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Introduction
The emphasis of usability with digital or web interfaces has increased since the coming of the digital era. For data repositories, the user interface (UI) and user experience (UX) of their websites are especially crucial, since their web interfaces often are the primary, if not the only, method that is available to users for searching, discovering, understanding, accessing, and using the data and related resources that the repositories hold.

This poster aims to demonstrate the applicability and benefits of using UX/UI principles and techniques in evaluating the services offered by data repositories through using three different techniques and applying them to three separate data service areas at the National Center for Atmospheric Research (NCAR).

Background
Usability, as discussed by Nielsen¹, is the “quality attribute that assesses how easy a user interface is to use” as well as referring to “methods for improving ease-of-use during the design process.” By applying UX/UI principles to UI designs and evaluating UX through usability techniques, interfaces could potentially be enhanced and improved to provide people with positive and productive interactions with technologies. Given the impact that UX/UI could potentially have in influencing users’ impressions of the repositories, it is important to consider how repositories’ web interfaces can be evaluated and improved, so that users can achieve useful and successful interactions.

Objectives
• Show that UX/UI analysis need not be time consuming or complex in order to yield immediate, helpful results.
• Share the types of usability issues that users might encounter from data service areas.
• Offer potential fixes that could be determined by usability evaluations.
• Demonstrate how usability evaluations can help make repository interfaces more usable.

Method: 30 Minutes for Each Evaluation

Heuristic Evaluation: Checks Against Known Principles
• A Sample of Usability Principles from Nielsen²:
  - Recognition Rather than Recall
  - Flexibility & Efficient of Use
  - Consistency & Standards
  - Help & Documentation
  - Aesthetic & Minimalist Design

Cognitive Walkthrough: Emphasizes Learnability for New Users
• Three Major Components:
  - Define:
    - Tasks
    - Steps that users would take
    - Success criteria
  - Compare:
    - Users’ steps and success criteria

User Study: Involves Actual Users
• Four Stages:
  - Preparation (Planning for the Test)
  - Introduction (Pre-Test)
  - Tasks Performance (During Test)
  - Debriefing (Post-Test)

Results: Key Findings and Sample Screenshots

Before
Monochrome layout is difficult for users to differentiate content.

After
Text and layout are simplified.

Background
Involves Actual Users

Future Work
We will continue to practice these techniques and explore other methods, such as wireframes and competitive analysis, to apply to more data services at NCAR. We will also explore methods in which we could quantify usability improvements as a result of the evaluations.

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Conclusion
The evaluations showed that even within only 30 minutes of testing, each technique was able to reveal a variety of issues that could benefit from usability improvement. Consequently, performing usability evaluations often and with the combination of different methods could help with not only optimizing the resources needed, but also mitigating the severity of the usability issues over time.

References

Before
Even though the contents are organized, lack of help documentation or hints can hinder users.

After
Separate sections could be set up to help with different user expertise levels and use scenarios.