Accessibility and Usability

Tim Hostetler and the ADS Team

ADS Users Group Meeting, 19-20 Nov. 2020
Expert Assessment and Audit

● Contracted Harvard Web Publishing
  ○ UX Consultants specializing in academic web apps
  ○ Web accessibility and usability analysis
    ■ Provides status reports
    ■ Solutions to arrive at our goals
    ■ Suggestions and concepts based on user feedback and own expertise

● A good fit
  ○ Small team that spent a good deal of time to understand the application
  ○ Thoughtful suggestions based on thorough user feedback analysis
  ○ Provided detailed reports defending their suggestions/critiques
User Feedback

- Analysis of 106 email threads from users from Oct 2019 - Mar 2020
  - Bug reports, complaints, questions, etc.
  - Key observations:
    - Users tend to only contact support about specific questions/problems
      - i.e. a particular query or bug while perform a certain action
    - Some common themes can be seen indicating potential pain points
  - Provided areas to explore during usability testing
User Feedback

- Unexpected Search Results: 9.4%
- Problems Creating Search Queries: 23.6%
- Missing Citation Information: 13.2%
- Zotero Not Working: 1.9%
- Printing Trouble: 2.8%
- Dislikes New ADS: 3.8%
- Library Features: 4.7%
- Metrics about Papers: 6.6%
- Misc Feature Requests: 9.4%
- Slow Performance: 4.7%
- BibTeX Formatting: 6.6%
- API Questions: 11.3%
Analysis of User Feedback via emails

- Identified early usability pain points, addressed most of them
  - Difficulty with syntax for complex queries
  - Not always clear where to find data or metrics about specific results
  - Finding and maintaining accurate citation information can be difficult
  - Lack of understanding why there might be discrepancies between metadata in ADS and publishing sources
  - Unexpected results when searching for authors with common names, names with accents, and/or uncommon spellings (Mikal vs. Michael)
  - Lack of clarity about all the features available within the system
  - Changes in the export of BibTex citations
  - Occasionally, ADS has slow performance
Usability Study

- Usability study and report
  - 20 international participants
  - Users provided with a series of tasks, simple to complex

- Research questions
  - How is the Astrophysics Data System used as a research tool?
  - How usable is the flow?
  - How easy is it to find things?
  - How do people discover new (and old) features?
  - Is it accessible to users of assistive technology?
Usability Study

- **How is the ADS used as a research tool?**
  - Used by the majority of the participants more than once a week
  - User types: students, librarians, and power users

- **How usable is the flow?**
  - Quick-fields and query samples used frequently
  - 30% of participants utilized the autocomplete feature
  - Flow is less smooth for classic form users, but it is preferred by some
  - Some users started a query using classic form but refined it using the quick-fields and other modern form features later
  - 60% were modern form users, with some sticking to classic form because they found it more user friendly
  - Filters don’t auto-clear; 20% of users didn’t realize they had old filters applied when performing a new search
  - 25% of users were confused about the state of the filters while refining
Usability Study

● How easy is it to find things?
  ○ Users from all categories preferred ADS over competitors (i.e. Google Scholar)
  ○ 90% of participants used specific form fields for searching
  ○ About 50% knew how to use the Explore menu features
  ○ Most users were comfortable with the export tool

● How do people discover new (and old) features?
  ○ Some users discover features at the beginning of sessions
    ■ Several users discovering the paper form for the first time
  ○ Users discover features as needed
  ○ 35% attempted to guess the boolean search syntax
  ○ 30% utilized the help pages, with only one saying they frequented it
  ○ Those who used them, found the help pages invaluable
Usability Study

- **Recommendations (highlights)**
  - Make applied filters more prominent
  - Where possible provide shortcuts vs special syntax
  - Provide “did you mean…” feature for misspelled author names
  - Some text was confusing, i.e. “co-reads” and “Switch to basic HTML”

- **Wireframes**
  - Provided examples of two pages where simple changes could improve usability

- **Takeaways**
  - Review internally the viability of certain suggestions
  - Utilize new capabilities like A/B testing to confirm usability
  - What can we learn from these insights to continue improvements elsewhere?
Web Accessibility Overview

- Importance of web accessibility
  - Strive to be as open and accessible to as many users as possible
  - ~15% of users have a disability which affects their ability to access information on the web

- WCAG 2.0
  - Web Content Accessibility Guidelines
  - Our goal is to meet this standard

Sources:
https://www.interactiveaccessibility.com/accessibility-statistics
https://www.w3.org/WAI/WCAG21/quickref/
Accessibility Report

- **Areas**
  - Semantics
  - Color
  - Focus management
  - Names and roles
  - Input labels
  - Dynamic updates

- **Audit**
  - Utilized screen-readers VoiceOver (Mac) and NVDA (Windows)
  - Provided detailed descriptions of each area, and examples
  - Audit report enumerated many issues, rating them low to high
  - Team also offered support, as needed, during our development
Accessibility Report

Distribution of Accessibility Issues

- **Semantics**: 8 issues, 4 high impact, 3 medium impact, 1 low impact
- **Color**: 5 issues, 3 medium impact, 2 low impact
- **Focus Management**: 14 issues, 3 high impact, 2 medium impact, 9 low impact
- **Names and Roles**: 13 issues, 1 high impact, 6 medium impact, 6 low impact
- **Input Labels**: 4 issues, 1 high impact, 3 medium impact, 0 low impact
- **Dynamic Updates**: 3 issues, 1 high impact, 2 medium impact, 0 low impact
Work to do

- Prioritized accessibility issues
  - Some high priority bugs have been addressed
    - Modern form search examples visual indicators, better tab ordering
    - Increased contrast in landing pages and results page
    - Pages have proper tab order, better keyboard navigation
  - Additional fixes are harder to implement because they require in-depth testing and underlying changes in the application
  - Gradual improvements planned as technical debt is paid off (refactors)
Questions?

- Links
  - Reports available upon request:
    - User feedback report
    - Usability test report
    - Accessibility audit report
  - Miscellaneous
    - Harvard web publishing
    - Accessibility statistics
    - WCAG reference