: <http://www.publishing.act.gov.au/pubserv/index.html>)

The Guidelines also allow for exemption: “Exemptions from the ‘required’ elements identified within this document will not be granted unless compelling reasons for taking an alternative approach can be demonstrated. Requests for an exemption must be provided in writing to ACT Information Management”.

New South Wales

The NSW Office of Information Technology determines the policy regarding Government web site conformance, and the policy is applied to all Government department and agency web sites. The policy states:

Accessible content should be developed as a standard feature of web pages, rather than being considered as a specialised feature for people with disabilities. Accessibility features improve access for all people not only those with disabilities. They can increase the effectiveness of the page for a variety of situations (slow modem speeds, graphics turned off, readability, etc). Development of alternative text based pages should be considered a last resort.

The Disability Discrimination Act 1992

The Disability Discrimination Act 1992 requires all government bodies to provide equitable access to people with disabilities. NSW government web sites (and others, including commercial sites) risk exposure under the Act to complaints from anyone claiming disadvantage by lack of access. The Act requires equal access for disabled people, where it can reasonably be provided. (Internet Guideline Issue No: 3.1 First Published: October 1998 Current Version: Feb 2003)

TAFE NSW

The TAFE sector in NSW is centralised under the state-wide body TAFENSW. Under this umbrella, there are twelve institutes that basically run their own business, and respond to local needs of their metropolitan, regional and remote communities. Within each institute, there may be a different number of campuses, as many as 10 in some cases. However, the curriculum, policies and processes are established centrally.

TAFENSW has always had a strong policy and practice regarding access and equity. For example, for more than 20 years it has had specialist consultants for disabilities including visual, learning, psychological, psychiatric, and physical. The background for this stems from accommodating the deaf in the training sector, and this evolved to take into account people with other kinds of disability.

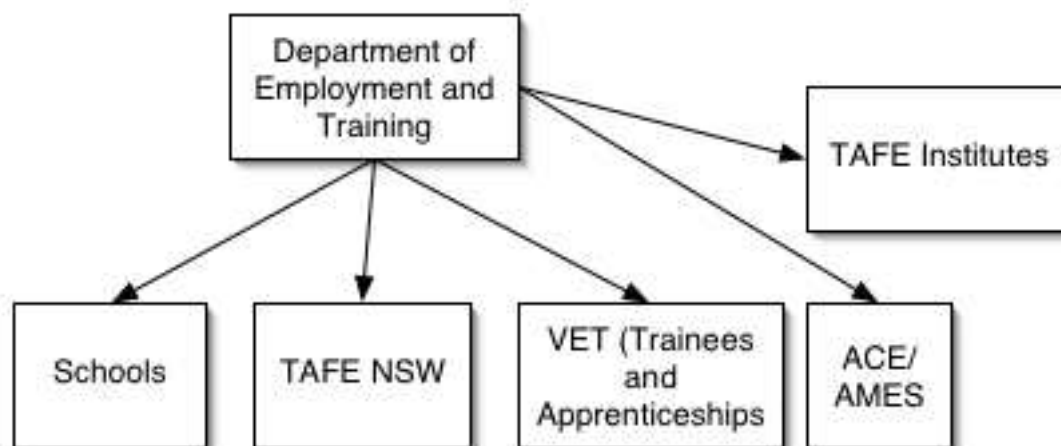
The spark for online accessibility was the SOCOG incident where a person with a visual disability brought a case of discrimination before HREOC for an alleged non-accessible web site. TAFENSW was doing the training for the Olympics volunteers, and implemented a program about disability, cultural and customer awareness – in this respect it was close to the legal action.

Department of Education and Training web management

With respect to their web sites, the Department of Education and Training provide an accessible content management system as a solution to accessibility conformance. This system – called *TeamSite* – is being used for the DET web site at present, and it is envisaged that a template will be formed for all the NSW education institutions (including TAFE). It is anticipated that they will all come into the system by the end of 2004.

Initially, the content management system, developed by an external contractor, did not allow accessible pages, but this has now been rectified. Thus, using the *TeamSite* will provide more certainty over the navigation structure, the look and feel and the presentation issues (mandatory use of style sheets and control over placement of text alternatives for images), that is, its accessibility.

Currently, there are more than 100 sites, all managing their own systems using a variety of tools to do so. The structure of the DET web site system is illustrated below:



DET have also drafted specific policy on accessibility, but this has been held over whilst a restructure of the Department is in effect (September 2003).

Northern Territory

The Northern Territory Government, through the Department of Corporate and Information Services (DCIS), devised their Government Web site Guidelines in 2001. These Guidelines are for the departments and government agencies to observe, and currently they aspire to a Priority 1 level of the *WAI Guidelines*.

The policy document is available at:

http://www.nt.gov.au/dcis/it/it_policies/ntg_web_guide_2001_11.doc

In 2004, the DCIS will be taking another look at the guidelines, and via Cabinet, most likely mandating a baseline closer to WAI Priority 2.

As part of the eGovernment Master Plan 2002 / 2005, in June 2003, many of the agency web sites were audited (*Bobby* was used to check this), and it resulted in some sites being completely redesigned. Several agency sites are still in the process of rebuilding and are close to launching accessible sites. Agencies received a site report with detailed comments about where improvement was needed.

The Guidelines state:

Accessibility

Maximise the accessibility of information and services [RECOMMENDED]

NT Government web sites must support all users irrespective of their physical limitations (eg vision, hearing, mobility, literacy, or cognitive impairment), environmental limitations (eg noise), and/or technical limitations (eg slow modems, older browser versions, low resolution displays, and monochrome monitors).

Comply with the Web Content Accessibility Guidelines [RECOMMENDED]

The Web Content Accessibility Guidelines, developed by the World Wide Web Consortium, are aimed at making web sites accessible to all users – particularly those with a disability. NT Government web sites must satisfy all Priority 1 checkpoints (Appendix B) and where possible Priority 2 and Priority 3 checkpoints.

References:

Web Content Accessibility Guidelines:
<http://www.w3.org/TR/WAI-WEBCONTENT/>

World Wide Web Access: Disability Discrimination Act Advisory Notes, Human Rights and Equal Opportunity Commission:
http://www.hreoc.gov.au/disability_rights/standards/www_3/www_3.html

Designing web sites for accessibility online Tutorial:
<http://www.parsons.lsi.ukans.edu/media/webaccess.html>

Bobby

<http://www.cast.org/Bobby/>.

Refer to Appendix B for Accessibility Checkpoints.

Provide a text-based version of the web site [RECOMMENDED]

Web sites often incorporate objects (eg graphics and multimedia) that are slow loading or inaccessible to text readers or browsers with graphics turned off. Where Flash is used, provide a text-based (non-flash) alternative of the web site for users of slow internet connections and text-only browsers.

Provide interpreter service contact information [RECOMMENDED]

Provide contact information to the interpreter services from the web site home page. This information is available at: <http://www.nt.gov.au/ntg/interpret.shtml>.

Consider providing access to non-English versions of information and services based upon demand and the ethnicity of the client base. (http://www.nt.gov.au/dcis/it/it_policies/ntg_web_guide_2001_11.doc, accessed 4/9/2003)

Queensland

Like NSW, Queensland takes a mainstream approach to web accessibility. In response to the *WAI Guidelines* and universal access, the Queensland government through the Department of Innovation and Information Economy (IIE) has developed a set of mandatory principles:

Internet (IS26)

Version 4.00.00 of the Internet Standard has recently being reviewed by a cross-agency working group. The new version of the Standard now incorporates the "Consistent User Experience in the Online Environment" (CUE) Standard to facilitate consistency across Government Internet web sites and also raises the level of agency requirements to meet the World Wide Web Consortium (W3C) Accessibility Guidelines for equitable access to the web.

(<http://www.iie.qld.gov.au/informationstandards/default.asp>, accessed 23/9/2003)

The guidelines may be accessed at:

<http://www.iie.qld.gov.au/informationstandards/standards/IS26.asp>

Internet (IS26) standards are now mandatory under the Financial Management Standards of the *Financial Administration Act* of Queensland. Toolboxes are provided with the guidelines accessible from the web site. They apply equally to large agencies and small statutory bodies.

The process for policy and implementation of standards is the same as for all information standards - the policy must add value to the 'Whole of Government standards, and be clear and concise.

The agencies are left to implement the standards according to risk; they do a risk assessment of *not* implementing standards.

Guidelines were first mandated in 2002 at Priority 1 on the main web site pages, whereas they are now (2003) expected to meet Priority 1 & 2 on all pages. All agencies were consulted in preparing the Guidelines, and no agencies objected to implementing the standards.

The Department of Innovation and Information Economy (IIE) recently had Vision Australia conduct a workshop for all the web managers from Queensland government agencies and statutory bodies. 150 people attended and the workshop was considered as very useful, particularly in raising awareness that accessibility was not just about screen readers. For example, it was pointed out

that a broken arm is a disability in using the Internet. IIE has received positive feedback regarding its professional development sessions.

Consistency in user experience is seen as a tandem issue with accessibility and to this end a template has been provided as a part of the policy implementation by IIE. Testing to check for conformance is up to each agency.

According to IIE, peer pressure has emerged as a serious factor for IS26 conformance: web developers egg each other on in terms of it being a part of their job and central to what ethical web developers do.

The Department for Education & Training (DET)

The Department of Employment and Training (DET) is one of the agencies implementing and monitoring accessibility. This also involves the TAFE network.

An Information Management Policy Consultant within DET suggested that a series of factors impact on compliance with IS26 within this department and effective communication is a vital component to implementing IS26, as information about accessibility is not thoroughly understood within all appropriate business areas.

At the time of the consultation (early October, 2003), there were firm plans for specialised professional development but this does not mean it will not happen in the near future.

DET is integrating all Information Standards (that includes IS26 where appropriate) as a part of everyday business activity of all employees including teachers and web developers working in TAFE institutions. In this context, professional development could assist the department, including TAFE colleges, so that the implementation of Information Standards in general, and IS26 in particular, would form part of their every day processes and procedures.

The following factors were identified as impediments to conformance to *WAI Guidelines*:

- lack of understanding of *WAI Guidelines* - needs more thought by all stakeholders;

- communication between stakeholders is an issue that needs to be addressed;
- there is no central web site (on the departmental intranet) for information management - this needs to be developed so that all departmental personnel can access departmental policies, standards and procedures related to Information Standards like IS26;
- a mobile workforce brings with it many issues and concerns for all stakeholders - for example managing contact detail changes;
- Information Standards are viewed as something that government employees are required to comply with as part of their work activities. Whereas they need to be viewed as beneficial to each business area and their employees (as they are based on best practice) so that they become part of what people do in their everyday work - for example information management (understanding compliance with Information Standards) should be part of induction and QA processes and procedures;
- Government changes happen on a regular basis - a review process is required to ensure all changes are applied to the work environment, however this is also a resourcing issue as government departments are continually asked to become more cost effective; and
- Web sites are increasingly part DET's business and will become even more so in the future - the number of remote access workers is increasing.

South Australia

There are guidelines in South Australia (Government Web site Protocols; South Australia 2001) that include a section on accessibility. They have existed for five years and are currently in second version. In order to be updated in line with technological changes, they are currently under review and redevelopment. The Guidelines apply to all public access web sites established and maintained by or for South Australian Government agencies”.

The SA Government Web site Protocols is available at:
www.sacentral.sa.gov.au/Protocols2001.pdf

These guidelines stress that web sites must comply with *World Wide Web Access: Disability Discrimination Act Advisory Notes*, Human Rights and Equal Opportunity Commission which may be accessed at:
http://www.hreoc.gov.au/disability_rights/standards/www_3/www_3.html

The Human Rights and Equal Opportunities Commission stresses that:

“All webpages must make provision for people with disabilities, either through following accessibility guidelines, or by providing alternative text-only versions.” (p.12)

People with visual disabilities read and navigate webpages using text-only browsers such as *Lynx* in conjunction with text-to-speech synthesisers. Consequently, webpages dependent on non-textual effects are effectively inaccessible to these people. *Bobby* is a free online service that evaluates webpages for accessibility. In general, webpages should be functional using text-only browsers. Alternatively, consider providing text-only versions of pages that make heavy use of images or scripting effects. (p12)

The SA Government Web sites Protocols provide guidelines for assisting agencies to develop their web sites, but they are not strictly mandatory even though in the document they are referred to as “mandatory requirements”. In other words, there is no penalty applied if conformance is not achieved. (http://www.hreoc.gov.au/disability_rights/standards/www_3/www_3.html,p.8)

The Government provides agencies with resources and information sessions. Training courses on accessibility are provided by private companies and can be attended by the public service staff. There are regular meetings with agencies on e-Government directions.

It is unclear what the level of conformance is in the TAFE sector as it is not followed up at the State level.

The main obstacles to conformance are:

- changes in technology
- keeping up to date
- decentralised system so any monitoring is difficult

Tasmania

The Inter Agency Policy and Projects Group is responsible for the Tasmanian Government Web Publishing Standards. The first standards were published in 2000, and have been updated since that time.

Policy is contained in Tasmanian Government Web Publishing Standards. Although these are labelled 'draft', they have been endorsed by the Inter Agency Steering Committee and need to be complied with under the Communications Policy mandated by the Tasmanian Cabinet.

The policy regarding accessibility in Tasmania is mandatory and may be accessed at:

http://www.go.tas.gov.au/standards/tgwps/draft_tgwps_complete_publication.shtml
http://www.go.tas.gov.au/standards/tgwps/draft_tgwps_complete_publication.shtml

It is compulsory for 'inner-budget agencies' to adhere to the Guidelines set down in the policy. Although TAFE is outside these 'inner-budget agencies', there is a close relationship with the Department of Education. The Tasmanian government is relatively small and people tend to know where to look for information on policies and standards. There is only one multi-campus TAFE institution in Tasmania, so it is relatively easy for people to become part of the communication stream, and to remain in that stream.

The Policy and Projects Group runs forums on e-Government issues every couple of months for all government agencies and associated entities, including TAFE. The Inter Agency Steering Committee buys advice on accessibility conformance externally from larger bodies (such as Multimedia Victoria) as Tasmania has a small governance system and they do not feel that it is worthwhile to expend resources on projects that are also being conducted in other States or nationally. Therefore they tend to be informed by other jurisdictions to comply with existing standards.

Internet connection speed is a major factor influencing policy. Accessibility is seen as inextricably linked to this because people have non-broadband connections and yet need to be able to access information efficiently and effectively. This means that web site design takes into account a user experience perspective to minimise download times and number of clicks. The Inter Agency Steering Committee encourages developers and Government departments to look at web site design from a user's perspective rather than how the departments are organised.

There is very little professional development provided around technical issues such as W3C accessibility conformance. Developers are expected to know how to build sites and materials that comply. The web publishing standards provide a direct link to the W3C standards. Agencies have not asked directly for support from the Inter Agency Group for accessibility toolkits.

According a policy officer with the Inter Agency Policy and Projects Group, the main barriers to accessibility conformance were identified as:

- The format of the *WAI Guidelines* themselves as many practitioners consider them difficult to follow; and
- The small size of the State government means that they tend to follow the larger states rather than taking their own initiative.

Victoria

The Victorian Government has articulated its approach to accessibility in a policy document (Whole of Government (WoVG) Web site Guidelines ID: IT&T-39 – March 2002) that outlines the way in which all Government web sites need deal with the accessibility guidelines.

Departments and agencies web sites should be designed for equality of access and use for all persons requiring Victorian Government services.

An objective of the [Commonwealth] [Disability Discrimination Act 1992](#), is to eliminate, as far as possible, discrimination against persons on the ground of disability in the provision of a wide range of things including goods and services. It is the intention of this policy that the provision of goods and services by Victorian Government departments and agencies accords with these objectives.

Departments and agencies should apply the W3C Guidelines to the Internet, intranets and extranets.

Where these principles cannot be followed, an accessible, alternative version of the content should be provided.

As a minimum, department web sites should be level 'A' compliant.

Web sites should be checked with tools recommended by the W3C such as *Bobby*. Compliant web sites or pages should indicate this on their web sites.

(<http://www.egov.vic.gov.au/>, assessed 24/7/2003)

The WoVG Web site Guidelines were developed by Multimedia Victoria (MMV) as a collaborative, cross-Department process. Interested parties came together to help formulate a Draft policy. This draft was put it out for comment to all the IT departments, and then the feedback assessed. The policy was signed off (Strategic Communications and Government Department of Premier and Cabinet) and published.

Information is disseminated through the Multimedia Victoria web site; in particular, the eGovernment Resource Centre. (The material may be accessed at: <http://www.egov.vic.gov.au/>.) This is an enormous resource that brings together all of the Government department's Intranet knowledge system into one public online repository. There is a special area dedicated to accessibility that includes a library of articles, policy documents, discussion papers, and resources.

Multimedia Victoria (MMV) has built an *Accessibility Toolkit* (<http://www.egov.vic.gov.au/Victoria/StrategiesPoliciesandReports/Reports/Accessibility-Toolkit/Accessibility-Toolkit.htm>) for online developers and project officers and managers, to encourage and assist conformance. The resource is pitched at 'A' level conformance. The Toolkit puts the WAI standards into simple terms and shows how to apply them. The Toolkit will be revised (in 2004) to bring an understanding to AA and AAA conformance levels.

MMV has conducted workshops, seminars and information sessions for general staff awareness as this is seen as very important to back the policy. As the policy is not mandatory, the position adopted in these information sessions is basically: "you ignore it at your peril. If you ignore it and then get in strife over it, you're accountable for that action. You were advised this is the best course of action and you chose to ignore it".

Government online developers and content managers are encouraged to use their own testing techniques including *Bobby*.

MMV acknowledges that most department sites are not currently accessible, but they are working hard to achieve a WAI 'A' rating. It is likely that this standard will be lifted to 'AA' level over the next few years. This is seen as a gradual process; the first step is to get a common understanding of the basic conformance issues, and then lift the bar. All new sites in construction are aiming for a 'AA' conformance level, but there is concern that some of the WAI Checkpoints at this level may compromise the functionality of a resource.

In order to encourage accessibility conformance beyond the Government departments, MMV intends to create an accreditation process for external organisations developing web sites. This would require developers attending a course, where they would receive a qualification accreditation; they would be expected to maintain this. Under this regime, MMV will put out tender specifications that require developers have accessibility accreditation.

MMV is currently undertaking a project measuring web metrics with demographic profiling. This will be a continuous profiling service to survey people and ask them of their accessibility requirements. This information will be

used in accessibility work to see what percentage of people using Government sites actually have an accessibility issue. It is believed that this information will help drive deadlines. If there is a huge demand, this will drive the urgency – for both timelines and levels.

According to MMV, the Victorian Government currently has no intention of creating a new set of guidelines (as the US has done with *Section 508* – see Appendix X for more information about the relationship between Section 508 and the *WAI Guidelines*); it is comfortable with the international standards set by W3C.

Victorian Office of Training and Tertiary Education (OTTE)

The Office of Training and Tertiary Education (OTTE) has developed a strategy to re-engineer OTTE's web communications in line with the Whole of Government (WoVG) Web site Guidelines, including accessibility conformance.

The process was initiated by a consultant's report into the user and business requirements for core OTTE sites.

The scale of the OTTE online communications makes this task enormous. Currently, OTTE manages 9 web sites across the organisation. The five core sites alone constitute at least 2000 HTML pages, 400 PDF documents and 250 Word documents. As well as this, OTTE maintains 16 other web interfaces, databases and production systems.

The core sites have been prioritised for redevelopment, followed by the systematic transformation of the remaining sites. "In the case of Department funded external VET sites and externally funded sites, OTTE does not have the authority to mandate standards and guidelines; rather it is anticipated that OTTE will adopt a mentoring role during their redevelopment." OTTE Web Presence Reengineering Strategy 2003-2005.

The implementation plan is stretched over 3 years, where it is anticipated by early 2004 at least 3 of the core sites will be completed.

The current OTTE web sites have been tested recently for accessibility conformance.

Web sites managed by WIS (Web Information Services) in general pass conformance [to a Priority 1] with the exception of some material, such as large,

multi-pages pre-2001 publications developed in HTML, which have not been converted retrospectively due to lack of resources.

(OTTE Web Presence Reengineering Strategy, 2003-2005).

Conformance will be achieved across the core sites by using the same HTML template and content management system for each site. This means that each site will have the same 'look and feel' and document uploading system, thereby controlling the accessibility issues. This sets up the same expectation for all users; they will be able to search in the same spot and navigate in the same way for each site.

It is recognised that accessibility conformance has been difficult to promote across the Victorian TAFE system.

The TAFEVC (which includes the learning management system WebCT and online content repository) used in Victoria is seen by OTTE as an external site. Therefore, in the strategy for site re-engineering, TAFEVC is further down the track. Courses developed for TAFEVC have not generally followed *WA/ Guidelines* and most are not accessibility compliant (see more on TAFE frontiers resources).

Western Australia

The Western Australian Government has articulated its position on accessibility in guidelines (Guidelines for State Government Web sites Version 1.0.) that include 11 different sections. One section deals solely with accessibility and advises WA State Government Agencies to apply at the minimum, the W3C WAI priority 1 Guidelines. They also discuss that ensuring accessible sites is a requirement under the Commonwealth Disability Discrimination Act (1992). (The Guidelines and policy may be accessed from <http://www.egov.dpc.wa.gov.au/index.cfm?fuseaction=projects.policy>)

The Guidelines for State Government Web sites are currently being redeveloped. It was anticipated that Version 2 would be completed in the near future.

The Guidelines for State Government Web sites were consulted on widely throughout the review and revision of the current Guidelines. Input was sought and received from the public and private sectors.

The Guidelines for State Government Web sites are viewed as tools for assisting agencies to comply with the State Government policy for Web

Standards. The rationale is presented in Premiers Circular 2002/14 and refers to the international context (see Appendix 1, for a full discussion of the international context) and the issues raised by Waddell's (1999) notion of the 'digital divide'. The approach then can be seen as one that emphasises principles of universal access.

In terms of accessibility, this policy states that Government sites:

- be well designed, taking account of recognised standards and protocols. The design of a Government web site must be based around the needs of the audience of the site, aiming to be inclusive to all intended users, bearing in mind the wide range of customers' circumstances, computer capability and technical knowledge;
- ensure accessibility for the largest possible number of users across various sections of the community;
(<http://www.egov.dpc.wa.gov.au/index.cfm?fuseaction=projects.circular>, accessed 13/9/2003)

The W3C *WAI Guidelines* in the Guidelines for State Government Web sites are regarded as the best means to achieving the goals articulated above. Many WA agencies have included conformance with Premiers Circular 2002/14 as a part of call for tender documentation for private sector developers.

The Government also provides agencies and the private sector with a comprehensive range of information on accessibility on the E-Commerce Centre at <http://www.ecc.online.wa.gov.au/matrix/acc.htm>

It is clear that the key factors influencing the TAFE sector's response to accessibility are:

1. the Commonwealth Disability Discrimination Act (1992)
2. the W3C *WAI Guidelines* or
3. Premiers Circular 2002/14

The main obstacles to conformance were identified as:

- lack of awareness
- lack of knowledge
- lack of funding

Web site Accessibility Conformance

All the 65 TAFE institute web sites were tested for different levels of accessibility conformance. The testing techniques are described in the Methodology.

The results of the tests are provided for these TAFE institutes in the table below. A breakdown for each State and Territory TAFE institutes is provided in Appendix 2.

Table 1: National TAFE web sites accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 29 | 32 | 4 |
| Cascading Style Sheets | 58 | 6 | 1 |
| Black & white monitor | 57 | 0 | 8 |
| Flesch index | 22 | 29 | 14 |
| <i>Lynx</i> browser | 24 | 17 | 24 |
| <i>Bobby</i> : | | | |
| A | 13 | 48 | 4 |
| AA | 3 | 59 | 3 |
| AAA | 1 | 61 | 3 |
| HTML validator | 17 | 47 | 0 |
| Navigation | 36 | 7 | 22 |
| Site map | 32 | 27 | 6 |
| Text size | 59 | 0 | 16 |
| Keyboard controls | 55 | 10 | 0 |
| Download speed | | | |
| 28.8k | 19 | 13 | 25 (8NA) |
| 56k | 32 | 5 | 20 (8NA) |
| 128k (DSL/ISDN) | 49 | 0 | 8 (8NA) |

(NA: Not able to take a reading)

Eighty percent of the TAFE institute web sites fail to meet an automated *Bobby* test at an A level. Nearly all sites fail to meet an automated *Bobby* test at levels AA and AAA.

Only about 50% of the web sites use site maps. There are a significant number of sites that have poor navigation structures (45%). Nearly fifty percent of the sites fail a readability test. About one quarter of the sites cannot be navigated using *Lynx*, and another quarter present difficulties when using this text-only browser. More than half the sites present problems when images are switched off.

Style sheets are used correctly in most cases, and most sites allow keyboard control, text expansion and contrasting colours in their interface designs.

Site download speed is clearly an issue, with only 50% able to be downloaded efficiently using 56k modems (8 sites were borderline using 128k simulated lines).

42 non-TAFE provider web sites, we tested using a number testing tools (see Methodology). The results are provided in the table below.

Table 2: National independent provider web sites accessibility conformance

| Test | Pass | Fail | Borderline | |
|-----------------|------|------|------------|---|
| Images off | | 9 | 29 | 4 |
| <i>Bobby:</i> | | | | |
| A | 6 | 36 | 0 | |
| AA | 0 | 42 | 0 | |
| AAA | 0 | 42 | 0 | |
| Download speed | | | | |
| 28.8k | 21 | 8 | 13 | |
| 56k | 30 | 0 | 12 | |
| 128k (DSL/ISDN) | 42 | 0 | 0 | |

Why web sites fail testing procedures

There are a number of reasons why the web sites tested in this research, fail specific tests conducted for this research.

This section outlines the reasons for each test conducted, and discusses the significance of this failure.

Images off:

Significant numbers of sites failed this test. Failure is due to the absence of text alternative tags on navigation buttons and other images on the pages of the sites tested.

The critical issue is when alt tags are not provided for navigation buttons. This means that effective navigation through the site is impossible.

There are a number of 'borderline' cases where images were not provided with text alternatives, but this did not affect the ability to navigate through the site.

The reasons why images are not being alt tagged vary. This is not necessarily a difficult procedure to implement technically. *Dreamweaver* and *Contribute*, for example, request that images are tagged with alt text tags when an image is placed on the HTML page.

Failure may be due to some Content Management Systems not permitting image tagging, and the Template provided for the system not button-image tagged. This requires high-level technical and strategic decisions (with cost implications) to rectify.

Non-tagged menu buttons are due to inattention or lack of knowledge about the requirement, or simply the site developer not including them. Simple (non-navigational) images (for example, photographs, logos, illustrations) are not tagged when content managers simply overlook this requirement.

Cascading Style Sheets (CSS) turned off:

There were very few failures in this category. Failure is due to the absence of style sheets, or style sheets in place that render incorrectly. Incidentally, a number of sites have problems when using dynamic HTML (DHTML) navigation and a user chooses to over-ride the style sheet.

Black and white monitor:

There were very few failures in this category. A failure is due to an insufficient contrast between the text and the background. This could either be in the text content or the text labels on menu buttons. This failure is very easy to correct by providing templates that have clear colour differentiation.

Flesch Index:

This is a simple test that measures the level of difficulty of a block of text content.

Failure is due to over-complicated sentence structure (using complex sentences rather than simple), overly long sentences, or unnecessarily difficult language (VET titles and terms).

We have been reasonably generous in our interpretation of these results when determining Pass, Fail or Borderline because the results may vary according to the piece of text selected. However, the test does indicate symptomatic issues of inappropriate writing and inattention to the target audience.

The *Flesch Index* also tests for the percentage of passive and active sentences, and as active voice is encouraged in web writing, this also can be used as an effective guide to better web writing.

Incidentally, a number of sites were found to have simple spelling and grammatical errors.

Lynx:

Lynx is a text browser that is operated using a keyboard only. It closely replicates some adaptive technologies, such as screen readers. (It also determines whether the site is accessible to non-human readers - for example, web crawlers, - and data mining applications.)

Failure is due to a number of factors including the poor use of frames (not providing correct frame titles); not providing text tags for navigation buttons; not providing 'empty' tags for shim and spacer gifs; not constructing data tables correctly; using Flash often for the front page (that can't be accessed by a text browser); using Javascript 'hover' menus with no text equivalent; and not constructing tables correctly so that they linearise.

The reasons for failure may be due to inadequate knowledge on the part of content managers and developers, particularly in relation to tables and alternative (text) tags for images. However, the misuse of frames and Javascript 'hover' menus is related to initial site design and programming decisions.

Bobby:

Using *Bobby* is not an exact measure of accessibility conformance. This observation is supported by a number of opinions, for example, in his report entitled “Evaluation of Testing Tools”, Joe Clarke states that “you might as well forget about *Bobby* (cast.org/Bobby), the alleged Web site accessibility testing tool that is always immediately mentioned by everyone who doesn’t know the first thing about accessibility”.

(<http://www.joeclark.org/book/sashay/serialization/Chapter14.html>, accessed 25/8/2003)

For our purposes, *Bobby* indicates a number of symptomatic issues at various levels of conformance (generally confirmed by other tests we conducted) as it highlights areas that don’t comply with WAI Checkpoints.

In a number of cases, we were not able to use *Bobby* to test a site. This was due to the errors in the HTML code or Javascript re-directs. However, this does not mean necessarily that the site was inaccessible and other tests were conducted to ascertain the level of accessibility.

Note: We have only listed those failures that are automatically identified by *Bobby* at each Priority level.

Bobby level A:

A significant number of sites failed (48).

Failure is due to no alternative text tags being provided for images (buttons, logos, etc); not providing text alternatives for client side image maps, or not providing titles for frames. If the alt tags are not provided for menu buttons or image maps (that have links to other pages), the site cannot be navigated by text only browsers or some adaptive technologies.

As with the *Images Off* test, oversight on image tagging and text alternatives for client side image maps can be lack of developer awareness or oversight, or due to content management system capacities.

Bobby level AA:

A very high number of sites failed (59). However, this is not altogether surprising, given that most State Government and institutional policy and guidelines do not specify conformance at this level.

Failure is due to a range of factors, including not using percentage values; frames incorrectly or not titled; page re-direct; mouse-only triggered event handlers; not providing DOCTYPE statements; nested headings; form controls not labelled; and links with the same targets.

Setting percentage values allow a browser to stretch a web page to the size of the screen. With some screen readers that magnify the size of the text, non-expanding widths force long columns of text, making reading difficult. (There is an issue here because stretching rows of text beyond 450 pixels at standard text size can also be difficult to read.)

Frames are not inherently inaccessible, but they must be labelled in a way that facilitates navigation. Frames are the deliberate choice of the site developer, and they need to know the correct technical procedures to make them accessible. Some experts advise, for instance, Clarke (<http://www.joeclark.org/book/sashay/serialization/Chapter10.html>) that they should be avoided, and limit the length of text pages.

A DOCTYPE validates the HTML standard to which the document is written. Placing a DOCTYPE in the code allows HTML validation. The WAI Checkpoints at Priority 2 require that coding complies with an HTML standard, and this avoids proprietary code.

Event handlers that require a mouse to trigger their action (rollover, animation, 'hover' menus, etc) assume the device reading the site is a typical browser, but many adaptive technologies do not use a mouse. Therefore, alternatives need to be provided if these event handlers are incorporated in the site.

Nested headings mean that the structural hierarchy of the document is incorrect and will be confusing to adaptive technologies.

Input boxes in forms must be labelled correctly with each input field having their own independent label. This ensures the input box is read correctly by an adaptive technology.

Links labelled the same but leading to different target is usually due to the use of labels such as "click here", "view here", etc. Adaptive technologies are able to 'scan' a page by jumping from link to link, so same name labelling is confusing.

Most of these failures at *Bobby* AA level are due to lack of programming knowledge, or due to conformance at this level not being specified or required.

Bobby level AAA:

Most sites fail this test. Again, this is not altogether surprising, given that most State Government and Institutional policy or guidelines do not specify conformance at this level.

Failure is due to a range of factors including not providing table summaries; adjacent links not spaced; natural language of text not provided; and place holding characters not provided in forms.

Failure to separate links with more than white space. It is not enough simply to have the link on another line (that is, line breaks, carriage returns and paragraph breaks are not sufficient).

Placing default text in the form control (for example, “enter your name here”) forces adaptive technologies to see the control.

Most of these failures at *Bobby* AAA level are likely due to lack of programming knowledge or due to conformance not being specified or required at this level.

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HTML validation:

Most sites failed HTML validation. Part of the failure here is due to not providing the DOCTYPE. If a DOCTYPE was found, a setting was made to HTML 4.1 transitional, and tested again. For this second test, most sites fail as there is significant deviation from the HTML standard.

Failure is due to lack of relevant programming knowledge.

Navigation:

A significant number of sites failed this test.

Failure is due to inconsistent navigation pathways; no clear URL structure for each page (due to content management systems or frames) and failure of navigation links.

Site map:

A significant number of sites do not provide site maps. These may assist a user to navigate a site. There may be reasons for no site map including where a site is considered too large, or that a site search engine suffices, or it would be impractical to provide a map as continuous changes are being made to the site structure. So, non-conformance is a result of deliberate decisions made at the design and information architecture level.

Text size:

There were very few failures in this category. However, there are a number of borderline cases where the text content can be expanded, but not the menu button. Most sites use images for menu buttons, whereas coding the buttons correctly using HTML will allow expansion.

Non-conformance is due to lack of relevant programming knowledge or deliberate design choices.

Keyboard controls:

A significant number of sites failed this test.

Failure occur in forms or tables constructed in such a way that the keyboard tab did not follow a proper linear sequence.

Non-conformance is due to lack of relevant programming knowledge.

Download speed:

This test is designed to determine whether sites are addressing rural and regional issues of poor quality landline links to the Internet and slow modem speeds.

28.8k

There are a small number of failures at this level. However, there are more borderline cases. Failure is due to graphics or animations displayed on pages that are too large for efficient download.

56k

There are very few failures. There were, however, a number of borderline cases. Failure is due to graphics or animations displayed on pages that are too large for efficient download.

128k DSL/ISDN

There are only several borderline cases. Failure is due to graphics or animations displayed on pages that are too large for effective download.

TAFE Practitioners

Interviews were conducted with 63 people in TAFE institutes across Australia. In some cases, more than one person was interviewed at the one TAFE institute. This enabled information provided to be crosschecked and to cover both aspects of online development (web site and online learning resources).

The positions of those people interviewed included flexible learning managers, online services managers, web managers, professional development and innovation coordinators, systems and IT administrators, disability liaison officers. Titles of similar positions varied – so an online learning manager in one organisation could be an innovations manager in another, and so on. It was felt that these people would hold the keys to awareness and knowledge of the implementation of accessibility standards.

There is generally no one person or unit responsible for accessibility conformance across the institution (and hence the range of people interviewed for this study). All the interviews conducted were cold calls, and incidentally and interestingly, it was often difficult to locate from outside the person who was responsible for web administration or online learning in the organisation.

Awareness and knowledge

To ascertain levels of awareness, people were asked to indicate their familiarity with online accessibility or the W3C accessibility standards, and to express their understanding of the main purposes of these standards.

Their awareness was spread across the spectrum, with about half the respondents feeling that they were familiar to a high degree and the other half, to a low degree. There were some who had no awareness of accessibility

standards at all, and some often confused these online accessibility standards with standards governing access and equity in general (often, Australian Training Qualifications Framework requirements).

Most respondents, who were aware of online accessibility standards, explained the purpose of them generally in terms of access and equity. So, for the majority, accessibility was equated with disability ('to make sure web sites are accessible to disabled with visual and auditory impairment'). However, a smaller group insisted on a broader definition that included poor literacy skills and technology access (computers, browsers, modems, etc.); in other words, they understood the concept of 'universal access'.

State/Territory variation: This spread of awareness was similar in all States and Territories, although people from NSW in general believed they had the highest levels of awareness of accessibility.

Institutional policy and implementation

Formal policy

Most institutions across Australia do not have a formal policy on accessibility conformance, or the respondents were unsure whether they have a formal policy.

State/Territory variation: Victoria has a very low level of formal policy at the institutional level, with only one respondent indicating positively that there was such a policy. In Queensland, SA and NSW, although there was no institutional policy as such, respondents thought that as there was Government policy or the AQTF standards in place, it was therefore not necessary to formulate an individual institutional policy

Meeting accessibility standards

Very few respondents believed their organisation had attended to conformance across the whole organisation. Several commented that they were making considerable efforts to do so where practically possible, but were hindered by content and learning management systems or in using tools such as *Flash* and *Powerpoint*. Several people commented that achievement was at different degrees of conformance depending on the area; for instance the staff Intranet was compliant, but not the web site – or in some situations, the reverse. Some considered conformance of their online resources as the highest priority,

whereas for others, it was the public web site. Others commented on the issues of the difficulty of quality assurance processes with online learning materials.

State/Territory variation: Western Australian respondents considered that in the main, their organisation had attended to meeting accessibility standards to a high degree. On the other hand, Victorian respondents in the main considered that their organisations had not attended to online accessibility standards.

Priority level

Most respondents were unsure what level of conformance was specified, or if it was specified at all in terms of WAI priority levels. Several expressed it as the “highest level to achieve accessibility”. Of those people who were familiar with the levels, most indicated that they had achieved or were working towards a level ‘A’. A smaller number suggested a ‘AA’ or ‘AAA’. One person claimed that the staff Intranet was compliant to a level AAA.

State/Territory variation: This was uniform across all States and Territories.

Policy responsibility

This question was set to determine who had developed, was developing or should develop institutional policies and guidelines regarding accessibility conformance. This question elicited a wide-spread response. The most frequent response was for the person interviewed to indicate it as their responsibility. Because of the diversity of people interviewed, this position ranged from web administrator to IT systems manager. Other positions mentioned were: general manager, education development services committee, ICT strategic planning committee, IT department, IT manager, disability support services and marketing department.

State/Territory variation: This was uniform across all States and Territories.

Quality Assurance

This question was designed to find out who was responsible for ensuring accessibility standards were being met across the organisation. There was a great deal of variation in the response to this question. Many considered themselves as responsible, (and they ranged from web administrators to IT

systems managers). Other positions mentioned for this role were: web managers, everyone in the production team, disabilities service officers, education development services unit, access and equity units, web committees including ICS and marketing, and the online services units.

State/Territory variation: This was uniform across all States and Territories.

Training

According to our interviewees, most institutions provided no formal accessibility training for staff. In very few cases, the interviewee was providing training to others in their team and/or more broadly in the institution. In another case, training in general issues of access and equity was being provided across the institution.

All of those people interviewed who had a high degree of understanding of accessibility implementation had taught themselves - by attending:

- external workshops and seminars provided (in one case by the State office) and several others by Vision Australia;
- conferences or general awareness seminars about accessibility issues;
- special workshops about adaptive technologies; or
- or special training provided by the production team.

A considerably high number had learned their skills through online resources from a variety of sources, including the W3C web site, *OptionKeys* and peer exchange. (*OptionKeys* is located at <http://www.oten.edu.au/optionkeys/>)

State/Territory variation: This was uniform across all States and Territories.

Impediments to accessibility conformance

The respondents were asked what were the main impediments to achieving conformance across the organisation.

A small number of respondents (5) stated that they had not find any significant impediments to achieving accessibility conformance. The bracketed numbers refers to the number of times this impediment was mentioned by a respondent.

The main impediments mentioned are listed below.

- Time (and resources) to achieve accessibility effectively. (24)
- Lack of awareness of universal access. (16)
- Poorly articulated, confusing and sometimes contradictory accessibility guidelines. (9)
- Inadequate resources to learn about accessibility conformance. (7)
- Insufficient knowledge to implement accessibility conformance. (6)
- Using systems that don't permit conformance – Cold fusion, learning management systems, Javascript, DHTML. (7)
- Difficulty of achieving conformance – simulations, animations, etc. particularly in online learning resources. (6)
- De-centralisation of publishing systems to enable control over accessibility conformance. (5)
- Not an organisational imperative or priority. (4)
- Imprecision of the testing procedures, particularly, automated tools. (4)
- Site developed some time ago, so dealing with legacy pages. (4)
- No organisational policy or awareness or communication about accessibility conformance. (4)
- No one person or unit responsible for accessibility conformance. (3)
- Not having access to the right testing tools (for example, *Jaws*). (3)
- Leaving accessibility too late in the process of development. (3)
- Inability to keep up with the rapidly changing pace of technology – style sheets, Flash, adaptive technologies. (3)
- As it's a relatively new area of understanding, there is resistance from with new practitioners. (3)
- The size of bandwidth. (2)
- Lack of practitioner interest or care. (1)
- Lack of funds to evaluate and change legacy pages. (1)

State/Territory variation: This was uniform across all States and Territories.

Means to achieve accessibility conformance

Respondents were asked what would assist in implementing accessibility standards across the organisation. Their suggestions are listed below. The bracketed numbers refers to the number of times this solution was mentioned by a respondent.

- Training and professional development. (24)
- Clear and effective resources that show how to achieve conformance. (9)
- An accessibility awareness campaign. (7)
- Clear standards or criteria or checklists as to what makes materials meet a set conformance level. (8)
- More resources (time, staff) to implement the guidelines. (7)
- A content management system that specifies accessibility conformance. (6)
- Clear specifications provided with online resource development. (4)
- Policy development at the organisational level. (4)
- Appropriate and evaluated testing tools. (4)
- Centralised access point for technical information on conformance. (4)
- A course on accessibility with a formal qualification. (3)
- A national accessible online resources bank or repository. (3)
- Institute promotion and implementation strategies. (3)
- Resources to purchase assistive technologies. (1)
- Guidelines regarding who is responsible for conformance. (1)
- Set of ANTA approved standards. (1)
- Accreditation for developers. (1)
- Having classrooms that provide adaptive technologies for students with disability. (1)
- Department to identify students with disability about the nature of their disability and pass this information on to their trainers. (1)

State/Territory variation: Victorian respondents were generally much more concerned about policy development and implementation at the institution. Whereas NSW respondents were more concerned with the practicalities of achieving accessibility conformance, the clarity of the standards and having staff/resources to implement them. Western Australian respondents saw solutions in the provision of an accessible content management system. South

Australian respondents saw solutions coming from having more staff and resources.

Independent providers

There are more than 3000 providers registered to provide training in Australia. These vary from sizable organisations such as the Catholic University to individual consultants, with some providers delivering a range of courses to others specialising in one or two.

There is also great variation in the quality and accessibility of their public web sites. In the study conducted for this research, we selected 50 or so organisations that were delivering the Business Training Package. The result from this test can be illustrative only and not representative, but it did demonstrate a similar (albeit lower) level of non-conformance as the TAFE sector. The technical reasons for failure have been documented in the section of this report “Why sites fail testing procedures”.

From interviews conducted with the people in organisations with a automatic *Bobby* test that indicated an achievement level ‘A’, only one organisation had consciously attended to the accessibility requirements. In this case it was with a large training provider whose target audience was very much to do with people from disadvantage and disability. The other organisations that achieved this result were oblivious to the accessibility standards, and it was not with the intent to comply that they had constructed the site in such a way as to not fail the *Bobby* test.

The Australian Council for Private Education and Training (ACPET) is an advocacy body representing nearly 600 commercial independent providers. They provide a weekly electronic newsletter to their members about a range of State and national issues.

Nick Oklobdzija, Victorian Executive Officer, confirmed that the web sites in the independent sector were very inconsistent in their quality. Even In ACPET’s case, the site is created in *Flash* making it inaccessible and meaning that content maintenance is difficult: articles can’t be directly uploaded to the site, so they need to go through a developer to post them.

ACPET advises their members about standards (for example, the AQFT) and acts as an advocate for them if there was an issue. ACPET has not to date provided any information direct to their members about accessibility conformance.

In the case of online accessibility, Nick Oklobdzija believed that standards should be applied to web site development and that ACPET would be pleased to act as a conduit for any policy awareness campaign. He also recommended that a template exemplar should be devised that would assist independent providers to build sites that were compliant. (See Recommendation 1(a) and 1(g))

Online learning materials

In this section, we report on the investigation into the various approaches taken by the Toolbox project, TAFE NSW Online, OTEN and TAFE frontiers in developing accessible learning materials.

The Flexible Learning Toolboxes

The Flexible Learning Toolboxes (aka Toolboxes) represents a nationally co-ordinated approach to the development of online materials to support teaching and learning from recognised Training Packages. Each year of Toolbox development sees a Series of products developed for the VET sector. Series development of the Toolboxes is overseen by the National Online Product Managers, based in the Office of Tertiary Training and Education (OTTE) in Victoria, whose role is to guide the development and uptake of the Toolbox products. The 2003 Series 5 Toolboxes represent a further step in the development of accessible products. The Series 5 RFT states the following:

Conformance with W3C Web Content Accessibility Guidelines

All Toolbox teams will be required to develop online materials in accordance with Priority 1 of the W3C Accessibility Guidelines. These Guidelines are intended to assist developers create Web pages which are accessible to a diversity of users, particularly people with disabilities.

Conforming to the Guidelines should not result in any loss of desirable qualities in the intended features of the Toolbox (eg graphical and interactive elements), and project teams should attempt to integrate the accessibility options within the general design where possible.

To support ongoing development in this area, project teams will be expected to freely disseminate information and collaborate with other project teams to address issues concerning the development of accessible Toolbox materials. (Refer <http://www.w3c.org/TR/WCAG10>)

Importantly, the Series 5 Accessibility requirements were largely informed by earlier trials. These trials were conducted to ensure “that we all knew what meeting the W3C Accessibility guidelines was going to mean for product development” (Pasquale Stella – National Online Products Manager OTTE).

And, somewhat unexpectedly, the three trial projects presented three different approaches to meeting the Accessibility requirements:

- (1) The Truvision product (targeted at learners with a vision impairment) exemplifies an integrated approach whereby the visually impaired (and non-impaired) learner would experience a relatively seamless integration of accessibility features.
- (2) The Kitchen Operations product uses a partially integrated approach whereby non-accessible interactions (eg. some Flash or Javascript activities,) were accompanied by a text alternative..
- (3) The Call Centres Toolbox uses a non-integrated approach whereby the user selects – up front – a complete text alternative of the interactive product. (Pasquale Stella –OTTE)

The findings from these trial projects were then evaluated against a matrix which included the broader aims and technical requirements of the Toolbox products and how well they met the end-user’s needs. In summary, the findings were as follows:

- (1) The Integrated approach (as developed in the Truvision product) appeared to be a good solution, however when we investigated its technical feasibility to meet the other requirements for product maintainability, customisation, disaggregation and portability, it scored very low.
- (2) The non-integrated approach scored poorly all round. In fact, the best criticisms for the ‘text-alternative’ approach came from comments by impaired users who don’t want a complete alternative, don’t want a boring text version, and don’t want something that’s been dumbed down. They want a real alternative.
- (3) The partially integrated approach (as developed in the Kitchen Operations product), however, scored reasonably well across all criteria.

The trial projects also proved invaluable in giving actual ‘hard’ data on the impacts to project teams, budgets and timelines:

We conducted the trials to be certain about the impact on product budgets, timelines and quality in meeting the W3C Accessibility Guidelines. We ran the three trial projects prior to going full-bore in Series 5. The reports from these trials alerted us to (1) a possible 10% blowout in timelines, and the danger that this figure could double for teams unfamiliar with both the Toolbox concept and the W3C Accessibility

requirements. (2) That the project teams could (and would) absorb an extra 10% effort to meet the W3C Accessibility Guidelines, and (3) that teams could meet the W3C Accessibility guidelines and maintain the desirable qualities in the materials. (Pasquale Stella –OTTE)

Subsequently, a number of strategies were put in place to assist the teams in developing W3C Accessibility compliant products.” These strategies included:

- A discussion forum so that Toolbox developers could leverage off the knowledge of their peers.
- Moderated discussions with an Accessibility expert and experienced Toolbox developers (this was conducted concurrently)
- User trials with vision impaired users. (Toolbox project teams were encouraged to attempt early user trials)
- Early accessibility testing of the Series 5 Toolbox product prototypes so that developers could gain early feedback on their approach..

A report (courtesy P. Stella OTTE Sept 2003) on the outcomes of the early accessibility testing conducted on the Series 5 Toolbox prototypes describes the most common accessibility problems found were issues concerning:

- Flash, multimedia content and interactive features
- Scripts (typically Javascript)
- Opening new windows as pop-ups
- HTML Forms
- HTML Tables
- Frame titles

According to Pasquale Stella:

These issues were to be expected as the disjuncture between assistive technologies and user-agents, and our ability to find workarounds to address these is difficult to maintain within our project timelines. Nevertheless, some developers/programmers have come up with some ingenious work-arounds, and for the most part the various development teams that we engage with are just as passionate in developing a quality accessible product.

Pasquale has also noticed a gap growing between those developers and organisations who understand accessibility and those that don't:

It seems that some (and thankfully its just a few) organisations just don't get it: they need to be fully aware and conversant of W3C Accessibility issues and give their teams the required training. To fill the gaps, we encourage teams to

buddy up with organisations that are aware of the issues and have the necessary expertise.

The challenges for Toolbox product accessibility however go beyond meeting the technical requirements as outlined by the W3C Accessibility guidelines as Pasquale explains:

It's also about: How to provide a text equivalent for a drag and drop activity? How do you create an equivalent self-test, or an assessment activity? How do you create an equivalent learning effect? And how will you know? How do you provide an equivalent experience? How do you maintain a level of satisfaction?

These questions, and more, provide interesting challenges for those developing quality e-learning materials.

TAFE NSW Online

It is estimated that TAFE NSW Online will soon have some 650 online courses available, and about 450 already reside in the central TAFE NSW Online Library. The products in the Library have been checked first for a whole range of standards conformance, including accessibility. Those products are endorsed and receive a TAFE Connect logo to identify the resources have been through a content and technical QA process.

When product development was initiated back in 1999, it was very much a case of coming to terms with online development itself; how to do it and how to meet the course learning outcomes. However, since 2001, the process has become much more strict to ensure W3C Level 1 accessibility conformance. The creation of the *OptionKeys* web site was part of this tightening up - providing a professional development resource that specified the *WAI Guidelines* and offered techniques to comply.

David Poynter, Manager, TAFE Online Project, says of these initial products, "They were not entirely satisfactory. Now, two years on from there, those materials have come up for re-working. The replacements are all *Bobby* compatible. It will however be a little more time before we get all the original non-compliant materials out of the system".

'*Bobby*', the automated accessibility-testing tool, is used to test conformance, and the TAFE NSW Online Project is acquiring their own site license for in-house developers to be able to access higher-level testing inside the TAFE and Schools network.

David is aware of the difficulties in developing learning resources to meet the accessibility standards.

Where we cannot demonstrate the education content without breaching *Bobby* Level 1 standard, we will identify up front those elements which do not comply with the standard. It may be that a concept is so well explained using a bit of Java or Flash that it's impossible to describe it long hand as a text alternative.

For example, in one of our modules there is an interactive demonstration of radiology equipment used in testing for faults in metals. We have an animation that simulates this, whereby moving sensors around and varying control knobs on the testing equipment reproduces the real-world irregularly shaped patterns that come out on the cathode screen of the testing equipment. . One picture can tell a thousand words when bringing the theories behind such an activity to life. You have to temper principles and practice with reality. We were told it is unlikely that we'd find blind people in a radiological lab being required to use that equipment. This particular simulation was made an exception.

But as a general rule, every resource is expected to be *Bobby* tested and compliant. The learning management system used across the NSW TAFE is also compliant, according to David. "It comes with a built-in facility so that when a page is authored within the system, a button sends it off for *Bobby* checking. It is re-worked until it comes up OK for use with screen reading technology".

Current contracts for the development of the project's TAFE Connect learningware require that learningware will be produced to meet the accessibility standards defined in the "*OptionKeys*' TAFE NSW best-practice web site, and pass the "*Bobby*" international test standard."

However, David is less concerned about the specially commissioned learningware meeting accessibility standards, than he is for those resources produced independently by enthusiastic teachers.

We now have a great many teachers whose threshold knowledge and skills have been raised, and they know how to write and enter content into a platform or put up a class page. If it is subsequently found that a student can't access it with their screen reader their Institute could be up for a hefty fine. It may be argued that such pages are not official web sites, but if a teacher has told the student to go there, then it may go the student's way in court.

Approx 30% of the online materials that the 20,000 or so 'onliners' in TAFE NSW are using have been developed independently, some commercially, and for the most part I believe by extremely proficient and responsible web-developers. However we have no way of monitoring or assessing the quality of them all as they are not courses that have been commissioned for the TAFE Online Project. We have to rely on the QA processes within the individual Institutes where such materials are being made available.

However, the TAFE NSW Online Project has put a number of things in place to encourage conformance.

TAFE Connect is a quality assurance signifier. If you are using these learningware materials then they are generally *Bobby* compatible and also conform to other QA standards. Institutes can submit locally built materials to our QA processes and, if they pass, they can be centrally and securely stored, and their availability promoted along with other 'TAFE Connect' materials. But, they have to go through the QA and be able to wear the *Bobby* accessibility sticker. That's one way we're trying to impress on people the required standard.

The TAFE NSW Online Project also publishes regular magazine inserts and electronic newsletters in which they raise the issue of accessibility conformance. Their TAFE Connect Library electronic newsletters announcing the release of all new learningware materials always carries the footer:

The Australian Flexible Learning Framework for the National Vocational Education and Training System 2000-2004 has created a number of useful checklists under its 'Access and Equity in eLearning' initiative. Teachers, student counsellors, online developers and administrators can download relevant checklists at:

<http://www.flexiblelearning.net.au/accessequity/guidelines/guidelines.htm>

Through the TAFE NSW Professional Development Network, a number of courses have been developed from the basics right up to a Graduate Certificate in Online Teaching and Learning. About 600 teachers a year undertake the initial training courses. Forty people each year have gone through the Graduate Certificate course.

All TAFE NSW Institutes' teachers are expected to undertake the online course *Introduction to Teaching Online* before they teach using online materials. Other courses involve effective use of the learning platform in online student management, and the pedagogy behind the design of the online materials themselves. "There are elements in all these courses that discuss accessibility. We need them to be aware of the standards as many build up extensive skills and are keen to develop additional materials for the benefit of their students".

David concludes, "So, we try to make all teachers and developers aware of the need for accessibility conformance. It's a continual process of education as increasing numbers of people move into the online learning arena".

OTEN

The Open Training and Education Network (OTEN), located in the Sydney suburb of Strathfield, is the specialist distance education and open learning institute of TAFE NSW. OTEN enrolls 35,000 students in more than 250 TAFE NSW courses.

OTEN is a national leader in the use of technology to develop and deliver high quality educational and training materials. OTEN also has a high-level production unit where they develop and produce learning resources (including print, multimedia, online, web sites, video, audio, and CD-ROM production), and video and television programs (including Satellite TV).

Over the past several years, OTEN has produced some a large number of online learningware products for a range of clients including TAFENSW Online. (See OTEN's web site to see a list of these projects). They were also responsible for the design and development of *OptionKeys*.

Vijendra Lal was the project manager and instructional designer on this project. This team has developed guidelines based on W3C guidelines to achieve accessibility conformance to at least a WAI Priority 1 level. "The approach we take", says Vijendra, "is determined by the learning outcomes and budget and timelines. The bottom line is to make it accessible".

But how easy is this to achieve this?

It's easy enough if the people on the team know what they are doing. The project manager needs to be sure all the members of the project team know how to meet accessibility. With TAFE Online products, we have to do it.

The important lesson for Vijendra was realizing that it is important to plan for accessibility right from the start.

We have learnt this the hard way from experience. It's easier and cheaper to address accessibility upfront, than to make a product for one audience, and then have to re-engineer it for meeting different target audiences.

Everyone in the team is responsible for ensuring the product is accessible. This includes the project manager, writers, programmers, graphic designers, and instructional designers. It's a team responsibility and guidelines are provided for each team member.

Testing is done by the programmers as they are developing the products, and by a Quality Assurance unit. The team mostly uses *Bobby*, but also a whole range of other testing tools. Real users also do testing; OTEN have people with

visual disability on site to do this. As Vijendra says, “*Bobby* does not cover everything, so we need someone to go through it manually. For example, the instructional designers look at the language to do a readability test, to make sure it’s user friendly with not too much technical jargon.”

So what about products that demand more complex interaction?

We determine it upfront in the planning phase; who the target audience is and what the accessibility requirement are. Then in design, we discuss all the options. We don’t go into full-scale production until a prototype is developed. This is where all the testing is done, to make sure it’s accessible.

If there’s a video, we need to work out how to make that video segment for visually impaired. For every segment, there’s a text alternative. As a rule, we don’t do captions. This will depend on how critical is the video in achieving the learning outcomes. If it’s enrichment material that simply enhances the understanding, then we provide a text alternative only. If it’s critical to the learning, then we would think of captioning.

For Vijendra, accessibility conformance is a continuation of their past practices developing learning resources.

I guess accessibility was always an issue in the development of learning resources, right back from the print days. OTEN being a distance education provider have always had access and equity high on the agenda. When we made the transition from print to online, accessibility always at the back of our thinking. We kept in touch with W3C and their guidelines.

But when TAFE Online started happening in a more strategic way, the need was identified to come up with a set of guidelines more user friendly than W3C. This was *OptionKeys*. It’s purpose is to help developers not only within OTEN, but other developers in other parts of the TAFE system. Many of these did not have the time or infrastructure to develop full resources that meet the requirements. As far as we are concerned, we have always operated this way.

TAFE frontiers

TAFE frontiers, located in Melbourne and funded by the State Government through the Office of Training and Tertiary Education (OTTE), collaborates “with training providers within the Victorian Vocational Education and Training (VET) sector to build capability for flexible learning innovation”. It does this by producing “high quality flexible learning resources and providing a range of professional development opportunities for teachers and developers”.

According to Ben Fennessy, Project Officer, TAFE frontiers became aware of the W3C accessibility standards at about the same time as they were expanding the quantity and quality of online resources. This was in 2000. Ben says, “It was a period of experimentation and innovation. We were exploring the limits of the technology to see what could be achieved. We were creating high-end learning materials; visually exciting and interactive. Some of it was hybrid – using the TAFEVC to link to media rich resources such as video and animations that were sourced via CD-ROM driven from the computer”.

There was also at this time (2000) a strong sense of community initiative with where developers were starting to meet, discuss common problems and share knowledge and ideas.

In 2000, TAFE frontiers wrote a developer’s guide (“Guide for Online Developers”) for those teams who had successfully tendered to produce online learning resources. They wanted the new development teams to continue to experiment and innovate, to make stimulating and enjoyable resources that met the learning requirements of their target users. They did not want the developers to narrow their focus to the complexities of the WAI standards to the detriment of innovative approaches. Therefore, the Guide focused on what makes an innovative product (the pedagogy), what is good design practice and what makes a resource highly usable (usability).

We wanted the standards to be thought of as background. We needed to alert our developers about the standards and where they should go to find out about them. I guess we expected them to make resources that were W3C compliant, but there was no enforcement of this. Our approach was to make the online resources as effective as possible in meeting the learning outcomes of the training.

The “Developers Manual for Online Materials” (2002) stated, “We expect developers of TAFE frontiers training products be familiar with the W3C Accessibility Standards and to apply them in their work. If your learners have special needs, you should apply the relevant W3C accessibility standard.” (p.9)

In 2003, TAFE frontiers decided that it was important to provide developers with a resource that made the WAI standards easier to comprehend and implement. Consistent with their approach to minimize anxiety about the standards, a “Wizard” was commissioned and built that demarcated the responsibilities of accessibility conformance for each member of the production team – the project manager, content writer, instructional designer, server-side programmer, client-side programmer and content manager. (Accessed at www.binaryblue.com.au/access_wizard).

Of this resource, Ben says, “We’ve got to demystify the accessibility standards. Developers have this mindset that ‘there is a whole lot of this stuff that we’re expected to do that will make our work the lowest common denominator and not good to use or look at’. We have got to be able to say there are these 3 or 4 things that they have to know and do, or think of another alternative. It’s about informing developers without creating undue anxiety”.

Ben would like to see TAFE frontiers in the future be specific about accessibility in their tender specifications for resource development, and reviewers conduct a QA on the product’s accessibility conformance. “I don’t think accessibility conformance will become all encompassing or time consuming. It’s a bit of an impost on their time and they need to work around these things smartly. They have to build accessibility into their time frame”.

Conclusions

This section of the report provides some conclusions and suggests ways in which web sites and learning materials can be designed more effectively to meet accessibility requirements. Many of these suggestions made are built on the knowledge and best practice of practitioners in VET working to achieve accessibility conformance.

Institutional accessibility conformance

This study has found a great degree of variation in the awareness, skills, knowledge and capacity of practitioners about online accessibility conformance and implementation.

About half the people interviewed - online developers, web administrators, IT managers and so on - are knowledgeable about accessibility conformance, and work hard to make their institute online services and products accessible. At the other extreme, there are practitioners whose general awareness of accessibility are poor, or see it as a low priority (it was often the contact made through this investigation that brought accessibility to their attention).

The central question posed by this research is: Why is it that, despite best intentions, policy frameworks, the availability of a wealth of resources, testing devices and so on, many VET web sites and resources fail to comply with the accessibility standards? (See the Findings section on web site conformance).

This issue is not found only in the VET sector; it is also apparent in the Australian university environment, and is the focus of USA and EU policy development as well. (See Appendix 1) Liddy Nevile, an accessibility expert, some time ago observed, "The problem with government web sites comes about not through lack of standards, but a lack of advocacy and enforcement". (<http://www.webcontentaccessibility.org/> , accessed 21/8/2003)

Dey Alexander, in a study "How Accessible Are Australian University Web sites?" found that 98% of the university web sites studied failed to comply with the *WAI Guidelines*. She concluded:

The results of this research suggest that Australian university web sites are likely to present significant barriers to access for some disabled user groups. Although many universities have policies governing web accessibility, the policies are apparently ineffective. This may be due to any one or more of the following:

The role of text equivalents for non-text elements, particularly images, is poorly understood amongst university web designers.

There is insufficient knowledge of accessible web design practices amongst those who are charged with design, development or maintenance of university web sites.

Web publishing quality assurance procedures either do not exist, do not address issues related to web accessibility, or are not adhered to.

In order to discharge their obligations under the DDA [Disability Discrimination Act], universities need to take immediate steps to improve the accessibility of their web sites. The implementation of web accessibility policies needs to be supported by a broad educative process. All those involved in the design of university web sites or the markup of web content need to be given thorough training in accessible web design techniques. In addition, quality assurance processes need to be strengthened: sign-off authorisation should include not just the acceptance of responsibility for the accuracy of page content, but for the accessibility of that content as well.

(<http://ausweb.scu.edu.au/aw03/papers/alexander3/paper.html>, accessed 19/9/2003)

Mapping accessibility conformance

In order to understand the implementation of accessibility conformance across the VET sector, we have investigated and mapped an implementation structure across six levels. (See Implementation framework)

The way in which these levels of accessibility implementation affect a person's unique experience is indicated in this interview:

I was appointed to the role of web developer at an Institute in 2001. There was no policy and fair degree of ignorance about accessibility standards. Having heard about them from a number of sources, I tried to educate myself – using a variety of sources – the W3C site (and resources), a visit to the NOIE site, or wherever. There was no realization that there was a set of whole of Government standards and guidelines. Even after reading the material, I was not confident about it. There was no-one supporting my endeavours within the institution, either. I had to continually weigh up the sheer weight of the information about accessibility with having to meet the deadlines of the web site. I didn't have the time to educate myself as I would have liked to before building the site. (Peterson, 2003)

We will investigate each level of accessibility implementation separately to attempt to identify where the gaps are occurring.

1. Accessibility framework

WAI Guidelines

Many online practitioners have been troubled by the way in which the W3C Accessibility Guidelines have been framed. (A quick visit to the W3C site will demonstrate the current structure of the resource is difficult to comprehend.) Some of the Checkpoints indeed seem contradictory. Many of the Checkpoints are not expressed in plain English style, and one needs to be a reasonably high-level computer programmer to understand the technical language. There is also the transitory nature of some Checkpoints that lead to ambiguities.

This is not necessarily the fault of the W3C. The standards are based on rapidly improving technologies. These standards were drafted in 1998 and released in May, 1999. Since that time, adaptive technologies are becoming more sophisticated in what they can read (or select, or turn off). Some of the authoring tools (Director, Flash and Dreamweaver) are attending to accessibility issues (as a consequence of the W3C guidelines on software development, and other relevant legislation – see <http://www.w3.org/TR/ATAG10/>)

In recognition of these issues, the W3C has published a Draft set of Web Content Accessibility Guidelines 2.0 W3C Working Draft 24 June 2003.

(See, <http://www.w3.org/TR/2003/WD-WCAG20-20030624/>)

The Draft Guidelines state:

The basic principles are expressed in the 4 guidelines:

Perceivable Ensure that all content can be presented in form(s) that can be perceived by any user - except those aspects of the content that cannot be expressed in words.

Operable Ensure that the interface elements in the content are operable by any user.

Understandable Make it as easy as possible to understand the content and controls.

Robust Use Web technologies that maximize the ability of the content to work with current and future accessibility technologies and user agents.

(<http://www.w3.org/TR/2003/WD-WCAG20-20030624/>, accessed 1/8/2003)

Perhaps even more significant is their intention to change the structure of conformance from Priority levels (1, 2 and 3) to Core, Extended and Core+. It

has not yet been decided how conformance at these levels will be calculated. They ask: “How should conformance claims state how many Extended Checkpoints are met? in metadata? with core+n (n=number of Extended checkpoints)? in a site accessibility statement? Some other method?” (<http://www.w3.org/TR/2003/WD-WCAG20-20030624/>, accessed 1/8/2003).

These changes will have significant impact on policies, guidelines and resources that have been constructed for the *Web Content Accessibility Guidelines 1.0*.

This transitional nature of the *WAI Guidelines* already has impact on accessibility implementation. Although not explicitly stated by respondents as such, project researchers felt there was some hesitancy to treat accessibility as a high priority due to the belief that it is simpler to wait and see how the accessibility guidelines work out. Having transitional guidelines certainly is confusing for those practitioners who want hard and fast standards to work to. As one interviewee expressed it: “We don’t know when interim is not interim”.

Legislation

Accessibility is inscribed in various pieces of legislation, most importantly the *Disability Discrimination Act 1992* Section 24 Goods and Services: “It is unlawful for a person who, whether for payment or not, provides goods or services, or makes facilities available, to discriminate against another person on the ground of the other person's disability or a disability of any of that other person's associates”.

(http://www.austlii.edu.au/au/legis/cth/consol_act/dda1992264/s24.html)

Online accessibility, therefore, is not mentioned explicitly in the legislation, and it is up to the plaintiff to sue when they believe their rights to access have been denied. This is very different from the US situation, where the online accessibility guidelines are actually inscribed in legislation (Section 508 of the *1974 Rehabilitation Act*). Consequently, universities and colleges in the US have had to respond with effective strategies to ensure accessibility conformance (see ‘International Approaches’ in Appendix 1) for ways in which these strategies have been framed).

Most people interviewed were not keen to see the online accessibility standards necessarily inscribed in legislation in Australia, and most saw accessibility more as a human rights issue, reflecting more closely the European approach (see ‘International Approaches’ in Appendix 1).

Given the vagueness of the law in Australia, the legal incentive for most organisations to comply is based on a risk analysis. In other words, how likely is it that a person (with a disability) will sue if they can't access an online service or product?

There is no doubt that the Sydney Olympics Games Committee experience as evidenced by the response of Tom Worthington (<http://www.tomw.net.au/2000/mvs.html>) in 1999/2000 had significant impact on accessibility conformance – particularly in NSW where the action took place. (Sydney being the epicentre, it may be possible to map the level of interest in accessibility in direct relation to the distance from the epicentre.) Given that no-one has since (publicly) sued, the risk has perceptively diminished. However, the threat is nevertheless there, and those promoting accessibility conformance at various levels use the legal threat hammer when necessary.

In this respect, accessibility conformance is different to copyright conformance. Copyright has clear consequences when breached, and therefore there is a high incentive for institutions not to transgress. There are also powerful advocates of copyright (the authors and publishers) who will act if breaches are found. A user who is denied access or who finds access difficult is less likely to threaten action, or find an organisation to do so on their behalf.

It would be beneficial for TAFE institutes to shift from a risk analysis position to a cost benefit analysis model when considering the issue of accessibility. Here, it can be argued, that accessibility conformance will positively encourage people with disability into VET, and this will have positive financial benefits and rewards for doing so. This argument has been recently articulated by the report on “The Net Impact of the Introduction of the Disability Standards for Education”.

* people with a disability are under-represented in the workforce — while 80 percent of the general population are participating in the workforce, only 53 percent of people with a disability do. This means that more than half a million people with a disability are not participating in the labour market;

* there is a positive relationship between training and VET — the positive relationship between access to VET and employment are well known. If people with a disability are not accessing vocational education and training then they are less likely to become employed;

* people with a disability are less likely to participate in VET — the proportion of the Australian population with a disability aged between 15 and 64 who participate in vocational education and training is estimated at less than 2.5 percent, yet the proportion of all Australians aged between 15 and 64 who currently participate in VET is estimated to rise to 12 percent by 2005. It is estimated that the shortfall in the participation rate of people with a disability in VET was nearly 178,500 people in year 1998 and will reach more than 215,000 people by year 2005; and

research shows that people with vocational education and training qualifications are more likely to be employed than those who have no post school qualifications — these factors combined mean that there should be 30 percent more people with a disability participating in the labour market.

(http://www.dest.gov.au/Research/docs/july_03/DDA_Standards.pdf)

State government policy and guidelines

There has been significant progress made at this level. All States and Territories have policies and guidelines in place (across Government departments, a 'whole-of-Government' approach). This is reinforced by some internal staff training, promotion of policy guidelines (web sites, newsletters), online resources and quality assurance units (where accessibility conformance is tested), and strategic plans to roll out more compliant content management systems (NSW, Victoria and Queensland) to make their top level web sites accessible.

Perhaps the most rigorous is the A.C.T. Government, where many aspects of accessibility conformance are mandated, and this policy is applied directly to the TAFE environment.

Making Government department web sites compliant is an expensive exercise (legacy pages number in the thousands, and compliant content management systems are costly to build). The strategies to achieve conformance are conducted on the basis of a commitment to social inclusion and a risk analysis (the likelihood that if someone were to sue, they would be most likely to sue a Government department).

In other words, State and Territory Government policy is in place and many governments are showing leadership by tackling their own public web sites to make their information accessible.

However, extending their commitment to accessibility beyond the confines of the government is proving more troublesome. This is particularly the case in States such as Victoria where the TAFE institutions are not centralised. NSW and Queensland are embarking on a process to extend their content management systems into the TAFE colleges, whereas this would prove more difficult for Victoria and Western Australia (where the institute system is less centralised).

In Victoria, performance agreements with TAFE institutions have broad accessibility requirements in place within the terms of their access and equity policies. Including specific reference to the *WAI Guidelines* into the TAFE

performance agreements may encourage TAFE institutions to be more responsive about their accessibility obligations.

Institutional policy and guidelines

There is a great degree of variation regarding institutional policy and guidelines across States and Territories, and between institutions in the one State. Across Australia, the majority of people interviewed in this research were not aware of any formal institutional policy or guidelines about online accessibility standards.

There are several manifestations of this policy gap.

In some cases, the TAFE institute defers to the State or Territory Authority policy and guidelines. This was found to be particularly the case in Queensland, ACT and WA.

One consequence of the absence of policy and guidelines at the institutional level is that it does not encourage a strategic or cohesive institutional plan or objectives to achieve accessibility conformance. It leaves staff in different units and departments alone to do what they can about accessibility without any interlocking objectives. It makes it difficult to bring teachers now using online delivery systems to an awareness of accessibility issues and their implementation.

To many, conformance will only be a high priority if it is a transparent institutional policy. (See RMIT experience, Appendix 3)

Secondly, there were a considerable number of people who considered that an Access and Equity policy (generally positioned in the Disability Unit of the Student Services department) was sufficient to cover off online accessibility. Some referred to policy in terms of meeting the Australian Quality Training Framework (AQTF) standards and audits.

The AQTF standards state:

6.0 Access and equity and client service.

The RTO applies access and equity principles and provides timely and appropriate information, advice and support services which assist clients to identify and achieve their desired outcomes.

6.1 The RTO's policies and procedures must incorporate access and equity principles.

6.2 a The RTO must set out its access and equity policies in a code of practice or similar document.

(p. 19)

As can be seen, these standards are pitched quite broadly, encompassing a wide range of access and equity issues, and online accessibility can be overlooked in this broad-brush approach. However, an access and equity policy is an excellent place around which an online accessibility policy can be framed.

The Disability Unit is the organisation within the TAFE institution responsible for dealing with access issues. For many people we interviewed for this research, this responsibility included online accessibility and even, quality assurance (testing for conformance). As students enrol with an institution, they alert the institution to their disability, if any. Disability liaison officers know of the students, are aware of any particular access issues, and directly inform teaching staff. They therefore deal with student disability on a one-to-one basis, and act when there is an obstacle to access. This may be a need to use *Jaws* with an online learning product, or audio facilities. (See CIT experience, Appendix 4)

However, online accessibility is best handled universally: it is more cost effective to do so (a further elaboration is presented below). Disability units and officers generally do not have the programming and technical skills to control the quality assurance of online products, including their accessibility. In this respect, accessibility conformance, particularly the public web site, can slip through the organisational gap, and in effect, become no specific person's direct responsibility or speciality.

On the other hand, because of their experience with issues of access and equity, liaison officers need to be involved in the process of institutional policy formulation and audits and strategic plans for implementation and advocacy on behalf of the students with disability. (See RMIT and CIT experiences, Appendix 3 and Appendix 4)

The conclusion therefore is that an online accessibility unit should be constructed across departments and faculties in the larger TAFE institutions, similar to a copyright permissions unit (see RMIT experience, Appendix 3) with a clear mandate to promote policy awareness, provide training and professional advice, monitor policy implementation and conduct periodic accessibility audits.

For the small to medium independent provider, the implementation strategy will be different.

The case study of the independent provider i.d.e.a. (Appendix 5) is an example where awareness of the accessibility standards was lacking. However, because the organisation actually designed and built their own web site (which they are going to rebuild in the coming months), implementation of the accessibility standards will only be contingent on the skills and knowledge of the web designer. Therefore implementation will not be as difficult, so long as the developer has the knowledge to implement the standards.

In those cases where the web site construction and maintenance is outsourced, this will require an additional step. Not only will the person in the training organisation who has responsibility for overseeing the site content need to be aware of the accessibility standards, they will then need to convey the importance of conformance with the site developers. (See Recommendation 1 (a))

2. Accessibility awareness

This study revealed that awareness of accessibility in terms of the need and requirement for online access is reasonably high.

Most people interviewed gave detailed and articulate definitions on the purpose of having accessible online resources. A number of people also mentioned the 'legal' requirements of accessibility conformance, referring to Commonwealth and State Legislation (the Disability Acts); the Sydney Olympic Games Committee experience; State regulations (from the departments of education and training); Australian Quality Training Framework and to a lesser degree, the *WAI Guidelines*.

(This level of awareness should not be altogether surprising given the targeted interviews were with people who work directly in the web development area or in the disabilities units.)

The range of definitions of accessibility provided fell into two main groups – the majority who saw accessibility as providing access for people with disability (access and equity), and those who saw it in terms of 'universal' access.

Those people who saw accessibility in universal terms often argued that to see accessibility as just for those with vision impairment for example was far too narrow, and argued that this tended to overlook the issues of the 'digital divide' (access to technologies) or of literacy (including computer literacy).

Several people mentioned that it was necessary to see that conformance with accessibility standards benefited *everyone*, and a number said that it was important in discussing accessibility to “get people into a mindset that it is not a burden, but a requirement”. Another person said, “we don’t need the big stick approach. It’s more important that people believe in the notion of inclusivity”.

The other group viewed online accessibility as part of access and equity (and driven by Access and Equity policies such as AQTF). In some cases, it was implied that accessibility was not really their concern, or at least not a high priority for them; it was something that the Disability Unit was attending to or needed to attend to.

However, as one person said, the Disability Unit should *advocate* for online access, but not take responsibility for its conformance. As discussed above, it is not likely that this unit has the requisite skills to ensure conformance (through testing and other techniques).

A very high number of people interviewed suggested that *other* people in the organisation were not aware of accessibility and universal access. This was considered to be a problem across all levels of the institution – from the managerial and administrative level to teaching staff needing to learn how to use online technologies for course delivery.

Many respondents made the suggestion that a broad awareness campaign about accessibility be conducted to address this issue. (See Recommendation 1 (a))

3. Knowledge of the *WAI Guidelines*

In the main, knowledge of the *WAI Guidelines* was not very high. There are some people who were interviewed who are very knowledgeable about them, but some who were in an equivalent position (for example, web administrator) who knew nothing of them. This was also reflected in the high numbers of respondents who did not know what the WAI Priority levels were.

The importance of the *WAI Guidelines* is that they are a global set of standards, established through discussion from representatives across the globe. They therefore attend not to the problems of localized technologies, but to the Internet itself as a global system (it’s architecture, software and hardware). This ensures standardisation is not compromised by local technology or propriety solutions.

It is also apparent that if the *WAI Guidelines* are implemented correctly, accessibility will be achieved.

It is acknowledged that the current *WAI Guidelines* are complex and are not easy to understand, and as discussed above, W3C has recognized this and is currently drafting a new set of Guidelines. A number of people interviewed made this same comment, and saw the “poorly articulated, confusing and sometimes contradictory standards” as one of the impediments to achieving the conformance.

The complexity is not only one of language (using a technical rather than plain English style), but where the matrix of guidelines (there are 14), Checkpoints (there are 65) and Priority levels (there are 3) is reasonably difficult for project team members to decipher.

Consequently, there are a number of resources (a selected list is provided in Appendix 10) available, designed to ‘translate’ the *WAI Guidelines* into a more easily understandable language.

However, it is clear that more needs to be done to promote and articulate the *WAI Guidelines* more widely and deeply within the institutional environment, and on a continuous basis because these standards will always be in a state of flux. (See Recommendation 2 (a) and 2(c))

4. Capacity to implement techniques to comply with the *WAI Guidelines*

The capacity to implement accessibility was very varied, from those who have the knowledge and skills to do this, to those who clearly do not. (Capacity means not only the knowledge to do so, but also the *capability* to do so - which may not be a result of individual skills, but factors such as legacy pages and content management systems).

Interestingly, knowledge and skill was *not* seen as the main obstacle to achieving conformance: time and resources were. However, training and professional development were seen as the most important vehicles to ensure accessibility conformance.

Institutions generally do not provide formal accessibility training for their staff. Those people who have tried to technically implement the WAI Checkpoints realise the highly specialist and technical skill required by every team members:

project manager, content writer, instructional designer, interface designer and programmers, all have a special part to play in this. People have generally relied on their own self-initiated external training; online resources, seminars put on by Vision Australia and conferences. However, as several people commented, these options can be expensive, and not always convenient.

Several interviewees suggested providing (online) courses for developers, and that these courses should have a formal Qualification as an outcome. (See Recommendation 1 (b) and (c))

Another popular suggestion was “clear and effective resources to show how to achieve conformance”.

As the selected resources listed at the end of this Report show (Appendix 10) there are a number of excellent resources currently available. One resource, *OptionKeys*, was built specifically for TAFE developers and trainers in NSW to guide them in complying with the W3C accessibility standards. Despite a number of published newsletters, a brochure and regular electronic mail alerting people to its existence, we found a number of people from that State were still unaware of this resource. Many people interviewed were interested in hearing from the researchers about resources we may have come across in our study, and several have acknowledged the assistance provided by the project blog in this regard.

Once again, this is an issue of knowing where to look or, as one person said, “having the time to look for resources that could be effective”.

Accessibility conformance is not always in the hands of the people administering the web site or resource. Many interviewees suggested that their learning management systems (LMS) or content management systems (CMS) were a problem. In Western Australia, a number of institutions were awaiting the arrival of the WestOne portal (which they hoped was built to conform). In NSW and Queensland, their departments of education are rolling out a centralised (compliant) system for their TAFE (and other) institutes. The Toolbox project is also aware of this issue of LMS conformance, so that they now develop Toolboxes to an “accessibility ready” level, and do not guarantee after distribution that it will remain accessible (as it may be loaded into other systems).

Legacy pages that are not accessible are also a huge problem (and this was acknowledged by a number of interviewees). RMIT is a case in point (see the RMIT experience, Appendix 3) where it’s facing “the plethora of outdated and duplicated content that appears on the 130,000 web pages”. The costs of re-

engineering will be considerable. (RMIT General RMIT Web site Accessibility Report August 2003 Draft)

These instances of LMS, CMS and legacy pages reach far beyond the skills and aptitudes of the individual web administrator or team developer. These have significant resource implications that reach to the highest levels of management and strategic planning in governments and institutes. (See Recommendation 2)

In the case of the independent providers, the notion of providing one centralised and compliant content management system for their web sites is not viable. However, as ACPET (the Australian Council of Providers in Education and Training) suggested, it may be possible to develop an accessible template as an exemplar on which independent providers can model their own sites. (See Recommendation 1 (g))

5. Capability to use appropriate tools and testing techniques to assure conformance

The way in which accessibility conformance is tested varies significantly across the State and Territories. In Victoria, there seems to be a push for *Jaws* testing; in NSW TAFE, they use *Bobby* as the legitimate testing tool. In many cases when people were asked how they tested their web sites and learning materials, they were vague about their specific testing procedures.

Indeed, a number of people mentioned the imprecision of testing techniques as an obstacle to meeting accessibility, This was well expressed by Amgad Louka, Manager, RMIT Teaching and Learning Production Group (See RMIT experience, Appendix 3):

What are the criteria that determine failure and success? If you run it through *Bobby*, and one problem comes up, does that constitute failure? I don't know. We need to actually work that out. What is the minimum standard for actual implementation? We've got the law, we know what they say we should do, but how do we verify whether we've complied with the standards that make it a success as opposed to a failure? This needs to be investigated and clearly outlined.

Reliance on the automated testing and accuracy of software such as *Bobby* has serious problems. Faulkner and Arch, in their paper, "Accessibility Testing Software Compared" advise that:

These automated tools are very good at identifying pages and lines of code that need to be manually checked for accessibility. Unfortunately, many people misuse these tools and place a "passed" (e.g. XYZ Approved) graphic on their site when the tool cannot identify any specific accessibility issues, but the site has not been competently manually assessed for issues that are not software checkable

So, automated software tools can:

- check the syntax of the site's code
- identify some actual accessibility problems
- identify some potential problems
- identify pages containing elements that may cause problems
- search for known patterns that humans have listed

However, automated software tools cannot:

- check for appropriate meaning
- check for appropriate rendering (auditory, variety of visual)

(2000, <http://ausweb.scu.edu.au/aw03/papers/arch/paper.html>, accessed 2/8/2003)

Faulkner and Arch go on to say in this paper:

The interpretation of the results from the automated tools requires assessors trained in accessibility techniques with an understanding of the technical and usability issues facing people with disabilities. A thorough understanding of accessibility is also required in order to competently assess the checkpoints that the automated tools cannot check such as consistent navigation, and appropriate writing and presentation style.

(2000, <http://ausweb.scu.edu.au/aw03/papers/arch/paper.html>, accessed 2/8/2003)

This is a very important observation, and one that was confirmed by the testing conducted in the research for this project.

Alarming, Faulkner and Arch also identified a great deal of variation in what accessibility errors were found when using different testing tools.

In another paper, "Getting started with Accessibility Assessments", the same authors state:

A full conformance evaluation of a web site for accessibility combines semi-automatic, manual and user testing with a much higher degree of rigour than undertaken in a preliminary review. Conformance assessment requires a thorough knowledge of accessibility, assistive technology and the implications for people with disabilities. Some of the additional steps include code

validation, manual evaluation for many of the checkpoints, and user testing with people with disabilities using assistive technologies.

(<http://ausweb.scu.edu.au/aw03/papers/arch2/>, accessed 4/9/2003)

Another way of saying this is; it's easy to show that a site or resource is *not* accessible (and *Bobby* will prove that in an instant), but it is very difficult to prove conclusively that it *is* accessible.

This uncertainty in the testing procedures was acknowledged by many of those interviewed in that one of the main 'solutions' to achieve accessibility was "a clear standard or criteria or checklist as to what makes materials meet a set conformance level".

Some people interviewed also noted the lack of reliable information about testing software. There are not only a significant number of commercial products out there, but they cost money, and therefore they need to have their accuracy validated before the cost of purchase is made. Several people interviewed commented on a need for an institutional budget to purchase testing software, including *Jaws*.

It is the contention of the authors of this study that *the best way to ensure accessibility conformance at any WAI Priority level is to implement to WAI Checkpoints correctly*. However, this unease about testing techniques does point to the necessity of a guide that provides good up-to-date information on valid testing tools and techniques. (See Recommendation 3 and 4)

6. Keeping up to date with new developments

There are number of aspects implied by the need to keep up to date with new developments in online accessibility, because as we have explored above, this is a moving feast. As one interviewee expressed it: "How do we know what we don't know?"

WebAim expressed it this way:

Perhaps the most important concept to remember as you travel the road of institutional reform is that change is a dynamic and flexible process. There will be changes in staff, standards, and technologies. Your institution must have in place a system to handle these changes and a mechanism to update standards as new technologies emerge. You should also remember that there will be turnover of designers and new designers hired all the time. In that case, new training will be required, as well as retraining when standards change or work becomes sloppy. Your institution must always be at the ready for revamping

and retooling as necessary. In fact, there should be allowances and provisions made for this in all policy plans.

(<http://www.webaim.org/howto/reform/reformstep8>)

For the VET sector, keeping up to date will include such things as:

- The *WAI Guidelines*, with Version 2 currently in Draft form.
- Changes to Government policy and implementation. This could mean moving from one Priority level to another, or adoption of compliant learning and content management systems.
- New testing software. There is already a raft of commercial products out there, including *Bobby*, *Aprompt*, *AccessEnable*, *AccVerify Server*, *PageScreamer Spider* and *InFocus*, and more tools will come into the market place.
- Developments in computer applications (eg Flash, PDFs and LMS/CMS) as they become more accessible.
- Developments in assistive technologies as they become more proficient.
- Changes in staff personnel and development teams. This indicates the requirement for a continuous program of professional development.
- Auditing institute product and service conformance and monitoring the implementation system on a continuous basis.
- Changes in learning resource development approaches, for example, Learning Objects.
- Changes in online teaching practice, where new technologies are introduced and different delivery techniques are adopted.
- Changes in to the institution Learning Management or Content Management systems.

This suggests the need for a regular *e-post* where VET online practitioners can visit, read and discuss technology, standards and implementation changes that will impact on accessibility conformance. (See Recommendation 1 (f))

Web sites

Most organisations (Government departments and TAFE institutions) where accessibility policy is in place, aim for WAI 'A' level conformance. This is the minimum level required by the *WAI Guidelines* that **must** be achieved "otherwise, one or more groups of users will find it **impossible** to access information from the web document".

There are only 16 WAI Checkpoints that need to be satisfied at 'A' level of conformance.

Put this way, it is hard to understand why some practitioners are not addressing these issues, as in all cases, they are not difficult *technically* to accomplish.

When asked what the obstacles to accessibility conformance, the most often quoted reason given was "time and resources to do so". In other words, it was perceived by some people as not necessarily their *capacity* to implement, but their *time* to implement. Many who said this complained that they were the only person across the institution (often covering many campuses) responsible for updating all the web pages for the web site (and sometimes the institute Intranet as well). This work could be in addition to their other duties.

On the other hand, the most quoted solution to accessibility conformance was training and professional development and clear and effective resources to show how to achieve conformance.

It is our contention that not meeting accessibility requirements is due to lack of awareness, inattention or oversight, disregard (often on the part of external commercial developers), or due to content management system capacities.

There is no high level interactivity demanded by the web site's objectives that requires sophisticated technology solutions. Thus, from a purely technical perspective, there is no serious underlying (technical) obstacle to accessibility conformance.

Some people interviewed saw building a content management system as the step to solving their accessibility issue, but (as others had experienced) this is a solution *only if the content management system template is itself, accessible*.

The number of non-compliant legacy pages was a further impediment to conformance. To rectify this requires high levels of resourcing: the time it takes to classify and reconstitute the information in the new (accessible) form. Incidentally, in a number of cases we investigated, this material is not just inaccessible, it is out-of-date (and therefore misleading).

But is it good enough for VET web sites just to achieve an "A" level conformance? Izabella Bartosiewicz, the RMIT University Library Web site Coordinator, thinks not.

Setting conformance level to A is probably sufficient to give us a nice 'warm and fuzzy' feeling of satisfaction for being compliant, but it will not be adequate if we are really serious about making our content and applications accessible. If we are, then we will need to examine each checkpoint in a context of what is being developed and for whom. (<http://131.170.9.29/onlinelearning/>)

Many of the organisations we consulted advocated that web site developers need to first achieve a Priority A level, then at a later stage, move to a AA level of conformance. Although this makes sense as a strategy to encourage progressive conformance, it is clearly not cost effective. This approach would involve a great deal of secondary re-engineering and resources to reach each level (AA) of conformance.

It is far more economical to achieve a high level of conformance from the start. It is more effective to ignore the Priority levels (although ensure all of Priority 1 Checkpoints are met) and then select the most relevant Checkpoints (ignoring their 'priority' context) to guide the developmental process. After all, as far as web site users are concerned, they just want to access the content and they are not concerned with the priority ranking assigned to web pages. A record of Checkpoints that were most relevant to the content should be maintained. This way, when the next version of the *WAI Guidelines* are introduced, whatever the principles and priority levels are recommended, it should be fairly easy to map these with the Checkpoints used.

Indeed, the WAI Checkpoints at various levels of priority *make good* web site *design and programming sense*, not just for disability reasons. For example, many of the Checkpoints in the AA level refer to site navigation, and if we consider the Checkpoints at levels 2 and 3 that relate to navigation, it is apparent that they improve the quality and effectiveness of the site overall.

For example, the following Checkpoints are taken from Priority 2 that relate to navigation issues:

- Do not cause popups or other windows to appear, and do not change the current window without informing the user.
- Clearly identify the target of each link.
- Provide metadata to pages and documents.
- Provide information about site layout - site map or table of contents.
- Use navigation mechanisms in a consistent manner.
- Divide large blocks into more manageable groups.
- Associate labels explicitly with their controls.

And some from Priority 3 again relating to navigation:

- Provide information so that users may receive documents according to their preference.
- Provide navigation bars.
- For group related links, identify the group and provide a bypass mechanism.
- If search functions provided, enable different types of searches for different skill levels and preferences.

These are all eminently sensible design considerations, and those that an instructional designer or information architect would generally implement as a *matter of course*.

Similarly, at a Priority level 2 for a client side programmer, many Checkpoints are to do with correct HTML coding, the use of Style sheets and tables:

- Use style sheets to control layout and presentation.
- Use relative rather than absolute units in markup attribute values and style sheet property values.
- Include default, place holding characters in edit boxes and text area.
- Use markup to associate data cells and head cells when data tables are more complex.
- Don't use tables for layout unless they make sense when linearise.
- If a table is used for layout, don't use structural markup for visual formatting.
- Render side-by-side text correctly and provide a linear text alternative for all tables that lay out text in parallel word-wrapped columns.

Clearly, irrespective of accessibility considerations, many of the WAI Checkpoints at various Priority levels simply reflect *good programming and site design practice*. Therefore, the approach is not to identify what WAI Priority levels we need to aim for on the basis of some *obligation* to do so, but to use the Checkpoints positively to guide good design practice. (See Recommendation 3)

Audits need to be conducted on institute web sites to determine their levels of accessibility conformance. This needs to be conducted by independent and specialised organisations that understand and use appropriate and valid testing tools and techniques. Strategies then need to be devised to consider what steps need to be taken to meet accessibility requirements, as it may be more

cost effective to rebuild the web site again. This may take time to implement, so there should be transparent information about the adopted process published on the public web site. This strategy will also need to deal with legacy pages, but a sizable proportion may simply be out of date, so this exercise will involve selection and archiving. (See Recommendation 2)

Content management systems have been singled out as an obstacle to conformance, and part of the audit is to identify their problems and technically reconstitute them so that they enable compliant pages. This would be part of the institution audit (see above). (See Recommendation 2)

Learning resources

In the design and development of online learning materials, it's a matter of balancing several requirements:

- (a) learning requirements – making sure the learner is achieving the learning objectives and the required skills and is stimulated and challenged in the process;
- (b) technical requirements – ensuring compatibility with authoring software, learner management systems, and various hardware and technical standards;
- (c) functional requirements – delivering various levels of interaction through games, simulation, puzzles, forums, artificial intelligence, etc.; and
- (d) non-functional requirements – usability to ensure ease of use and, accessibility to ensure the materials can be accessed by everyone.

Some specifications for the development of online learning materials run for many pages, and specify the requirements that product development needs to meet. For instance, in the recent Series 6 Flexible Learning Toolboxes tenders, the technical requirements included:

Product Utility (“they are expected to cater for portability, flexibility and the potential for customization”)

Conformance to Standards (“needs to conform to the nationally agreed preferred technology standards which are intended to promote economies of scale and interoperability across the VET sector”)

User Centred Design (“ensure that representatives of the target audience (“both learners and teachers) are involved in trialing the product”)

Conformance with W3C Web Content Accessibility Guidelines (“develop online materials in accordance with Priority 1 of the W3C Accessibility Guidelines”)

Quality (“comply with the National Training Quality Council (NTQC) principles for Training Package support materials”)

(Request for Tender National Flexible Learning Toolboxes (Series 6) page11)

For many teaching staff and development teams, the broad scope and skills range required in the development of online learning materials has presented a very steep and somewhat daunting learning curve.

For a number of people interviewed in this study, achieving the *WAI Guidelines* was seen as just one more thing to contend with, on top of all the other considerations as many are new to the field of online learning and feel “it’s just one more thing to cope with”.

This point of view was expressed very succinctly by developer, Leigh Blackall:

For quite some time I was threatened by the standards and requirements. My peers and I have been far more interested in designing to improve the Internet experience through use of richer media, animation, audio and video. We have been troubled by not so much accessibility, but usability. Accessibility standards were perceived to be a threat to our innovations on design for usability.

Most of our teachers and developers agree that learning materials that are delivered online are far from engaging for students, extremely difficult to use, frustrating and therefore destructive to most learners’ motivation. While the quality of education through the Internet delivery mode remains questionable, usability remains a primary concern for most developers.

By and large I have learnt that accessibility standards do not necessarily threaten innovations for usability. It simply becomes an extra design challenge. But I feel that the developers are largely out of step with awareness of standards, obligations, and policy let alone issues of access and equity. Perhaps developers are not likely to consider these points seriously before success is achieved developing truly usable, enjoyable and motivating online learning materials.

(<http://131.170.9.29/onlinelearning/>)

In our discussions with various VET practitioners, we found a great deal of debate and concern in VET regarding the balance between technology, pedagogy (the theories of learning) and accessibility.

The tendency, for many teams that are new to developing for W3C accessibility, is to see achieving accessibility as something that is fully determined and verified at the final testing stage - as in “we’ll deal with any accessibility issues that arise at the final technical testing stage.”

However, as the recent series of Flexible Learning Toolbox product development has shown, accessibility requirements must be considered at the early stages of the product development lifecycle. It can prove very difficult, and costly to re-engineer products to comply with the *WAI Guidelines*. Furthermore, early design choices about what technologies to use (for example, Flash animations, PDFs, video and audio, etc.) can significantly impact project timelines. These design choices need to be incorporated into an overall design strategy for product accessibility.

Another approach has been to firstly, encourage practitioners and teaching staff to come to terms with the technology and advantages of using online technologies. Then secondly, to apply more strictly the technical requirements, including, user-centred design and usability techniques, functionality specifications, and so on, and finally, to apply accessibility standards.

Another approach is to argue that learning resources should be seen in a different light to web sites, and therefore different accessibility standards should apply (or not apply at all). As one person put it, “W3C standards are for web sites, not learning resources”. This argument is that (especially for ‘blended’ delivery), the teachers know their students, and any disabilities will be known also (the Student Services disability office will also let them know of this). If a student is having trouble accessing the material, they can deal with this and modify the material accordingly.

However, Ian Fegent, Program Manager, Access Division, TAFE NSW countered this position.

But you don't know who your *future* students are or who else may use them. It's therefore a very limiting approach. If accessibility gets done up front, that's a darn sight cheaper than catching up afterwards - that's when you have the hassle. In this, I find there can be a difference in attitude between technical people with an education background and those who are just straight technical. You'll find some developers without an education background are into the look and the 'geewiz', making the maximum use of the systems and technology. Those with an education background will generally be aware of the accessibility issues, and how to create products around them.

The practitioner concern is often that in meeting accessibility guidelines, the learning resource has to be ‘dumbed down’. Marilynne Trevenar, also from the Access Division, TAFE NSW suggested that conformance “requires lateral thinking”.

You need to think of an alternative that would give you the same learning outcome, the same learning experience using a less visual means. You can build in all sorts of interactivity without it being *Flash*. To me, it's a result of

laziness. Because you're dealing with this narrow group of students and this is what you want to achieve, it's great for those students, but you find it hard to think of alternatives. We don't know what the future student cohort is. When spending ten thousand dollars or one hundred thousand dollars on a resource, you want it to have a reasonable shelf life.

In terms of distance, if you only create material that is available to people with most up-to-date hardware and software and those who have access to broadband, you're very limited. Universal accessibility is not just the stuff of disability. Good practice is designing stuff that is usable for the most number of people.

There needs to be an approach to the development of online learning resources that *amalgamates* pedagogy, technology and accessibility considerations, instead of viewing these aspects as separate and contradictory.

A way to approach this is to identify what specific accessibility requirements practitioners may find difficult to achieve when developing highly interactive learning resources.

There are three aspects of the *WAI Guidelines* that cause problems.

- Providing text equivalence. This includes video, photographs, animations (in simulations and games).

Practitioners need to address this differently by asking the question – how do they provide *learning equivalence* for all users? Otherwise, there will be some pedagogical strategies that are lost in the need to satisfy text equivalence (for example, high level simulation and game play).

- Providing non-mouse options to navigate. For example, pop-up windows, Javascript actions, controls on players, drag and drop, Flash rollovers, dynamic layers.

If a practitioner chooses to use scripts that are controlled by the mouse, they must also include keyboard controls. These are available in every case and should be incorporated.

- Using non - W3C technologies (for example, PDF, Flash, Quicktime, etc).

This requires a different kind of solution: one that is devised by the developer of these propriety applications. Practitioners have a choice: to avoid using them (and thereby putting economic pressure on developers to comply), or using them and providing accessible alternatives (for example, providing HTML alternatives to PDF documents).

There are two categories of learning materials development – those products commissioned by funding agencies (such as TAFE NSW, TAFE frontiers, Toolboxes, etc.) or TAFE institutes (for school, department or faculty wide use), and those materials developed by individual teaching staff for their own students.

For commissioned developer teams, an effective approach incorporates:

- Understanding that meeting the WAI Checkpoints makes good design and programming sense. In other words, the clear intention of the project team in constructing an online learning resource should be to make the resource accessible to as *high a Priority level as possible*. This assumes that members of the development team understand the *WAI Guidelines* and practically how to achieve each of the Checkpoints (they should be 'accessibility qualified' and have an Accessibility Qualification). (See Recommendations 1 (a) and (b), 2 (g) and (h), 3 (b) and 4(b))
- An awareness of the target user, factoring into the user centred design equation scenarios involving people with disability, issues of computer and Internet literacy, levels of disadvantage (computers, modems and line speeds). These should form the basis of the design documentation which should be stored for sign off and future audits.
- Articulating the specific learning outcomes required for the learning resource and how pedagogically these outcomes will be met. In other words, the learning outcomes may be met through study, activity and exercise (practise), mentoring, conversation, peer review, game play, role play, simulation, dialogue, presentation, etc.
- Considering carefully the technologies (authoring tools, chat and discussion facilities, etc.) that will enable the articulated pedagogical approach. To emphasise this: this is a design consideration that comes *after* the WAI, the user research, the learning outcomes and the pedagogical approach have been considered.
- Documenting the WAI Checkpoints that have been achieved for components of the learning resource.
- Explaining on pedagogical grounds why specific WAI Checkpoints (if any) for components of the learning resource have not been met. This justification should be provided as a part of the learning resource and design documentation, and publicly available.

A prototype of the learning resource should be developed and all the documentation provided and archived for each step in this approach. The prototype is independently tested to validate the accessibility conformance claims and the justification for exclusions.

For teaching staff, readily available information and resources about accessibility issues and general awareness courses should be provided for those that are interested.

However, effective intervention to promote accessibility in the instance where teachers are developing online resources, independent of a centralised “production unit” in their Institute, should include information and assistance at the point where online materials are being prepared.

On request from a teacher preparing to develop online resources for server space for a web site or a course “shell” within a Learning Management System, they are furnished with two documents:

1. A simple statement of why their Institute is advocating accessibility.
2. A checklist that asks the teacher what their online development will involve. Depending on their response to this checklist, they would be directed to appropriate advice and/or resources. For example, if the teacher wants to make a series of word documents available to students, they would be given information on accessibility issues to do with readability and font size. If the checklist identifies that the teacher wanted to present images as part of their resource they would be able to find information or help on the addition of alt tags. This approach provides to this group “just in time” and “just for me” advice about accessibility and greatly enhances the likelihood of conformance.

Most large Institutes operate some form of quality assurance process for their online course presence. Accessibility conformance can also be included in the established activities of checking for copyright conformance and whatever peer review activities might be in place.

This approach should progressively “mainstream” accessibility considerations amongst online teachers while maintaining interest and enthusiasm for this form of learning delivery. If any of these materials are intended or destined for wider distribution, the approach for commissioned products should be adopted.

With respect to Learning Management Systems, it was not the scope of this research to determine their accessibility or otherwise. There have been some previous studies into this. However, many of the vendors and developers of these systems have been endeavouring to meet the *WAI Guidelines* on software, and research needs to be conducted in what issues of accessibility there are (if any) and what strategies VET should adopt to ameliorate these issues. (See recommendations 1 (h))

Recommendations

1. *That the Flexible Learning Advisory Group:*

- a) Conduct an awareness campaign about accessibility conformance through a variety of sources and organisations (including ACPET for independent providers).
- b) Commission the development of a generic online national course on Accessibility (based on the course *Web Design and Technology 9560G*).
- c) Commission the development of an online Developers course based on the IT Training package competency (ICAITT183A Confirm accessibility of web site design).
- d) Incorporate into Australian Quality Training Framework Access and Equity policy guidelines the requirement that registered training organisation web sites meet the highest-level W3C accessibility guidelines.
- e) Encourage agencies commissioning tenders for online development projects insist that development teams are 'accessibility qualified'.
- f) Support the development and maintenance of a blog and online newsletter that focuses on accessibility trends.
- g) Commission the development of an exemplar of an accessible Template.
- h) Conduct further research into accessibility issues of learning management systems.

2. *That VET Registered Training Organisations:*

- a) Formulate online accessibility policy guidelines across the institution, which may be attached to the general access and equity policy.
- b) In larger TAFE colleges, establish an Accessibility Unit that provides publicity, advice and training, and is accountable to appropriate senior governance body in the institution able to influence all levels of the university.
- c) Conduct an awareness campaign about accessibility conformance for practitioners and teachers.
- d) Commission independent audits into the accessibility conformance of local web sites, content management systems and learning management systems.

- e) Publish an accessibility statement on organisational web sites confirming their policy on online accessibility and the level of conformance achieved.
- f) Ensure undergraduate and postgraduate Multimedia and IT courses with training in accessibility conformance.
- g) Encourage teachers using online facilities to complete a generic online course on accessibility conformance (based on *Web Design and Technology 9560G*).
- h) Recruit and promote web administrators and online learning managers with knowledge of accessibility conformance in key selection criteria.

3. *That online practitioners:*

- a) Design and construct web sites to meet the highest level of accessibility conformance by implementing the WAI Checkpoints correctly.
- b) Complete and maintain accessibility qualification.
- c) Design and construct learning materials to the highest level of accessibility conformance, and explicitly justify where components do not meet stated WAI Checkpoints.
- d) Develop clear testing methodologies and use automated tools as guides only to establish levels of accessibility conformance.

4. *That Learning Materials Development Agencies:*

- a) Set standards of accessibility conformance at the highest levels in all tender specifications.
- b) Commission learning materials from accessibility qualified practitioners.
- c) Specify development pathways that lead to high level accessibility conformance.
- d) Use independent and specialised organisations to conduct accessibility testing on learning products.

Appendices

1. International approaches

The landscape for policy development and implementation of *WAI Guidelines* reveals that different nations are at varying stages in policy development and implementation of online accessibility.

The Internet is now regarded as a hub for Information and Communications Technology (ICT), and this raises issues of universal access for citizens being able to participate in a knowledge driven economy. Universal access to the Internet has in essence become a human rights issue that allows all members of a society, including people with disabilities, the right to access its vast repository of information.

The W3C Web Accessibility Initiative devised guidelines to ensure that people with disabilities can access information on the Web. On the WAI web site it states that:

There is a growing body of national laws and policies which address accessibility of ICT, including the Internet and the Web. There is also a great variety of approaches among these laws and policies: some take the approach of establishing a human or civil right to ICT; others the approach that any ICT purchased by government must be accessible; others that any ICT sold in a given market must be accessible: and there are still other approaches. (<http://www.w3c.org/WAI/Policy>)

The purpose of this section of the study is to review the international situation regarding Government intervention, institutional policy development and implementation.

In broad terms, the European Union (EU) policy development and implementation is driven by the overarching goal to establish Europe as a key player in the 'new economy'. There is a strong awareness that the advent of broadband has the potential to create an underclass. Therefore, the emphasis is on Internet access as a fundamental right of all citizens, including those with disabilities. Governments encourage and facilitate the implementation of policy and through the EU system of committees, finding models of best practice and setting action plans with performance indicators.

In the USA, legislation and regulation drive the development of policy. Section 508 of the Rehabilitation Act is the most prominent legislation and it will be discussed in greater depth below. In summary, it is fair to say that Federal

Government intervention is the motivating force behind accessibility conformance. The case study, University of Wisconsin-Madison, provides an example of best practice in terms of implementation guidelines. These are discussed in greater detail below.

European Union

The development of policy regarding accessibility and *WAI Guidelines* within the nations that constitute the European Union is a reflection of the EU itself.

The *eEurope Action Plan 2002* agreed to by the Feira European Council in June 2000, examines methods of increasing participation in the use of the Internet. The goal is to facilitate the achievement of an economic objective building a dynamic and competitive European economy that is able to exploit the opportunities afforded by the new economy and the Internet in particular. A key aim of the Action Plan is to improve and ensure Web access for people with disabilities and the elderly. The risk of excluding a large proportion of the population is openly acknowledged and is presented as a pivotal point in the argument to develop policy and implement the *WAI Guidelines*.

The Action Plan is centred on three main objectives:

1. A cheaper, faster secure Internet
 - a) Cheaper and faster Internet access
 - b) Faster Internet for researchers and students
 - c) Secure networks and smart cards

2. Investing in people and skills
 - a) European youth into the digital age
 - b) Working in a knowledge-based economy

3. Stimulate the use of the Internet
 - a) Accelerating e-commerce
 - b) Government online: electronic access to public services
 - c) Health online
 - d) European digital content for global networks
 - e) Intelligent transport systems (p. 2)

Section 2 of the Action Plan comprises three subsections. *2c Participation for all in the knowledge-based economy* directly addresses the necessity for conformance to the *WAI Guidelines* as a basic human right. The Lisbon European Council (the European Council held in Lisbon on 23-24 March 2000) declared that “ special attention should be given to disability people and the fight against info-exclusion” (p. 17)

The challenges of this statement were identified as ensuring that all citizens could indeed access government information on web sites. (This was seen as analogous to providing access for people with a disability to public buildings.) This meant that citizens with special needs needed web sites that were compatible with assistive technologies. Furthermore, the Action Plan identified that a focus on usability and accessibility throughout the design process would make the Internet easier for everybody to use.

The Action Plan also contained an undertaking that the Commission of European Communities would “examine and monitor legislation and standards relevant to the information society to ensure their conformity with accessibility principles.” (p. 17)

The Action Plan also states that:

Public sector web sites and their content in member states and in the European Institutions must be designed to be accessible to ensure that citizens with disabilities can access information and take full advantage of the potential for e-government. (p.18)

The Action Plan under 2c comprises five actions designed to support policy development and implementation of accessibility principles. The actions include:

- Coordination of policies at a European level through benchmarking and exchange of best practice between member states. This action was to have been completed by the end of 2001.
- Publication of design standards (“Design for All”) for accessibility of information technology products. This action was to have been completed by the end of 2002.
- Review of relevant legislation and standards by member states. This was to have been completed by end of 2002.
- Adoption of *WAI Guidelines* for public web sites by member states. This was to have been completed by the end of 2001.
- Establishment of networked national centres of excellence to promote design-for-all and European curriculum for designers and engineers by

member states and the European Commission. To be completed by end 2002.

The *eEurope 2002 Action Plan* has been superseded by *eEurope 2005 Action Plan*. It is difficult to ascertain how many of the *2002 Action Plan* objectives were achieved as the *eEurope 2005 Action Plan* does not directly refer to these five actions. Instead, it refers to progress made and looks forward to the future.

The executive summary of *eEurope 2005 Action Plan* reinforces the objectives of the previous Action Plan, and states that major changes have already taken place and that the number of citizens and businesses connected to the Internet has increased. The strategy has also been extended to include a multi-platform provision of services, such as interactive digital television and mobile telephones. The Action Plan has two strands. One is to address an increase in activity around services applications and content; the other strand addresses broadband infrastructure and security.

The analysis of activities against performance indicators of the e-Accessibility policy emanating from the *eEurope 2002 Action Plan* indicates that considerable progress has been made. The current position shows that the following has now been accomplished:

- e-Inclusion is now a main objective of the overall European Social Inclusion Strategy so that a digital divide may be avoided. This builds on a detailed analysis of practices in the member states;
- WAI standards have been adopted by member states for the construction of their public sites;
- Publication of “Design for All” standards now has a co-ordination group that is linked to the e-Accessibility group;
- The e-Accessibility Group has conducted a review of relevant legislation and standards and has defined a framework for analysis; and
- Most member states have identified centres of excellence and their networking is ongoing. Recommendations regarding curricula are under discussion.

The Economic and Social Committee (a sub-committee of the European Community), in response to the 2001 Communication of the European Commission regarding the accessibility of public web sites, produced a paper expressing their opinion. This paper serves to inform policy initiatives taken by member states and may be accessed at:

http://europa.eu.int/information_society/topics/citizens/accessibility/web/wai_2002/index_en.htm

The paper clearly outlines the issues and supports the spirit of inclusive web service provision. The context for policy and implementation is framed by increasing participation in the possibilities offered by digital technology. The *WAI Guidelines* (W3C/WAI Web Content Accessibility Guidelines version 1.0) are viewed as the de facto global standard. However, there is a clear acknowledgment that with the evolution of technology, new versions and guidelines will emerge. The importance of legislation in providing a framework for the achievement of accessibility conformance is noted with particular reference to the United States with Section 508.

The paper endorses the initiatives of the *eEurope 2002 Action Plan* and adds that accessibility is also important for elderly persons; so that they do not become marginalised due to technological developments.

The Economic and Social Committee proposes that active use of research programs will facilitate accessibility of web sites for the disabled and the elderly and that there should be training programs for developers to support accessibility conformance.

The Committee also advocates that the accessibility initiatives be extended to regional and local authorities. The Barcelona Declaration (1995) instigated the notion that responsible local and regional authorities implement policy with regard to web accessibility. The Committee “believes that the national governments should earmark funding for the implementation of the objectives of the Communication taking into account all aspects and all activities, including professional training of their staff and increasing the efficiency of public administrations”

(http://europa.eu.int/information_society/topics/citizens/accessibility/web/wai_2002/index_en.htm, accessed 3/7/2003).

It was decided that policies should be coordinated at the European level in order to avoid confusion and information exclusion. This will be achieved through benchmarking and exchange of best practice between Member States.

A snapshot of performance against targets reveals that the information for some member states is quite detailed, whereas others are still in the process of developing policy and implementation strategies. The performance in terms of the adoption of *WAI Guidelines* follows the pattern above:

- Belgium has included *WAI Guidelines* in its e-government concept.

- Germany has included *WAI Guidelines* through a Federal Government Labour policy and under legislation – *Barrierefreie Informationstechnik Verordnung*.
- Denmark has established standards and provided for consultation for web site designs. Public web sites are checked quarterly.
- France has established implementation guidelines recommending the *W3C WAI Guidelines*, and includes *BrailleNet* and *Braillesurf*.
- Italy has set up a coordination group to undertake an evaluation of government web sites by AIPA in conjunction with Rome University.
- Portugal has adopted the Web Accessibility Initiative and Cabinet approved the National Initiative for Citizen with Special Needs in 1999. A training initiative has been undertaken and Cabinet has approved a resolution (no 97/99) for measures with regard to public web sites.
- Sweden has developed national guidelines in line with WAI.
- Ireland has established a series of knowledge sharing seminars and conferences to establish best practice

eEurope 2005 Action Plan identifies areas where public policy can provide added value. The area that has the greatest potential for impact on accessibility conformance is the key target that is concerned with the provision of “interactive public services, accessible for all and offered on multiple platforms” (p.3). The focus is also on the provision of broadband services for public administrations, and schools. Again the underlying position is one of universal access for all citizens of the EU member states.

A Case Study of EU Policy Implementation: Republic of Ireland

The Employment Equality Act (1998) and the Equal Status Act (2000) cover the accessibility of Information and Communications Technologies in Ireland. The Irish Government has plans to introduce a Disabilities Bill that will allow people with disabilities to take legal action with regard to ICT accessibility. It is expected that this will create a legal climate similar to the USA (Americans with Disabilities Act, 1990) and Australia (Disability Discrimination Act, 1992). Developers are urged to comply if they wish to sell their products into overseas jurisdictions and take particular note of Section 508 of the Rehabilitation Act, USA. Nevertheless, the thrust of the policy is based on principles of human rights and social inclusion through user-centred design rather than a fear of litigation when a web site does not conform to *WAI Guidelines*.

The public policy in Ireland requires Government departments and agencies to conform to Priority 1 and 2 of the *WAI Guidelines*. The documents referred to below may be accessed from:

<http://accessit.nda.ie/index.html>

The European Union's *eEurope Action Plan 2002* is identified as a key driver of Irish policy. The relevant *Section 2c* is cited as the foundation for Irish policy. Further drivers of Irish policy are the Information Society Commission documents, in particular, the third report (Dec 2000) recommendation (section 6.3.2) that Priorities 1 and 2 are complied with by the end of 2001 and that all Government tenders for web site design specify conformance with these Priorities from the *WAI Guidelines*. The section also states that universal design principles for all projects involving ICT should specify conformance.

The other document of significant import is from the *Programme for Prosperity and Fairness (Feb 2000) Framework III: for Social Inclusion*. This undertakes that the National Disability Authority will provide guidelines that reflect international norms and will award accessibility symbols to public offices that conform to the *WAI Guidelines*.

A further initiative has taken place at the level of local government whereby the Institute for Design and Disability has been carrying out a campaign designed to champion the Barcelona Declaration.

The implementation of policy in Ireland has been approached through the design process with a focus on user-centred design principles and includes emerging technologies that are currently not covered by Guidelines such as interactive television and mobile phones. The policy acknowledges that accessibility challenges that need to be addressed for people with disabilities will include delivery technologies such as interactive television, public access terminals and desktop software that is not currently covered by the *WAI Guidelines*. The General Accessibility Process designed as an implementation strategy seeks to address these issues and purports that the *WAI Guidelines* may be adapted to new situations. It may be accessed at http://accessit.nda.ie/general_principles.html.

The General Accessibility Process sets out a clear process for designers of web sites and further details about specific Guidelines and actions needed to ensure conformance are presented in Guidelines for Web Accessibility¹. An ICT Accessibility Coordinator who is readily available has been appointed to provide advice about the implementation of accessibility principles and standards.

USA

The White Paper entitled, "*The Growing Digital Divide in Access for People with Disabilities: Overcoming barriers to participation in the Digital Economy*", was commissioned by the National Science Foundation to be presented at a public conference examining the digital economy (Waddell, 1999). The conference was responding to a directive from the President of the United States. That the President issued such a directive indicates the high degree of importance placed on accessibility.

This paper identified some significant blocks to access in the emerging digital economy, examined efforts to address these blocks and sets out a long-term policy research agenda. The author presents a vision where the benefits for removing accessibility blocks extend to the whole community so that everyone can benefit from the digital economy and, age and disability or limitations of technology do not preclude participation.

Waddell (1999) presents a very convincing case for extending the strategies associated with mainstreaming to digital environments. Underpinning her argument is the notion that inclusion of everyone's individual differences, including disabilities, provides the collective community with greater benefits than the exclusion of those with disabilities. Thus mainstreaming functionality found in assistive computer environments will create benefits that flow on to the wider community even though the functionality may be designed to accommodate disability users in the first instance. This will be accomplished through creative solutions and technological innovations.

Waddell (1999) asserts that the functionality needed by people with disabilities that can be addressed by accessible web design will enable:

- Dynamic web sites;
- CD and video tapes to be archived through captioning;
- Electronic textbooks to be accessible; and
- Low technology access to high technology.

Brummell Turnbull (1994) according to Waddell (1999, pp.2-3) also highlights public benefits for accessible web design because it:

- Removes communications and information access barriers that restrict business and social interactions between people with and without disabilities;
- Removes age-related barriers to participation in society;
- Reduces language and literacy-related barriers to society;
- Reduces risk of information worker injuries; and
- Enhances global commerce opportunities.

Having established the need for people with disabilities being taken into account by accessible web design, Waddell (1999) continues to build her argument that dealing with accessibility issues on a case by case method is not sufficient nor efficient. Rather, the focus should be at a systemic level. She draws an analogy with building access and wheelchairs and the outdated perception that there was no need for wheelchair ramps if there were no people in the building who used wheelchairs. She notes that the Internet has transformed from a "text-based medium to a robust multi-media environment" and observes that this "has created a crisis" (Waddell, 1999, p.3) as graphical pages often create barriers. Where previously a person with a visual, mobility and learning disabilities can no longer access pages they were once able to due to the presence of graphical and technical elements.

At the time Waddell wrote this paper, commercial web authoring tools made it difficult to build accessible web pages. This situation has changed dramatically as companies such as Macromedia have begun to address the *WAI Guidelines* (as they too are implicated by Section 508).

The legal framework in the USA protects the civil rights of people with disabilities. The federal statutes that impact on access to the Internet according to Waddell (1999, p.4) are:

4. Section 504 of the Rehabilitation Act of 1973
5. Section 508 of the Rehabilitation Act of 1973
6. Rehabilitation Act Amendments of 1986
7. Technology-Related Assistance for Individuals with Disabilities Act of 1988 (Tech Act)
8. Americans with Disabilities Act of 1990
9. Education of the Handicapped Act Amendments of 1990
10. Education for All Handicapped Children Act of 1975
11. Handicapped Infants and Toddlers Act
12. Telecommunications Act of 1996

13. Section 121 of the U.S. Copyright Law
14. Individuals with Disabilities Education Act

The Americans with Disabilities Act of 1990 (ADA) requirements apply to the Internet, and therefore there is "an affirmative duty to develop a comprehensive policy involving input from the community of people with disabilities" (Waddell, 1999, p.5). New technology should be developed with accessibility in mind so that the ADA requirements for "effective communication and "auxiliary aids and services" and "reasonable accommodations" are met "unless doing so would result in a fundamental alteration to the program or service or in an undue burden" (Waddell, 1999, p.5). At the time of writing (1999), no legal challenges had been mounted under the ADA on the issue of inaccessible web pages and the Internet environment; but the potential for such challenges was highlighted.

Waddell also refers substantially to Section 508 of the Rehabilitation Act. Section 508 imposes accessibility requirements on Federal agencies regarding the development, maintenance, procurement and use of information technology. She notes the scope of Section 508, which includes a wide range of electronic hardware and software, such as web pages.

Waddell further focuses attention on the legal developments in California where higher education institutions have received letters of resolution from the U.S. Department of Education, Office for Civil Rights. The letters were quite specific in their recommendations. For example, "ORC Letter Docket No. 09-97-6001 (January 22, 1998): <http://www/rit.edu/~easi/law/ocrsurltr.html>" (Waddell, 1999, p.6-7) suggests nine strategies after reviewing 106 California Community Colleges in terms of how they met their obligations to students with visual disabilities in providing access to print and electronic information. for educational institutions to implement to help meet their obligations under the ADA and Section 508.

The nine strategies are:

- Cost-effective approach to purchasing adaptive technology
- Adaptive technology training
- Access guidelines for distance learning and campus web pages as well as tools for training faculty and staff
- Inclusive language in the distribution of standard technology grants/funds addressing the college responsibility to ensure access and compatible upgrades
- Print material translated into alternate formats such as electronic text and Braille

- Central registry of textbooks in alternative formats
- Library technology initiatives for access to both students and patrons with disabilities
- Follow-up to OCR survey initiated in 9/18/96 (September 18 1996) to determine conformance progress
- Annual reviews of Disabled Student Programs and Services to include attention to the removal of barrier in electronic technology (Waddell, 1999, p.7)

Waddell suggests that accessible system design should be treated in much the same way as the Y2K issues were.

Section 508

Section 508 is part of the Workforce Investment Act of 1998, which was signed into law by the President of the United States of America.

Section 508 is often cited in material and a summary of it is presented here. The Federal Register states that "Section 508 requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, they shall ensure that the electronic technology allows Federal employees with disabilities to have access to and use of information and data that is comparable to the access and use of information and data by Federal employees who are not individuals with disabilities, unless an undue burden would be imposed on the agency" (p.80501). Section 508 also requires that individuals with disabilities, who are members of the public seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency.

The Architectural and Transportational Barriers Conformance Board (the Board) is responsible for publishing standards setting forward "a definition of electronic and information technology and the technical and functional performance criteria necessary for such technology to comply with Section 508." (Federal Register, Vol. 65, 2000, p.80501)

A response was sought and received from the Information Technology Association of American, who commented that the standards should be expressed as technical and functional performance criteria rather than as technical design requirements. It was argued that discretion is needed because it is impossible to predict future developments in information technology with any accuracy. It was further argued that design requirements would provide a

barrier to innovation because they would be too specific. The Boards response to this comment was that performance standards were preferable to design standards as they allowed greater flexibility to regulated parties. There is also provision for alternatives to be used provided they provide equivalent of greater access to people with disabilities.

With regard to web-based Intranet and Internet information and applications, the final rule includes provisions that are generally based on Priority one checkpoints of the WCAG 1.0. But the rule does not reference WCAG 1.0 as the standard for accessibility. The key reason for this is that the Board itself wishes to take leadership in the development of codes and standards for accessibility. Nevertheless the WCAG 1.0 checkpoints serve as the default standards for accessibility and are acknowledged by the Board.

Case Study - University of Wisconsin-Madison

The University of Wisconsin-Madison is recognised as a leader in the development of web accessibility policies by educational institutions. The policy is promulgated top down with local responsibility for conformance to the standards mandated by the administration. The full policy may be viewed at: <http://www.washington.edu/accessit/articles?140>

Briefly encapsulated, the policy (enacted in December, 2000) endorses the *WA/ Guidelines* and notes that these are consistent with Section 508. All new or revised web pages are to be in conformance with the Guidelines and revised web pages are defined as "a web page where significant redesign of a page or a major revision of the content of a page takes place" (see web site above). Priority is established for the creation of web pages containing core information. Core information is defined as course work, registration, advising, admission, catalogues and student services information.

The guidelines for setting priorities may be summed up as follows:

- Top 20% of pages most frequently used to be placed in the first priority
- Pages required for participation, funding, disability-related services not in top 20% to be placed in the first priority
- Each department is responsible for determining the top 20% pages and other high priority pages
- Alternative formats may be used to provide information to individuals in a timely fashion where undue administrative or financial burdens are caused

- Each site should contain a link or contact person for people having trouble accessing the site
- Each site/page to be tested with a variety of web browsers, platforms and evaluation tools
- Staff should explicitly state if a course/subject requires the use of graphical user interfaces, interactive screen, visualisation tools and audio to explain significant instructional material
- Text only sites to be offered where conformance is requires extraordinary measures
- Exceptions to the policy may be granted
- Further information about training, tools and consulting may be found at <http://www.doit.wisc.edu/accessibility>

2. Web site accessibility conformance; State and Territory TAFE web sites

Australian Capital Territory

One ACT TAFE web site was tested and the results are shown below. (As of 10/9/03)

Table 3: ACT TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 1 | 0 | 0 |
| Cascading Style Sheets | 1 | 0 | 0 |
| Black & white monitor | 1 | 0 | 0 |
| Flesch index | 0 | 0 | 1 |
| Lynx browser | 1 | 0 | 0 |
| <i>Bobby:</i> | | | |
| A | 1 | 0 | 0 |
| AA | 0 | 1 | 0 |
| AAA | 0 | 1 | 0 |
| HTML validator | 0 | 1 | 0 |
| Navigation | 1 | 0 | 0 |
| Site map | 1 | 0 | 0 |
| Text size | 0 | 0 | 1 |
| Keyboard controls | 1 | 0 | 0 |
| Download speed | | | |
| 28.8k | 1 | 0 | 0 |
| 56k | 1 | 0 | 0 |
| 128k (DSL/ISDN) | 1 | 0 | 0 |

New South Wales

Twelve New South Wales TAFE sites were tested. (As of 10/9/03)

Table 4: NSW TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 7 | 5 | 0 |
| Cascading Style Sheets | 11 | 1 | 0 |
| Black & white monitor | 12 | 0 | 0 |
| Flesch index | 4 | 4 | 4 |
| <i>Lynx</i> browser | 6 | 2 | 4 |
| <i>Bobby</i> : | | | |
| A | 3 | 9 | 0 |
| AA | 1 | 11 | 0 |
| AAA | 0 | 12 | 0 |
| HTML validator | 2 | 10 | 0 |
| Navigation | 10 | 0 | 2 |
| Site map | 7 | 5 | 0 |
| Text size | 11 | 0 | 1 |
| Keyboard controls | 9 | 3 | 0 |
| Download speed | | | |
| 28.8k | 5 | 3 | 1 (3NA) |
| 56k | 6 | 2 | 1 (3NA) |
| 128k (DSL/ISDN) | 7 | 0 | 2 (3NA) |

(NA = Not able to take reading)

Northern Territory

Three Northern Territory TAFE web sites were tested. (As of 10/9/03)

Table 5: Northern Territory TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 3 | 0 | 0 |
| Cascading Style Sheets | 3 | 0 | 0 |
| Black & white monitor | 3 | 0 | 0 |
| Flesch index | 1 | 2 | 0 |
| <i>Lynx</i> browser | 2 | 0 | 1 |
| <i>Bobby</i> : | | | |
| A | 1 | 2 | 0 |
| AA | 0 | 3 | 0 |
| AAA | 0 | 3 | 0 |
| HTML validator | 3 | 0 | 0 |
| Navigation | 2 | 0 | 1 |
| Site map | 2 | 1 | 0 |
| Text size | 3 | 0 | 0 |
| Keyboard controls | 2 | 1 | 0 |
| Download speed | | | |
| 28.8k | 2 | 0 | 1 |
| 56k | 3 | 0 | 0 |
| 128k (DSL/ISDN) | 3 | 0 | 0 |

Queensland

Fifteen Queensland TAFE web sites were tested. (As of 10/9/03)

Table 6: Queensland TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 7 | 7 | 1 |
| Cascading Style Sheets | 15 | 0 | 0 |
| Black & white monitor | 11 | 0 | 4 |
| Flesch index | 4 | 8 | 3 |
| <i>Lynx</i> browser | 7 | 3 | 5 |
| <i>Bobby</i> : | | | |
| A | 4 | 11 | 0 |
| AA | 1 | 14 | 0 |
| AAA | 1 | 14 | 0 |
| HTML validator | 5 | 10 | 0 |
| Navigation | 8 | 1 | 6 |
| Site map | 7 | 7 | 1 |
| Text size | 13 | 0 | 2 |
| Keyboard controls | 13 | 2 | 0 |
| Download speed | | | |
| 28.8k | 2 | 6 | 6 (1NA) |
| 56k | 4 | 1 | 9 (1NA) |
| 128k (DSL/ISDN) | 10 | 0 | 4 (1NA) |

NA= Not able to take reading

South Australia

Eight South Australian TAFE web sites were tested. (As of 10/9/03)

Table 7: SA TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 1 | 6 | 1 |
| Cascading Style Sheets | 6 | 2 | 0 |
| Black & white monitor | 7 | 0 | 1 |
| Flesch index | 2 | 5 | 1 |
| <i>Lynx</i> browser | 2 | 1 | 5 |
| <i>Bobby</i> : | | | |
| A | 0 | 6 | 2 |
| AA | 0 | 7 | 1 |
| AAA | 0 | 7 | 1 |
| HTML validator | 1 | 7 | 0 |
| Navigation | 3 | 1 | 4 |
| Site map | 1 | 6 | 1 |
| Text size | 3 | 0 | 5 |
| Keyboard controls | 7 | 1 | 0 |
| Download speed | | | |
| 28.8k | 3 | 2 | 3 |
| 56k | 4 | 1 | 3 |
| 128k (DSL/ISDN) | 8 | 0 | 0 |

Tasmania

One Tasmanian TAFE web site was tested. (As of 10/9/03)

Table 8: Tasmania TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 1 | 0 | 0 |
| Cascading Style Sheets | 1 | 0 | 0 |
| Black & white monitor | 1 | 0 | 0 |
| Flesch index | 0 | 0 | 1 |
| <i>Lynx</i> browser | 1 | 0 | 0 |
| <i>Bobby</i> : | | | |
| A | 1 | 0 | 0 |
| AA | 0 | 1 | 0 |
| AAA | 0 | 1 | 0 |
| HTML validator | 1 | 0 | 0 |
| Navigation | 1 | 0 | 0 |
| Site map | 1 | 0 | 0 |
| Text size | 1 | 0 | 0 |
| Keyboard controls | 1 | 0 | 0 |
| Download speed | | | |
| 28.8k | | | (1NA) |
| 56k | | | (1NA) |
| 128k (DSL/ISDN) | | | (1NA) |

(NA= Not able to take reading)

Victoria

Fifteen Victorian TAFE web sites were tested. (As of 10/9/03)

Table 9: Victorian TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 8 | 6 | 1 |
| Cascading Style Sheets | 12 | 2 | 1 |
| Black & white monitor | 13 | 0 | 2 |
| Flesch index | 5 | 7 | 3 |
| Lynx browser | 4 | 6 | 5 |
| <i>Bobby:</i> | | | |
| A | 2 | 11 | 2 |
| AA | 0 | 13 | 2 |
| AAA | 0 | 13 | 2 |
| HTML validator | 6 | 9 | 0 |
| Navigation | 8 | 2 | 5 |
| Site map | 6 | 6 | 3 |
| Text size | 10 | 0 | 5 |
| Keyboard controls | 13 | 2 | 0 |
| Download speed | | | |
| 28.8k | 4 | 1 | 10 |
| 56k | 11 | 0 | 4 |
| 128k (DSL/ISDN) | 14 | 0 | 1 |

Western Australia

Ten Western Australian TAFE web sites were tested. (As of 10/9/03)

Table 10: WA TAFE web site accessibility conformance

| Test | Pass | Fail | Borderline |
|------------------------|------|------|------------|
| Images off | 1 | 8 | 1 |
| Cascading Style Sheets | 9 | 1 | 0 |
| Black & white monitor | 9 | 0 | 1 |
| Flesch index | 6 | 3 | 1 |
| <i>Lynx</i> browser | 1 | 5 | 4 |
| <i>Bobby</i> : | | | |
| A | 1 | 9 | 0 |
| AA | 1 | 9 | 0 |
| AAA | 0 | 10 | 0 |
| HTML validator | 2 | 8 | 0 |
| Navigation | 3 | 3 | 4 |
| Site map | 7 | 2 | 1 |
| Text size | 8 | 0 | 2 |
| Keyboard controls | 9 | 1 | 0 |
| Download speed | | | |
| 28.8k | 2 | 1 | 4 (3NA) |
| 56k | 3 | 1 | 3 (3NA) |
| 128k (DSL/ISDN) | 6 | 0 | 1 (3NA) |

(NA = Not able to take reading)

3. RMIT experience: institutional accessibility implementation

Background on RMIT

RMIT is one of Australia's largest universities, with campuses in Melbourne's CBD, Bundoora and Brunswick and specialised sites or services in the Victorian regional areas of Hamilton and East Gippsland. Overseas, RMIT operates RMIT International University Vietnam.

In 2002, RMIT recorded 57,243 enrolments, including about 25,000 undergraduate, 8000 postgraduate, and 22,000 TAFE enrolments. International students accounted for 14,000 enrolments, with 7600 students studying in Melbourne and another 6400 studying offshore through international partners and at RMIT International University Vietnam. (RMIT 2002 Annual report)

RMIT has a very large database driven web site that uses a unique content management system called *TeraText*. This is a system where MS Word templates are used to create pages. These are then converted to HTML and uploaded to the site. There is a reasonably complex system of authority checks made on the content before it is published 'live' to the site. It is estimated that there are about 130,000 pages contained in the site currently.

RMIT uses a Distributed Learning System that integrates a number of products including *BlackBoard CourseInfo* for the learning management system, *Question Mark Perception* for improved online assessments and surveys, and O'Reilly *WebBoard* for online discussion and chat. The DLS was developed using MS-SQL as the back-end because *Blackboard CourseInfo* did not support Oracle at the time of development.

An accessibility evaluation was conducted by Visions Australia on the general RMIT site in August 2003. The conclusions to this evaluation were:

There are three Priority 1 accessibility issues that mean some user groups will find it *impossible* to access information. This includes the need to provide appropriate text alternatives for images, image "hot spots" and some multimedia files and also to identify table header cells with markup. These issues are located throughout the web site.

There are eighteen Priority 2 accessibility issues that mean some user groups will find it *difficult* to access information. Colour combinations of text and background are particularly problematic for sufficient contrast. Using structural markup to identify headers and lists is required. Some link phrases need to be

clearer and provide more information. Flash movies are not accessible and are used in cases where accessible formats can easily provide the same information. Some content layout in tables is inappropriate for correct reading order non-visually.

There are six Priority 3 accessibility issues that mean some user groups will find it *somewhat difficult* to access information. In the reviewer's opinion, the most critical of these is the need to provide links that skip to pertinent areas of the page.

The size of the RMIT web site will mean a great amount of time is needed to identify all locations of the accessibility issues. Any template areas will reduce this greatly.

(RMIT General RMIT Web site Accessibility Report August 2003 Draft)

The RMIT ITS Project Office has been commissioned by the University to prepare a Business Case for continuous improvement and further development of the RMIT general web site.

The Business Case is still in draft, but confirms that the site has a number of accessibility issues within the site's 130,000 web pages, many of which require updating.

(RMIT Web site Development – Business Case Draft 23/9/03)

The Marketing and Public Affairs area of the RMIT has commissioned a consultant's report aiming to specify the style guide requirements for publishing into the RMIT web site. Guidelines are provided for content creators to ensure conformance for the main accessibility related disabilities:

- Visual
- Auditory
- Speech
- Motor
- Cognitive

(RMIT University Online Style Guide Version 1.2 - Draft - 24/9/03)

A subcommittee of the University's Web Users' Reference Group has been established to recommend how the style guide can be implemented across the organisation.

In discussions with Alan Ballagh, Director of TAFE, it was confirmed that RMIT was currently pulling out all stops to meet accessibility standards. According to Alan, the performance agreement that RMIT has with the OTTE specifies

access and equity standards conformance, which is implemented through the RMIT Student Services Group, or more specifically, the Disability Liaison Unit. But the performance agreement had no specific mention of online accessibility conformance.

According to the *RMIT University Policy on Students & Staff with Disabilities*, RMIT abides by the general principle of providing “students, and prospective students with disabilities, with the opportunity to realise their individual capabilities for physical, social, emotional and intellectual development through opportunities to participate fully in all aspects of University life”. Furthermore, “RMIT University will ensure educational access for students with disabilities, by making adjustments to its environment and programs to reduce or eliminate those factors that tend to impose handicaps”. The policy may be accessed via the RMIT web site (<http://www.rmit.edu.au>).

A discussion about accessibility conformance

A meeting was held at RMIT to discuss accessibility conformance and its implementation across the institution on 8 September 2003. The discussion recorded represents the views of a number of RMIT staff from across the University who have an interest in accessibility issues.

The views are those of the individuals at the meeting and not those of RMIT University. They highlight many of the issues for a large and complex educational organisation in dealing with accessibility issues.

Participants:

Izabella Bartosiewicz - RMIT University Library Web site Coordinator

Martin Fathers - Head of Unit Student Services Group - Disability Liaison

Rodney Inns - Instructional Designer - Curriculum Innovation and Design

Meredith Kidby - Educational Developer - Technical Service unit - FELCS

Amgad Louka - Manager - Teaching and Learning Production Group

Lawrence Martin - Information Manager - AD&C

Rod Mc Crohan - Team Leader Production Unit - RMIT Business Online Teaching & Learning Unit

Doug Oldmeadows - Documentation and Training - Learning Technology Services

Jason Snell - DLS Software Tester - Learning Technology Services

Marsha Berry - Lecturer In Bachelor Of Design - Multimedia Systems

Laurie Armstrong - Learning Technology Manager - Faculty of Art, Design and Communication

Reece Lamshed – Binary Blue

Reece briefly outlined the purpose of the Report and posed the Central Question:

Why is it that, despite best intentions, policy frameworks, the availability of a wealth of resources, testing devices and so on, most VET web sites and resources fail to comply with the accessibility standards?

Reece also provided a summary of the six Mapping Implementation levels.

Amgad: I think those six points are fantastic. They encapsulate very well the areas that need to be dealt with.

We have a situation at the moment where there are people doing things and working on their own all over the place. So there definitely needs to be a coordination of the activities around accessibility. It needs to have authority, and that can only be gained from a senior level in the College.

There is an Educational Technology Sub-committee for the Teaching and Learning Strategy Committee that's been formed here at RMIT. The Education Technology sub-committee could be an appropriate place to at least report back to, to get some validation and acceptance of some of the issue that a specific group has been set up to deal with. I think you want people who are passionate about this to actually go into it. And I'm sure that some of the people in that sub-committee are passionate about it, and they could take it to a group that would be responsible to take this further and hopefully give it some kind of seal of approval at the end of it. And it needs to be institutionalised. It can't be just, "Please do this if you've got the time", and leave it at that.

Laurie: Yes, the process needs an organisation sponsor.

Amgad: Yes, absolutely. And get the solicitors involved. That will give it a lot of oomph and attention. I think everyone is aware that legally we're obliged to do things. I'd rather us being a flagship as opposed to being one of the crowd waiting to be hung, drawn and quartered and then move on to do something about it. So, that could be an avenue for getting that support.

Reece: So, where is accessibility conformance at the moment in RMIT?

Amgad: I think there are people trying to do things. And we are. But it's all these points (referring to Laurie's document) that need to be dealt with first, and information needs to be disseminated throughout the university about things like, what is a failure? When you (Reece) were talking before about a possible 90% failure of TAFE college web sites that have been tested, what is failure? What are the criteria that determine failure and success? If you run it through *Bobby*, and one problem comes up, does that constitute failure? I don't know. We need to actually work that out. What is the minimum standard for actual implementation? We've got the law, we know what they say we should do, but how do we verify whether we've complied with the standards that make it a success as opposed to a failure? This needs to be investigated and clearly outlined. Not in legal jargon, but in practical terms with some real checklists and guidelines that are actually distributed to all staff.

Rod: In the Business school, we're trying to come up with an established set of standards for our business production unit. So we've produced a document that talks about if we've got audio, we have a button next to it that provides a text version. We have an agreed set of type headings, fonts and things like that, so that in theory, we've developed our own standards matching against what the law says. I did this in an ad hoc way, looking at the web, the AFLF tips for web developers, Priority 1 and W3C Guidelines. That's the way we deal with it. But it's not spot-on hitting the mark.

The other point that comes up is in relation to something that Reece said about the legislation in each State. If we've produced something in accordance with the agreed standards for Victoria, or Australia, and our courses then go over to Hong Kong or China or whatever, does it make any difference with the accessibility standards for a student in Beijing on the Internet or Intranet there? Are those standards going to be the same? We need to factor that in as well.

Amgad: My understanding is that there are the global rules, and W3C is one of those – not the only ones though. With the international situation, this depends on your interpretation of accessibility because accessibility is a lot more than just for the disabled – it's also about infrastructure, hardware and software. I think overseas is probably more the issue. Are we designing for their systems and if not, then do we need to make agreements that stipulate software and hardware applied to have that partnership? So internationally, there are those issues for sure.

Martin: I think these standards have been developed all round the place. People are trying to do this. I think that's fine, and they are probably complying. The problem is that there is no requirement to follow those standards. So you have your authors and liaison officers doing their bit, and they're being totally ignored. I think that's why there's six layers, as you (Reece) propose.

Laurie: That kind of reflects your experience by the sounds of it, Jason? You're interested in the area, and you want material to comply, and there's a situation of support, but...

Jason: Yes, within our own group, everyone is up on it. We recognized that the original RMIT web site failed at a number of levels. Whereas, SIM (the new system introduced in 2001) is kind of helpful as it imposes a structure. So it's a matter of just putting Word documents up, and being forced to follow a structure. You're covering everyday material that floats around the university. But in terms of accessibility, we still need to find out where that's at.

Amgad: We've set up a testing station which is just there (outside the meeting room) and that's up and running. It's being used but predominantly by the production group. We have invited anyone in the university, mainly through the design and production network, to let people know that its available and they can use it. But again, that's to test different browsers, with Jaws, with *Bobby*, those sort of standard tests. But what we're talking about is more the systems side of things as well – system development right throughout the organisation.

We've got this accessibility chart you, Jason, gave me a while back.

Jason: Oh, the review we did on our products.

Amgad: Yes, so there has been some work done on it.

Jason: Yes, but that hasn't been widely distributed. It's not necessarily visible through the whole organisation. I know there are all these things happening all over the place. However, it needs to be done across the University. We can do some things here at our level, but to get the (global) buy in, obviously it needs to be very visible.

Lawrence: Well, an audit has been done by Vision Australia of the *TeraText*-based web site at RMIT. The final report for that hasn't been delivered yet as far as I know, and when it is, I'll certainly make sure it's distributed to this team.

Amgad: That'd be great.

Lawrence: The scope of the report was limited to: do we meet the requirements for visually impaired people for the current *TeraText* web site? And to make recommendations about how much further we should go.

There is a sort of parallel process going on at the moment where the University is developing a Business Case to re-develop its web site and its web resources for 2004 and beyond. Accessibility is one issue that has been very strongly identified as part of that. We don't have the draft Business Case before us at the moment – although we will have it hopefully next week.

But some of the issues that have been identified have been things like: how do we make sure people produce an accessible web site? There have been ideas about perhaps some form of Certification for people who are actually allowed to produce content and an actual understanding of what responsibilities go with that role. There's been talk of a notion of 'web police' (laughter) who roam around web sites looking for things that look suspicious and out of place. There's going to be a lot that's relevant to this forum, that's going to be coming out of that including things that we will be actually budgeting for – the wider accessibility review and the quality control procedures that need to be done. And certainly, the results of this initiative should be fed into that process.

Iza: We need to be clear about what we mean by accessibility conformance. There is accessibility conformance of the content we produce and there is the technology we use to produce this content, which also needs to be compliant, as well as accessible. *TeraText* as a publishing system is a perfect example. You can produce your content according to the accessibility guidelines, but since this content will be displayed within a global template, if template elements are not accessible, then your page will fail the accessibility test. Both the content and the tools for developing this content must meet the relevant guidelines. There is a separate set of W3C guidelines for applications used for authoring content – like web publishing systems, and applications like Flash. We need to be aware of these guidelines and insist on conformance from applications developed internally as well as from off-the-shelf products.

Lawrence: One of the things that has been identified as part of the Business Case for how we progress with the web for 2004 and beyond, has been that issue. I know that within ITS, they have created a much more coordinating role for someone to actually sit on top of the web site and manage it, and part of what we're asking for is also resources that will sit in Marketing and Public Affairs that will have a much broader view of the University and that may be where a metadata expert and an accessibility expert actually sit in the University. At the moment, we do not have a business plan prepared yet – I don't have anything to give out to anyone but if you want, we will pass this on.

Amgad: It's fantastic if ITS actually get a coordinating person, but just because a group within institution decides we need to have a person to coordinate, is that appropriate for the university-wide needs? I'd say No. I'd say that it may be very appropriate for their local needs or their knowledge areas. But it would be good to have some feedback from all stakeholders about what is required if

there is going to be a coordinating person or people. I do believe that these sorts of initiatives need to be more centrally owned.

Rod: I don't want to build something and then take it to someone and to say whether this is accessible. If its not, it's a waste of hours of our time. So I need is a system that helps me within the production unit know that the things we're building from scratch are meeting whatever University guidelines are being talked about forming. This is how I'd like to see it organised.

Reece: This is being echoed across the country because everyone realises that if you do it during the design phase when you're constructing it, that's where you should make it accessible. If you create it, then test, you may need to re-engineer and this is a costly exercise if it fails.

Marsha: Well, it comes down to good user centred design, where you're constantly thinking of different scenarios of user experience. You need support with that right at the outset of the design process and throughout, rather than being told at the end, tick the box or not. Your people (Rod) need to support during the process.

Rod: It's a matter of what that support is. If it's information and knowledge, it's got to be directed at specifically what we're doing – the information and knowledge has got to come from the kinds of discussions we're having now. And how this filters down to the people who are actually making it is important.

Martin: I have a concern about that because we're doing the same thing again. Unless we resolve the first point, and that is, who is going to own it? We can continue to discuss around the table, but we still haven't solved the problem. It's still pockets all over the place. What opportunity does this group have to reinforce the view that we've just heard in getting by and reinforcing what's happening? So if we need to contact someone or we need more information, then we know what office to go to.

Marsha: Which level would you advocate so that it is mainstream, and not something on the fringes?

Martin: It's got to be high.

Amgad. When the IT systems are implicated, then PVC needs to be there. TNL definitely needs to be involved. What they do is basically give the tick to go ahead. But you also need that lower level that can inform and follow up on it, to make sure it's actually *happening*, to make sure they get the feedback. That's why I was suggesting the Education Technology sub-committee which quite clearly falls within their scope. There maybe some people here on the committee already and others interested in the issue. They could form a

working party and that could have a hands-on, how we can do it role.

Merideth. I take your point about organisational responsibility. I think this could be very helpful. There is quite a scattered group of people that do publishing in between times. However, I think to have it top down, it may just be one of many conflicting directives. They may do something which just about meets the guidelines, and they don't want to be told that they haven't achieved. They could have done more with simple guidelines or assistance.

Laurie: You mean education and support rather than policing, and looking at things as a process because things are changing all the time – to reflect change and manage it.

Amgad: I think the first step is to make sure the mechanisms are in place, as an institution – the enterprise stuff – that enables. Once that's set in place, then it's worth spending the time and effort to have the guidelines and how to produce stuff that can be delivered. And you have confidence in the delivery system to make your effort worthwhile.

There are so many layers to this. Maybe I'm over-complicating this. It's about what order they should be prioritised and how reasonably quickly we can do this. In addition to this, whatever we do at an enterprise system has to have high-level sponsorship. It will inevitably require organisation time or resources and money.

Reece: The other interesting thing that's coming up is a kind of a qualification of accessibility that Lawrence referred to. Multimedia Victoria is talking about this. Rather than having a *Bobby* assured resource or site, they are moving to a system where successful tenderers will need to have been through a qualification. It raises the question of Certification of the development team, and courses. The second part of this issue is that in the MM and IT courses, it seems there is very little being taught about accessibility.

Iza: Several papers delivered at this year's Ausweb conference were accessibility-related. During the discussions I suggested that perhaps one of the reasons why so many web sites are still not accessible was because accessibility is not being given an adequate weight in many of the web design courses. Finding out to what extent accessibility is being covered in various courses is something I would like to do as a research project, time permitting.

Generally there is a lack of awareness about accessibility requirements amongst web developers because many people involved in web development are self-taught and managing it on top of their regular duties, often without

support or professional development opportunities. And try to find a standard description for web developers – you can't even find a standard title for that position. It would be impossible to normalize these positions at this point in time, but we can target the new generation of web developers in order to ensure their awareness of accessibility.

Laurie: Marsha, are we doing anything in this area of teaching accessibility in RMIT courses?

Marsha: No. I don't think we are doing much about accessibility in courses. I think usability, usability testing and so on, is a big enough issue. Accessibility makes it even more complicated for a lot of people.

Amgad: One thing that is important here is that industry will eventually start requiring that students know something about accessibility. They will be facing similar issues like us, and will want a web developer who is already on the ball for far as accessibility goes. They don't want to get sued either. So using our education links with industry, it's something that can be built into – part of the PQA process. We can then say, 'you should do this because that's what industry requires'. So, in that sense, although teachers may not want to be told how to do it, it really shouldn't be up to them. It is the program, what the industry requires, by the time the students graduate. It must be accommodated in the course structure.

Rod: It's interesting to ask though: is industry asking this of our graduates? Although programs have industry committees and they update their programs, is industry out there saying accessibility is an issue now?

Amgad: Maybe not now, but it will soon. I think that what we're doing now is probably being dealt with out there at a similar level in industry. It's a couple of years out still, but a student enrolling in 2004 won't be out until 2007-8, and I imagine that it will have progressed a fair way by then.

Rod: I know that I have employed someone, and I didn't put in the key selection criteria on understanding of accessibility.

Marsha: I think it's also an issue that's linked with globalisation and internationalisation. With the USA, if you want your sites or resources to be accessed through them, they need to be compliant under Section 508. It's the same with Europe. We can't just look at it in the insular context of just Australia. It is a global thing. So if we want our graduates to be employable, they are going to be looking for work overseas as well. Amgad is right, it will be an industry issue soon.

Amgad. And wouldn't it be great for our graduates to be the first out there. Often it comes down to one thing separating a person from another for a job.

Rod: As a University we should be starting to include that as an employment criteria.

Laurie: The obvious point here is that before you can imbed anything as a University curriculum, we have to imbed it in our corporate systems, don't we? But it would be fantastic to show some leadership with our students.

Reece: Laurie, could you present an outline of the schema that you drew up (see Implementation analysis below)?

Laurie: The first step is: do we have information sources, forums and contacts about accessibility? Do we have that broad spectrum of information available about what it is, where to go to get information, who are the people, who have got authority to give me advice about accessibility? This is a bedrock in getting anywhere with accessibility in the university.

Do we even have an inventory of where we're up to now and what our priorities are? We've covered that point too, now. We need to have a clear picture of ourselves, where we're up to in relationship to accessibility in our learning management systems, although by the sounds of things, we will with the university web site - but we're not quite there at the moment.

If we had all those things then maybe we would be in a position to talk about developing a University policy. One of the things I wanted to ask Martin today was, and before the meeting I had a quick look at the RMIT policy on People with Disabilities, and whilst not specifically addressed there, the principles are.

Martin: Yes there are, but it's something we need to alert people to.

Laurie: So, we need a policy that looks at such things as accountability, who the audience is and so on.

Then out of that, we should be flowing a series of responsibilities of procedures. I've got someone who can support with educating and policing, but what I need the organisational sponsor for it. This should be something like the Ed Tech sub-committee.

Down below in this structure is the 'people box', and the arrows that point up. The first column indicates the people that would be involved in those things above them – doing the inventory, working on the policy and thinking through the procedures. The people in the second column would be more involved in developing action plans and supporting documents and so on, and those in the third column are involved in determining the key issues in how to institute a process rather than a product. That's about monitoring, feedback and evaluation processes, and to look at how we're going and looking at technical issues – not just the text content - but the technology it's inserted into. And how do we review this for continued monitoring and change.

Martin: We can add another dimension. We're replacing our action plan under the DVA and under the Equal Opportunity review - we're currently rewriting it. And clearly a lot of this discussion will need to fit in. So that's an actual driver, as we are about to update our action plan on Equity and Access.

Marsha: That's a really good lever.

Laurie: We need then to be looking at supporting processes and documents that sit around something like policy.

Iza: We could start with the Disability Standards for Education.

Martin: Yes. And that's the other point too. The education standards. Although they were knocked back by the State governments, the Federal government is taking full sponsorship and they will be implemented. These education standards are a massive document and have some real implications for us – not just in terms of accessibility.

Iza: And the implications of implementing them across the sectors are even bigger.

Rod: When Laurie was talking about accessibility, my mind flashed back six years ago when copyright was beginning to be an issue like this. So we've had an experience at RMIT where 6 years ago, people were talking about copyright around the table like this. There was talk of legislation too - that no-ones been sued yet - but it may happen. Over time, RMIT established a Copyright Unit, and it's interesting to track their history as it maybe made a lot of mistakes we may learn from - any recommendation about who they report to, their home and so on.

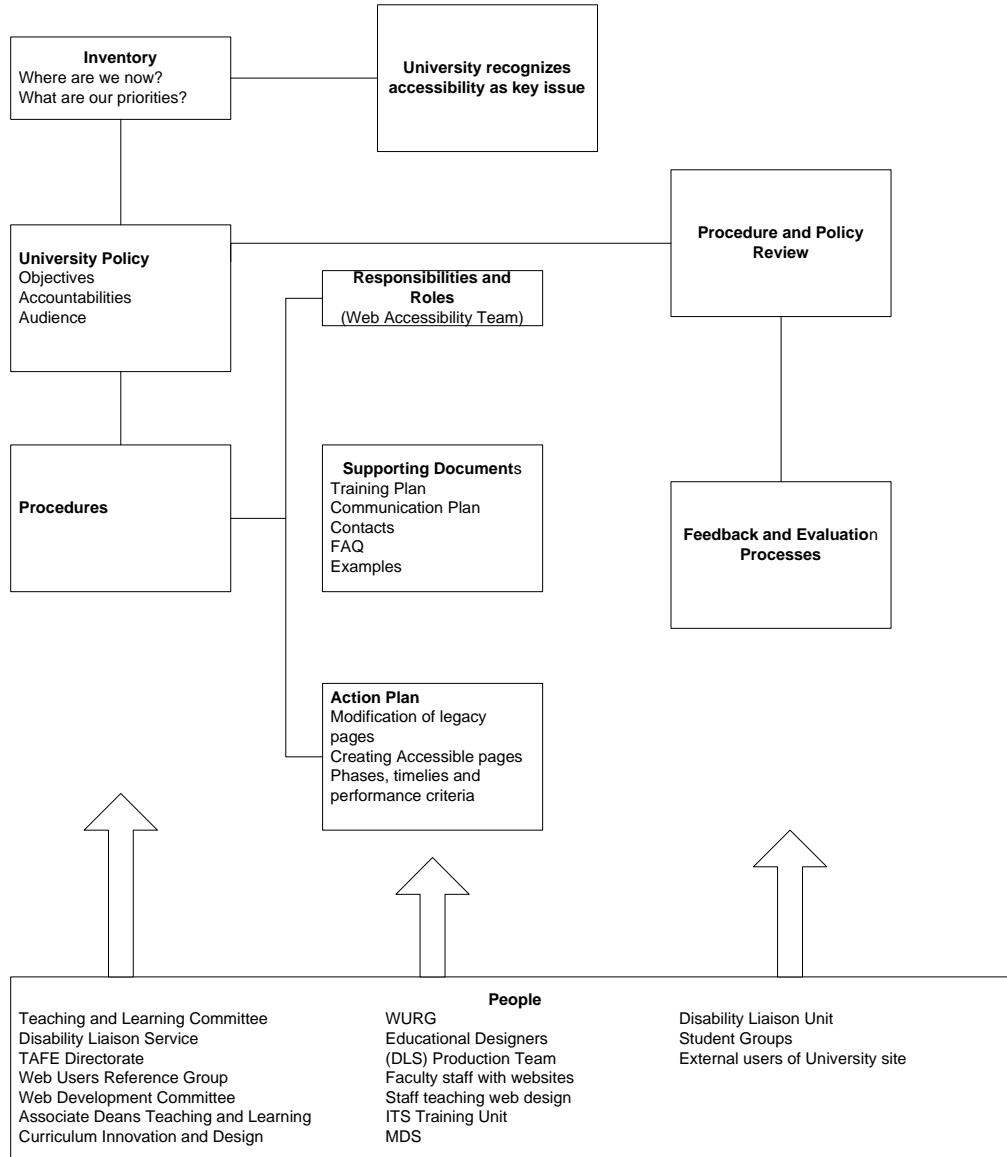
Laurie: Yes excellent idea. This is as much about organisational change as anything.

Rod: The other idea is to use the international situation and use that as a lever to set up a unit – if that’s the way to go – for this accessibility. Another buy-in is the idea that will it provide more successful graduate outcomes.

Laurie: Let’s have a staged proposal. This isn’t as big a job as it seems because when Marsha and Reece prepare their report, with the background information they will provide, this will help us.

Implementation analysis

CONFORMING FOR ACCESSIBILITY



Copyright: does this provide a lead?

In the RMIT discussion on accessibility, it was mentioned that a Copyright Management Service was established in 2000 to deal to ensure RMIT conformance with the *Copyright Act 1968* and Statutory Licensing Schemes. This lead was followed to investigate whether there are any lessons learnt from this experience that could be pertinent to the implementation of an accessibility process.

Annie Lennox is the Coordinator of the service.

Annie was initially employed by the Faculty of Business to find permissions for Java applets and images the faculty wanted to use in their online learning courses. Copyright laws and regulations were rapidly changing at that point. “The worry”, says Annie, “ was at a staff level, with them using images, diagrams, chapters, articles scanning them and putting them online, without taking into consideration how much can go online and under what circumstances. They believe that they are covered by educational use. That’s sort of true, but it comes with rules and limits”.

After a lot of research, Annie raised the copyright issues at the Online Publishing Standards Committee. The Copyright Act was about to change as well as the Statutory Licensing Schemes. As a result, it was thought a good idea if the Faculty of Business service was expanded for the rest of University.

Together with Learning Technology Services (LTS), Annie developed a project brief that outlined the service provision. They put in interim budget asking for a coordinator and two additional staff. A database that records and tracks every copyright permission was already functioning. The project brief was refined in the Business Faculty, and sent to various committees where it was finally approved.

So why does Annie think she was so successful in getting approval for the Service?

It became a risk management issue for the University. The risk was high and the levels of understanding were quite low. The main thing then was to disseminate information to staff so that they had an idea of what they couldn’t do when they moved online. That’s what pushed it.

The LTS funded the service with support from all RMIT faculties. All in all, the process took about 18 months to establish as a University-wide service. The LTS refer teaching staff to the Copyright Centre. Annie talks to different

faculties about the services they provide, and runs seminars for those interested.

Annie recognizes the continuous effort required to support the RMIT staff. “I always knew that this was going to be a long education process. Every time I talk, there’s still misunderstanding. There is so many staff in the university and given the numbers that attend the seminars, it’s a long way to go. You get a lot of people coming back. They’re not able to grasp everything in the first session. They say they come back to learn more.

We also have key people around the university who know about copyright and they can refer to us if they think there is an issue”.

What would she have done differently?

We would have implemented it more widely. We would have had a bigger marketing plan. The service has been in operation for 3 or 4 years, but when it initially got started, we should have marketed it more widely; what it is and what service we provide. We could have got a wider immersion. We therefore did a lot of tracking backwards for a lot of courses.

How does she see the difference between copyright and accessibility conformance implementation?

I think you need to follow the same track as we did. You need to put together a project brief that goes to the appropriate University committees with the reasoning behind it.

Now that RMIT has masses of web materials out there, trying to think of how to implement accessibility over the top of that now, your head spins. This is huge.

A general awareness is necessary. It’s very similar in this respect to copyright. If its caught at the functional end at the DLS, it will start to filter down to those who come into their areas, when they move online or when they develop resources for the online. Then they’ll realize there is these web accessibility standards that they have to understand”.

4. Canberra Institute of Technology experience

CIT was initially established in 1928. It is the oldest and largest post-compulsory education system in the ACT, providing vocational education and training for Canberra and its regions.

There are about 18,000 students enrolled studying in more than 300 accredited programs of study each year. There are five campuses and a flexible learning centre.

CIT has a clear Access and Equity policy, but no specific online accessibility policy. However, the ACT Government Web site Guidelines apply to the CIT web site.

Donna Christie is the Senior Manager of Student Services that has the responsibility for implementing the Access and Equity policy across CIT.

It is the role of CIT Student Services to communicate to the teachers those students who have a disability and other equity target groups, for example migrants, women and indigenous people. The objective of the Service is to raise awareness about access and equity issues and to work with the students – to interview them, assess their support needs, and apply the principle 'reasonable accommodation'. In this circumstance, teachers know the students they are dealing with and will therefore know if they need an assistive technology, for example, or if a text book is provided, whether an electronic version is required.

In their recent enrolments (2003), out of 9000 or so new enrolments, some 1240 ticked the box on having some disability. A letter was sent to everyone to follow up on this. It was determined that 600 needed active support of one kind or another. The types of disabilities include: learning, mental health (psychiatric), hearing, sight impaired, medical and physical.

Donna was of the view that there should be a national strategy on accessibility that reinforced the State Government policies, and that these should be developed by the Australian National Training Authority. This, she believed, would ensure that there was consistency across the VET system, nationally. Donna thought that this was more important than developing policies at the individual institutional level, where the access and equity policies were sufficient.

Donna also believed that the 'digital divide' should also be recognised as an accessibility issue, as should computer illiteracy. "Accessibility should be akin to a minimum building standards, such as ramp access, and outside of this, the architect can design how they want."

One area that Donna thought needed much more attention was with writing content. "If it was a brochure, everyone would be involved. When it's the web, there is not much attention to the way this is expressed. There needs to be some editorial arrangement here, with people who know and understand how to write for the web, particularly for people intellectual disability".

Other issues that Donna thought required attention when considering accessibility were:

- The need to remember that people with disabilities normally have many forms to fill out to apply for dispensation. The dilemma is how to accomplish this online when they have to provide a lot of hard copy documentation;
- The slow speed of line in the more remote areas (of Canberra). There is an assumption that everyone is on high-speed lines.
- Equity is an issue for online exams when typing speeds or Internet connection speeds vary.

Flexible Learning Solutions

There is a central department in CIT, Flexible Learning Solutions, which is responsible for supporting teaching staff to use and develop flexible learning strategies and resources – including printed and electronic resources – and managing the CIT Online Campus.

Flexible Learning Solutions takes an interesting approach. Rather than create project teams within the Department itself, they instead provide professional development and support for the teaching staff to assist them develop quality resources to publish on the learning management system (WebCT). They do this by providing regular training sessions in technologies (like Dreamweaver) and pedagogical issues, and by assigning the Department staff - graphic designer, programmer and instructional designer – to work in collaborative teams or individually with the teaching staff.

As John Smith, the Manager of the Department says, "We could do it ourselves, and maybe this would be quicker and easier. But with a small team, we could only do a few projects. We're interested in growing the institute's capacity to

offer online learning. We see online learning as something that will be a standard part of all classes and something that all teachers need to be involved in”.

The Department has a small budget (approximately \$60,000) that is used to pay for release from teaching to help make time for teachers to work on their projects. “They come up with the projects and we work with them to achieve successful outcomes”.

John estimates there are currently 2000 students who are studying online. The way that they use the online campus varies considerably around the Institute. For most though, it is a blend of face-to-face and online. Instead of coming into a class three nights a week, they may be coming in only one night. “They don’t want to give up the face-to-face contact, but they would like it to be less demanding on their time, and online learning enables this”.

The online content varies enormously, from just assessment, to teachers putting their course notes and Powerpoint presentations before or after the event, to some teachers putting entire chunks of a course online. Or, they may take old print based resources and have the Department help them convert this to an online course. A growing number are accessing the Flexible Learning Toolboxes. In some courses, they may only use a Chat or Discussion forum.

The Department, working with other parts of the CIT Learning Services Division, also created a Study Support Course that every student who enrolls in anything at CIT, online or not, has access to. It includes such subjects as: What’s the Internet? What are discussion forums and how do they work? An introduction to WebCT and Time Management. It also provides online versions of over 80 library subject guides.

Flexible Learning Solutions also provides a telephone and email support service for staff and students who are using the online campus.

By the end of 2004, the expectation is that 60% of courses delivered by CIT will have some online presence. John says, “There is a bit of resistance or hesitation about this. But the pressure will come from the students, and it’s better that way. We’re hoping that the Study Support Course will provide some leverage for this from the students, and this will encourage teachers to engage”.

Accessibility

John Smith views online accessibility as part of the access and equity objectives of the Institute. John has had a long history of participation on Institute committees concerned with access and equity for learners and employees. In the 1980's, John worked in sheltered workshops for six years and is very aware of the difficulties that face people with disability.

In terms of training teachers, the Department has not run individual PD sessions about online accessibility; rather it is integrated into the general training about online teaching and learning – although there have been plenty of workshops on access and equity topics over the years.

Accessibility is a wide-ranging term; it is not just something that applies to online teaching and learning, it's important in all teaching and learning situations. For a lot of teachers, when they make their material available as web pages for online delivery it's the first time they have put their work into a form that can be reviewed by others. In the past most of their interactions with learners have probably been verbal. So issues of how language is used are pertinent. For example, avoiding the reinforcing of stereotypes. Many issues related to accessibility are therefore embedded in the general teacher education programs run by CIT. Also, we've coordinated a number of specific sessions in the past, presented by people such as Rhonda Daniel who was involved with the ANTA Flexible Learning Framework Accessibility project, and products that came out of this have been useful for the staff. There is not a shortage of coverage of this issue. Having said that, it certainly hasn't had the attention that the equity issues got in the '80s.

John has been concerned how the generic ACT Government Web site Guidelines are being applied to learning materials. The Guidelines are very broad, and concern a range of standards as well as accessibility.

I put up an argument that an online course is not a web site. I wanted to get this through as a policy statement because I could see all these rules coming out about what could and couldn't be done on an 'official web site' and could see that many of them would simply kill the online learning environment. For example, I saw one 'rule' that said you can't allow people to post to a Discussion site without their message first being approved by a moderator. This would be like asking a student to write a question down and get their teachers approval before being allowed to ask that question in class. It flies in the face of what we know is good practice in Adult Learning and it wouldn't work. If you kill off online discussion, you kill off online learning. There is an understanding that what we're doing isn't building a web site. But there is no official recognition that the policies and guidelines that need to apply to an online course are any different to those that apply to an 'official government web site'. So it would help if ANTA would tell it from a Federal point of view, and that may get the relevant State authorities to better understand the differences between learning materials and web sites.

When a student enrolls at CIT, they specify any disability and this information is used to help determine and offer what support they may need. If a teacher or student is having an issue with access, for instance using a screen reader, the

FLS team can be contacted to help out. John's team have assisted student's using screen readers to access their WebCT courses and can't remember having to change anything in the course itself.

We need the broad statements that confirm our commitment to an equitable learning environment – whether it's in the classroom, or online. And we need teachers and learners to know how to get things fixed if something isn't working for them. For example, a PDF file. If a student rings our team for help because they can't access a PDF, we can fax it to them or mail a print out of it or, in some cases provide it in another format, .txt or .doc . This is the kind of arrangement we can and do make; it's tailor-made to suit the particular student's need”.

We don't want to see rules and regulations brought in that stop people from going on line, we want to make it as easy as possible to go on line. And sometimes that may mean the resource is not accessible to all people – but if it is accessible to all the people in that particular class then it's not a problem. We have processes in place where people who do have accessibility issues, can have a quick and effective – and usually pre-emptive solution, that is to say we aim to ensure that all students find suitably accessible resources in their online course. We wouldn't like to see at this stage an approach that that hinders a teacher's ability to go online. We prefer to treat it the same as in a classroom situation. If you have people who are hearing impaired in the classroom, then contact Donna Christie's people (Student Services), and get signers. It's exactly the same for us. Someone wants to use a Screen reader, then get in contact with Flexible Learning Solutions to see what could be done to make that resource accessible. I think that's a better option for where we are at the moment.

But for the Institute's www site it's a different situation. It's not a known audience and that has to be accessible for anyone who may care to visit it.

CIT web site

At present, the web site is going through a review. They are investigating a wide range of functionality issues including the content management system that currently doesn't allow the setting of alt tags.

There are also process issues that are currently being addressed. Web administration was recently handled by a number of people having different responsibilities. The institute has just brought in a web manager to centralise and coordinate the system (and the review). The content management system allows any staff person to upload the content directly. This facilitates publishing information quickly, but there is a danger that the text – the grammar, spelling - is not correct. The institute is looking at a system that allows direct publishing, but where it is first held in a repository for approval before it is released 'live'.

The ACT Government Web site Guidelines apply to the CIT web site. Some of the guidelines are mandatory; others recommended. Accessibility conformance is mandatory (meeting a Priority 1 level). One of the reasons the institute had for bringing in a web manager was to meet the functional and accessibility standards set down by the Guidelines.

Testing for conformance has been found to be difficult. *Bobby* is used, but they realize that this is only a start in the testing process, especially given the content management system. They have also found the language and logic of the *WAI Guidelines* difficult, ambiguous and sometimes contradictory, and this has not helped in their objective to meet accessibility conformance.

5. The Institute of Design for Entertainment and Arts (i.d.e.a.) experience

The Institute of Design for Entertainment and Arts (i.d.e.a.) won both the ANTA and OTTE “Private Provider of the Year” in 2001, and was a finalist in both 2002 and 2003 for the ANTA Awards.

I.d.e.a. commenced in 1996 with 11 students to deliver courses in niche industries including graphic art, multimedia, broadcast journalism and visual arts. In 2003, 150 students attend the college, including part-time students. There are 12 staff, though no-one is full time as staff are encouraged to maintain their outside business activities.

The specific courses delivered include the Diploma and Advanced Diploma of Multimedia, Broadcast journalism, Diploma of e-business, Diploma and Advanced Diploma of Arts (Design), Diploma of Arts (Visual Arts).

The web site (www.ideaonline.com.au) is not accessible. It was designed and constructed by a staff member, and the Director of the college maintains the content.

The web site is very important for publicity and promotion of the college, to attract and recruit students. The site not only provides information about the college activities, but also displays a huge gallery of student work – animations, drawings and so on. David Turner, the Director of the College, believes the site is a powerful marketing tool. “The best way to sell the institute is to show the sort of work that students do. We know that from the students who have come here, that they have gone to the web site and gone ‘Wow, that’s where I want to go!’”

About 80% of the students are from the Melbourne metropolitan area, but 20% are from Victorian regional centres, interstate and some international. Prospective students use the web site to sense out the college, and as David says, “by the time they come to the building to have a look around, they have already decided to enrol”.

I.d.e.a. provides some courses online. They use the Design Toolbox, and a digital camera online course that they developed for TAFE frontiers. They intend to increase the online service, so that in 2004, they hope to have all course material online. Every student will have their own computer and be able to access all the material. They will also dismantle the Design Toolboxes,

simplify them, change some of the design briefs so that they are more integrated into their teaching program.

At the time of interview, Paul Conway, a multimedia teacher at the college had not heard of the WAI accessibility guidelines. He was also unaware of any explicit request by any commissioning organisation or policy that required accessibility conformance. His initial reaction on hearing about the W3C standards was that “if the client requested it, then it would be researched and done accordingly”.

Being a multimedia producer, Paul realised that it would be important to build accessibility into the resource from the start, rather than trying to attempt to do so once the resource is developed. He also believed that it should be done as part of the resource, rather than having a separate version. “Hopefully this way, in developing the resource for people with disability, this would have positive benefits for all users, not only those with disability”.

Next time we met, Paul had investigated the standards further by visiting the W3C web site.

I downloaded their basic guidelines. It all makes good sense. Some of it is pretty easy to do, and you generally do it anyway. Alt tags are easy to do. Setting standards for HTML is a good thing. But there are other things that will be harder to do. For instance, they said not to use tables for content layout. This is used a lot. As far as I know there is not another way to it. So unless they come up with a way of saying this is what you do, it will be pretty hard to implement.

Paul was still of the opinion that it was necessary for the client to specify these accessibility requirements, and that then the developer would design and build to comply.

If it's left up to developers, they will only go so far. If the Government insists on it, and they are the client, then you would do it. But for a small developer doing a small site, no way. Unless it's part of the client's target. They're just getting the product done. They don't want to spend any more time or money on it. It will therefore be hard to get it accessibility across the board.

How then are standards in general applied across a small organisation like i.d.e.a.? David Turner, the Director says that this is not difficult to communicate; “The success of organisation is communication and making sure everybody understands what we're doing so there's no conflict”.

We're a small organisation and this has real benefits. All the procedures of the institute are on the administration server, so any member of staff can get any

document they wish – policy, training plan, learning materials, competencies. We also have a fully articulated staffing induction manual, which every staff member given on commencing work. We have regular workshops that go through a whole range of things. And if needs be, I can just go down the corridor and speak directly with the relevant person any time I want.

I.d.e.a. is about to re-design their web site, and David will now be looking closely at the accessibility guidelines and working hard to implement them.

6. Institutional reform: the WebAIM institution action plan

In a resource provided by *WebAIM Institutional Coordination and Reform*, it is suggested that implementing accessibility in an institutional environment is an eight-step process. These steps involve:

Step 1. Gaining Administrative Support

“Your journey toward Web accessibility must begin by gaining administrative support at your institution”.

Step 2. Organizing an Institutional Web Accessibility Committee

“A group should be formed to draft accessibility policies and to see the process through its implementation. It is vital that this group be comprised of other key individuals at your institution.

Step 3. Web Policy: Defining a Standard

“There are 2 important components to the overall Web accessibility policy. The first is the standard, or institutional definition, of Web accessibility. Second is the implementation plan. Taken together, they form the complete policy”.

Step 4. Web Policy: Creating an Implementation Plan

“When you are constructing your institutional Web implementation plan, there are four areas to consider. They are establishing timelines, setting priorities in terms of what standards to achieve and on what timeline, delegating responsibilities and monitoring progress. These tasks often do not occur in order, but should be addressed when needed”.

Step 5. Gathering Baseline Information

“It is time to discover where you lie according to the standards you have set for yourself. This will help you know where to concentrate your efforts and where you need to continue to work”.

Step 6. Training and Technical Support

“Provide training and technical assistance for those who place content on the Web. Training is a critical element in the implementation and success of your institutional reform”.

Step 7. Monitoring Your Institutional Policy

“The key now is persistence. Now is the time to execute the strategies you outlined for monitoring progress in your implementation plan. This is the time to make sure that all goals for implementation are being fulfilled”.

Step 8. The Importance of Flexibility in Change

“There will be changes in staff, standards, and technologies. Your institution must have in place a system to handle these changes and a mechanism to update standards as new technologies emerge”.

(<http://www.webaim.org/howto/reform/reformstep1>, accessed 17/7/2003)

7. Accessibility awareness course

An example of a short course in online accessibility conformance was developed by TAFENSW and accredited in January 2001 titled “Web design and technology”. It has a specific Arts Industry focus. Currently, it is delivered by Sydney Institute. Aspects of the course appear in the revised Entertainment Training Package, the Visual Arts Training Package and the revised Museums and Library/Information Services Training Package.

The learning outcomes of the course are provided below with their assessment criteria.

Learning Outcome 1: Demonstrate an understanding of the issues affecting access to information services/products

ASSESSMENT CRITERIA

- 1.1 Identify uses of information services and information technology generally
- 1.2 Identify possible barriers to information services for people with a range of disabilities including physical, sensory and intellectual
- 1.3 Identify strategies to make information services more generally accessible
- 1.4 Demonstrate an understanding of technologies that can be used to make information services accessible
- 1.5 Identify community groups that will benefit from more accessible information services/products
- 1.6 Identify users of virtual tools and technologies within the arts environment, both on and off the site

Learning Outcome 2: Demonstrate an understanding of new and emerging technologies used by people with disabilities

ASSESSMENT CRITERIA

- 2.1 Identify some commonly used new technologies employed by people with disabilities
- 2.2 Identify community groups (with and without disabilities) who are able to utilise these new technologies and be involved in testing for useability
- 2.3 Demonstrate an understanding of the limitations and opportunities presented by these technologies

Learning Outcome 3: Demonstrate an understanding of the presentation of virtual display/events suitable for universal access

ASSESSMENT CRITERIA

3.1 Demonstrate an understanding of what a virtual display/event is and the uses for virtual display/events

3.2 Identify barriers to access of virtual display/events for people with disabilities

3.3 Identify strategies to make virtual display/events universally

Learning Outcome 4: Identify e-commerce and on-line ticketing issues affecting people with disabilities

ASSESSMENT CRITERIA

4.1 Outline the use of e-commerce and online technologies in the arts

4.2 Identify barriers to the use of e-commerce and online technologies for people with disabilities

4.3 Identify strategies to make e-commerce and online technologies universally accessible

Learning Outcome 5: Demonstrate an understanding of the concept of universal web/multimedia design

ASSESSMENT CRITERIA

5.1 Demonstrate an understanding of the barriers to web design and technologies for people with disabilities

5.2 Demonstrate an understanding of the key concepts of universal accessibility

5.3 Demonstrate an understanding of how to apply the principles of universal accessibility to a web site

5.4 Identify key resources and guidelines to assist in developing universal accessibility in web design

5.5 Evaluate their own/organisations web site in relation to the principles of universal accessibility

8. IT Training Package web site accessibility competency unit

The Information Technology Training Package (ICA99) has a competency unit aimed a skills in developing accessible web sites. This competency unit could form the basis of an online qualification in web and learning materials accessibility conformance.

ICAITT183A/01 Identify accessibility standards

- Specific user groups with particular accessibility requirements are identified.
- General legislated accessibility standards and requirements are identified.
- Specific and general standards and requirements are consolidated into an accessibility checklist.

ICAITT183A/02 Test accessibility

- Appropriate automatic testing tools and software are prepared.
- Automatic testing tools are run and changes made and documented.
- A text equivalent for every non-text element is present in web site.
- All information conveyed with colour is also available without colour.
- Changes in the natural language of a document's text are identified (i.e. captions, abbreviations or acronyms, etc).
- Documents can be read without style sheets.
- All priorities identified in the Web Accessibility Initiative (WAI) Accessibility Guidelines are met and completed.
- Site is test with different user agents to ensure site transforms successfully and maintains accessibility.

ICAITT183A/03 Test pages

- Pages are not dependant on colour and can operate in monochrome environment.
- Pages are logical and accessible in a text only environment.
- Pages operate correctly on text to speech browsers.
- Accessibility of web site is signed off as meeting WAI standards.

9. Parallel projects

There are several projects that this research draws on or intersects with that have been commissioned by the Australian Flexible Learning Framework.

Project 1: Access and Equity

One of the Reports emanating from this project - *Project: Access and Equity in Online Learning 2000* - made a number of specific references and recommendations on online accessibility issues:

“It is clear that following the W3C Guidelines in the planning and delivery of online learning courses and materials will help to address issues, concerns and aspirations found among all the Target Groups”. (p18)

“For VET policy makers, managers, teachers and learners as well as writers, designers, and computer technicians, the deliberate inculcation of understanding about what constitutes an inclusive online culture, supported by policies, procedural guidelines, checklists and other reinforcing devices, will help to create a climate where attention to access and equity is virtually an automatically accepted part of online vocational education and training.” P42)

“Recommended or preferred standards for the adoption and use of information technology and telecommunications in the VET system are in place (though not made compulsory), and these have taken some account of the need to address disadvantages faced by the Target Groups. However, there is scope for exploring whether attention to access and equity issues in the development and application of hardware and software should be mandated through legislation, or at least encouraged and supported by the adoption of specific standards.” (p43)

Recommendation: “Investigate the possible establishment of nationally applicable standards in relation to the accessibility of online learning, Web design and content addressing the needs of Target Groups and issues such as copyright and plagiarism.”

Project 2: Preferred Standards 2001 – 2002

The Preferred Standards is part of the vision for a nationally agreed standards-based and technically compatible working environment for online training experiences.

In the *Summary and Recommendations* section of the Report, reference is made in general terms to accessibility conformance in item 26 of the Operational Guidelines agreed by the Working Groups: “The following published guidelines to be followed W3C Web Accessibility Guidelines”.

Project 3: What is Universal Design and how can it be Implemented?

The Report states that “universal design is an overarching philosophy that is increasingly being adopted to ensure that practical issues such as accessibility for people with disabilities are dealt with by an inclusive approach to the planning of products and services, rather than being 'add-ons' once completed.”

The main resource identified by this project was the *OptionKeys* web site, which Report states, “ provides a good framework for this process with links, checklists and examples”.

Project 4: Collaborative Interoperability

This project aims to extend access to resources for the VET sector by focussing on improved information management and greater adoption of national technical standards.

Interoperability describes "the ability to transfer and use information in a uniform and efficient manner across multiple organisations and information technology systems."

In reference to accessibility, the ‘content formats’ section will deal with accessibility issues.

A draft has only been written to this stage.

10. Selected resources

Listed below are user-friendly resources that will facilitate the design and development of accessible web sites and e-learning resources.

Australian products

Accessibility Toolkit - Multimedia Victoria

The resource was commissioned by Multimedia Victoria for business managers and web site owners to enable them to effectively present the business case for accessibility and manage the processes involved. It is designed to assist developers achieve a Level A conformance.

<http://www.egov.vic.gov.au/Victoria/StrategiesPoliciesandReports/Reports/Accessibility-Toolkit/Accessibility-Toolkit.htm>

Accessibility Wizard – TAFE frontiers and binary blue

This resource was developed by TAFE frontiers and binary blue. The resource allows for a Priority setting, and provides the relevant WAI checkpoints for each team member of the production team – project manager, information architect, content writer, interface designer, client-side programmer, server-side programmer and content manager.

Accessequity: Everyone Online

This resource developed by the AFLF Access and Equity Project is an e-learning online tutorial designed to show managers and practitioners some simple techniques they can use to design and develop accessible e-learning products.

http://www.flexiblelearning.net.au/accessequity/everyone_online/index.php

Macromedia Accessibility Solutions

This series of documents provides an overview of resources. Macromedia accessibility solutions are designed for both web developers that are relatively new to Web design, and those with advanced Web design expertise.

<http://www.tomw.net.au/as/as.html>

Macromedia Accessibility

This resource provides specific comment and advice on the accessibility issues for a range of Macromedia including Dreamweaver, Flash and Contribute.

<http://www.macromedia.com/macromedia/accessibility/>

OptionKeys: TAFE NSW

This resource was developed by TAFE NSW to assist production teams to develop accessible online resources and web sites. The site includes background on the rationale and legal requirements for accessibility as well as practical guidelines and tools for planning, designing and testing accessible web sites.

<http://www.oten.edu.au/OptionKeys/>

Designing accessible web sites

This resource was developed by Swinburne University to provide current and would-be web page developers with the skills to develop accessible online content to a Priority 1 level. Topics include image maps, tables, frames, applets and scripts and multimedia.

<http://www.vetonline.vic.edu.au/accessibility/>

International products

Building Accessible Web sites – Joe Clark

An online version of a more detailed book by Canadian journalist and accessibility consultant, Joe Clarke. Chapters include: The structure of accessible pages, The image problem, Text and links, Navigation, Type and colour, Tables and frames Stylesheets Forms and interaction Multimedia Certification and testing.

<http://www.joeclark.org/book/sashay/serialization/>

Evaluating Web sites for Accessibility

This resource was developed by W3C and outlines “approaches for preliminary review Web site accessibility, and for evaluation of conformance to the Web Content Accessibility Guidelines 1.0 .It does not provide checkpoint-by-checkpoint testing techniques it does include general procedures and tips for evaluation during development of Web sites, and for monitoring of established Web sites”.

<http://www.w3.org/WAI/eval/>

Making Educational Software and Web Sites Accessible

This resource is created by the National Centre for Accessible Media and provides an excellent array of advice on Images, Multimedia, Forms, Tables, Textbooks, Interactivity, Graphs and Maths.

<http://ncam.wgbh.org/cdrom/guideline/disabilities.html>

Making UW Web sites Accessible To Everyone

This resource was developed by the University of Washington. As well as providing links to other resources that assist in accessibility conformance, there is a list of most US Universities’ Accessibility policy.

<http://www.washington.edu/computing/accessible/index.html>

WebAIM

Web Accessibility In Mind (WebAIM) is administered through a grant provided by the Fund for the Improvement of Postsecondary Education (**FIPSE**) Learning Anywhere Anytime Partnerships (**LAAP**). The resource provided as a tutorial covers in detail Acrobat PDF, Basic HTML, Captions, Dreamweaver, Dynamic Content, Flash, Forms, Frames, FrontPage, Graphics, Javascript, Keyboard Accessibility, Navigation, Page Layout, PowerPoint, Tables, Text,Word.

(<http://www.webaim.org/techniques/>)

11. Accessibility research questionnaire

Please complete the survey. There are 10 questions. The information is confidential.

Organisation:

Position:

Q1: Are you familiar with online/web accessibility or W3C standards?

Completely To a high degree To some degree Not at all

Q2: What do you believe is the main purpose of these standards?

Q3: Do you believe your organisation has attended to the implementation of these standards across all information and resources?
Completely To a high degree To some degree Not at all Unsure

Q4: Does your organisation have an established and formal policy on accessibility conformance for online information and materials?

Yes No Working on it Unsure

Q5: What level of conformance does your organisation aim to achieve?

Priority 1 (A) Priority 2 (AA) Priority 3 (AAA) Not sure

Q6: Who is or was responsible in the organisation for the development of online accessibility policy?

Q7: Who in the resource and information development team is primarily responsible for ensuring the accessibility standards are met?

Q8: Does your organisation provide training to development teams or teaching staff in meeting the accessibility standards?
Yes No Working on it Unsure

Q9: What are the main impediments to implementing accessibility standards across the organisation?

Q10: What would assist in implementing accessibility standards across the organisation?

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