

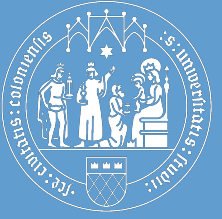


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A Heuristic Usability Evaluation of Kadi4Mat

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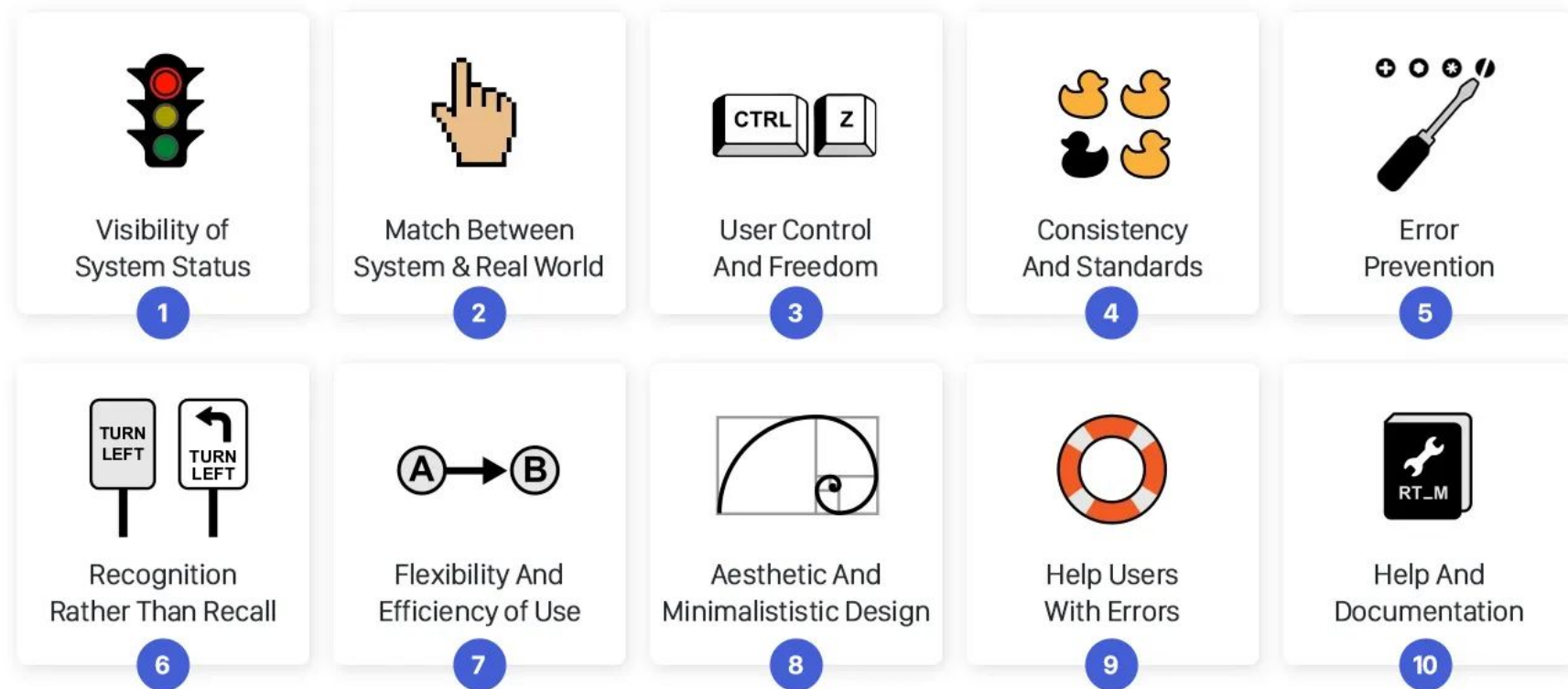
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Agenda

1. Jakob Nielsen's 10 usability heuristics
2. Kadi4Mat
3. Usability Tasks
4. Analysis and Recommendations
5. Feature suggestions

Jakob Nielsen's 10 usability heuristics

Jakob Nielsen's 10 general principles for interaction design. They are called "heuristics" because they are broad rules of thumb and not specific usability guidelines.



Jakob Nielsen's 10 usability heuristics



Visibility of
System Status

1

Design should always keep users informed, through appropriate feedback.



Match Between
System & Real World

2

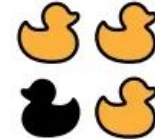
Design should speak users language.



User Control
And Freedom

3

Users need a clearly marked "emergency exit".



Consistency
And Standards

4

Users should not have to wonder whether different words, situations, or actions mean the same thing.

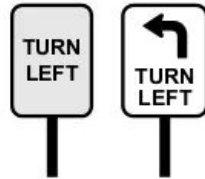
Jakob Nielsen's 10 usability heuristics



Error
Prevention

5

Good error messages are important, but the best designs carefully prevent problems from occurring in the first place.



Recognition
Rather Than Recall

6

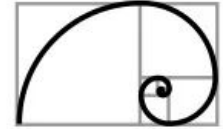
Users should not have to remember information from one part of the interface to another.



Flexibility And
Efficiency of Use

7

Shortcuts may speed up the interaction for the expert user.



Aesthetic And
Minimalist Design

8

Interfaces should not contain information that is irrelevant or rarely needed.

Jakob Nielsen's 10 usability heuristics



Help Users
With Errors

9

Error messages should be expressed in plain language and constructively suggest a solution.

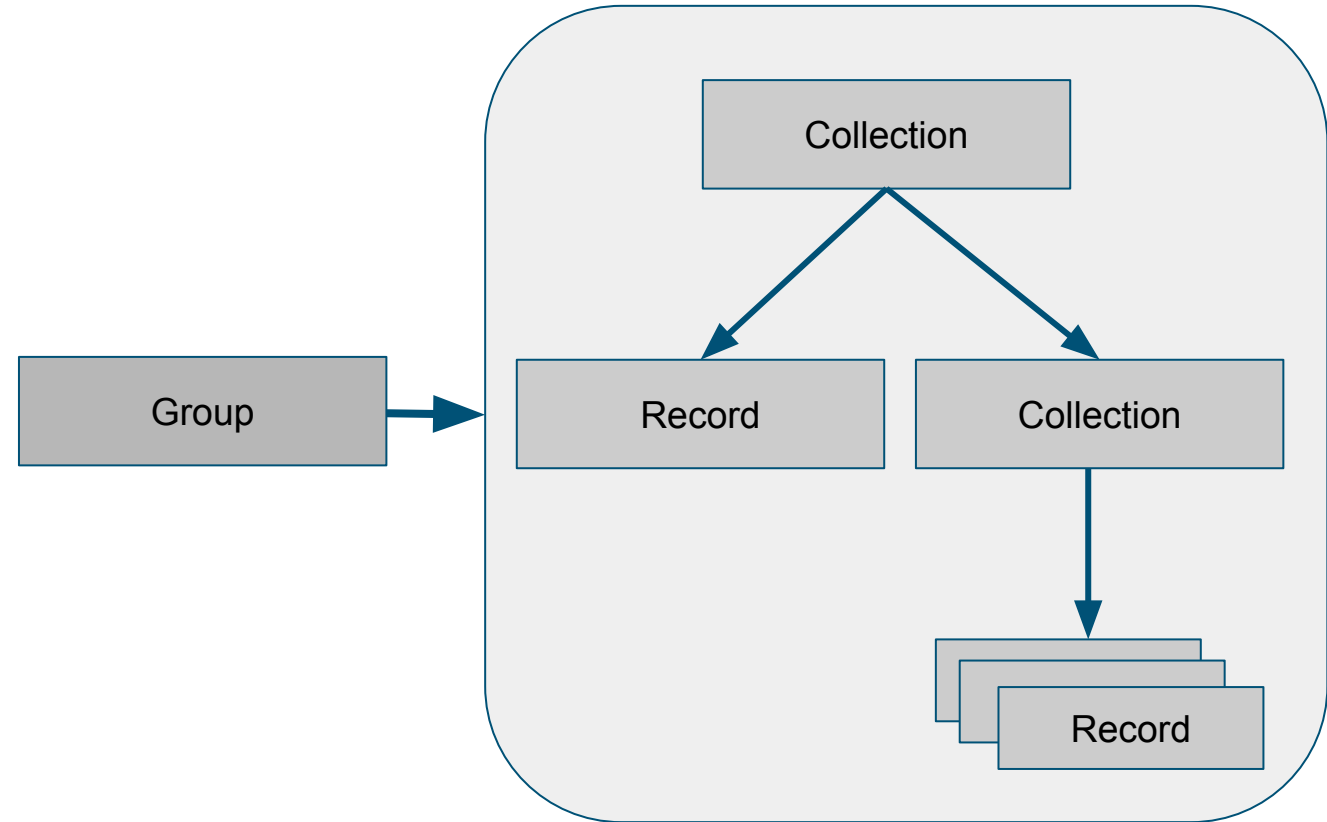


Help And
Documentation

10

Provide documentation to help users understand how to complete their tasks.

- Open Source software for managing research data
- Primary goal: digital collaborative lab notebook
- Tailored especially for material science
- Enables close cooperation between
 - Experimenters
 - Theorists
 - Simulators
- Employs a modular and generic architecture
- Can cover unique workflows
- Adjust to needs of different scientists and other research fields
- Repository component
 - Store, manage and exchange data
- Electronic lab notebook (ELN) component
 - Analyze, visualize and transform



Tasks

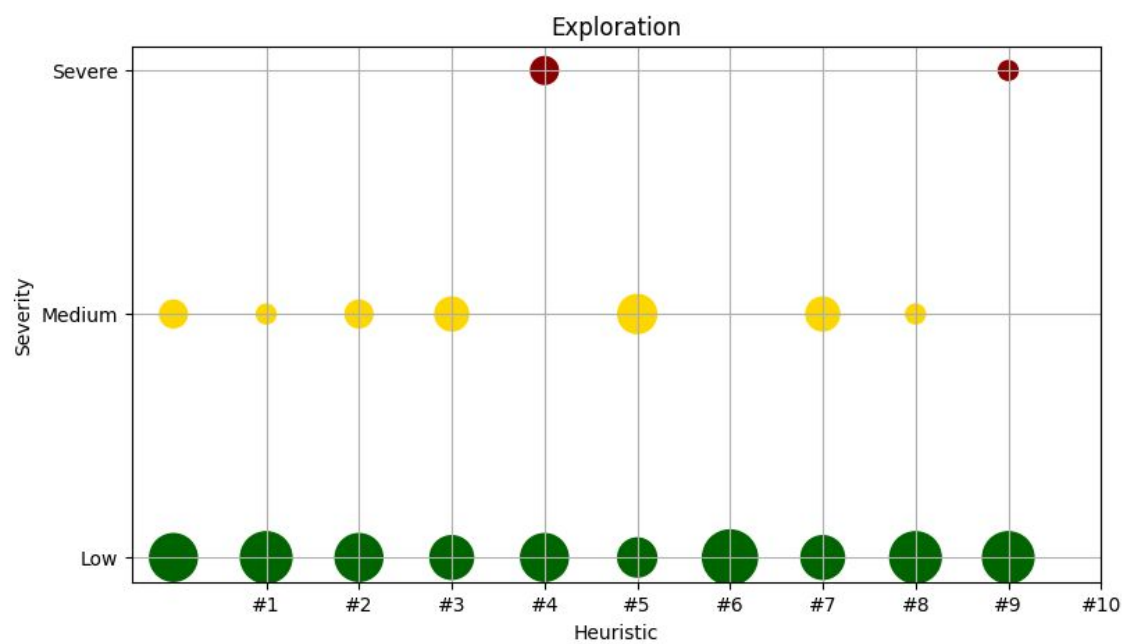
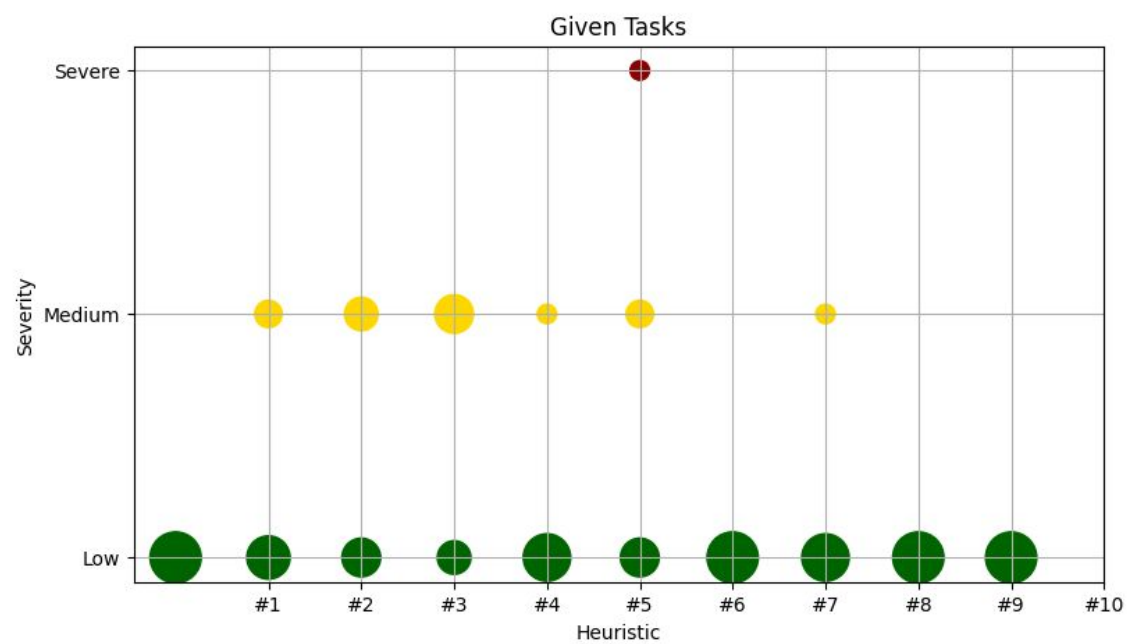
Given Tasks

- Login
- Create a group
- Create a project
- Create experiment 1
- Create a template
- Changes
- Find Entries

Free Exploration

- Create/Add child collections
- Create Records Dashboard
- Edit permissions
- Customization of layout
- Manage Permissions for records
- Import data for a record

Evaluation



Usability Tasks

Main findings:

Medium:

- Usually there is no “cancel” button
- Minor issues within the navigation process
- More explanation and guidance would help increasing intuitivity
- Error messages are unclear or absent

Severe:

- The “edit file” function when uploading data
- Dashboards are deleted when clicking on “undo”
- Search function does not work properly

Recommendations



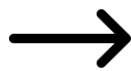
Improve error prevention as this is a key aspect
→ Fix severe bugs
→ Introduce more warnings and error messages



Most issues touch on user control and freedom
→ Add a “cancel” button to every creation mask



More explanation and guidance is required in some areas
→ Explanations of concepts and relations between elements

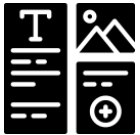


Our report can act as the central document with detailed recommendations on how to improve the system

Feature Suggestions



Implement a Search Function in Help Section



More Detailed Layout Options



Integration of Commonly Used Databases (e.g., GitLab)



Comment and Message Functions



Integrated Literature and Database Search



Notification/Alert System for Deadlines

Personal reflection

Nielsen Heuristics

Cons:

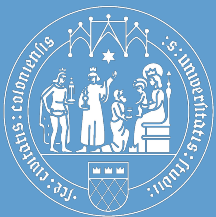
- *“Doesn’t go with the flow”* : Established 1990, Nielsens Heuristics do not reflect modern design principles such as adaptive design for mobile/VR/AR/...- interfaces
- *“I don’t like outliers”*: Limited use for specialized systems (e.g. medical, aviation, ...) and/or in systems with significant differences in cultural norms across users

Pros:

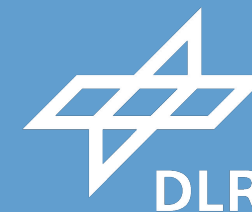
- *“Traditional Internet”*: Very effective design principles for web and software design.
- *“Always useful”*: The heuristics are versatile in early to late stages of development.
- *“Slow but Steady”*: Overall good foundational framework for UI-design and usability evaluation

Quellen

- Bild: <https://uxdesign.cc/10-usability-heuristics-every-designer-should-know-129b9779ac53>
- Logos: <https://kadi4mat.iam.kit.edu/about>
- Piktogramme: <https://www.flaticon.com/de/kostenlose-icons/piktogramm>
- Jakob Nielsen's 10 usability heuristics:
<https://uxdesign.cc/10-usability-heuristics-every-designer-should-know-129b9779ac53>



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Thank you!

