aec at the UNIVERSITY of NORTH CAROLINA at CHAPEL HILL
accessible electronic content

Accessibility of Emerging Technology

Problems, Hand-Wringing, and Solutions

Our Freaky Future

"Wise crowds ... Collaborative Atom hacking ... E-Commerce at an interplanetary scale ... The swarming Web ... Tangible computing ...
Retrofitting the Semantic Web onto British Democracy" - all titles of lectures at the 2005 O'Reilly Emerging Technology conference. The future is going to be a strange and wonderful place.

But will it be accessible?

Hitting a Moving target

We have no idea what we'll be doing in five years, but we can be certain it will be inaccessible to somebody. What's to be done? Let's look at some of the potential problems. For each I'll offer an example and some challenges, and (hopefully) a solution. Remember that this is a very broad overview - use it to stimulate your imagination and, perhaps, start to future-proof your technology planning.

Software Tools

Products like Software Secure lock out all other applications - including screen readers and other assistive technology. In cases like this, either the vendor fixes their product or some kind of work-around needs to be developed. We rely on the vendor to do the right thing.

Language and display conventions are becoming increasingly important in information sharing. MathML is a great example of an open standard that is being adopted rapidly. Happily, open standards tend to encourage accessibility efforts - in the case of MathML, the Mathplayer product works quite well with assistive technology.

Rich Internet Applications

Very cool, cutting edge applications like Google maps and Oddpost employ Ajax or some JavaScript-heavy successor to DHTML to work their magic. Existing XML-based development frameworks that export Flash files (like Laszlo) are close on their heels. What's to be done? Well, for a start, the mantra of "standards, standards, standards" is needed. Also, smacking developers upside the head occasionally can't hurt. In many cases, accessibility will be problematic with RIA content regardless of developer intent.

Classroom Capture and Presentation Applications

"Classroom in a Box" services, like Apreso classroom, can be made fully accessible. They key here is the combination of thoughtful design and integration, coupled with the potentially expensive and time-consuming addition of captions and transcripts. This technology needs to mature, and captioning technology needs to keep up. Until that happens, staff time will be required to make content accessible.

Building your own rich media presentation is an attractive and useful pedagogical tool. Many of the problems with classroom capture bleed over, and standards compliance remains an issue.

Knowledge and Course Management

Exciting content management solutions like the Zope/Plone combination are very appealing from an accessibility point of view. You can template to enforce accessibility standards, and Plone boasts of being 508/WCAG AA rated out of the box.

Course management systems need to keep their eye on the accessibility ball, particularly large-scale open source efforts like Sakai/OKI. It is possible, as smaller upstarts have proven - ATutor calls itself "...the first fully inclusive LCMS, complying with the W3C WCAG 1.0 accessibility specifications at the AA+ level ... Conformance with W3C XHTML 1.0". It also uses GPL license.

Document Management

New formats and paper replacement strategies abound, like Macromedia's Flashpaper 2, initially designed to compete with .pdf. Most of these can be *made* accessible, but training, education, and general awareness-building are key. And, of course, nothing can take the place of providing information in multiple formats, including that delightful least common denominator, the .txt file.

Open Source Applications

Many open source projects are gathering mainstream momentum, including OpenOffice. Unfortunately, accessibility efforts often lag behind. Continued development is always needed and welcome. Although OpenOffice has a way to go, it's companion/predecessor, StarOffice, uses the Java Accessibility API and supports JAWS Screen Reader, ZoomText, Gnopernicus Screen Reader and Magnifier, and the GNOME On Screen Keyboard (GOK).

Operating Systems

Windows isn't the computing universe, and accessibility issues will become increasingly critical for users of alternatives. Apple, once a leading light of the assistive technology community, has fallen far behind. The access features built into OS X lag behind Windows in many important ways. A small but vibrant community of A.T. developers exists within the Linux OS world, but huge strides need to be taken before anything like parity with Windows can be achieved in this arena.

Communication Tools

Mobile Devices don't present explicit access challenges, but rather implicit ones - design and markup are keys to accessibility, as well as consideration of limitations based on media type.

Location-aware computing, via GPS, Wi-Fi, Bluetooth, RFID, Cell ID, UWB, FM, or magic future pixie dust, presents issues of privacy and security as well as accessibility. This nascent technology will need further development before it can be thoroughly examined.

Voice-over-IP, represented by "Internet phone" applications like Skype, presents the same challenges for hearing impaired users that a telephone would. On the down-side, there is no practical way to attach a TDD/TTY device. On the up-side, Skype comes with a wicked cool chat/instant messaging tool that can largely take its place. VoIP is also a young technology and more work needs to be done here as well.

LINKS

UNC Webaccess
http://www.unc.edu/webaccess

O'Reilly Emerging Technology 2005
http://conferences.oreillynet.com/pub/w/36/sessions.html

Secure Exam
http://www.softwaresecure.com/

MathML
http://www.w3.org/Math/

Mathplayer
http://www.dessci.com/en/products/mathplayer/

Laszlo
http://www.laszlosystems.com

Apreso Classroom
http://www.apreso.com/

Macromedia Breeze
http://www.macromedia.com/macromedia/accessibility/features/breeze/

Zope and Plone
http://www.zope.com/Products/Zope4Edu.html
http://plone.org

Sakai and OKI
http://www.sakaiproject.org/
http://www.okiproject.org/about/

ATutor
http://atutor.ca/

Flashpaper
http://www.macromedia.com/macromedia/accessibility/features/flashpaper/

OpenOffice
http://www.openoffice.org/

Google Web services
http://www.google.com/intl/en/options/

Apple accessibility
http://www.apple.com/accessibility/

Linux accessibility
http://www.tldp.org/HOWTO/Accessibility-HOWTO/

WML
http://www.w3schools.com/wap/default.asp

Location-aware computing
http://www.deviceforge.com/articles/AT7857629578.html

Skype
http://www.skype.com/