Web content accessibility' is about making content for the World Wide Web that is accessible to all, regardless of what access device they are using. The particular focus is on developing standards that will make it possible for all users, including those with disabilities and relying on assistive technologies, to access Web content. Raising awareness of the need for and benefits available from improving Web content accessibility has, however, not been very successful. This paper considers a pedagogy called the Active Accessibility Technique, especially the qualities of scenarios that make the best base for this technique. As with use cases, many times the scenarios improve with use. In advance of use with 'students', scenarios can be road-tested. Once really good scenarios have been developed, they can be shared. Scenarios are considered good, or 'rich', if they reliably provide role-players with a wide-range of stimulating issues. It is not essential for these issues to be obvious when the scenario is first read, but they should emerge as the role-playing advances. Indeed, experience with scenarios can help in their evaluation: some are not as rich as hoped, others are not as reliably generative of engagement by students or as illustrative of important aspects of accessibility. This paper should help others develop scenarios and follow the Active Accessibility Technique.
High Quality Scenarios for Raising Web Content Accessibility Awareness

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Abstract

‘Web content accessibility’ is about making content for the World Wide Web that is accessible to all, regardless of what access device they are using. The particular focus is on developing standards that will make it possible for all users, including those with disabilities and relying on assistive technologies, to access Web content. Raising awareness of the need for and benefits available from improving Web content accessibility has, however, not been very successful. This paper considers a pedagogy called the Active Accessibility Technique, especially the qualities of scenarios that make the best base for this technique.

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1 Introduction

Currently accessibility issues are relatively poorly understood in the Web development community despite their potential for making the Web better for everyone. Web commissioners do not seem to know what they should require of their developers and hesitate to specify appropriate levels of accessibility. They do not seem to realise that well-formed Web content can be accessed by the blind, the deaf, and people with vision and other disabilities using assistive technologies. They rarely understand that the same well-formed Web content is immediately available to people using new access devices such as telephones, hand-held devices or depending on agents to make use of Web accessible content.

Some governments have legislated a minimum standard of accessibility: the US has focussed on testable requirements; Australia and others have a somewhat higher but less objectively tested standard. The Australian standard is defined in terms of the World Wide Web Consortium's
Given that WCAG 2.0 is due to be released in 2003, Australian developers and others, whether or not they have already understood and implemented WCAG 1.0, will need to adapt their practices rapidly to incorporate new requirements specified in WCAG 2.0. In all cases, there is a long way to go before all developers and web site commissioners understand the requirements, how to implement them, or even if they have been implemented. In this situation what is needed is a way of raising awareness of Web content accessibility.

### 1.1 Pedagogical foundation

Like many others, the authors are turning their attention to a pedagogy that can be used in multiple contexts to raise awareness. In particular, people with no discernible disabilities find it difficult to understand the need for attention to web accessibility techniques. Fortunately, making the Web more accessible to people with disabilities also makes it more useful and accessible to those who want to use alternative devices such as palm devices, telephones, and other non-standard user agents.

The authors have been engaging students and, significantly, technology developers, managers and other practitioners, in role playing carefully developed scenarios to draw attention to aspects of accessibility. Well-chosen scenarios can give personal experience to role players that can give lasting personal meaning to accessibility. Significantly, this does not result from having people with no disabilities playing the role of those with disabilities, so much as playing roles in which accessibility problems share qualities with those of people with disabilities. A bus driver who is following directions to a location, where those directions are made available via wireless communications, is using the Web but also, hopefully his eyes. He will not be able to browse the map as he might if he were sitting in front of his home computer. He will have similar access needs as a blind person.

The role-playing approach borrows from pedagogy previously used in the teaching of computer ethics (scenario analysis), systems development (use cases), legal thinking (moot cases), technology development (role-playing), and the notion that active learning is the most effective, long-lasting learning. The 'Active Accessibility Technique' (AAT) requires few resources other than good scenarios and a few support questions. It does not require computer laboratories nor expensive computing and telecommunications equipment. As with other scenario-based pedagogies, the success of the process is usually dependent upon the quality of the scenarios.

Pedagogical practices that employ scenarios are used in a range of industry sectors. Anderson et al. (1993) employ scenarios to explore the application of a new code of ethics in different professional settings. Clement (1993), in writing up experiences in a Computer-Supported Cooperative Work workshop, found that discussing scenarios was a productive means to exploring privacy issues. Similarly, Burmeister (2000) used case studies to illustrate the application of the Australian Computer Society (ACS) Code of Ethics to professional practice.

These approaches all employ what can be termed 'passive' scenario use. However, in order to engage developers, managers, policy makers, and others attending training in accessibility, an 'active' approach is needed. Liffick (1995) describes analysis of scenarios in terms of the stakeholders that can be identified. His approach, similar to that of the Actor Network Theory (ANT) approach, seeks to simplify complex models of actors involved in a situation into heterogeneous entities (Robinson, 2002). The ANT and Liffick approaches recognise the
importance of identifying the actors and the roles they play in the environment. It is noteworthy that in ANT, actors may include non-human actors, and in the context of accessibility of Web content, there are many non-human actors. Associated with this is the idea that actors are not independent of each other, but that political power involves political alliances between actors. These approaches employ analysis and engagement in an intellectual activity.

Howard et al. (2002) show how real actors in a user-centred design approach to Human Computer Interaction, help in the design process. Acting out roles enables designers to better understand how technology will be used, helping them to identify the inherent interface and technology issues.

Simpson, Nevile and Burmeister (2002) have employed a 'Doing Ethics Technique' to help people, both individually and in groups, passively work through a scenario to discover the pertinent issues. A modification of this technique, the AAT, is the focus of this paper. The process of scenario analysis is made active by having participants interact in a 'holistic way', conversing and negotiating their roles in real-time.

1.2 Goals for Scenario Design

In general, the goal of using scenarios is to explore situations ahead of time, while one can engage objectively in discussion without risk. In the accessibility context, many wide-ranging factors should be taken into account. In other contexts, scenarios can be employed to explore one's knowledge of a particular domain. By asking people to investigate what they would do in a particular situation, one can readily identify the limits of their knowledge.

One goal is to provide scenarios that will be useful to all participants because of obvious, easily reached issues but also extensible to the edge of all participants' knowledge. Such a range of opportunities has been described in other contexts as having 'a low threshold and high ceiling'. Another goal is to provide 'rich' scenarios. Rich scenarios contain aspects that can be further developed by participants to raise additional issues for consideration. Finally, good scenarios often include conflicting considerations, as when there are within the same community, some participants who have a need for visually instructive diagrams because of intellectual disabilities, and other participants who have visual disabilities that require limited or no use of diagrams. Other conflicts affect Web communities that cross borders, as is the case with legal compliance that varies as described above between the US and Australia.

2 Active Accessibility Technique

Unlike in the Doing Accessibility Technique, on which the AAT is based, identification of stake-holders is done early. Once the stake-holders are identified, participants are asked to take the roles of the various stakeholders. In this way, the follow-on questions are then considered from differing viewpoints, creating a more engaging and active process of analysis than the Doing Accessibility Technique. The process begins by asking everyone in the audience to consider responses to six simple questions, in the following order:

1. What is going on? What are the facts?
2. Who is affected?

Then audience members are chosen to act the role of each of the stakeholders identified. These people then consider the following questions from the standpoint of the role they are playing.
3. What are the accessibility issues?
4. What are the ethical issues and implications?
5. What can be done about it? What options are there? And
6. Which option is best? – and Why?

The scenarios should be neither self-evident nor simple. Instead, there should be ambiguities that require reflection, leading not always to a ‘right’ solution, but rather towards a solution that is satisfactory. The ambiguities can lead to further questions and impromptu modifications of the scenario that, in turn, lead to further issues and ambiguities.

Non-core extensions for Question 5 include:
- What would be 'the right thing' to do?
- Who/what suffers if you do not do the right thing?
- What additional costs will be incurred if you do the right thing?
- What indirect benefits might accrue from doing the right thing?

A further non-core extension for Question 6 is 'Who gains if you do the right thing?' This is particularly useful in the role-play activation of the Technique, to better consider stake-holder viewpoints.

Finally, multi-disciplinary extensions include asking:
- What does the law say?
- What chance is there it will be enforced??

Pausing the action allows the opportunity for others, perhaps audience members, to suggest what a particular actor might have done. Involving others in the reflection yields alternate and, as shown by Simpson et al (2002), often better solutions than those suggested by people doing the analysis on their own. Rich scenarios allow for reconsideration of issues raised.

2.1 Evaluation of the Active Accessibility Technique

The AAT has been tried in a setting with final year students in an Australian University. An evaluation study, based on a case-study by students of a real situation of Web-based training delivery where the developers were based in Australia while delivery of the course was in Scotland, was used at the conclusion of a session on accessibility issues. Students participated in identifying the facts of the case (Question 1) and identification of the stake-holders (Question 2). Volunteers took on the roles of the stake-holders and worked through the remaining questions of the AAT, exploring each question from the view-point of the role they were playing. When each successive question was dealt with by all actors, the facilitator asked the audience participants for their view. For example, all actors in turn considered Question 3, with some conflicting opinions, and a few arguments about the relative importance of the accessibility issues were identified. Then, before moving on to Question 4, the audience got a chance to participate.

At the conclusion of the session, students were surveyed concerning the use of this technique. The data collected were made available to all students in the course. They were required to write up a formal reflection on the scenario and were encouraged to use the survey data about the audience participation to help them understand why the audience interacted as they did.
A descriptive, preliminary analysis of the survey data revealed the following. Of the 105 students in the course, approximately 80 attended this session, 44 of whom completed the questionnaire. In terms of the 6 questions of the AAT, students were asked to consider how helpful was the active approach of this technique in identifying the pertinent issues in this case study. Relating to question 1 “I was able to identify many of the facts in the case” 72.7% either agreed or definitely agreed. [For this and subsequent discussion, the facilitator listed responses by stakeholders and the audience on a whiteboard. Before moving on to the next question he, supplied his own list on an overhead projector screen.] Relating to question 2 “I was able to identify many of the people affected in the case” 68.2% either agreed or definitely agreed. Relating to question 3 “I was able to identify many of the accessibility issues in the case” 63.6% either agreed or definitely agreed. Relating to question 4 “I was able to identify many of the ethical issues in the case” 40.9% either agreed or definitely agreed. Also relating to question 4 “Having people act the stakeholder roles helped me identify the ethical implications” 61.4% either agreed or definitely agreed. The relatively low percentage for identifying ethical issues individually versus the role play, appears to support the view that active scenario analysis benefits participants in thinking through the implications of the scenario.

3 Conclusion

This paper suggests a further development of the Doing Ethics Technique, following the constructivist pedagogy, whereby participants construct a final composition that is an appropriate solution to the situation confronting them. Experience with scenarios can help in their evaluation. Some scenarios are not as rich as others, some are not as reliably generative of engagement by participants or as illustrative of important aspects of accessibility. Designing good scenarios is a necessary precursor to effective use of the AAT. A preliminary study of the effectiveness of this alternate to the Doing Ethics Technique suggests this is a helpful approach to thinking through complex industry situations, where conflicting interests between stakeholders complicate resolution of the issues involved. Further research is needed to test and where necessary, improve, the effectiveness of the AAT.

4 References