



The NYS Forum, Inc.

Web2.0 and Accessibility (Review and Recommendations)

Contributors

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Introduction

For the New York State Workforce, the year 2009 introduced the use of a myriad of social networking technologies. This movement was led by New York State's CIO/OFT (Chief Information Officer and Office for Technology). This agency's lead in initiatives and accomplishments has inspired other state agencies to provide services using new channels to deliver information to New York State (NYS) residents.

NYS CIO/OFT has established three strategic goals in promoting the Empire 2.0 initiative. Listed below is an excerpt from the CIO/OFT's Empire 2.0 Fact Sheet located at

http://wiki.cio.ny.gov/wiki/Empire_2.0_Fact_Sheet:

1. **Promote open and transparent government for policy- and decision-making.**
2. **Increase collaboration and participation by engaging New York State constituents through the use of innovative tools and new media technologies.**
3. **Increase the awareness of government initiatives to the "Generation V" (virtual) community.**

Why Web2.0?

For the purposes of this paper, we are addressing the social media/social networking/group collaboration aspects of Web2.0.

NYS CIO/OFT's goals align with the Federal government's "Open Government Initiative." These goals are a natural outgrowth of the state leadership reflected by the issuance of Executive Orders for transparency in government. The IT Accessibility Work Group embraces the use of social media as it allows for easy formation of communities of interest among individuals who otherwise might not geographically connect (communities without boundaries). This collective movement engages communities to come together and exchange ideas in new ways, fostering a better forum for groups to discuss and develop solutions to common problems.

Unless the accessibility issues surrounding Web2.0 products and functionality are addressed early in the adoption of Web2.0 technologies by NYS agencies, web content providers run the risk of excluding people with disabilities. With nearly 4 million New Yorkers self-identifying as disabled in some way, content that is not accessible excludes a large portion of their potential audience. Since Web2.0 is by its nature interactive, this failure disenfranchises disabled people by barring them from the conversation, intentionally or not. For governmental organizations, that 20% is also a part of the taxpayer base that funds your operation – including your web site.

Web2.0 in Context

This White Paper is the result of a project spearheaded by The NYS Forum's Emerging Technology Work Group and the Center for Technology in Government (CTG) that focused on the "**social networking / social media / collaborative tools**" portion of Web2.0. Social Networking includes products such as Facebook, Govloop, Ning, IdeaScale, and Twitter; social media encompasses products such as YouTube and Flickr; collaborative tools include products such as GroupSite, wikis, and online bulletin boards. The lines between these categories are quite fuzzy; many products fall in more than one category. This paper focuses on the products that NYS agencies use or are considering for use. The accessibility issues

of those products are at the center of our discussion: captioning, login procedures, content presentation, mini-apps and pop-up windows, are among some of the topics explored.

Standards bodies and related organizations are investigating the accessibility issues presented by Web2.0 technologies. The World Wide Web Consortium (W3C), for example, is working on a set of technologies called ARIA (Accessible Rich Internet Applications), designed to mitigate the inherent inaccessibility of many interactive applications that use new technologies such as AJAX. These tools are not fully developed. Tests conducted in the last year have shown that browser implementations of ARIA did not behave as expected. Once the tools, overarching principles such as graceful degradation, and design best practices mature, developers can use them to make third-party and home-grown RIA applications accessible. Despite the relatively young Web2.0 environment, best practices have emerged. Web2.0 development in this regard is no different than any other application or web development process; good design benefits everyone, by creating applications that are easy to use, easy to understand, and robust. The Social Media Accessibility Recommendations provided in the Appendix at the back of this document lists high-level best practices that should be followed for all web technologies.

Uncover the Falsehoods

Similar to nearly every technology, the use of social media by people with disabilities has been mythologized:

- People with physical limitations (hearing, sight or cognitive) have no interest in engaging with Social Media.
 - The estimated growth rate of Internet usage by people with physical limitations currently ranges from 20%-40% annually. This population now represents 20% of all Internet users. The statistics for social media are no different. In New York, this represents nearly four million people.
- If we are disseminating the same information using a variety of channels, the social technology toolsets do not need to be accessible.
 - The strength of Web2.0, compared to standard web technologies, is the two-way communication it offers between government and its citizens. By pushing disabled Internet users to older technology, we miss the opportunity to engage them fully. Second, it's possible that some nuance of a policy or procedure could emerge through full engagement that might not be gleaned from static web pages. There has been a fundamental paradigm shift in human behavior as a result of two-way channels. For example, some organizations are using Facebook to screen and pre-interview prospective candidates. The "digital divide" widens when government bases decisions on one's ability to collaborate using these Web2.0 technologies that unmodified may exclude persons with disabilities.
 - Time critical interactions will inherently create an unequal state and effect outcomes.

The following excerpt is a screen reader user's perspective on one popular social networking tool.

A Perspective on Social Networking: *from a screen reader user*

Social Networking

By Jeff Bennett

The users of screen reading software, like the rest of us, are also interested in social networking websites. Sites such as Myspace.com and Facebook.com are quite challenging for the screen reading user. The social networking site that seems the most promising for screen reading users is Twitter, found on the web at twitter.com.

The Website

The Twitter website is quite accessible for screen reading users. There is a “skip navigation” link at the top of the page, and all graphics and links are appropriately labeled.

The only problem that screen reading users will encounter is the signup process. The Twitter site uses a Turing test – that is, a test to ensure that the entity filling out the form is human – called Captcha. At the end of the form, an obscured image of alphanumeric text is presented, and the user is required to re-enter the information provided in the image. Obviously, this procedure poses some problems for individuals with vision impairments. The Twitter site uses another technology known as Recaptcha, where the information in the image is also available in an obscured audio form. The screen reading user can listen to a phrase, and enter what is heard. This can be rather challenging.

If you use Firefox, there is an add-in from a company called Webvisum found on the web at <http://www.webvisum.com>. This add-in will capture the Captcha image, and place that image in the user’s clipboard. The user will paste that image in to the edit field. Once this has been accomplished, the user can successfully complete the task of signing on to Twitter.

Twitter has an open source application program interface (API), which allows the creation of Twitter applications. One of these applications is Mctwit. This application allows the screen reading user to use Twitter without entering the Twitter website. The program, produced by Jamal Mazrui, can be found at the following link <http://empowermentzone.mtsetup.exe>. This program has been designed for the screen reading user, with full keyboard support. The program is well documented, with the documentation easy to read and understand.

For screen reading software users who use Microsoft Outlook®, another program that works with screen reading software users is Twinbox. This program allows the user to use twitter within the Outlook client.

Another website for Twitter users is Accessible Twitter found on the web at <http://www.accessibletwitter.com>. This site is fully accessible, and has even more accessibility features than the Twitter website.

This is just a brief look at the Twitter social networking site.

If you need further information, please contact me, jbennett@oft.state.ny.us.

Web2.0 Reviews and Recommendations

The following Web2.0 sites have been reviewed as tools available to NYS agencies to use in reaching citizens using social media/social networking/collaboration sites. Researchers used JAWS to assist in their reviews. Browsers were both IE and Firefox. Researchers felt it important to acknowledge dynamic content and the impact of JavaScript incorporated into these technologies. This review incorporates both user experiences and programmer reviews of technologies behind the applications. (NOTE: JavaScript is not, in itself, inaccessible.)

As with the first service reviewed below, Facebook, many of these sites' account creation forms will pose difficulty for screen reader users, since Turing tests are widely used.

Facebook

Review: [Facebook.com](http://facebook.com) Features should be more accessible. Researchers could not find ways to incorporate alt text into Facebook. Parsing through content was a challenge. Mobile Facebook at <http://m.facebook.com/> and <http://lite.facebook.com/> are viable alternatives to the navigation challenges and were evaluated with positive user experiences reported. Facebook badges, boxes, and live stream tend to be JavaScript dependent, so if used would require an accessible alternate. The mobile version, recommended by Facebook as the accessible version, appears to deliver content accessibly.

Recommendations: Facebook has some accessibility issues (particularly with screen readers and with navigation and image description), but those can be alleviated.

- Offer your visitor Facebook alternatives such as <http://m.facebook.com/> or <http://lite.facebook.com/>. Alternate links to these versions should be used in unison with links to agency Facebook pages. However, these versions do not have all of the features of Facebook such as the calendar, photos, and video tabs.
- If video is uploaded, it should be captioned (does Facebook offer video captioning?).
- NYS developers should review the Facebook developer's site (<http://developers.facebook.com/>) and wiki: (<http://wiki.developers.facebook.com/>) and look toward server-side API calls. which can present imported Facebook content more accessibly.
- Facebook does not provide alt attribute support, but does offer the ability to caption an image.

Twitter

Review: [Twitter.com](http://twitter.com) Researchers had an overall positive experience with Twitter. The challenge appears to be in the initial subscription to the service requiring a Captcha or Recaptcha authentication process. Other observations: Twitter's main site is highly reliant on JavaScript functions to deliver content. Twitter does not provide good support for the alt attribute, the noscript element, or semantic code. Wal-Mart's public web site offers Twitter in MP3, although there's uncertainty as to effort and cost to convert. Google has an API component in development that provides limited text-to-speech conversion as part of its overall translation service.

Recommendations: Except for its use of Recaptcha during the initial sign-on procedure, Twitter offers good accessibility. In addition, there are many alternatives to the main Twitter site that are even better regarding accessibility.

- Consider offering alternatives to visitors who link to your Twitter site. Twitter offers Accessible Twitter <http://www.accessibletwitter.com/> Twitter also has an open source API for twitter apps called "Mctwit"
- Developers should visit <http://apiwiki.twitter.com/Twitter-API-Documentation> and use the API to create alternate content page dynamically via the API (so that it doesn't have to be recreated for each alternate site).
- Links to the alternate Twitter sites should be used in unison with links to the agency's main Twitter page.

Ning, Govloop

Review: Ning.com and GovLoop.com are social network sites. Ning and GovLoop were inconsistent when it came to adding alt text for images. Under the Latest Activity section, the user images were read with incredibly long and nonsensical alt text. The same is true for the graphics which appear in the Groups section. However, under the Members section, each image, whether it was the generic graphic or a user-specific graphic, read the member's name as the alt text. The same is true under the Blog Posts, Forum and About sections. The use of h2 and h3 definitely help in the navigation of the page. The screen reader correctly identified the main area of the page. The list of links was not as helpful. Links contained in lists, did make sense. However images with the horrendous alt text were displayed as links. A Skip Navigation link would be desirable. Search results were navigable through header and top navigation information first.

Recommendations: These networking and collaboration platforms do present some difficult accessibility issues from the initial sign-on procedure to the navigation, control of content, image description, etc. Many offer third-party applications (apps) that would need to be evaluated separately for accessibility.

- Uses Captcha for its initial sign-on, which creates problems for screen readers or browsers that have images disabled.
- Disabling JavaScript and CSS does not seem to affect core functionality and can make for an easier navigation experience for vision or mobility impaired users.
- The platform offers little control in how content is presented, especially in regard to alt text and image captioning.
- Ning has been responsive to accessibility issues that we have brought to their attention, but that doesn't mean that all the problems have been resolved.
- Our review only looked at www.nysforumwebguild.ning.com and www.govloop.com, both of which run on the Ning platform. However, similar platforms such as www.groupsite.com raise similar concerns.

YouTube

Review: YouTube.com resulted in mixed reviews. Captioning is available to YouTube posters via Automatic Speech Recognition (ASR) since November 2009. You can find more information on how

to caption YouTube videos at

http://code.google.com/intl/en/apis/youtube/2.0/developers_guide_protocol_captions.html.

YouTube videos can be embedded in pages on the agency web site or agencies can establish their own "channel" on YouTube. The YouTube site itself is problematic for screen reader users.

Recommendations: The main accessibility concern with YouTube or any other video site is to provide captions with the video.

- Use ASR for when posting YouTube videos.
- If JavaScript or Flash is not present in the browser, then videos will not play. Also, disabling JavaScript removes some functionality, such as the ability to comment on videos or reply to comments, but core functionality does not seem to be affected.

RSS, Atom, News Feeds

Review: RSS, Atoms, News feeds. Researchers chose http://www.cio.ny.gov/CIOOFT_rss.xml for review. Subscribing to syndication services or newsfeeds is a web service that few web visitors attempt as yet. However aggregating news from subscriptions can be a very efficient way to acquire knowledge about a particular area of interest to the user. Feeds are primarily links and should be easily read by most screen readers.

Recommendations: RSS, Atom, and newsfeeds may not fall within the social media/ social networking/ group collaboration umbrella under the strictest interpretation, but most of these tools do offer RSS or newsfeeds, so we are evaluating them here. Since RSS, etc., are just simple text and links, the technology does not raise accessibility concerns. For that reason, we'd recommend RSS, Atom, or newsfeeds as another option for users to connect to agency social media sites according to their own preferences.

- In many cases, RSS seems to be undervalued at its placement on a page is often difficult to find or hidden at the bottom. RSS feed location should be elevated and feeds should be given the same importance as the link to the main content page. It may be preferable to users to pull information via RSS and review in their aggregator, rather than having to visit and navigate the site. As there is no true standard for RSS as yet, Visit the following links for more information on RSS <http://www.w3schools.com/rss/> and <http://www.webbie.org.uk/accessiblerrss/> for more information on RSS service. The American Foundation for the blind, <http://www.afb.org/> provides information to individuals with limited vision on utilizing RSS feeds.

Flickr

Review: [Flickr.com](http://www.flickr.com) Researchers reported several accessibility issues. The site uses dynamic JavaScript menus. There is very little developer control of components. Site does not allow user access to an image's alt attribute. Flickr places the title of the image and the photographer's username into the alt attribute.

Recommendation:

- Developer should use care when selecting title names because the title will become the alt text. The interface difficulties can be circumvented by embedding Flickr galleries on your own web page as an alternative. Developers should visit http://developer.yahoo.net/blog/archives/2008/06/how_to_build_an.html.

Delicious

Review: [Delicious.com](http://delicious.com) Delicious is a social bookmarking site where users can store their web bookmarks on the Internet (instead of just on their desktop or notebook browser). It also allows sharing of these bookmarks, viewing others' bookmarks, and joining/creating social networks around these bookmarks. Delicious seems to offer good accessibility support. Creating an account is done through Yahoo.

Recommendations: Delicious does not present any major accessibility issues.

- Developers visit <http://delicious.com/help/api>.

Wikis, Blogs, CMS

Wikis/Blogs/CMS: One of the advantages to using these technologies is that they are open source and user-installable. This provides the developer with full control over the presentation of content, which is the key to providing accessible content. In addition, these applications enjoy wide support among open source developers, many of whom have implemented improvements that adhere to accessibility standards. In general JavaScript and alt text support is good in these applications and the code is customizable. However, web developers should validate to ensure customized code is semantically correct. Themes are customizable, which provides good contrast support.

The developer can control many of the components/plugin/add-ons which are hosted and should therefore incorporate accessibility into end user experience. Like any third Party or Customized product, when designing your wiki consider navigation and the design principles of the W3C's Web Content Accessibility Guidelines (WCAG) 2.0 and understand the impact of your design decisions on the end-user. Since these products are customizable, you can either prepare users for the Turing tests or create/maintain user accounts. It is the developer's responsibility to review products' functionality extensively, prior to incorporating into an existing site. See the **Social Media Accessibility Recommendations** in the Appendix.

1. **Review:** [MediaWiki.org](http://mediawiki.org), with the specific implementation review for http://wiki.cio.ny.gov/wiki/Main_Page The CIO/OFT wiki uses HTML tags that support JAWS users. H1, h2, and h3 are generated and can speed navigation of the page. Wikis also generate and support list structures. Navigation back to the CIO/OFT homepage from the wiki was an issue, but can be addressed by customizing links. Screen readers will recite the entire page, instead of, for example, the edit window presented when making changes to a page.

Recommendation:

- Create more descriptive titles to improve screen readability. Any extensions used would also need to be review for accessibility. Developers visit <http://www.mediawiki.org/wiki/MediaWiki> or <http://blind.wikia.com>.
 - Wiki users should use the markup functionality provided by the wiki instead of HTML markup.
2. **Review:** [Wordpress.org](http://wordpress.org) Wordpress allows non-web developers to create and maintain a blog. The presentation is highly customizable.

Recommendation:

- Any extensions used would also need to be reviewed for accessibility. Developers visit http://codex.wordpress.org/Developer_Documentation and <http://codex.wordpress.org/Accessibility>
4. **Review:** [Drupal.org](http://drupal.org) is a database-driven content management system that allows non-web developers to create web content. The CMS allows a high level of customization and offers good support for accessibility.

Recommendation:

- Any extensions/plugin used would also need to be reviewed for accessibility. Developers visit <http://drupal.org/contributors-guide>.

To summarize researchers' experiences, all expressed a more positive user experience with the screen reader when the technology offered a mobile equivalent.

Resources: You can find more information at the IT Accessibility Work Group wiki located at http://ddjsandbox.com/wiki/index.php?title=Main_Page .

If you need help in accessing our team's website, contact Jason Cortes at jcortes@goer.state.ny.us .

Appendix: Social Media Accessibility Recommendations

Accessibility Goal:	VISION IMPAIRMENTS Blind, low vision, colorblind	HEARING IMPAIRMENTS Deaf, hearing-impaired, no sound support on device	MOBILITY IMPAIRMENTS Partial or full paralysis, difficulty with fine motor control	COGNITIVE IMPAIRMENTS
PERCEIVABLE: Information and user interface components must be presentable to users in ways they can perceive.	<ul style="list-style-type: none"> • Alternatives for non-text elements (e.g., alt attributes, video description) • Layout-independent • Sufficient contrast between text and background • Do not use color to convey meaning 	<ul style="list-style-type: none"> • Alternatives for aural elements (e.g., captions, visual alerts) 	<ul style="list-style-type: none"> • Avoid creating content that requires scrolling 	<ul style="list-style-type: none"> • Uncluttered layout • Incorporate related images to enhance understanding
OPERABLE: User interface components and navigation must be operable.	<ul style="list-style-type: none"> • Avoid timed responses, if possible • If using Captcha, be sure to include accessible alternative for visually impaired users • Keyboard accessible • Consistent navigation 	<ul style="list-style-type: none"> • Provide textual instructions • Text equivalents for all aural cues • Consistent navigation 	<ul style="list-style-type: none"> • Design for “lowest common denominator” – establish viewport size to avoid necessity for scrolling • Maximize “clickable” area by linking labels to input elements • Keyboard accessible • Consistent navigation 	<ul style="list-style-type: none"> • Avoid timed responses, if possible • Consistent navigation • If using Captcha, be sure to include accessible alternative • Consistent navigation
UNDERSTANDABLE: Information and the operation of user interface must be understandable.	<ul style="list-style-type: none"> • Use clear, concise language • Properly labeled navigation • Make sure page elements linearize properly 	<ul style="list-style-type: none"> • Use clear, concise language • Properly labeled navigation • Clear instructions for turning captions on 	<ul style="list-style-type: none"> • Use clear, concise language • Properly labeled navigation 	<ul style="list-style-type: none"> • Use clear, concise language • Properly labeled navigation
ROBUST: Content must be able to be interpreted reliably by a wide variety of user agents, including assistive technologies.	<ul style="list-style-type: none"> • Adhere to web standards • Use fluid layouts • Provide alternatives to dynamic navigation and other dynamic content • Provide descriptions for substantive video content 	<ul style="list-style-type: none"> • Ensure that captions are synchronized with content 	<ul style="list-style-type: none"> • Adhere to web standards • Use fluid layouts • Provide alternatives to dynamic navigation and other dynamic content 	<ul style="list-style-type: none"> • Adhere to web standards • Use fluid layouts • Provide alternatives to dynamic navigation and other dynamic content