Project title: From Remediation to Proliferation - Mainstreaming the accessibility of Web Resources

Investigators:

- ❏ Principal Investigator: JaEun Jemma Ku, PhD and PMP, Internet Application Systems Specialist, University library IT
- ❏ Co - Principal Investigator: Jon Gunderson, PhD, Coordinator of Information Technology Accessibility, Disability Resources and Educational Services (DRES)
- ❏ Participant: William Weathers, Web Developer and User Interface Specialist, University library IT

Project Idea

Over the next year, the Library's WordPress-based Content Management System (CMS) will be used to create and manage a myriad of informational items and Library web services. These resources must be made optimally accessible to all Library users, but the means of designing and implementing accessible systems is often misunderstood, if recognized at all by most developers and end users.

This problem is far from unique to Illinois. In content management systems typically used by libraries and other organizations, it is too difficult to make pages accessible to people with disabilities requiring a complex a three-step process. First, authors need to understand the needs of people with disabilities (e.g. Web Content Accessibility Guidelines, Diverse Personas for library resources[1]), in the second step they must understand the accessibility features of the technology they are using (e.g. HTML5, JavaScript…). The last step is how their authoring environments (e.g. WordPress) can support implementing the accessibility features for a web page. These are three huge steps and most authors do not even get to the first step. Due to the knowledge and skills required by author's accessibility of web resources is rare.

This innovation project seeks to change this model to one where the authoring environment supports accessibility by default, reducing for the need of the author to understand the complex technical standards underlying accessibility requirements as well

[1] Diverse personas example by a banking industry can be found at https://app.pelorous.com/public/cms/239/497/62/65/Barclays-Diverse-Personas-Issue-1.pdf?realName=zjtBN1.pdf

as the technical details of accessibility for a particular technology. This proposal posits that it would be innovative to mainstream accessible authoring practices as a core service of a content management system--a practice that has not to our knowledge been pursued in our peer Libraries. The goal of this project is that accessibility of web resources authored in WordPress becomes standard practice and it will be harder to create inaccessible resources, than accessible resources.

The investigators, with the assistance of a student assistant, will develop accessible page authoring templates, plugins, and guides that will both enable and enforce, in a light-handed fashion, accessible practices to support authors in creating accessible content by default. The goal of this project is to provide users with the tools they need to ensure that they create accessible sites without having to understand complex technical details of accessibility.

Innovation

Horton, S(et al.) [2] point out the practice of retrofitting accessibility at the end of project and suggest to revisit the approach.

> *"Attention to accessibility usually comes into play in the later phases of product development. ...However, the best fix for many complex accessibility issues may be to revisit the overall design approach: yet reworking designs at this late phase has a significant impact on timelines and processes. Any recommendation involving alternative design is therefore usually unwelcome…….The best approach to accessible user experience is to integrate accessibility into the design and development process. When accessibility is part of the practice of every member of the product development team, and when accessible features and functionality are built into design, content, and code, the result is a product that is accessible and enjoyable for everyone."*

In the same context, this proposal suggests an innovation, which revisits the overall design and IT project management practice in the library. Implementing accessibility at the end of project release to avoid Office of Civil Right complaint or violation of Illinois Information Technology Accessibility Act (IITAA)[3] and Section 508[4] is a common practice that is very costly and delays project timelines.

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[2] Horton, S (et al.) "*Accessibility in Practice: A Process-Driven Approach to Accessibility",* Inclusive Designing: Joining Usability, Accessibility, and Inclusion*, Editors: Langdon, P.M., Lazar, J., Heylighen, A., Dong, H. (Eds.) 2014.*

[3] Illinois Information Technology Accessibility Act(IITAA) http://www.dhs.state.il.us/page.aspx?item=32765

[4]Section 508 and Related Laws and Policies http://www.section508.gov/content/learn/laws-and-policies

The innovation in this proposal is changing the authoring model through changes in the WordPress authoring interface and through user feedback during the authoring process. This will reduce the risk of having inaccessible web materials and reduce the costs associated with retrofitting (e.g. recoding pages) to be accessible when users are unable to make effective use of the site or when complaints are made regarding inaccessible content. This will effectively move accessibility from a three-step process to an one step process.

Objectives: what problems will be solved:

1. Creating an inclusive online environment for students, faculty and staff with disabilities

Inclusive Illinois 2015 impact report addresses well how "people from diverse backgrounds working together identify more creative solutions to problems" [5] These efforts will also contribute to enhancing web content quality in teaching and research.

2. Decreasing the likelihood that inaccessible content pages are created

The learning curve to understand accessibility requirements and recommendations (i.e. WCAG rules and ARIA roles) is steep and getting steeper. Once the principles are understood, they must be implemented in efficient working code, a task that is beyond the capability of most end users and requiring time to develop expertise that most developers do not have.

3. Forestalling expensive and ineffective retrofitting of accessibility

Past practice has been to hold a small number of Library IT staff solely responsible for ensuring the accessibility of numerous web pages created by library subject experts and staff. This requires that inefficient and largely ineffective remediation work be completed after services have been developed, typically via the application of one-off solutions.

4. Prevention for Office for Civil Right (OCR) complaints

[5] Inclusive Illinois 2015 impact report, http://www.inclusiveillinois.illinois.edu/supporting_docs/2015%20Inclusive%20Illinois%20Impact.pdf

Higher educational institutions face liability for inaccessible web content and technologies.[6] Several universities had already gone through OCR complaints for not ensuring equal access to its website for individuals with[7] disabilities.

5. Growth of In-house Expertise

The University Library has been getting immense assistance from the Disability and Resources and Educational Services (DRES) to release IT projects such as the Gateway project, Easy search and the Interlibrary Loan site. DRES helps with IT projects across all campus units, not only library projects. As a result of being a campus-wide service DRES is in high demand and it usually takes a few weeks to receive accessibility reports services. If the University Library can grow in-house experts, ensuring IT accessibility with the close partnership with DRES will be more efficient and effective.

Contributions:

1. Provide accessible content authoring experiences to content authors by adding accessibility features to library CMS WordPress templates, plugins and widgets.

2. Ensure the IT accessibility compliance throughout the project life cycle, not the end of the project delivery.

3. Provide outreach for the culture of accessibility awareness rather than a concept of accessibility compliance by law.

4. Share web accessibility knowledge with and assist Graduate School of Library and Information Science curriculum development with actual library CMS coding examples.

5. Contribute accessibility feature development to the WordPress community.

6. Contribute to the World Wide Web consortium ARIA (Accessible Rich Internet Application) effort.

Consultation with other campus units

[6] Higher Ed Accessibility Lawsuits, Complaints, and Settlements http://www.d.umn.edu/~lcarlson/atteam/lawsuits.html

[7] U.S. Education Department Reaches Agreement with Youngstown State University to Ensure Equal Access to its Websites for Individuals with Disabilities http://www.ed.gov/news/press-releases/us-education-department-reaches-agreement-youngstown-state-university-ensure-equal-access-its-websites-individuals-disabilities

DRES will play an important role in assisting this project due to their vast and deep knowledge of web accessibility as well as its resource network to other campus units and other universities. Dr. Gunderson will mentor the project members for web accessibility coding and shepherd the work into being incorporated to JQuery, WordPress as well as W3C authoring guides. Furthermore, W3C coding examples will be used not only by IT developers in the libraries, but also IT professionals worldwide, which will raise the reputation of University of Illinois library globally.

Jemma Ku has also shared the project idea with Julieanne Chapman, the service manager of Publish.Illinois.edu system, which provides the campus wide WordPress content authoring platform. Currently, some of university library units, projects and services are already using PIE system to author library contents (ex: Undergraduate library blog, Recognizing Excellence, The Image of Research and more). Jemma is looking forward to sharing the deliverables with PIE system to maximize innovation proposal benefits.

Project deliverables

- ❏ Content authoring interface and templates that support authors creating IITAA and WCAG 2.0 compliant content
- ❏ Accessible user interface components coding examples (ex: menus, date picker, slideshow and more)
- ❏ Accessible University library WordPress website compatible with IITA (Illinois Information Technology Act) and WCAG 2.0 requirements
- ❏ Providing accessibility feedback on authored library web pages
- ❏ Project report, professional presentation or an article for the publication

How it fits with existing activities in the Library

1. Library CMS project

This accessible coding project fits with existing content manage system(CMS) development efforts in that it mainstreams the accessibility of web resources as well as ensures IT accessibility compliance.

2. Library's strategic planning

One of principles for recent "Framework for Strategic Action, 2015-2018" is "inclusiveness " and it also suggests to "optimize discovery of, access to, and accessibility of all library resources, collections, and services"[8] to which this project will directly contribute.

Resources Available and Dedicated by Proposers

- Assigned one work day per week to code and review accessibility features and to train and mentor the student worker
    - Jemma Ku, Internet Application Systems Specialist
- Separate 150 hours to review student worker's code and to support integration of developed plug-ins, templates, and widgets
    - William Weathers, Web Developer and User Interface Specialist

Resources needed

Estimated Total: $17,052

- Student programmer(s)
    - Code accessible features of WordPress templates, plugins and widgets and UI components (1,004 hours x $13.00 =$13,052: 20 hours per week for 12 month)
- Accessibility outreach, workshop and conference ($4,000)
    - International Association for Accessibility Professionals webinar or invited speaker for accessibility training
    - Annual International Technology and Persons with Disabilities Conference, San Diego, CA March 21 - March 26 - was recommended by Jon Gunderson as cost-effective ways from programmer/development staff to gain an understanding of advanced accessibility principles and practices

Sustainability

After the project support from Innovation Funding, the participants will look for more long term stable funding from the campus or inside of University library as well as external sources, such as the Institute of Museum and Library Services (IMLS) National Leadership

[8] Framework for Strategic Action, 2015-2018, http://www.library.illinois.edu/planning/ADOPTEDFramework_for_Strategic_Action.pdf

Grants for Libraries. External funding support will be essential to generalize, systematize and distribute project deliverables.

As one way to sustain the project goals and benefits, Jemma Ku, Co-PI relates this project idea to develop a companion online accessibility training module. This online accessibility training module can be licensed with small fee to other educational institutions or partnered with a company like Facebook[9] to deepen the accessibility training.

Time-line

- ❏ Project initiation and planning: February - March 2016 upon approval by library Executive Committee
- ❏ Project execution (coding, feature development and more): March 2016 - March 2017
- ❏ Project completion (Final report): April - June 2017

How to measure benefits of the project and determine whether the project has succeeded or failed

- ❏ Project report detailing changed workflow- qualitative and quantitative measure[10]
- ❏ Accessible codes repository (repository location is not decided yet)
- ❏ Shortened delay of project release due to accessibility problems
- ❏ Increased accessibility in University Library Websites (ex: Functional Accessibility Evaluator Report)
- ❏ Presentation or publication of project deliverables
- ❏ Submission of accessible features and feedback to WordPress and other open source such as JQuery group
- ❏ Submission of accessible coding examples to W3C ARIA working group

[9] Basic web accessibility training module by Facebook http://accessibility.parseapp.com/

[10] As a quantitative measure, accessibility components story points in WordPress CMS agile project board can be totaled or compare total accessibility story points with total story points for all the work components.