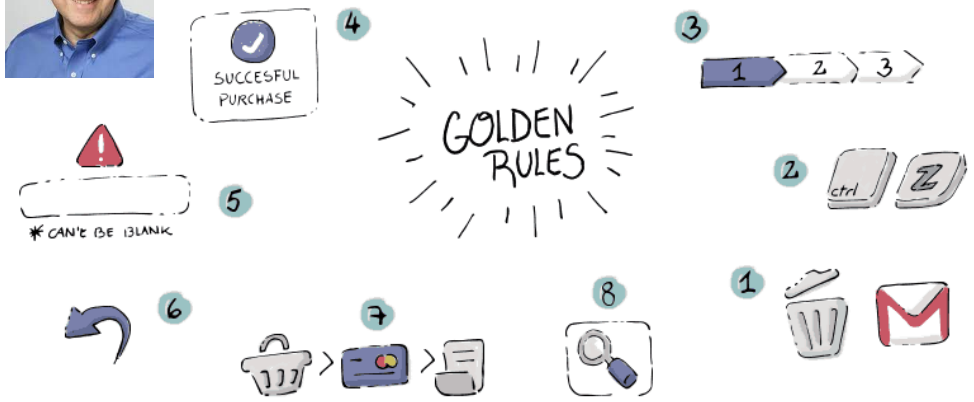
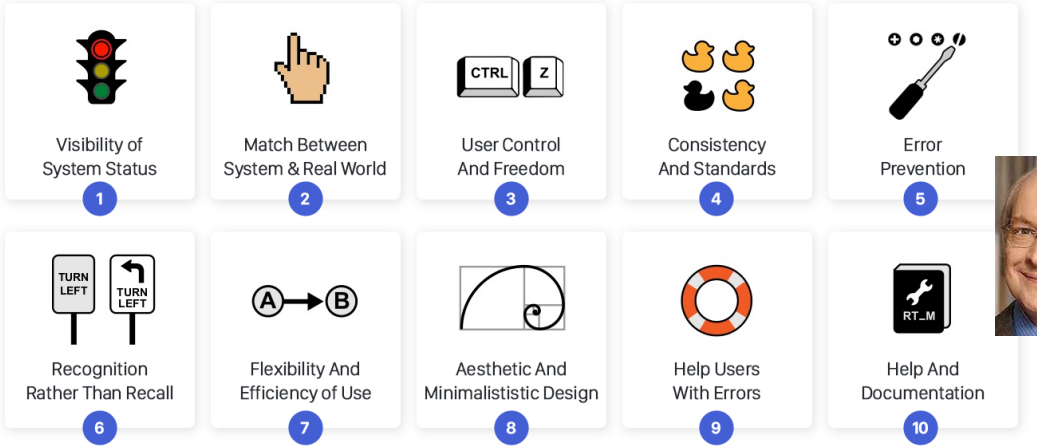
Debriefing

Schneiderman's **8 Golden Rules**



Norman's **7 Design Principles**

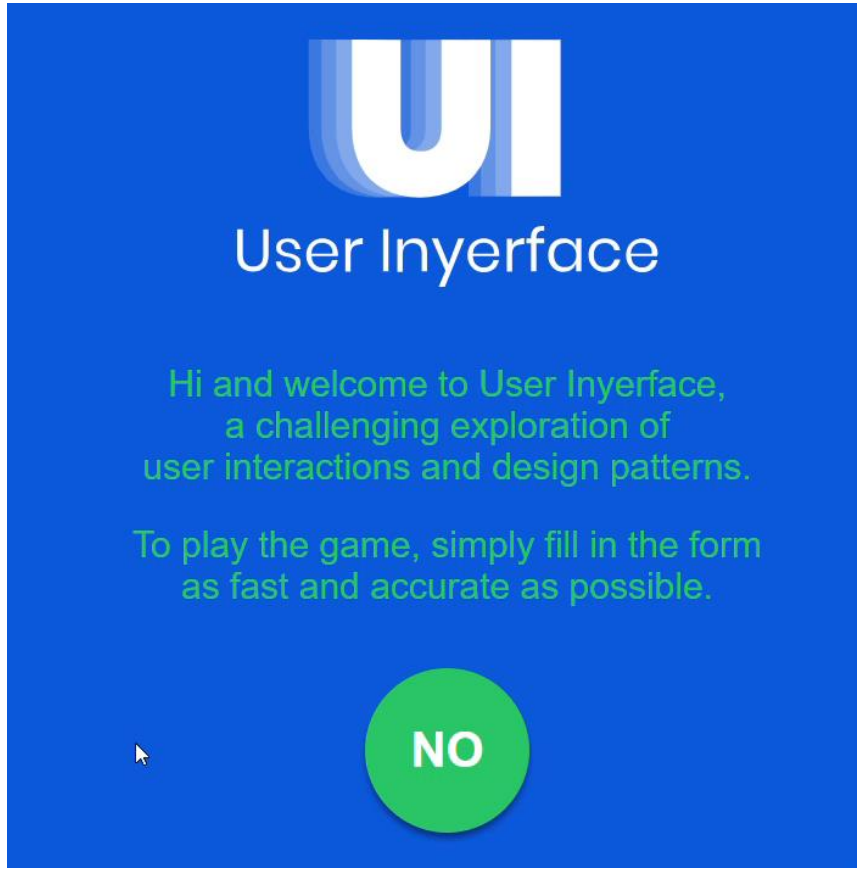


Nielsen's **10 heuristics**

Debriefing

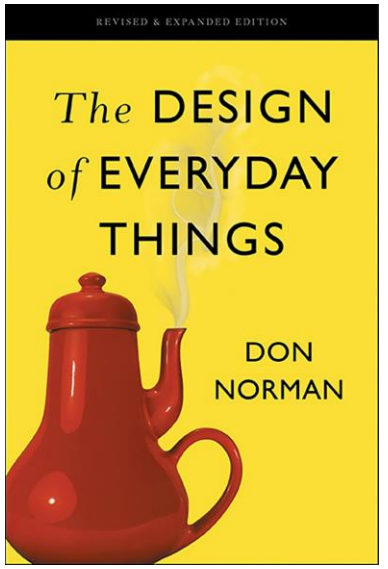
What action should I do?

This is an example of **Affordance**



Affordance

Donald Norman: The Design of Everyday Things



Everyday objects reflect the problems of user interface design.

Introduces the notions of affordance, metaphor, conceptual model.

Provides design rules.

Affordance

Set of the possible actions on an object.

- All actions that are physically possible to do with this object.
- Affordances exist whether or not they are perceived by the user.

The shape, the size, the aspect of the object suggest what one can do with it.

Has since been popularized in interaction design to discuss how to design interface objects (for example, scrollbars to enable moving up and down; icons to click on).

Debriefing

Where to click?

This is an example of **Signifiers**

Signifiers

The way to make sure the affordances are clear (that is, the perceived affordances match the real affordances).

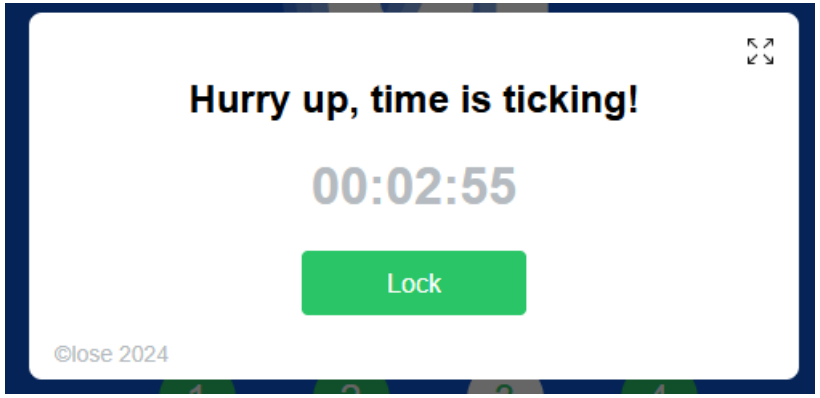
Any perceivable indicator that communicates appropriate behavior to a person.

They are more important than affordances in HCI.

Link Link Link Link

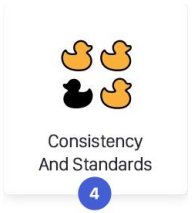
Debriefing

How to close the window?

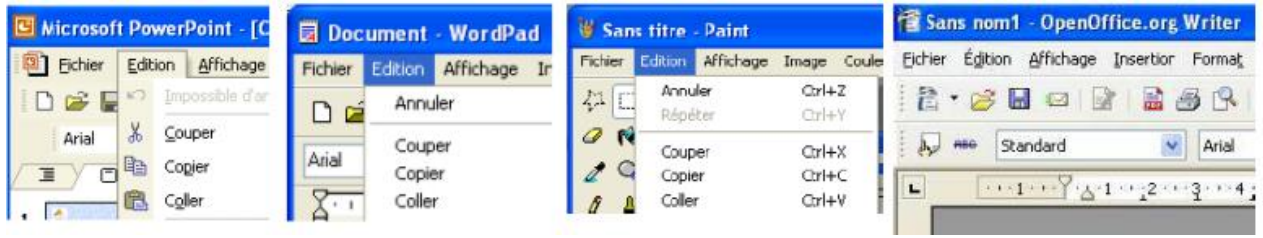


Let’s talk about **Consistency**

Internal and external consistency

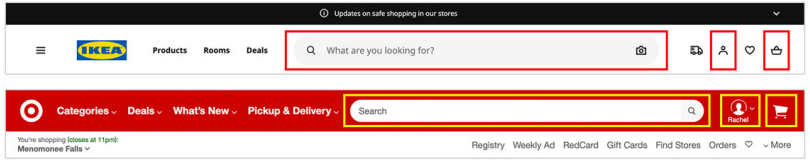


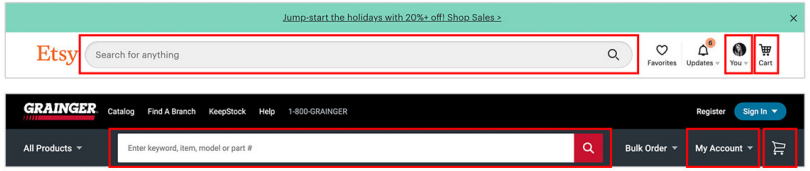
Internal consistency refers to designing operations to behave the same within a single application or across a family or suite of applications.



External consistency refers to designing operations, interfaces, and so on to be the same across applications and devices.

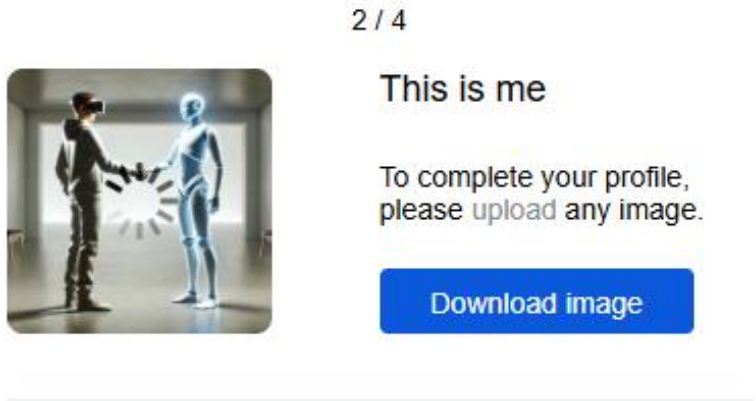
“Don't forget that people spend 90% of their time interacting with other apps.”





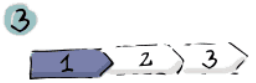
Debriefing

Is the image still uploading?



Let’s talk about **Feedback**

Offer informative feedback



Continuously inform the user about what the system is doing, and how the system is interpreting the user's input

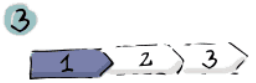
Each user action should be followed by a changed representation in the interface.

Includes sound, highlighting, animation, and combinations of these.

Inform users of long operations.

Show status of system operations in progress.

Offer informative feedback



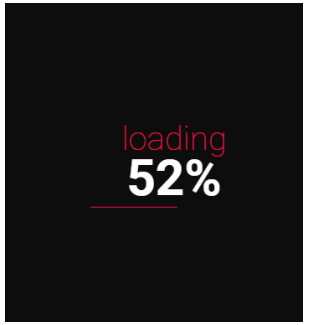
System Response time (time to give feedback)

How users perceive delays:

- < 0.1s perceived as “instantaneous”
- 1s user’s flow of thought stays uninterrupted, but delay noticed
- 10s limit for keeping user’s attention focused on the dialog
- > 10s user will want to perform other tasks while waiting

Feedback during long delays:

- Cursors for short transactions
- Percent done dialogs for longer transactions
- How much left; estimated time; what it is doing...



Design dialogue to yield closure

Sequences of actions should be organized into groups with a beginning, middle, and end.

Informative feedback at the completion of a group of actions gives users the satisfaction of accomplishment, a sense of relief, and an indicator to prepare for the next group of actions.

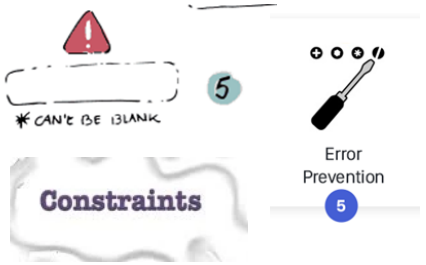
For example, e-commerce websites move users from selecting products to the checkout, ending with a clear confirmation page that completes the transaction.

Debriefing

Pay attention!

Let’s talk about **Errors**

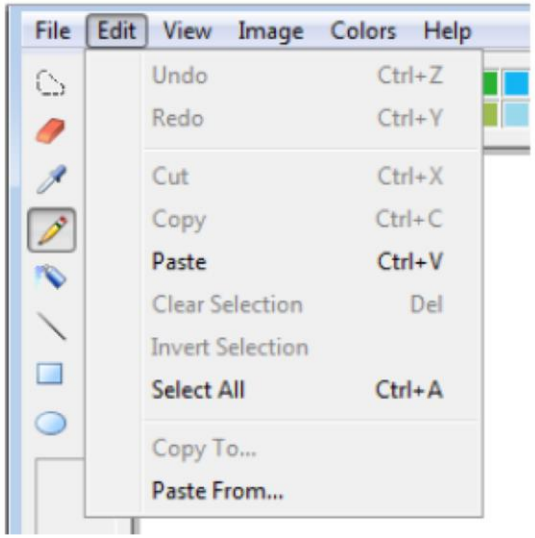
Error handling/constraints

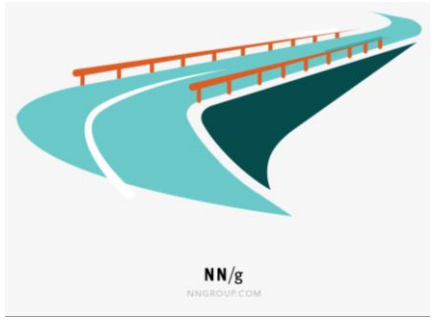


Design the interface so that users cannot make serious errors.

Restrict the possible actions that can be performed.

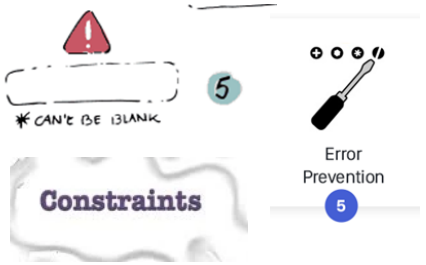
E.g., gray out menu items that are not appropriate and do not allow alphabetic characters in numeric entry fields.





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

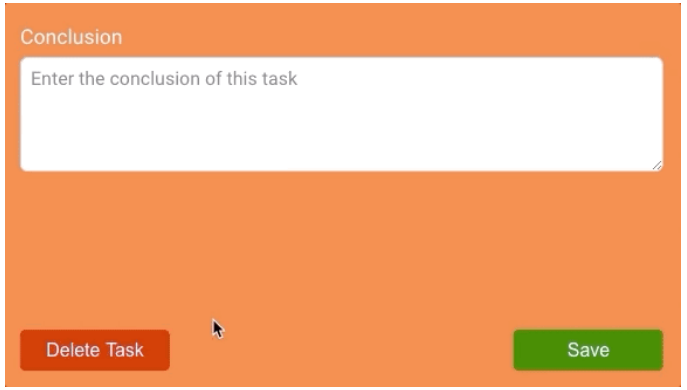
Error handling/constraints



Avoid slips (unconscious errors caused by inattention) by providing helpful constraints and good defaults.

Prevent mistakes by removing memory burdens, supporting undo, and warning your users.

- Deactivate invalid options
- Constrain field formats (dates, etc.) or give the expected value
- Warn users of irreversible actions
- Place the message where the user can see it
- Don’t condemn the user for their error
- Avoid technical terms if possible

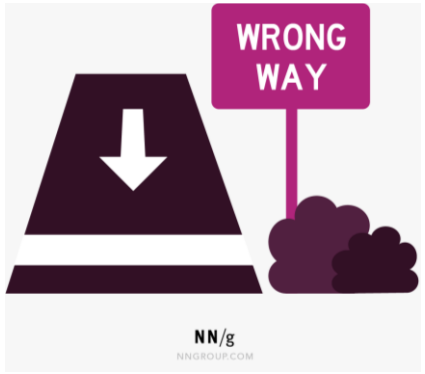


What if the error occurs?

Help users recognize, diagnose, and recover from errors

Help Users With Errors 9

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



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

Permit easy reversal of actions 6

As much as possible, actions should be reversible.

Reduces anxiety, since the user knows that errors can be undone.

It encourages exploration of unfamiliar options.

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

Debriefing

What option is selected?

Let’s talk about **Visibility**

Discoverability/Visibility

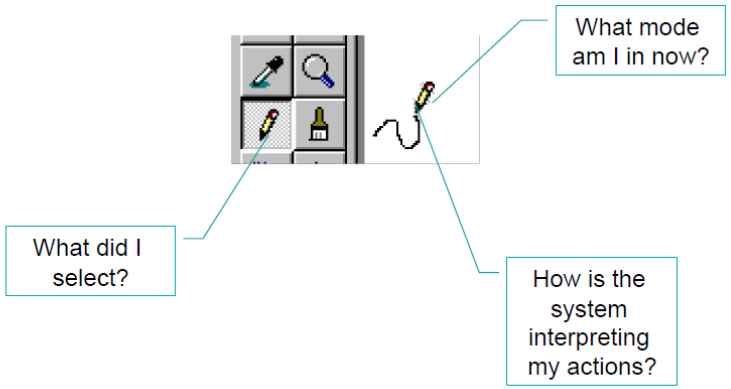
Communicate clearly to users what the system's state is — no action with consequences to users should be taken without informing them.

Make core user functions clearly apparent (e.g., toolbars vs. Menus).

Visible properties guide users as to what to do next.

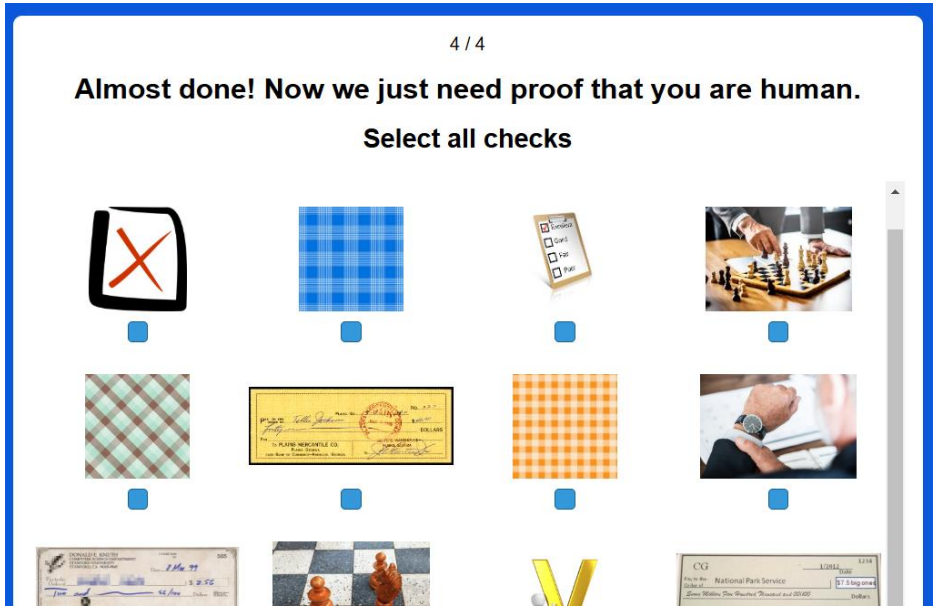
Structure enhances visibility.

Give intelligent default values.



Debriefing

Do I have to select all them manually?

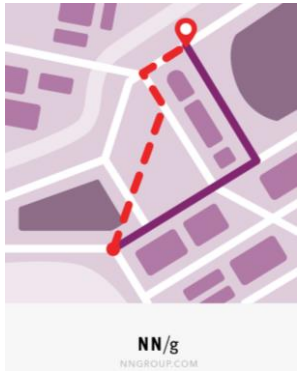


Let’s talk about **Shortcuts**

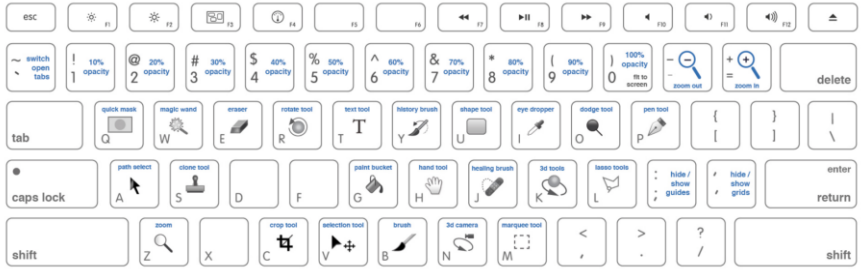
Enable shortcuts/Flexibility

Expert users want to reduce the number of interactions and to increase the pace of interaction.

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.

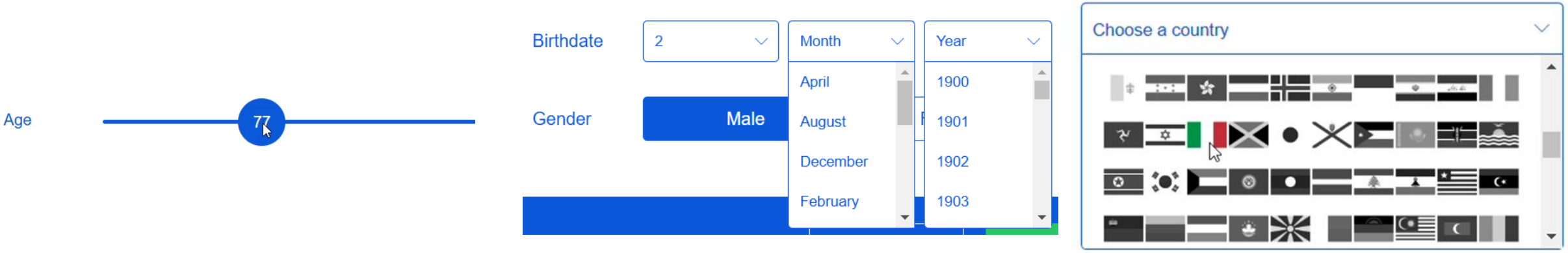


Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.



Debriefing

How much did it take to find the right option?



Let’s talk about **Cognitive Load**

Reduce short-term memory load

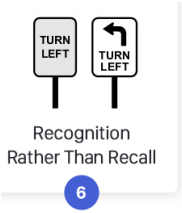
Humans' limited capacity for information processing in short-term memory requires that designers avoid interfaces in which users must remember information from one display and then use that information on another display.

We are easily distracted.

Increasing users' productivity by providing simplified data-entry procedures, comprehensible displays, and rapid informative feedback to increase feelings of competence, mastery, and control over the system.

"3 click rule" – an unofficial web design rule. The user should be able to find any information with no more than 3 mouse clicks

Recognition rather than recall



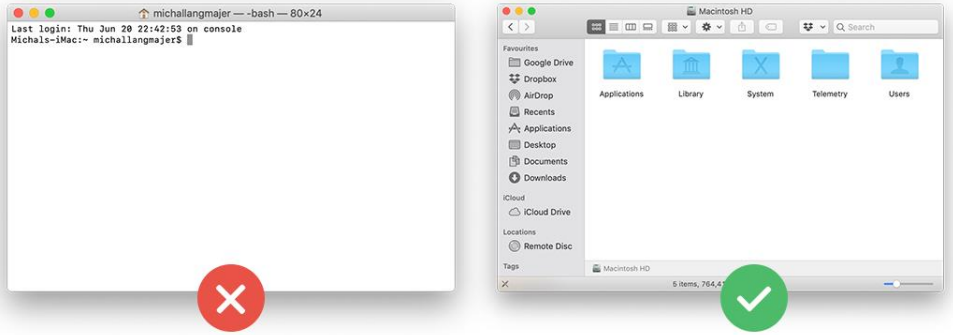
Recognizing something is always easier than recall because recognition involves perceiving cues that help us reach into our vast memory and allowing relevant information to surface.

> For example, we often find the format of multiple-choice questions easier than short answer questions on a test because it only requires us to recognize the answer rather than recall it from our memory.

Minimize the user's memory load by making elements, actions, and options visible.

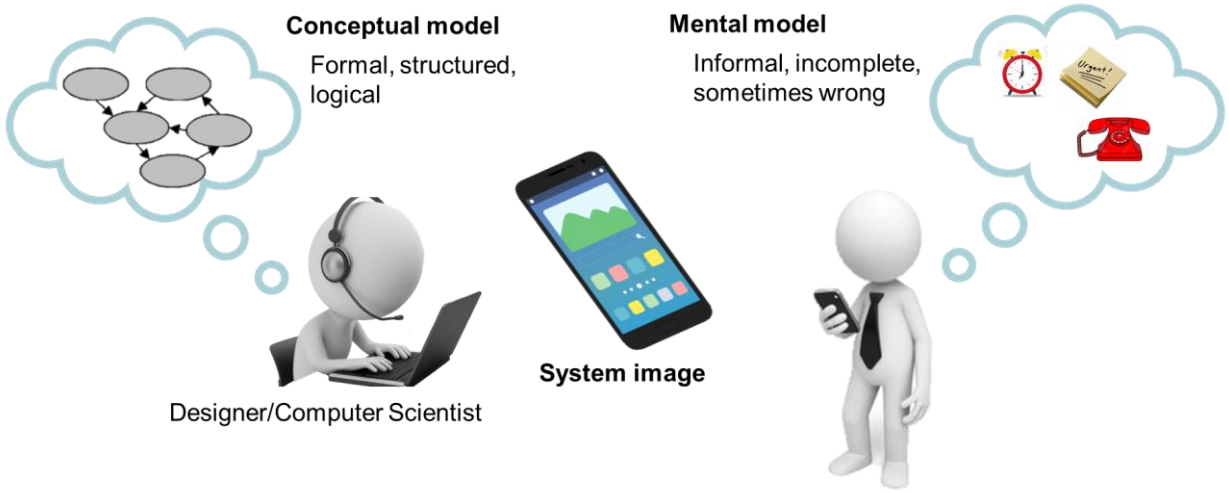
Information required to use the design (e.g., field labels or menu items) should be visible or easily retrievable when needed.

Offer help in context, instead of giving users a long tutorial to memorize.



The most important one...

When there is a disconnection between
the **conceptual** model of the designer (a simple explanation of how something works) and
the **mental** model of the user (our expectation of how something should work),
trouble can occur.



Match between the system and real world

People presume how the system could work based on their experience with other systems that are similar.

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.

Never assume your understanding of words or concepts will match those of your users.

User research will help you uncover your users' familiar terminology, as well as their mental models around important concepts.

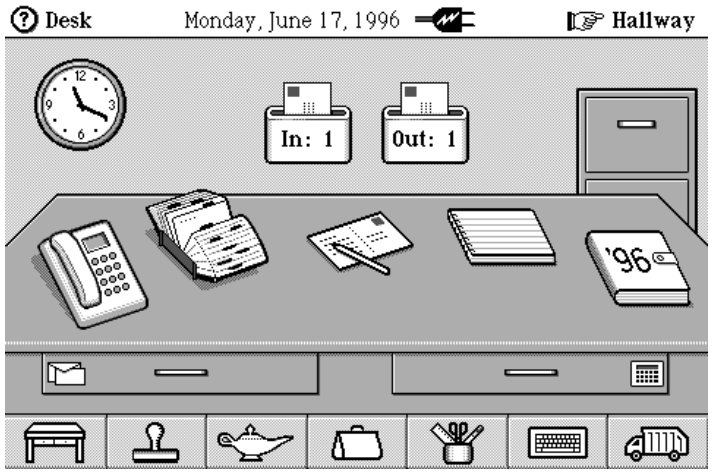
Digital interfaces use visual **metaphors** to help us create an understanding of what can be done.

Metaphors

Transfer a relationship from one set of objects to another set of objects in a different domain.

Transfer the **properties** of objects.

Open a folder, put in the trash, etc.



Metaphors

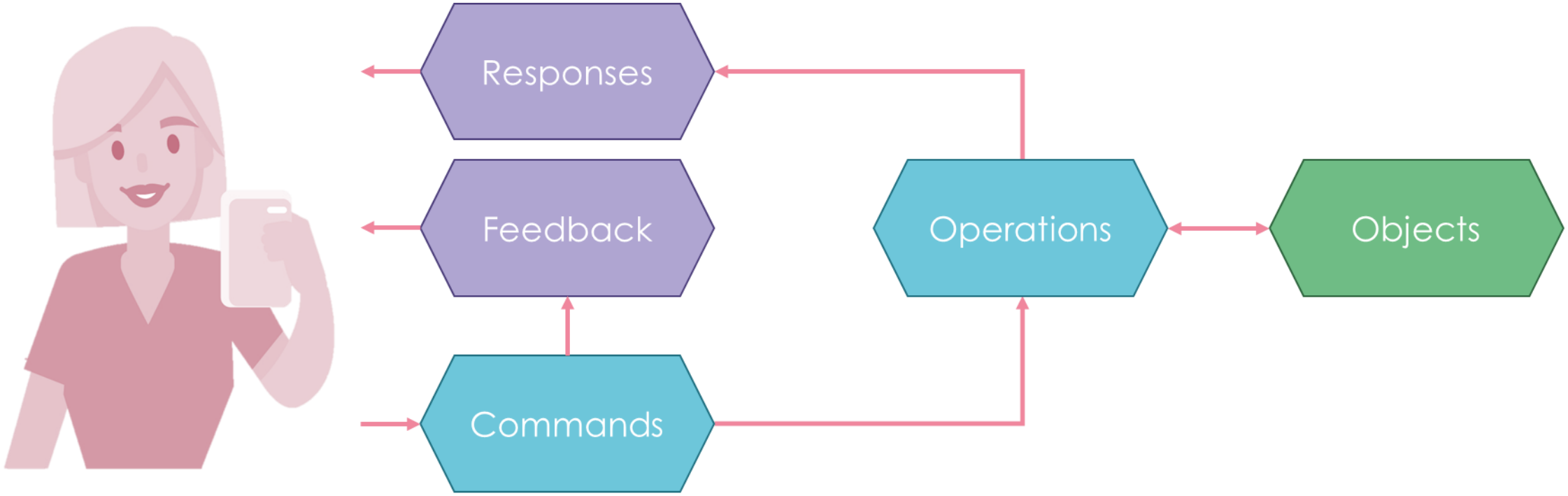
Interaction

Dropbox

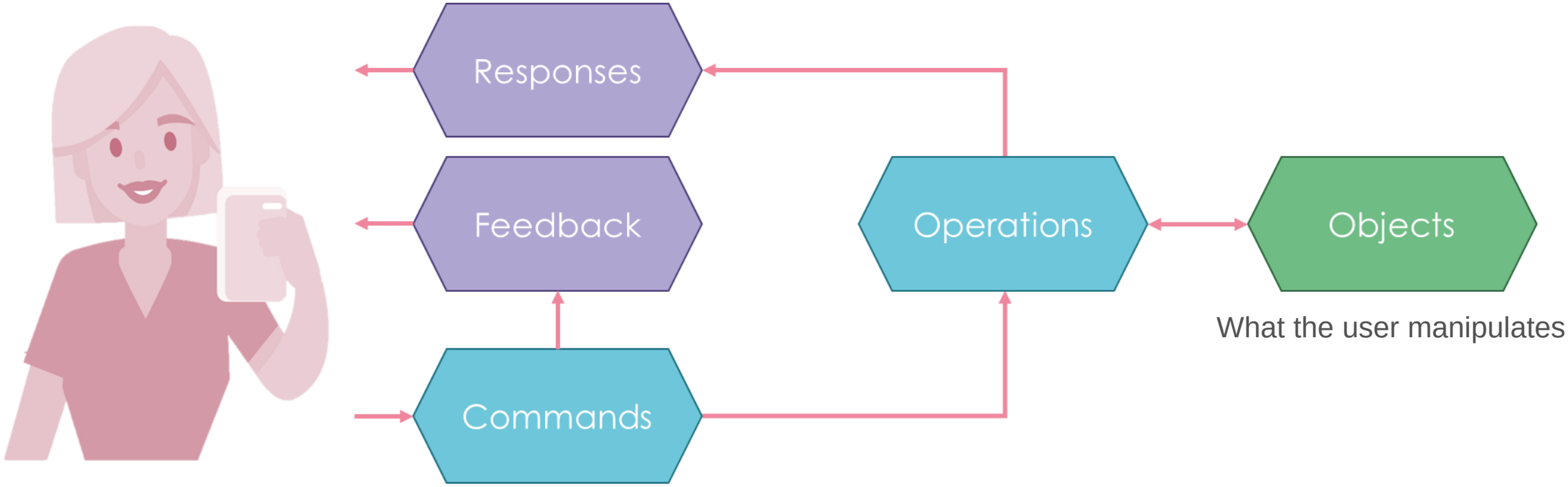
Ecological, contextual, broader system

Personal relationships

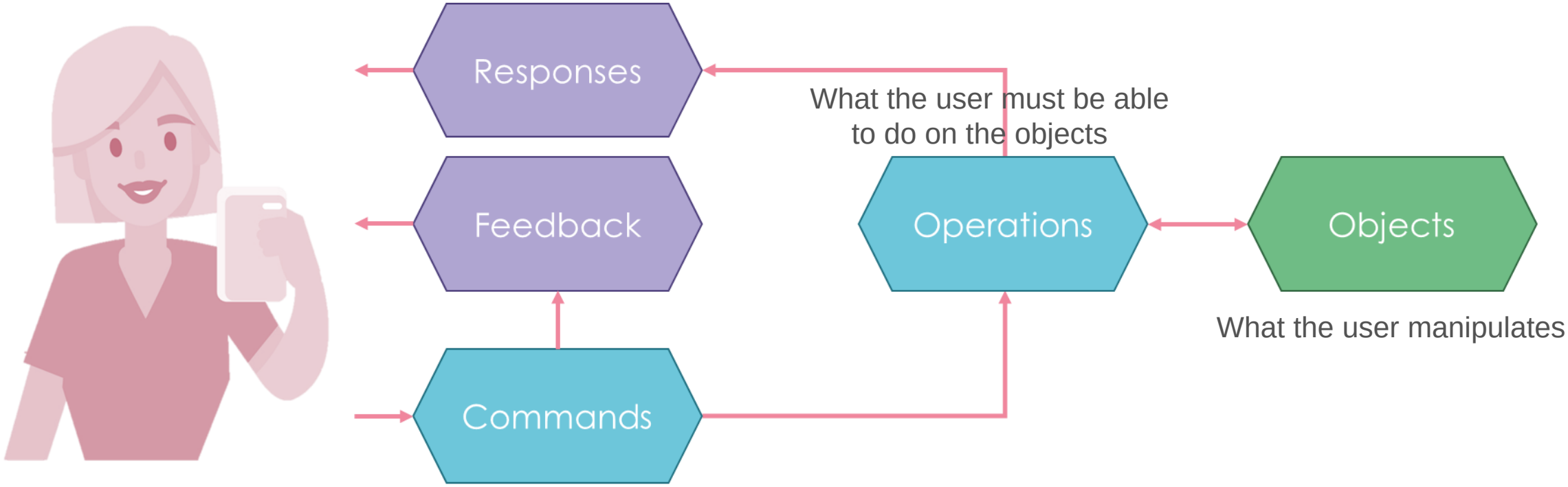
A focus on: conceptualizing the interaction



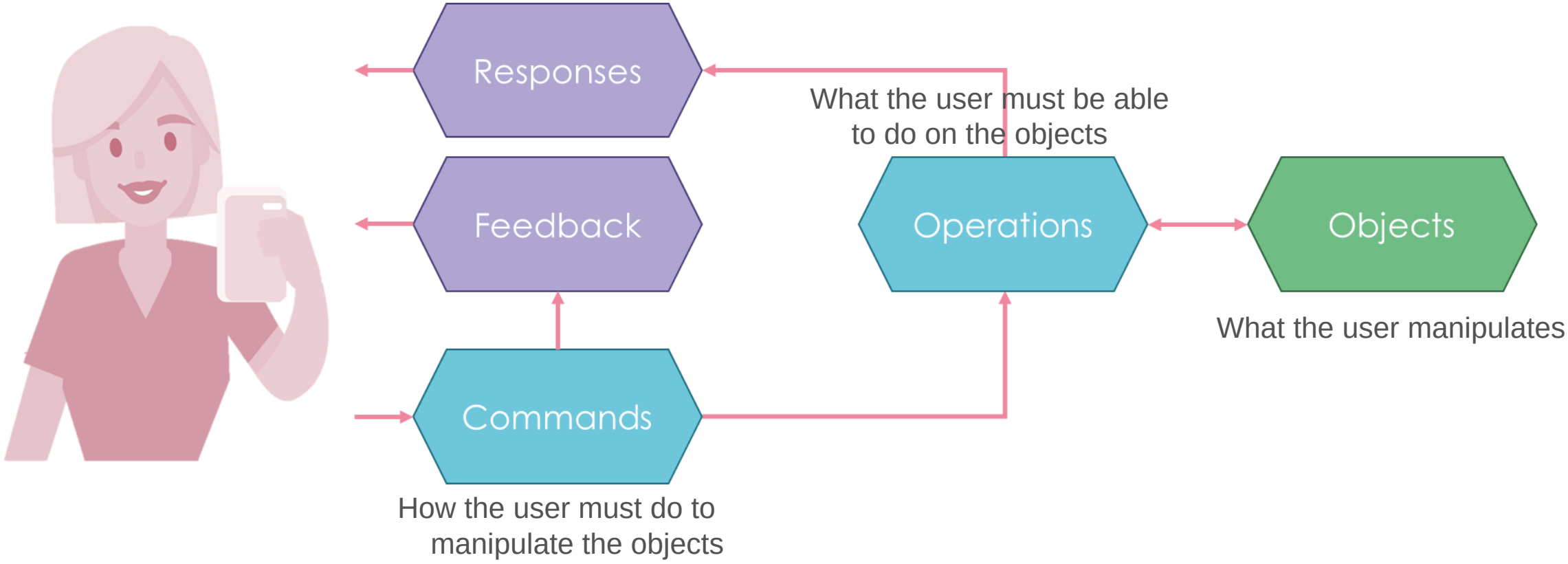
A focus on: conceptualizing the interaction



A focus on: conceptualizing the interaction



A focus on: conceptualizing the interaction



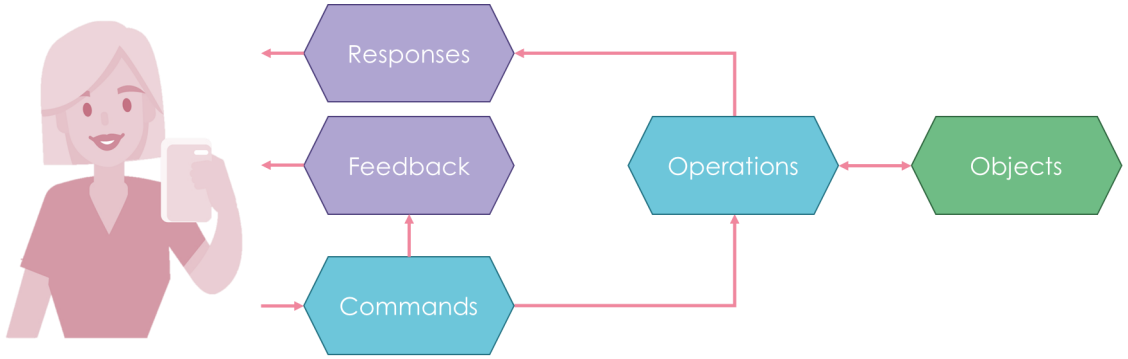
A focus on: conceptualizing the interaction

Feedback:

What the user sees **during and until** a command is completed

Response:

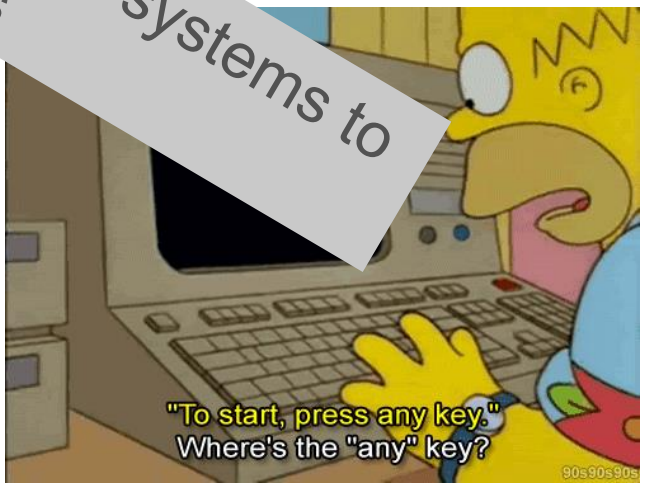
What the user sees **following the execution** of the operation corresponding to the command



To summarize

Designed with the user in mind

Engineered as software systems to perform set functions



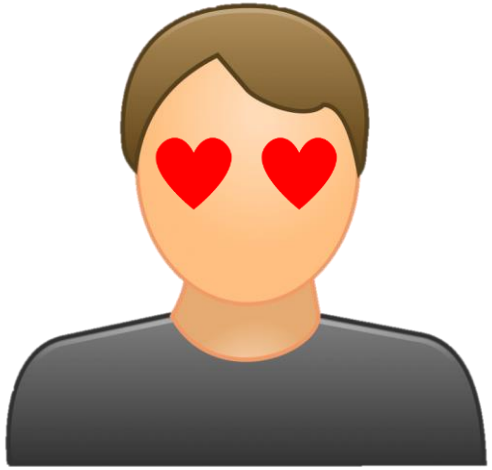
What are the consequences?

How to measure them?

User Experience (UX)

How people feel about a product and their **pleasure** and **satisfaction** when using it, looking at it.

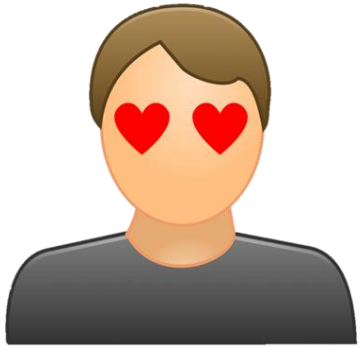
Overall **impression** of how good it is to use.



User Experience (UX)

UX is concerned with “all aspects of the user’s experience when interacting with the product, service, environment or facility” (ISO 9241-210*)

How users **perceive** a product, such as whether a smartwatch is seen as sleek or chunky, and their **emotional** reaction to it, such as whether people have a positive experience when using it. (Hornbæk and Hertzum, 2017)



*This document provides requirements and recommendations for human-centered design principles and activities throughout the life cycle of computer-based interactive systems

Usability

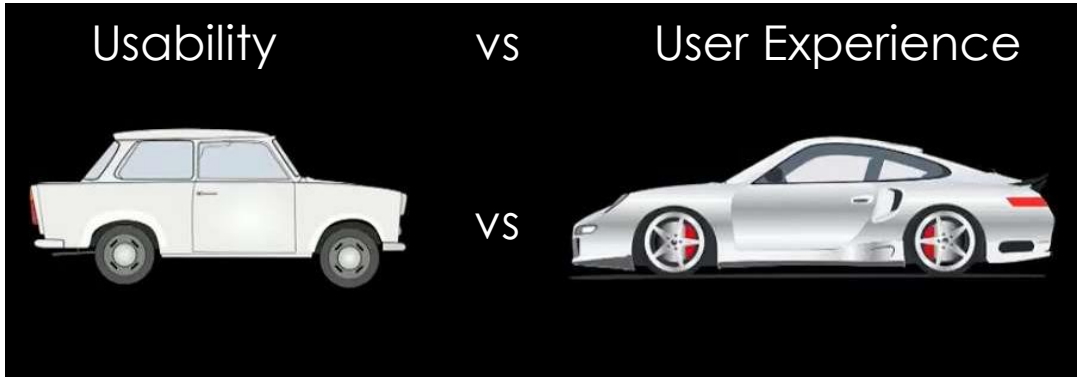
Usability is concerned with the “extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use“ (ISO 9241-11:2018)

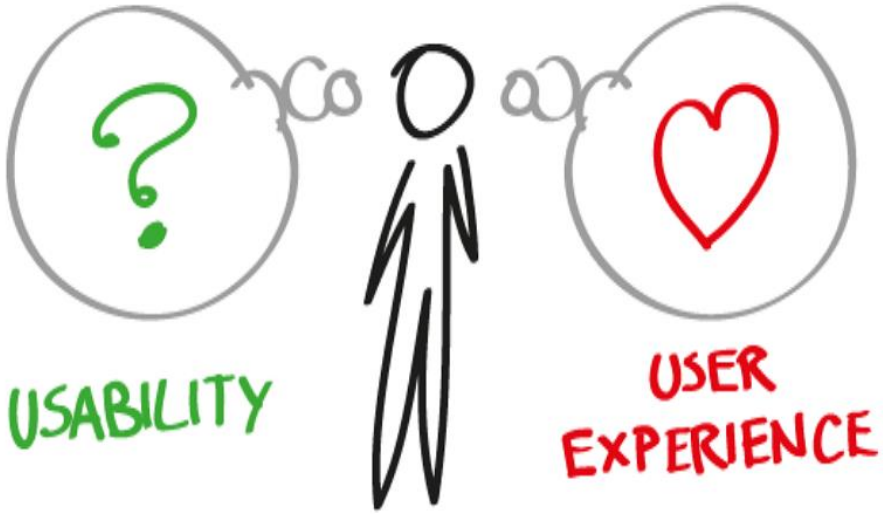
A usable system is: easy to learn, easy to memorize, efficient, visually appealing and fast to recover from errors.

It is mainly about the **functional** part of a product.

Usability plays an important role in creating good UX: products with good usability are convenient and make users feel comfortable while using a product.

Usability vs UX





Usability: Is it easy to use?

User Experience: Does it feel good?

Usability and UX goals

Usability goals:

are concerned with meeting specific usability criteria, such as efficiency.

UX goals:

are concerned with explicating the nature of the user experience, for instance, to be aesthetically pleasing.

Usability and UX goals

Usability is often fundamental to the quality of the user experience.

Aspects of user experience are inextricably linked with how usable the product is.

Sometimes contrasting goals: a complex system (e.g., a game) can be more challenging and hence more interesting than an easy-to-use system!

Usability goals: Effectiveness

How good a product is at doing what it is supposed to do?

Usability goals: Efficiency

Once users have learned how to use a product to carry out their tasks, can they sustain a high level of productivity?

Usability goals: Safety

What is the range of errors that are possible using the product, and what measures are there to permit users to recover easily from them?

Usability goals: Utility

Does the product provide an appropriate set of functions that will enable users to carry out all of their tasks in the way they want to do them?

Usability goals: Learnability

Is it possible for the user to work out how to use the product by exploring the interface and trying certain actions? How hard will it be to learn the whole set of functions in this way?

Usability goals: Memorability

What type of interface support has been provided to help users remember how to carry out tasks, especially for products and operations they use infrequently?

Usability criteria

A characteristic of usability goals that can be measured to determine if the goal is being met.

- **Effectiveness**: user can complete desired task (yes/no)
- **Efficiency**: time/ number of operations to complete a task
- **Safety**: number of errors / time to recover from errors
- **Utility**: number of times the user uses the product to complete a task
- **Learnability**: time / number of errors when learning a task
- **Memorability**: number of errors made over time

User Experience Goals

Subjective qualities.

Elements that contribute to making a user experience pleasurable, fun exciting, etc.

More difficult to measure than usability goals.

Desirable aspects

Satisfying	Helpful	Fun
Enjoyable	Motivating	Provocative
Engaging	Challenging	Surprising
Pleasurable	Enhancing sociability	Rewarding
Exciting	Supporting creativity	Emotionally fulfilling
Entertaining	Cognitively stimulating	Experiencing flow

Undesirable aspects

Boring	Unpleasant
Frustrating	Patronizing
Making one feel guilty	Making one feel stupid
Annoying	Cutesy
Childish	Gimmicky