MICHIGAN STATE UNIVERSITY | Usability/Accessibility Research and Consulting

To: Robert Van Rennes, Big Ten Academic Alliance
From: Graham L. Pierce, MSU Usability/Accessibility Research and Consulting
CC: Heidi Schroeder, MSU Libraries
Subject: East View High-Level Accessibility Evaluation
Date: September 4, 2019

MSU Usability/Accessibility Research and Consulting (MSU UARC) conducted a high-level accessibility evaluation of East View to evaluate its conformance with WCAG 2.0 AA Criteria. This evaluation did not include all functionality or content of the site or all WCAG 2.0 AA Success Criteria.

During this evaluation, a number of issues were found that will make the site and its content impossible to use for many individuals with disabilities, and difficult to use for many others.

Keyboard users, including screen reader users and users with dexterity impairments, will be unable to access a variety of site functionality and content. Some critical interactive elements cannot be reached or opened via keyboard. Many interactive elements that can be reached lack a sufficiently visible focus indicator, making it difficult or impossible for many keyboard-only users to effectively use them, as they cannot determine when they have reached the correct element. Focus order is also incorrect in places, further increasing the difficulty of using the site with a keyboard.

Individuals with visual impairments, including those that rely on screen readers, will have additional problems. Most lightbox content cannot be read with a screen reader, making lightboxes impossible to use. Some content is not read out or is read out incorrectly and structural information is not appropriately conveyed to users, making it difficult or impossible to understand content and organization in places. Some form inputs are not appropriately labeled, making those inputs difficult or impossible to use for those that rely on screen readers. Custom elements do not correctly announce themselves to screen readers, making them difficult or impossible to understand and use. Some images lack appropriate alternative text, significantly impacting users with visual impairments.

While text in the PDF is provided to screen readers (if they have Russian capabilities), the PDF has not been tagged for accessibility and no structural information is provided to assistive technologies, making it extremely difficult to use and navigate for users with disabilities. Additionally, no title or language are provided to assistive technologies.

Other issues were found that will make it difficult for users with a variety of disabilities to effectively use the system, including insufficient link context, insufficient color contrast, no means to bypass repeated navigation, and language changes not being properly documented in the code.

To improve access for users with disabilities, UARC recommends a full WCAG 2.0 AA evaluation and that the problems discovered be remediated.

Note: For the purposes of this high-level review, results for "Влади́мир Ленинiп" (Transliterated) were used as an example of a Search Results page, "Pravda Digital Archive" was used as an example of a Digital Archive page, and "Pravda, 1912, No. 49, Page 14" was used as an example of an Article page and PDF.

Note: PDF text accuracy could not be evaluated (none of the evaluator read or speak Russian).

For reference, a screenshot of the Home Page at the time this evaluation was completed has been included at the end of this memo.

High-Level Findings

Document Structure

- On the Home, Search Results, and Advanced Search pages, headings are not tagged. [WCAG 2.0 SC 1.3.1]
- In the Transliteration lightbox, "Russian Transliteration Table" should be an h1, not an h5. [WCAG 2.0 SC 1.3.1]
- On the Digital Archive page, "Pravda Digital Archive" should be an h1, not an h3. [WCAG 2.0 SC 1.3.1]
- On the Article page, "Pravda, 1912, No. 49" should be an h1, not an h3. [WCAG 2.0 SC 1.3.1]
- On the Article page, headings are not tagged in the document (PDF). [WCAG 2.0 SC 1.3.1]
- In the Cite This lightbox on the Article page, headings are not tagged. [WCAG 2.0 SC 1.3.1]
- List in page footer ("Advanced Search", "Browse Titles", etc.) should be coded as a programmatic list. [WCAG 2.0 SC 1.3.1]
- On the Home and Advanced Search pages, continuous lists that span multiple columns should be a single list, not a separate list for each column of text. [WCAG 2.0 SC 1.3.1]
- Content in the Calendar lightbox is not correctly read out by screen readers. [WCAG 2.0 SC 1.3.1, WCAG 2.0 SC 1.3.2, WCAG 2.0 SC 4.1.2]
- Content in the Transliteration lightbox and in the Cite This lightbox on Article page is not read out by screen readers. [WCAG 2.0 SC 1.3.1, WCAG 2.0 SC 1.3.2, WCAG 2.0 SC 4.1.2]
- PDF is untagged, and provides no structural information to assistive technologies. [WCAG 2.0 SC 1.3.1]
- The language of the PDF is not defined. [WCAG 2.0 SC 3.1.1]
- Changes in language on pages are not programmatically declared. [WCAG 2.0 SC 3.1.2]

Keyboard Support

- Virtual Keyboard and Transliteration links and calendar icons in search lightbox/area cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- Virtual keyboard (which cannot be opened via keyboard) cannot be operated via keyboard if lightbox opened via mouse. [WCAG 2.0 SC 2.1.1]
- Calendar (which cannot be opened via keyboard) cannot be operated via keyboard in Firefox if lightbox is opened via mouse. [WCAG 2.0 SC 2.1.1]
- Calendar (which cannot be opened via keyboard) cannot be fully operated via keyboard in Chrome (e.g., "<", ">", and "Go to today" links cannot be reached) if opened via mouse. [WCAG 2.0 SC 2.1.1]

- On all pages except Advanced Search, radio buttons in search area cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On all pages except Advanced Search, search lightbox cannot be closed via keyboard. [WCAG 2.0 SC 2.1.1]
- On all pages except Article, checkboxes (with exception of Transliteration checkbox in search lightbox) cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Home and Advanced Search pages, "?" icon (next to "Niva Digital Archive) cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Article page, "Add to Favorites", "Download PDF", and "Cite This" cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- In the Cite This lightbox on the Article page (which cannot be opened via keyboard), "Copy" buttons cannot be reached via keyboard if lightbox is opened via mouse. [WCAG 2.0 SC 2.1.1]
- On the Advanced Search page, radio buttons in search area cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On all pages except Advanced Search, search lightbox inappropriately appears on keyboard focus. [WCAG 2.0 SC 3.2.1]
- On the Home page, the "Select Sources" radio buttons incorrectly receive focus at the start of the page, instead of where they occur in the page sequence. [WCAG 2.0 SC 2.4.3]
- On the Digital Archive page, focus inappropriately resets to the top of the page when columns are sorted. [WCAG 2.0 SC 2.4.3]
- On the Article page, PDF reader tools incorrectly receive focus at the start of the page, instead of where they occur in the page sequence. [WCAG 2.0 SC 2.4.3]
- On the Article page, PDF hand tool incorrectly receives focus out of order with the other tools in the PDF reader. [WCAG 2.0 SC 2.4.3]
- On the Advanced Search page, search inputs incorrectly receive focus at the start of the page, instead of where they occur in the page sequence. [WCAG 2.0 SC 2.4.3]
- On the Advanced Search page, focus incorrectly reaches "AND", "OR", "NOT", etc. at a different point than the surrounding inputs. [WCAG 2.0 SC 2.4.3]
- On the Advanced Search page, focus incorrectly reaches "Search and "Reset" before the "All years" dropdown. [WCAG 2.0 SC 2.4.3]
- Focus is not sufficiently visible for a variety of interactive content. [WCAG 2.0 SC 2.4.7]
  - "Advanced Search", "Help", "Evxpress" at top of pages
  - "AND", "OR", "NOT", etc. buttons in search lightbox/area
  - Virtual keyboard buttons in search lightbox/area
  - Checkbox in search lightbox/area
  - Calendar dates (after using mouse to open lightbox in Chrome)
  - "Selected Databases" on Home page
  - "Selected Publications" and dropdown arrow on Digital Archive page
  - "All Databases" on Digital Archive and Search Results pages
  - Column heading links on Digital Archive and Search Results pages
  - Stars on Search Results page
  - "Search" and "Reset" on Advanced Search page
  - "Select Sources" radio buttons on Home and Advanced Search pages

- On all pages except Advanced Search, focus on elements near top of page is covered by search lightbox. [WCAG 2.0 SC 2.4.7]

Navigation
- PDF is not programmatically titled. [WCAG 2.0 SC 2.4.2]
- No means to bypass repeated navigation exists on pages (no h1 at the start of unique page content and no "Skip to Main" link provided). [WCAG 2.0 SC 2.4.1]
- On the Digital Archive and Search Results pages, it is not visually apparent to users that clicking on column titles will sort rows. [WCAG 2.0 SC 2.4.4]

Forms and Data Submission
- The "All years" dropdown and date text inputs in the search lightbox/area are not programmatically labeled. [WCAG 2.0 SC 3.3.2]
- On the Home and Advanced Search pages, "Select Sources" radio buttons are not programmatically associated with grouping label ("Select Sources"). [WCAG 2.0 SC 3.3.2]
- On the Article page, article number text box is not programmatically labeled. [WCAG 2.0 SC 3.3.2]
- On the Advanced Search page, inputs are not programmatically labeled. [WCAG 2.0 SC 3.3.2]
- No instructions are provided for keyboard control of calendar lightbox. [WCAG 2.0 SC 3.3.2]

Images
- Appropriate alternative text is not provided for some images. [WCAG 2.0 SC 1.1.1]
  - Star icon (next to "(0/0)" at top-right of page)
  - "?" icon on Home and Advanced Search pages
  - Sort arrows on Archive and Search Results pages
  - Stars on Search Results page

Color and Visual Characteristics
- Grey text and objects on white background (e.g., placeholder text in inputs, radio buttons in search area; "X" button in Transliteration lightbox) and grey text and objects on light grey (e.g., checkboxes on all pages except Issue; "(selected: 2)" and "(UDB-COM)" on Home and Advanced Search pages; breadcrumb text on all pages except Home and Advanced Search) have insufficient contrast. [WCAG 2.0 SC 1.4.3]

Custom Elements and Dynamic Content
- Content in Transliteration lightbox and in Cite This lightbox on Article page is not read out by screen readers. [WCAG 2.0 SC 1.3.1, WCAG 2.0 SC 1.3.2, WCAG 2.0 SC 4.1.2]
- Content in Calendar lightbox is not correctly read out by screen readers. [WCAG 2.0 SC 1.3.1, WCAG 2.0 SC 1.3.2, WCAG 2.0 SC 4.1.2]
- Names, roles, and values (i.e., their text label, that they are checkboxes, and whether they are checked) are not provided for custom checkboxes. [WCAG 2.0 SC 4.1.2]
- On the Digital Archive and Search Results pages, roles and values (i.e., that they sort content, whether they are being used to sort content, and the sort order) are not

provided for column headings, and screen readers are not notified when users sort by a column. [WCAG 2.0 SC 4.1.2]

- On the Search Results page, names, roles, and values (i.e., their text label, that they are selectable, and whether they are selected) are not provided for Add to Favorites stars. [WCAG 2.0 SC 4.1.2]

- On all pages except Advanced Search, screen readers are not notified when search lightbox appears. [WCAG 2.0 SC 4.1.2]

Home Page Screenshot