UI/UX Concepts

Jakob Nielsen's 10 heuristics

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Introduction

Jakob Nielsen's 10 general principles for interaction design have remained relevant and unchanged since 1994 and thus remain widely accepted guidelines by designers throughout. They are called "heuristics" because they are broad rules of thumb and not specific usability guidelines. Following are the features of these heuristics. They are:

- ➔ derived from a systematic review of usability problems
- ➔ intended to be a small,complete and usable set
- ➔ well supported by theories of perception and cognition
- ➔ Able to be taught in a few hours

#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.

When users know the current system status, they learn the outcome of their prior interactions and determine next steps. Predictable interactions create trust in the product as well as the brand.

Why?

- Knowing what actions are available and how the system responds bridge the ‘Gulf of Execution’
- Echoes Norman’s principle of Feedback and Constraints

Manifestation:

- 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).
- Build trust through open and continuous communication.

Example of Usability Heuristic #1:

> “You Are Here” indicators on mall maps have to show people where they currently are, to help them understand where to go next.

#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.

The way you should design depends very much on your specific users. Terms, concepts, icons, and images that seem perfectly clear to you and your colleagues may be unfamiliar or confusing to your users.When a design's controls follow real-world conventions and correspond to desired outcomes (called natural mapping), it's easier for users to learn and remember how the interface works. This helps to build an experience that feels intuitive.

Why?

- Take advantage of user's existing schema
- Leverage perceived affordances and signifiers that suggest actions
- Reduce difficulty of forming effective conceptual models

Manifestation:

- Ensure users can understand meaning without having to go look up a word's definition. Avoid using system-oriented language.
- Order of operations should match the user's natural behaviour.
- Using metaphors/icons instead of phrased actions.

Example of Usability Heuristic #2:

When stovetop controls match the layout of heating elements, users can quickly understand which control maps to which heating element.

#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.

When it's easy for people to back out of a process or undo an action, it fosters a sense of freedom and confidence. Exits allow users to remain in control of the system and avoid getting stuck and feeling frustrated.

Why?

- Mistakes are inevitable

- Support the Seven stages of action by allowing reformulated goals
- Users employ ‘Trial and Error’ to learn a new system.

Manifestation:

- Support Undo and Redo.
- Show a clear way to exit the current interaction, like a Cancel button.
- Make sure the exit is clearly labeled and discoverable.

Example of Usability Heuristic #3:

Digital spaces need quick “emergency exits,” just like physical spaces do.

#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.

Users’ experiences with those other products set their expectations. Failing to maintain consistency may increase the users’ cognitive load by forcing them to learn something new.

Why?

- Leverage users schemes
- Present a coherent and conceptual model to make it easier for user to learn how to operate the system effectively.

Manifestations:

- Improve learnability by maintaining both types of consistency: internal and external.
- Maintain consistency within a single product or a family of products (internal consistency).
- Follow established industry conventions (external consistency).

Example of Usability Heuristic #4:

Check-in counters are usually located at the front of hotels. This consistency meets customers’ expectations.

#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: slips and mistakes. Slips are unconscious errors caused by inattention. Mistakes are conscious errors based on a mismatch between the user's mental model and the design.

Why?

- Mistakes are common
- People don't read or see everything on the screen
- Mistakes can be made while typing,clicking etc.

Manifestation:

- Prioritize your effort: Prevent high-cost errors first, then little frustrations through confirmation messages and preventive actions.
- Avoid slips by providing helpful constraints and good defaults.
- Prevent mistakes by removing memory burdens, supporting undo, and warning your users.
- Provide in-process feedback
- Provide constraints like required field, 10-digit no. etc.

Example of Usability Heuristic #5:

Guard rails on curvy mountain roads prevent drivers from falling off cliffs.

#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.

Humans have limited short-term memories. Interfaces that promote recognition reduce the amount of cognitive effort required from users.

Why?

- A familiar stimulus triggers retrieval from long-term memory
- Recall will fail unless remembered actions are frequent, recent OR strongly associated with
- Recall forces users to:
    - Recreate chain of association themselves
    - Forcefully learn through repetition

Manifestation:

- Let people recognize information in the interface, rather than having to remember ("recall") it.
- Offer help in context, instead of giving users a long tutorial to memorize.
- Reduce the information that users have to remember
- Utilize textual commands, passwords and speech UIs like Siri

Example of Usability Heuristic #6:

It's easier for most people to recognize the capitals of countries, instead of having to remember them. People are more likely to correctly answer the question Is Lisbon the capital of Portugal? rather than What's the capital of Portugal?

#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.

Flexible processes can be carried out in different ways, so that people can pick whichever method works for them.

Why?

- Recall is bad for new/infrequent users, but can be effective for experts
- Different users have different goals- allow them to customize, but don't force them to

Manifestation:

- Provide accelerators like keyboard shortcuts, bookmarks 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, based on past behaviour and action prediction.

Example of Usability Heuristic #7:

Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.

#8: AESTHETIC AND MINIMALIST DESIGN

Interfaces should not contain information which 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.

This heuristic doesn't mean you have to use a flat design — it's about making sure you're keeping the content and visual design focused on the essentials. Ensure that the visual elements of the interface support the user's primary goals.

Why?

- Visual clutter makes it harder to find and focus on desired actions
- Good use of color,shape and Gestalt principles guides the eyes
- The more there is to see, the less of it users will actually see

Manifestations:

- Keep the content and visual design of UI focus 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.
- Use Gestalt principles for non-linear reading. Make use of aesthetic design to organize the page in away that makes it easy for users to skim through, skip around, ignore useless info and get right to the info that they actually need

Example of Usability Heuristic #8:

An ornate teapot may have excessive decorative elements that can interfere with usability, like an uncomfortable handle or hard to wash nozzle.

#9: ERROR RECOVERY

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

These error messages should also be presented with visual treatments that will help users notice and recognize them.

Why?

It is a special case of other heuristics.

- Gives feedback
- Speaks users' language
- Allows users to undo and escape from mistakes
- Prevents and detects errors.

Manifestation:

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

Example of Usability Heuristic #9:

Wrong way signs on the road remind drivers that they are heading in the wrong direction and ask them to stop.

#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.

Help and documentation content should be easy to search and focused on the user's task. Keep it concise, and list concrete steps that need to be carried out.

Why?

- Your UI may not be as self-explanatory as expected
- Structure to support 'Gulf of Execution':
  - ☐ Easy to search

- □ Contains list of actions
- □ Focused on users’ tasks

Manifestation:

- Ensure that the help documentation is easy to search, task-focused and concrete.
- Whenever possible, present the documentation in context right at the moment that the user requires it.
- List concrete steps to be carried out.
- Provide help in the form of step-by-step instructions and contextual information that streamlines search help by focusing on the things the user is most likely to be interested in based on the tasks being performed right now.

Example of Usability Heuristic #10:

Information kiosks at airports are easily recognizable and solve customers’ problems in context and immediately.