Usability Engineering SENG 42222

Usability Heuristics

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Usability Heuristics

A set of general principles used in interactive design to ensure usability and provide a relatively simple and quick testing regime to identify problems and possible solutions.

- Some characteristics of usability interface
- fairly broad and can apply to practically any type of user interface

The main idea of heuristics is to provide a straightforward and quick way of assessing website usability and identifying and correcting defects.

Advantages of Usability Heuristics

1. Early Problem Identification
2. Cost-Effectiveness
3. Guidance for Designers
4. Quick Assessment
5. Educational Tool: Heuristics serve as educational tools for designers and stakeholders, aiding in understanding essential usability aspects. They provide a framework for discussing and communicating usability problems and solutions.
6. Consistency
7. Enhanced User Satisfaction: Implementing heuristic principles often leads to more user-friendly designs.
8. Reduced Development Time: By identifying and addressing usability issues early, heuristics can reduce the time spent on redesign or fixing usability problems during later stages of development.

Usability Heuristics

1. Nielsen's 10 usability heuristics
2. Shneiderman's Eight Golden Rules

https://www.linkedin.com/advice/3/how-do-you-choose-right-heuristic-evaluation-method#how-to-choose-a-heuristic-evaluation-method

10 Usability Heuristics for User Interface Design

Jakob Nielsen's 10 general principles for interaction design

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

1: Visibility of system status

The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.

Predictable interactions create trust in the product as well as the brand.

- Communicate clearly to users what the system's state is — no action with consequences to users should be taken without informing them.
- Present feedback to the user as quickly as possible (ideally, immediately).

https://www.nngroup.com/articles/visibility-system-status/
https://www.nngroup.com/videos/usability-heuristic-system-status/

2: Match between system and the real world

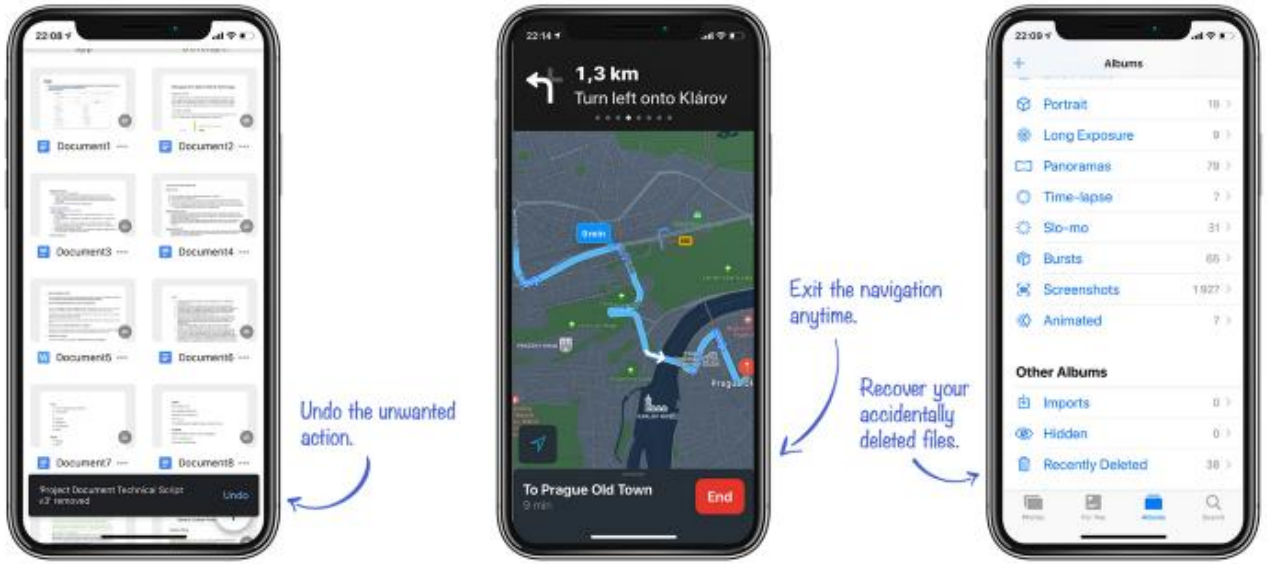
The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

- Ensure users can understand the meaning without having to go look up a word’s definition.
- Never assume your understanding of words or concepts will match those of your users.
- User research will help you uncover your user’s familiar terminology as well as their mental models around important concepts.

https://www.nngroup.com/articles/match-system-real-world/
https://www.nngroup.com/videos/match-system-real-world/

3: User control and freedom

Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.



https://www.nngroup.com/articles/user-control-and-freedom/
https://www.nngroup.com/videos/usability-heuristic-user-control-freedom/

4: Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.

"Don't forget that people spend 90% of their time interacting with other apps."

- Failing to maintain consistency may increase the users cognitive load by forcing them to learn something new.
- Consistency is one of the strongest contributors to usability

A good starting point for a consistent design system for mobile apps: Apple's Human Interface Guidelines and Google's Material Design Guidelines.

http://www.nngroup.com/articles/consistency-and-standards/
https://www.nngroup.com/videos/usability-heuristic-consistency-standards/

5: Error prevention

Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

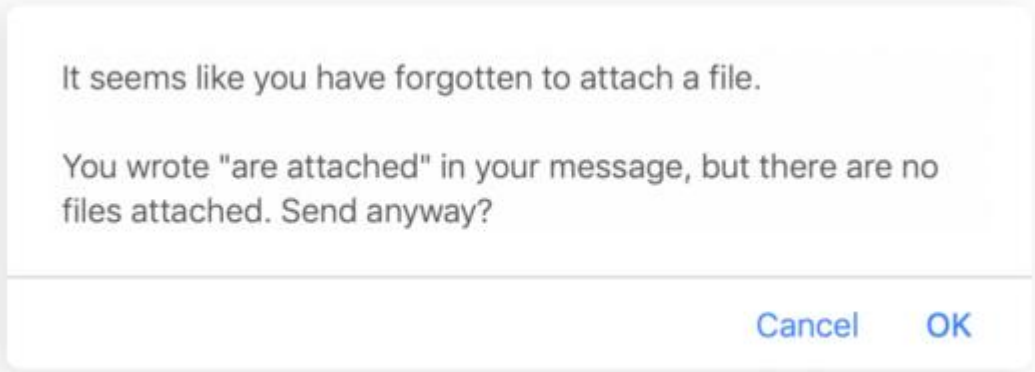
There are two types of errors:

1. **Slips**: unconscious errors caused by inattention (e.g. when performing well-known task).

The strategy to prevent users from experiencing a slip is to minimize the chance of it occurring by guiding them only through the safe areas. Examples:

- Use constraints that don't allow a user to set a wrong value (e.g. when you expect a number, don't allow to write the letters)
- Suggest the most common options to make choosing easy for users (e.g. while searching)
- Use confirmation dialogs before destructive actions

5: Error prevention



Smart slip prevention in the Gmail web app

https://www.nngroup.com/articles/slips/
https://www.nngroup.com/videos/usability-heuristic-error-prevention/

5: Error prevention

2. Mistakes: conscious errors based on a mismatch between the user's mental model and the design.

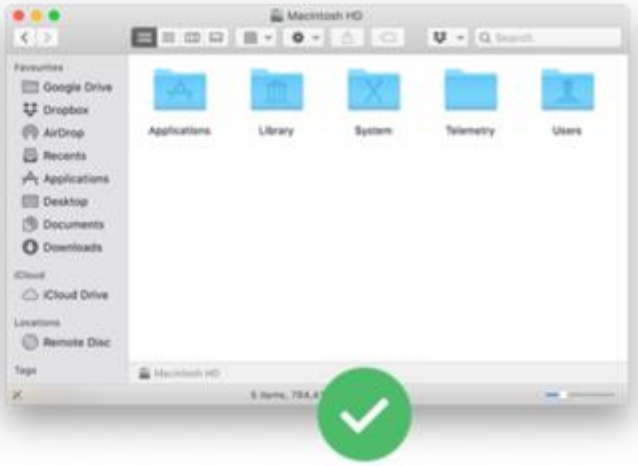
These kinds of errors don't often come with an easy fix, and they should be revealed during the user testing phase.

- Use clear communication and a consistent design system to prevent mistakes.

6: Recognition rather than recall

Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.

Recognition: this happens when you easily recognize a person or an object that you're familiar with. it doesn't require any work.
Recall: this happens when you have to find rarely used information in your memory (names, years, details, etc.) People have to activate more memory chunks

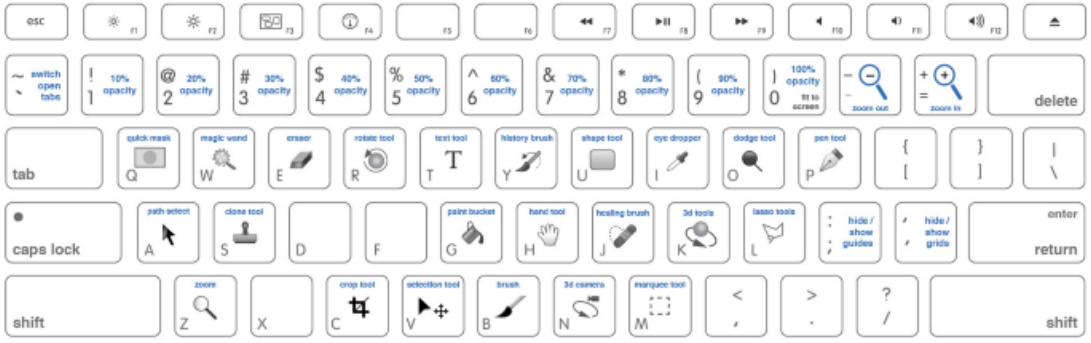


https://www.nngroup.com/articles/recognition-and-r
https://www.nngroup.com/videos/recognition-vs-recall/

7: Flexibility and efficiency of use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

- Provide accelerators like keyboard shortcuts and touch gestures.
- Provide personalization by tailoring content and functionality for individual users.
- Allow for customization, so users can make selections about how they want the product to work.



Advanced Photoshop Shortcuts

https://www.nngroup.com/articles/flexibility-efficiency-heuristic/
https://www.nngroup.com/videos/flexibility-efficiency-use/

8: Aesthetic and minimalist design

Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.

”Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.” – Antoine de Saint-Exupery

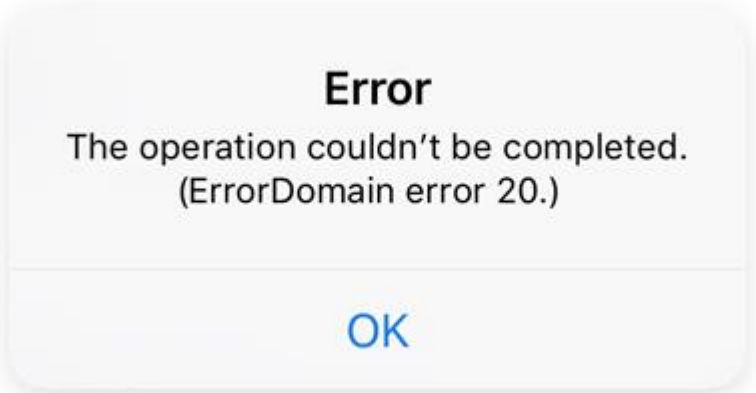
- Keep the content and visual design of UI focused on the essentials.
- Don't let unnecessary elements distract users from the information they really need.
- Prioritize the content and features to support primary goals.
- A minimal design uses only the necessary colors to support the visual hierarchy.
  - Think about the purpose and meaning of each color. Use it consistently.

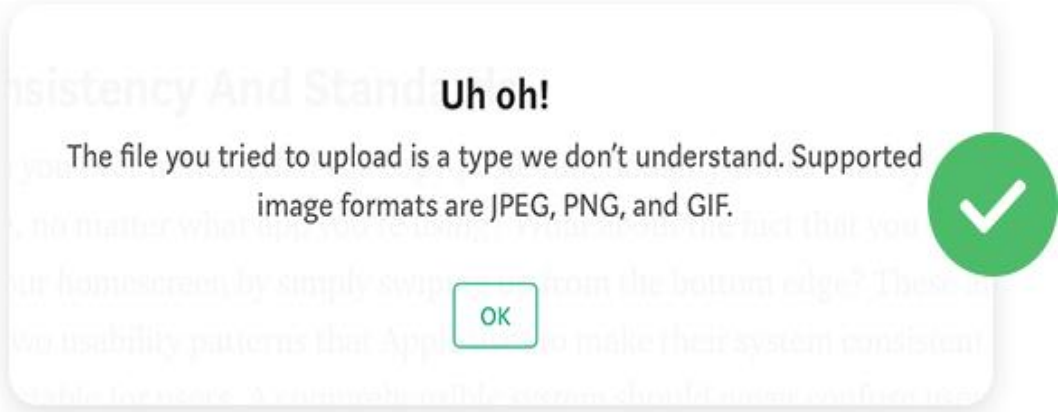
https://www.nngroup.com/videos/aesthetic-and-minimalist-design/

9: Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

- Use traditional error message visuals, like bold, red text.
- Tell users what went wrong in a language they will understand — avoid technical jargon.
- Offer users a solution, like a shortcut that can solve the error immediately.





https://www.nngroup.com/videos/usability-heuristic-recognize-errors

10: Help and documentation

It’s best if the system doesn’t need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

- Ensure that the help documentation is easy to search.
- Whenever possible, present the documentation in context right at the moment that the user requires it.
- List concrete steps to be carried out.

Well written documentation, FAQs, and tutorials might be crucial for retaining the stunned user.

https://www.nngroup.com/articles/help-and-documentation/
https://www.nngroup.com/videos/help-and-documentation/

https://www.nngroup.com/articles/usability-heuristics-complex-applications/

https://www.flexwind.com/user-experience/usability-heuristics-in-action-examples-from-everyday-life/#:~:text=Usability%20heuristics%20are%20based%20on,user%20experiences%20in%20common%20scenarios.

2. Shneiderman's Eight Golden Rules of Interface Design

1. Strive for consistency
2. Seek universal usability
3. Offer informative feedback
4. Design dialogs to yield closure
5. Prevent errors
6. Permit easy reversal of actions
7. Keep users in control
8. Reduce short-term memory load

https://capian.co/shneiderman-eight-golden-rules-interface-design

https://triptirajput9.medium.com/analyzing-instagram-using-shneidermans-eight-golden-rules-of-interface-design-7ff765a845db

Disadvantages of Usability Heuristics

1. The effectiveness of this method is closely linked to the competence of the evaluator, the more qualified and experienced the evaluator, the more convincing the results will be.

2. In particular, this evaluation requires the intervention of a minimum number of 5 experts in HMI interface ergonomics. However, it is not always easy to find experienced professionals specialized in this discipline.

3. These heuristics give better results when they are performed in parallel by a team of evaluators. This is not always possible, especially for companies that are constrained by a lack of resources and a reduced budget.

4. Heuristics are often elaborated in a rather vague manner, which can lead to unspecific recommendations.

5. This approach does not propose solutions to the problems encountered.

6. This evaluation is not complete enough, as it cannot detect certain problems related to the development of the digital device.

7. The heuristic evaluation may reveal problems that are not part of the evaluation grid.

Q & A