Want to Know How to Delight Your Repository Users? – Usability Can Help!

Sophie Hou
hou@ucar.edu
Data Curation & Stewardship Coordinator
National Center for Atmospheric Research (NCAR)
University Corporation for Atmospheric Research (UCAR)

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Agenda

1) Introduction: Usability Techniques
2) Background: the National Center for Atmospheric Research (NCAR) and the Digital Asset Services Hub (DASH)
3) Usability Applications Used with DASH
   - Heuristic Evaluation
   - Competitive Analysis
   - User Study
4) Engineering Perspective – Nathan Hook
5) Practice Makes Perfect
6) Reflection, Q&As, and Resources

Introduction to Usability Techniques

Usability Concepts

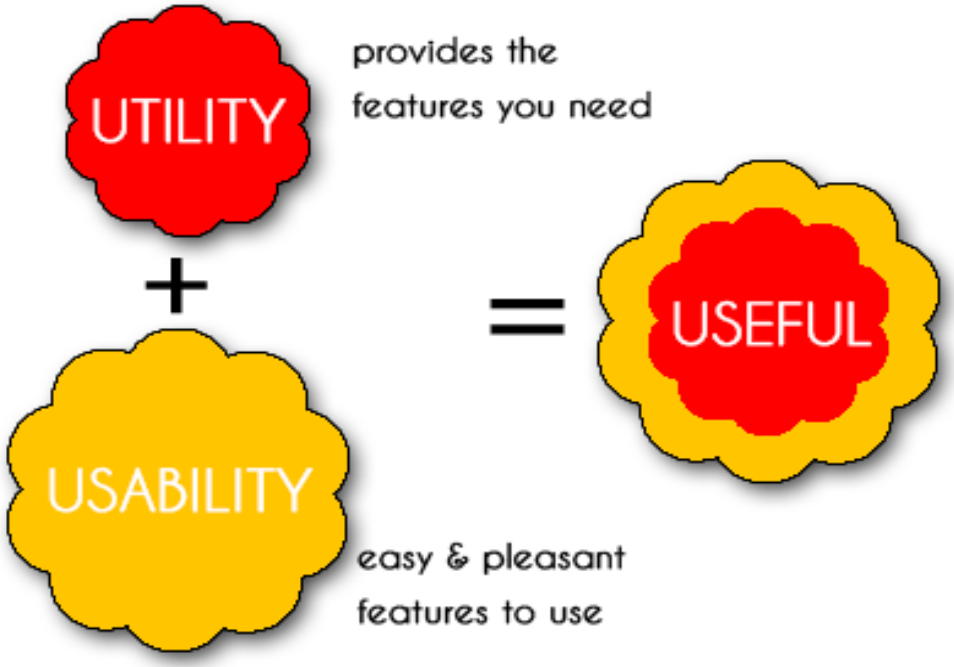
- 5 Quality Components:
  - **Learnability** - How easy is it for users to accomplish basic tasks the first time they encounter the design?
  - **Efficiency** - Once users have learned the design, how quickly can they perform tasks?
  - **Memorability** - When users return to the design after a period of not using it, how easily can they reestablish proficiency?
  - **Errors** - How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
  - **Satisfaction** - How pleasant is it to use the design?

- Reference:
  - Nielsen, Jakob. (2012, January 4). *Usability 101: Introduction to usability*. Retrieved from https://www.nngroup.com/articles/usability-101-introduction-to-usability/

Usability Concepts - Continued

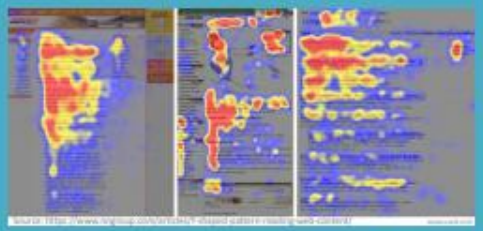
Definition of Usability:

"Quality attribute that assesses how easy user interfaces are to use."
"Methods for improving ease-of-use during the design process."



- Reference:
  - Nielsen, Jakob. (2012, January 4). *Usability 101: Introduction to usability*. Retrieved from https://www.nngroup.com/articles/usability-101-introduction-to-usability/
  - Nimit. (2013, September 19). What is usability. Retrieved from https://nimitmangal.wordpress.com/2013/09/19/what-is-usability/

Sample List of Usability Evaluation Techniques

Usability Testing 	Cognitive Walkthrough 	Heuristic Evaluation 
Competitive Analysis 	Interviews / Surveys 	Eye Tracking 
Paper Prototyping 	Wireframes 	Heat Mapping 

NCAR and DASH

National Center for Atmospheric Research - NCAR (Boulder, CO)

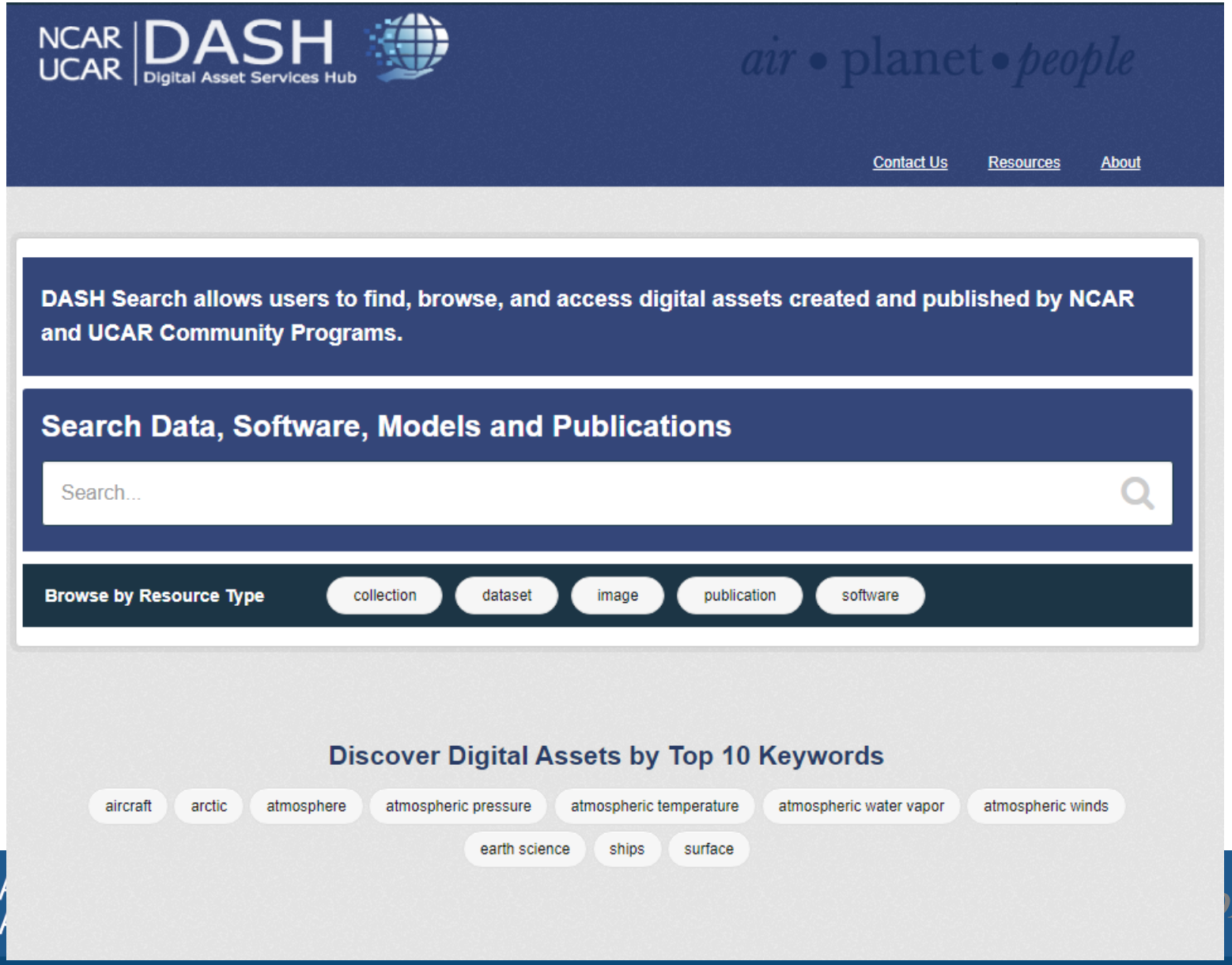
https://ncar.ucar.edu/who-we-are/labs

- Federally funded research and development center by NSF.
- 7 distinct laboratories plus scientific programs that have diverse research areas and associated outputs.

Digital Asset Services Hub (DASH)

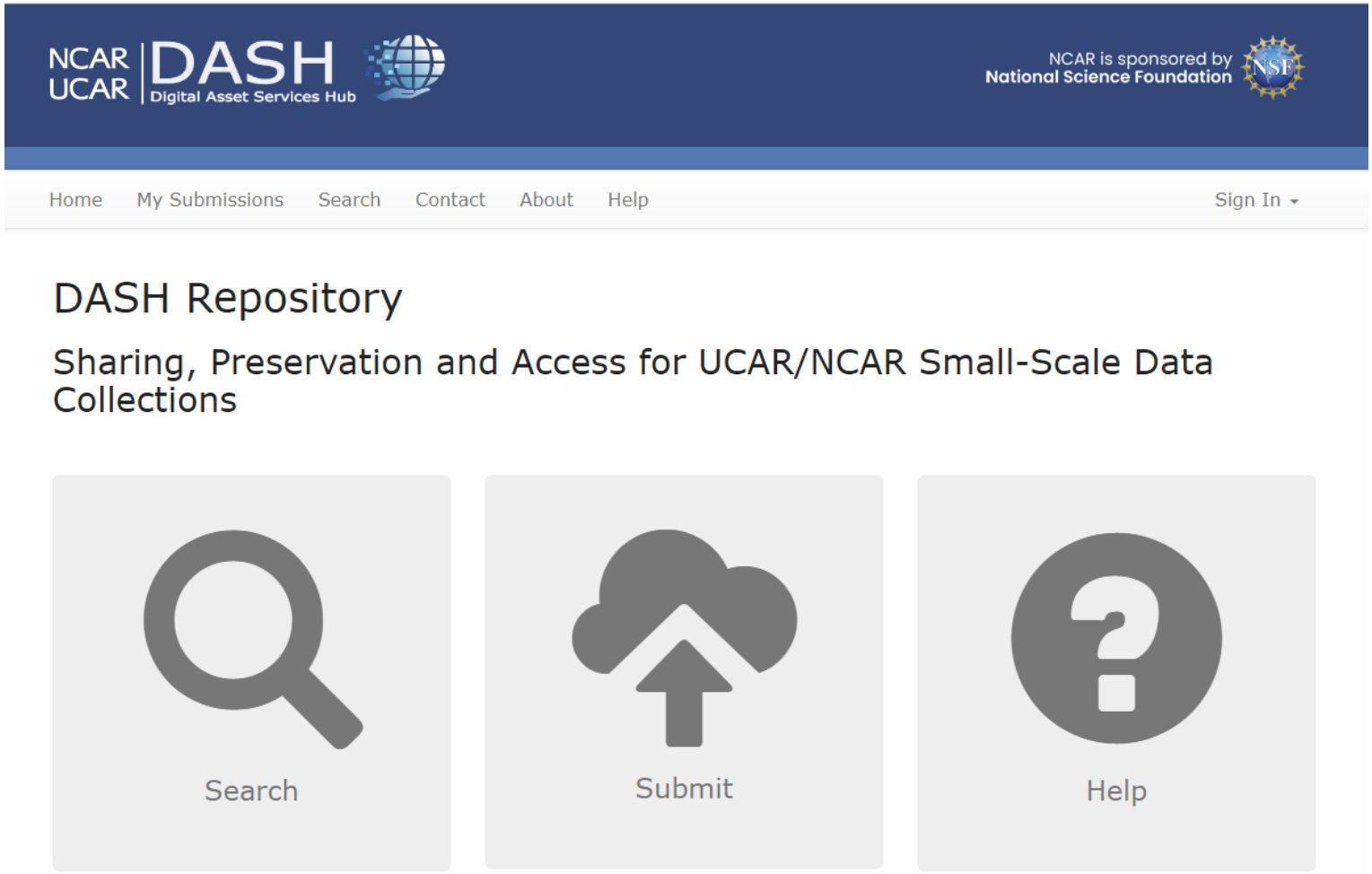
DASH Search

(https://data.ucar.edu/)



DASH Repository

(https://dashrepo.ucar.edu/)



Usability Techniques and Applications

Heuristic Evaluation

Heuristic Evaluation

- A Heuristic Evaluation, or Usability Audit, is a usability inspection technique where one or a number of usability experts evaluate the user interface.
- Evaluators measure the usability, efficiency, and effectiveness of the interface against a set of Heuristic Principles.
- Could be performed with low cost/available resource, but dot not involve actual users.

- References:
  - Muniz, Fabio. (2016, May 30). *An Introduction To Heuristic Evaluation*. Retrieved from http://usabilitygeek.com/heuristic-evaluation-introduction/
  - UsabilityNet. (2006). *Heuristic Evaluation*. Retrieved from http://usabilitynet.org/tools/expertheuristic.htm

Heuristic Evaluation - Continued

- 10 Principles were originally defined and presented by Jakob Nielsen in 1994.

1) Visibility of system status
2) Match between system and the real world
3) User control and freedom
4) Consistency and standards
5) Error prevention
6) Recognition rather than recall
7) Flexibility and efficiency of use
8) Aesthetic and minimalist design
9) Help users recognize, diagnose, and recover from errors
10) Help and documentation

- Other lists are also available. For example:
  - Arnie Lund's "Expert Ratings of Usability Maxims"
  - Bruce Tognazzini's "First Principles of Interaction Design"
  - Ben Shneiderman's "Eight Golden Rules of Interface Design"

DASH Home Page

Before

http://dash.ucar.edu

After

Discovery . Access . Use . Data Services

The Digital Asset Services Hub (DASH) is dedicated to provide **support**, **engagement**, and **training** for UCAR/NCAR's digital assets, including datasets, publications, software, and models. The services and resources made available through DASH focus on supporting these UCAR/NCAR community's digital assets in order to make them available to the broader scientific community. DASH is created and maintained by the Data Stewardship Engineering Team (DSET).

Overview - DASH Services & Resources

There are currently six DASH Services & and Resources areas that are under development.

- Training and Education Materials & Best Practices
- Consultation with Data Curation & Stewardship Coordinator
- Frequently Asked Questions (FAQs)
- DASH Search and Discovery
- Getting Assets into DASH
- Software and Tools

Training and Education Materials & Best Practices

- Learn about Data Management Plans and related policies/requirements.
- Access Data Management Plan Template and Sample.
- Find out how to obtain a Digital Object Identifier (DOI).

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Consultation with Data Curation & Stewardship Coordinator

- Get in-person help with Data Management Plans.
- Have live discussions about topics and challenges relating to working with digital assets at UCAR/NCAR.

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Frequently Asked Questions (FAQs)

- Find out other questions and issues shared by the UCAR/NCAR community.
- Contribute experience and lessons learned with managing UCAR/NCAR digital assets.

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NCAR UCAR CISL Computational & Information Systems Lab

NCAR is sponsored by National Science Foundation

DAILY BULLETIN | RESOURCE STATUS | NEWSROOM | EVENTS

DASH - GETTING STARTED

- DASH Home
- Managing Your Data
  - Data Management Plans
  - Digital Object Identifiers (DOIs)
- Depositing Your Data
- Sharing Your Data
- Help and Resources
  - DASH Consultation
  - Software and Tools

CONTACT AND ABOUT DASH

- Contact DASH
- About DASH/Background on DSET
- UCAR/NCAR Policies

HOME » DATA PORTALS » DASH

DIGITAL ASSET SERVICES HUB (DASH)

Announcement: Please help us improve the DASH Search's services by taking a short (~15 minutes) survey! The survey instructions and form can be found here. Thank you for your participation.

The Digital Asset Services Hub (DASH) is dedicated to providing the following services for open access digital assets from NCAR and UCAR Community Programs (UCP), including datasets, publications, software, and models:

- Guidance and Training
- Search and Discovery
- Access

How can DASH help you today?

I would like to:

Determine Data Management Requirements for Proposals	Deposit a Dataset	Explore UCAR/NCAR Digital Assets
Find Answers to My Questions	Get In-Person Help	Learn about Other Data Management Resources

Competitive Analysis

Competitive Analysis

- Evaluate UIs by reviewing designs that are both in direct and indirect competition.
  - Direct: Designs that are looking to solve the same problem, and often have the same core functions and overlapping user base.
  - Indirect: either have a different user base or different service offering, and some aspects of the system overlap.

- Mainly used for collecting design ideas from other systems and formulating potential design options for the system-under-design.

- It is important not to be tempted into designing an existing solution from a competitor.

- References:

  - Danforth Media. (2014, March 1). *Conducting a Solid UX Competitive Analysis*. Retrieved from http://danforth.co/pages/2014/03/01/conducting-a-solid-ux-competitive-analysis/
  - Khan, Sarah. (2016, July 5). *How to Check out the Competition*. Retrieved from http://www.uxbooth.com/articles/how-to-check-out-the-competition/

DASH Search – Temporal and Geospatial Search/Filtering

- The competitive analysis is performed specifically to understand the designs/functions that are currently employed for temporal and geospatial search/filtering.

- Six repositories were selected based on their relevance to NCAR in terms of their science domain, data service focus, and agency type.

User Study

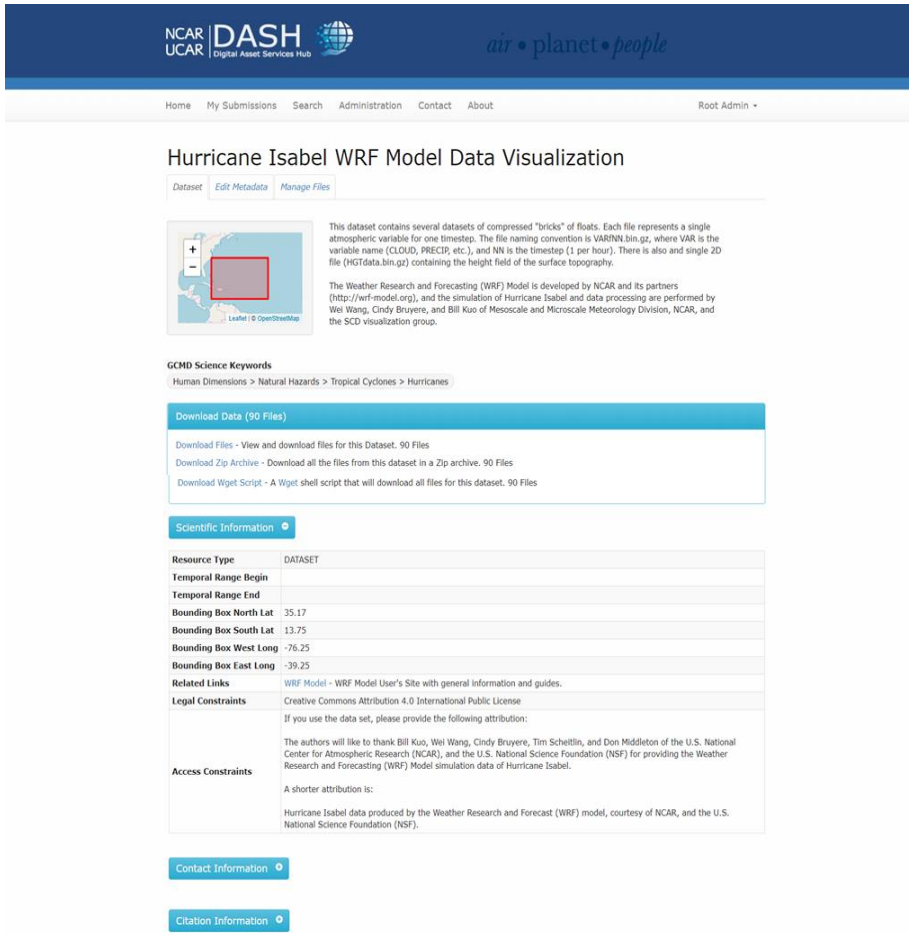
User Study

- Testing the interfaces with real users.
  - A Usability Test has four stages:
    1) Preparation
       - Creation of personas
    2) Introduction
    3) The test itself
       - Design of test tasks
    4) Debriefing
- Testing should be performed with at least 5 users.
- “Discount usability” variation.
- Not the same as focus group or interview.

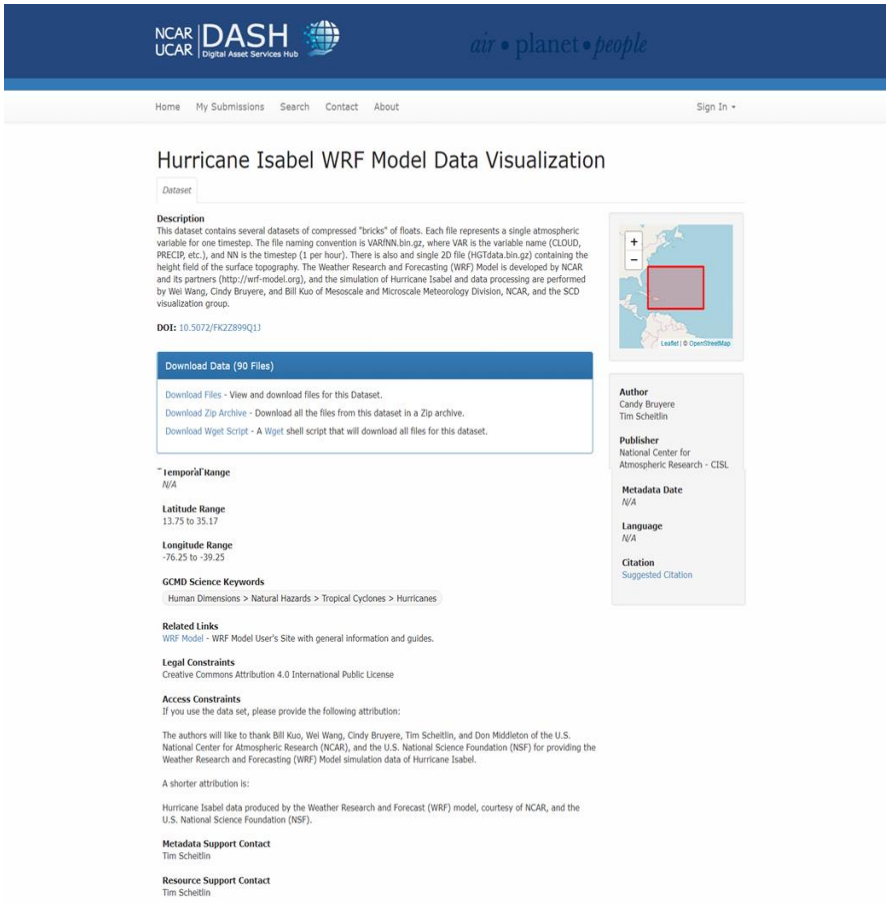
- Reference:
  - Nielsen, J. (1993). Usability Engineering. San Francisco, CA: Morgan Kaufmann.

DASH Repository – Landing Page

“Single Column”



“Right Rail”



Engineering Perspective

Practice Makes Perfect

Consent to Participate in Testing

- It is crucial to ensure your participants' confidentiality and privacy are upheld and protected, and that your test design meets ethical requirements.

- Possible Steps:
  - Step 1: Verify whether a formal informed consent is necessary for your organization (e.g Internal Review Board - IRB).
  - Step 2: Document any applicable waiver for consent.
  - Step 3: If a consent is required, confirm with the IRB what is the required format.

Reflection, Q&As, and Resources

Resources

From Usability Cluster:

- Tool:
  - Usability Test Framework

- Presentations:
  - 9 training presentations available on cluster's wiki.

Samples of Other Resources:

- Articles from the Nielsen Norman Group
- Usability.gov
- Don't Make Me Think: A Common Sense Approach to Web Usability by Steve Krug (book)
- About Face: The Essentials of Interaction Design by Alan Cooper et al. (Book)

Data Repository Experiences before Usability

Data Repository Experiences with Usability

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Thank You!
Questions? Comments?

Sophie Hou
(datahelp@ucar.edu,
hou@ucar.edu)