

**UI**

USER INTERFACE



**UX**

USER EXPERIENCE



“People will not use your design if it is bad”

- It is frustrating.

# UI

USER INTERFACE

- Hvad? Definition?
- Forskelle?
- Hvor? Eksempler fra Candidate.dk



# UX

USER EXPERIENCE

# UX

User research  
Usability testing  
Personas  
Information architecture  
Interaction design  
Workflows  
Copywriting  
Low-fidelity

# UI

Visual design  
Interface design  
Colors  
Layout  
Branding  
Typography  
Graphics  
High-fidelity

# UX      UI



A dark, moody photograph of a person's hands holding a smartphone. The hands are positioned as if interacting with the device. In the background, a laptop screen is visible but out of focus, suggesting a workspace or a technology-themed environment.

# UX/UI PRINCIPPER

# DAGENS FORMÅL

- Organisering i teams: *Admin, Recruiter, Candidate og Visitor*
- Fælles fundament for at kunne arbejde med UX/UI sprint.
- Metoder og værktøjer til UX/UI.

# FOKUS

- at forbedre brugeroplevelse og den visuelle brugergrænseflade

# AGENDA



1. Intro til UX/UI-sprint
2. Organisering i Teams
3. UX/UI Principper
4. Arbejde i teams

# UX MATERIALE R

**NN/g** Nielsen Norman Group

[www.nngroup.com](http://www.nngroup.com)



INTERACTION DESIGN  
FOUNDATION

[www.interaction-design.org](http://www.interaction-design.org)



**NN/g** Nielsen Norman Group

## Jakob Nielsen

“The king of Usability”

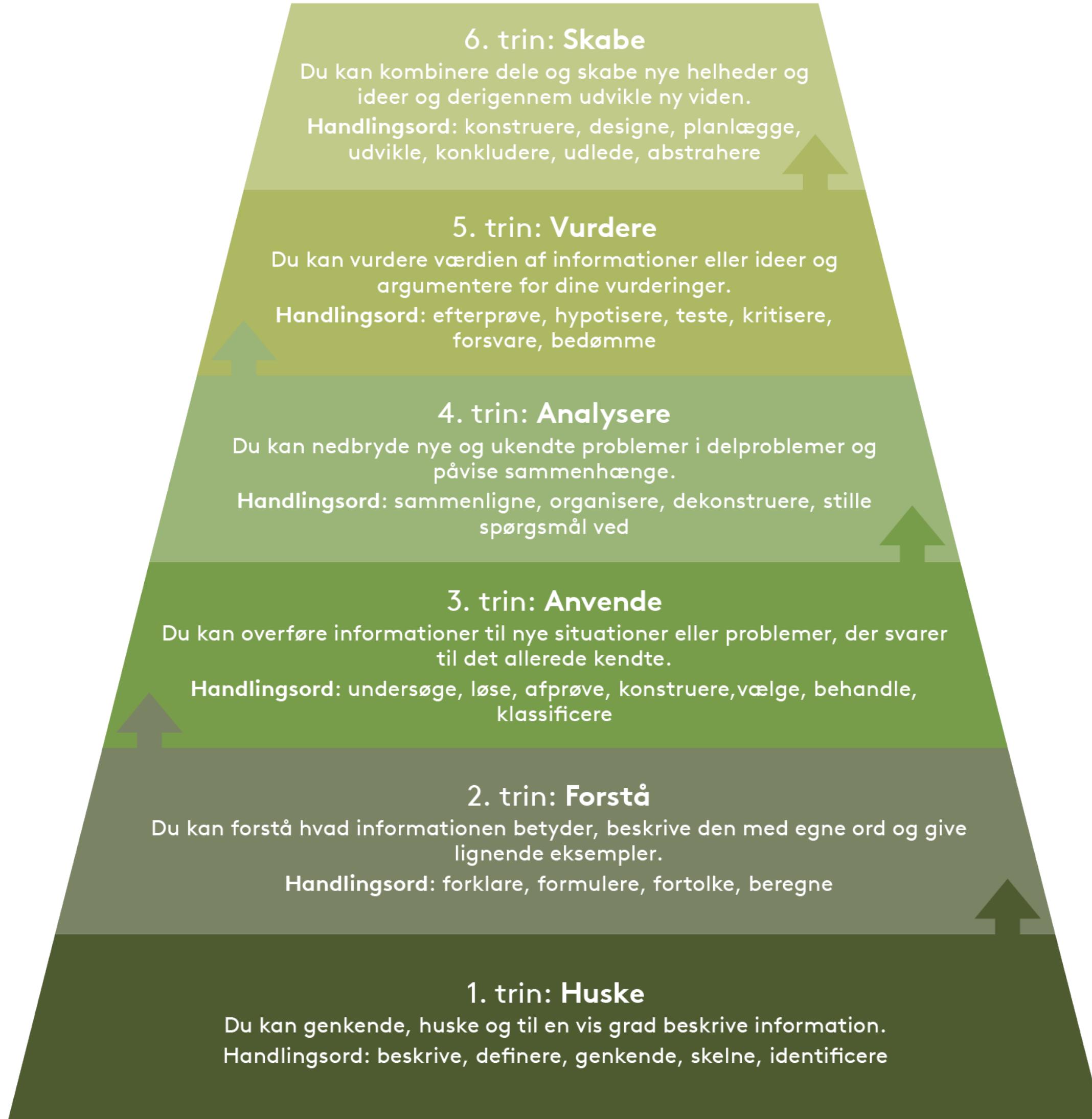
## Don Norman

Introducerer i 1988 for første gang begrebet  
“User Experience”

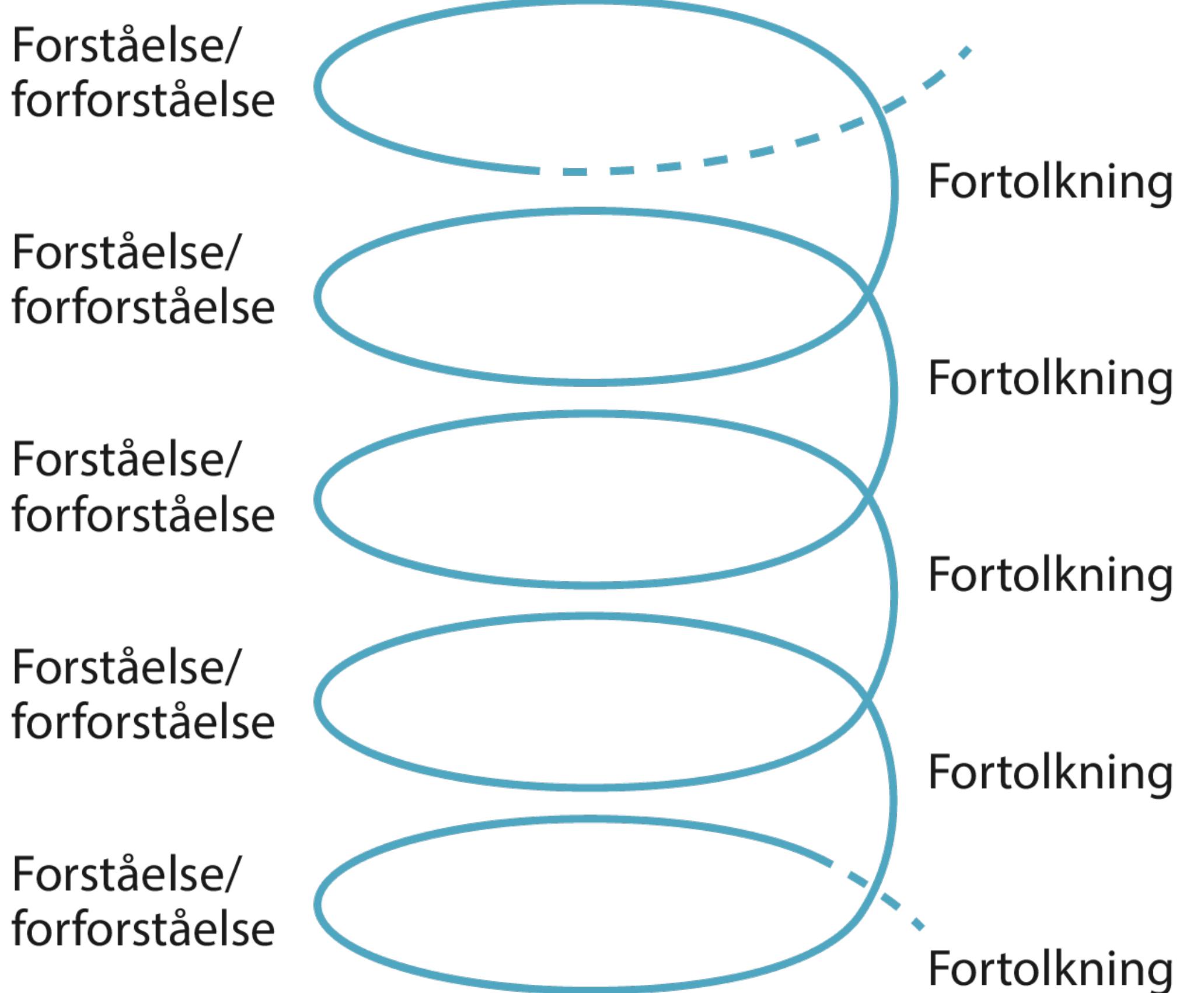
# DISCLAIMER

## LITTERATUR, MATERIALE & EMNER

# BLOOMS TAKSONOMI



# DEN HERMENUETISKE SPITAL



# UX/UI DEFINITIONER

**Digitalt Design** er design du sætter strøm til.

Det er **visuel kommunikation**, der præsenterer informationer, produkter eller en service gennem en digital **brugergrænseflade (UI)**.

Digitalt Design er Grafisk Design specialiseret til computere.

**UI, User Interface** eller **Brugergrænseflade** er alt hvad en bruger kan interagere med for at betjene et digitalt produkt eller en digitalt tjeneste.

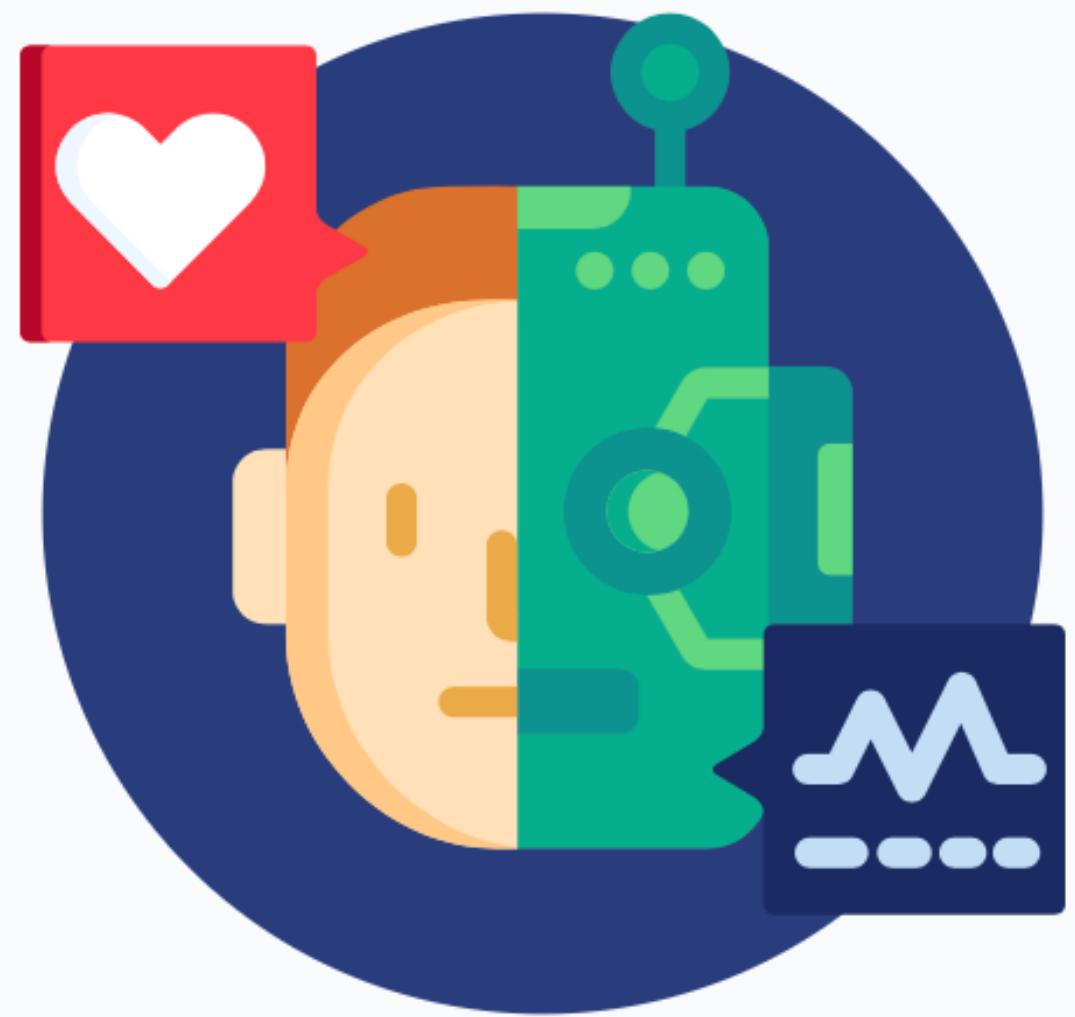
Det inkluderer skærm, touchskræm, knapper, tastatur, mus, lyde og lys.

En **brugergrænseflade** er bindeled mellem et system og dets bruger.

Typisk forbinder vi det med det vi ser: **Grafiske Brugergrænseflader (GUI)**

# UI

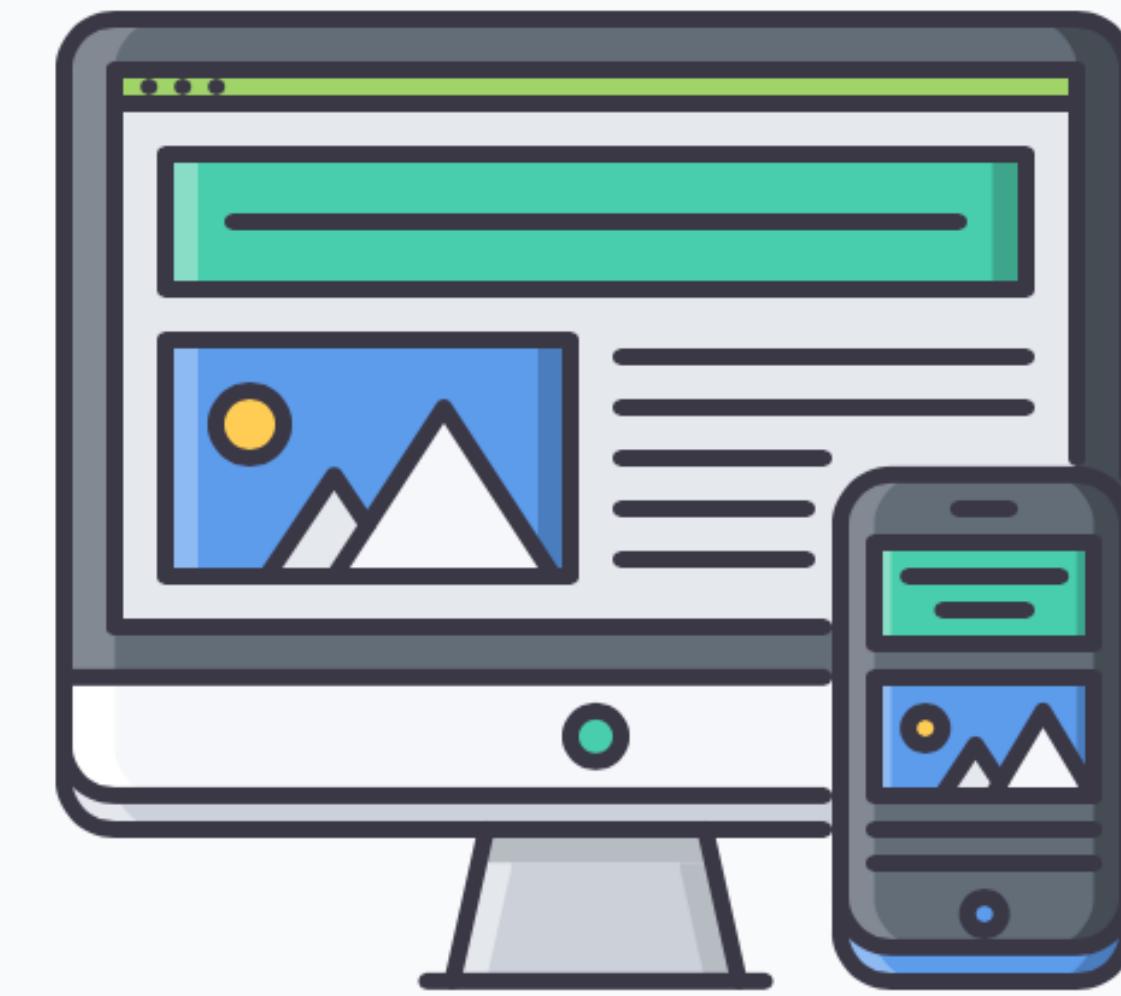
User Interface



all the ways in which a person can interact with a machine or system; including computerised systems.

# GUI

Graphical User Interface



A subset of user interfaces where the main way the computer systems communicate are through graphics on displays.

# **GUI is the most common UI but not the only one**

.....

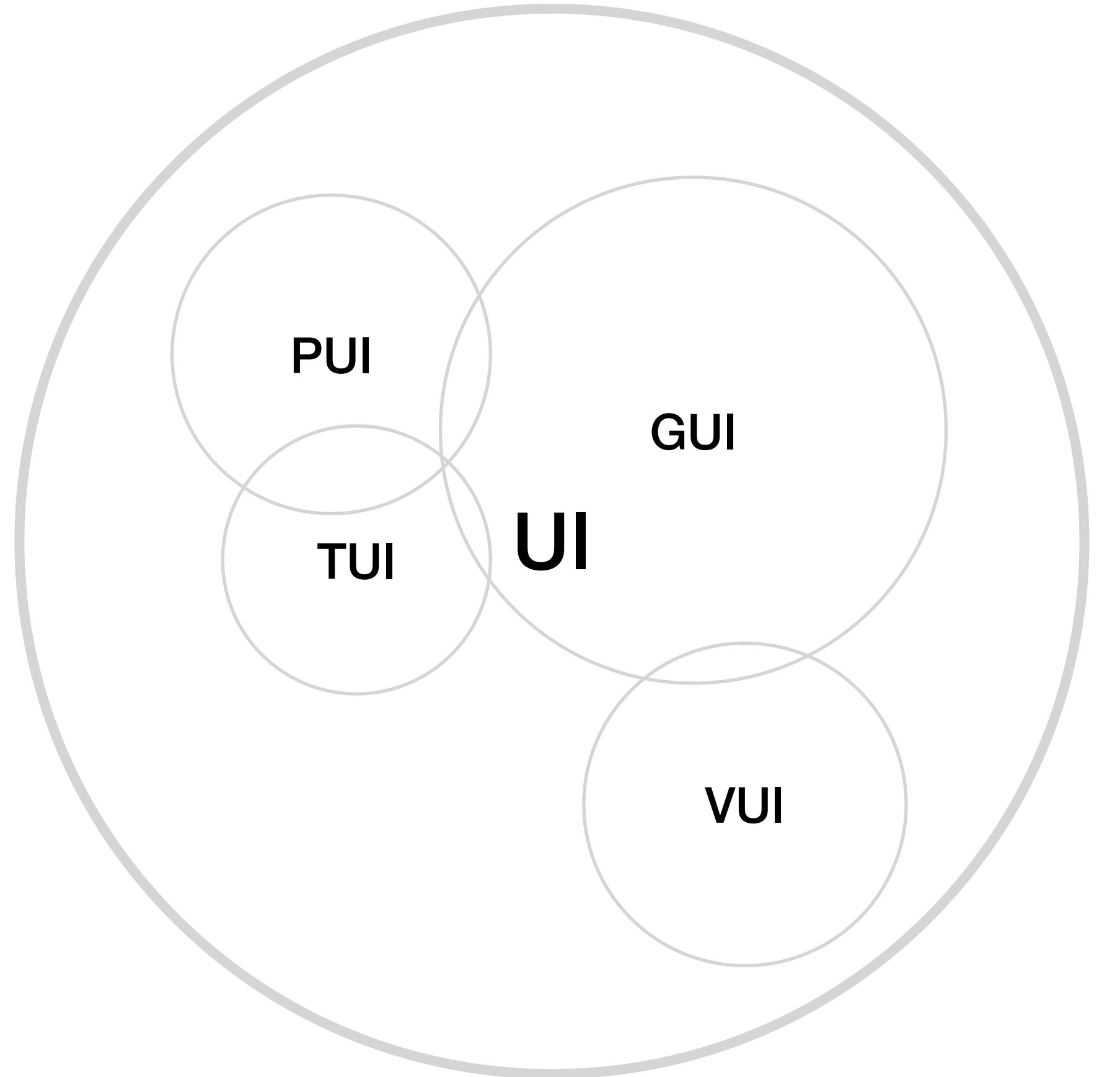
PUI/Physical UI - physical buttons, knobs, sliders, number pads, levers, steering wheels, remote pads, are all still heavily used and often preferred by users.

VUI/Voice UI/Conversational interfaces - Alexa, Google Home, Siri etc all use voice as the main interface.

TUI/Text UI and CLI (command-line-interfaces) - Text Interfaces require users to type commands and run processes.

Motion tracking and gesture UI - users can move their bodies/hands to make gestures that controls a system.

Auditory UI - Consider blind users. A GUI is wasted on them. Instead they use screen readers to read the information on the screen.



*different types of user interfaces intertwine  
and will continue to do so increasingly*

GUI ≠ UI

**GUI** = **UI**

*“Usability eller brugervenlighed er et udtryk for, om et system er bekvemt og nemt at betjene, fungerer og reagerer efter hensigten og passer til den givne målgruppe”.*

(Min fortolkning)

"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use".

(ISO 9241-210)

**“Usability is a quality attribute that assesses how easy user interfaces are to use.”**

(Nielsen, 2012)

# Usability 101

**Learnability**

Ease of tasks the first time

**Efficiency**

Quick performance of tasks

**Memorability**

Ability to reestablish proficiency

**Errors**

Ease of recovery from errors

**Satisfaction**

Pleasant use

# USABILITY GOALS

. Effective to use (effectiveness)

Efficient to use (efficiency)

Safe to use (safety)

Having good utility (utility)

Easy to learn (learnability)

Easy to remember how to use (memorability)

(Preece, Rogers og Sharp 2019, 1.7.1)

**Utility** = whether it provides the features you need

**Usability** = how easy & pleasant these features are to use

**Useful** = **usability + utility**

Jakob Nielsen

# UX, USER EXPERIENCE ELLER BRUGEROPELSE

ISO (International Organization for Standardization) definerer brugeroplevelse som: "*A person's perceptions and responses that result from the use or anticipated use of a product, system or service*".

Brugeroplevelse er "*en persons oplevelse og respons på resultatet fra brugen eller den forventede brug af et produkt, et system eller en service*".

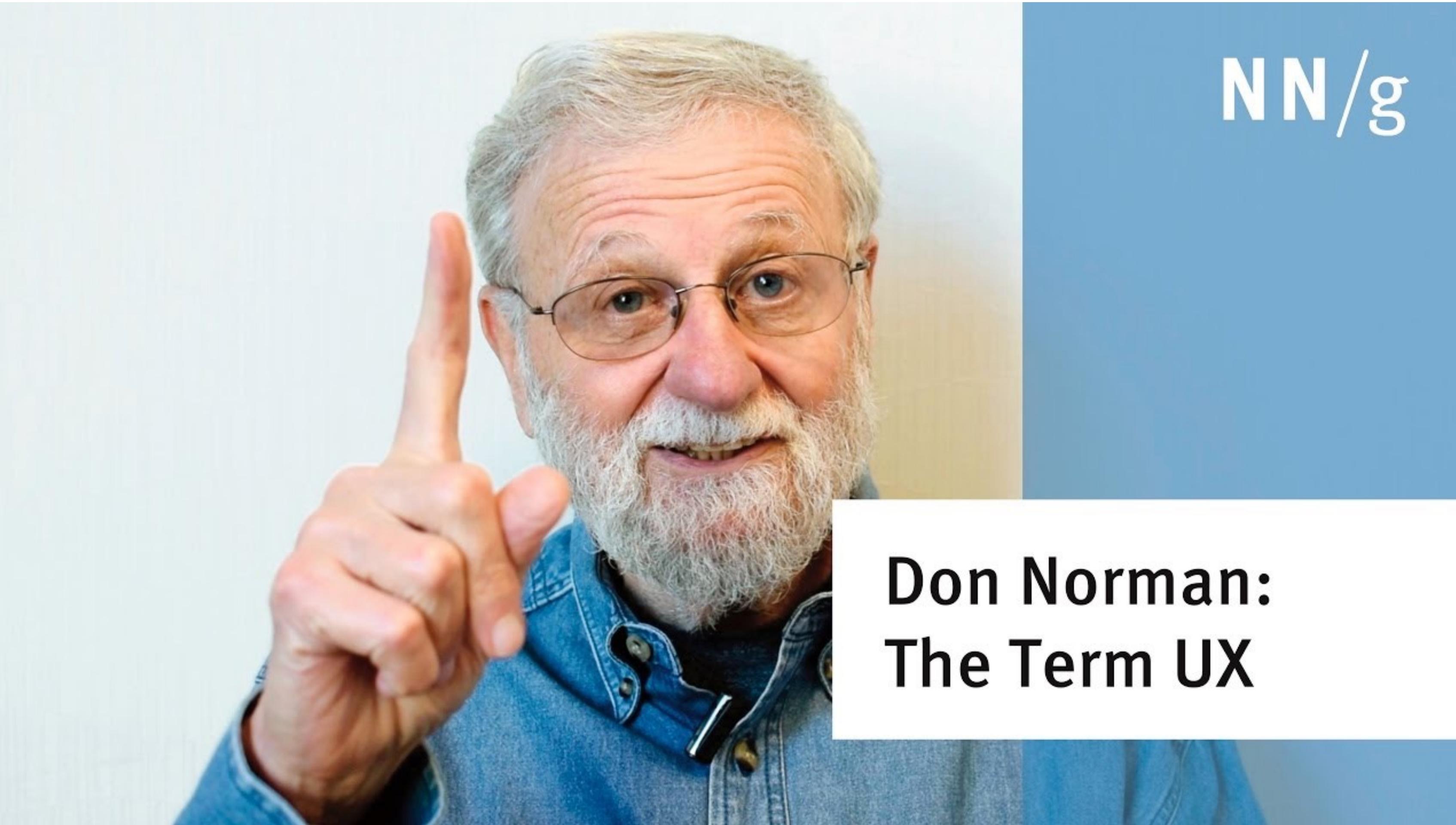
ISO 9241-210

UX, User Experience eller brugeroplevelse er alle  
brugerens oplevelser, når brugeren interagerer med  
en løsning, et system, dit produkt eller din service.

Det involverer brugerens adfærd, indstilling og  
følelse ved brugen.

User experience (UX)  
encompasses all aspects of  
the end-user's interaction  
with the company, its  
services, and its products.

*Brugeroplevelse* omfatter alle aspekter af slutbrugerens interaktion med virksomheden, dets tjenester og dets produkter.



[www.nngroup.com/videos/don-norman-term-ux](http://www.nngroup.com/videos/don-norman-term-ux)

**USER EXPERIENCE**



**USER INTERFACE**



# HVAD GØR VI SÅ?

HVORDAN SIKRER VI HØJ USABILITY OG GOD USER EXPERIENCE?

TEST

EVALUERING

USABILITY TEST

HEURISTISK EVALUERING

BRUGERTEST

TÆNKE-HØJT-TEST

FEEDBACK

INTERVIEWS

BRUGERINDDRAGELSE

- Brugerundersøgelser: Interviews, spørgeskemaer og observationer for at forstå brugerbehov.
- Personas: Fiktive brugerprofiler, der repræsenterer målgruppen.
- Brugerrejser (Customer Journey Mapping): Visualisering af brugerens oplevelse med produktet over tid.
- Wireframes og prototyper: Strukturerede layout og interaktive modeller for at teste designideer.
- Usability testing: Evaluering af produktet ved hjælp af rigtige brugere for at identificere brugsproblemer.
- A/B-testning: Sammenligning af to versioner af en webside for at se, hvilken der performer bedre.
- Analytiske værktøjer: Som Google Analytics, for at spore og analysere brugeradfærd.
- Usability Heuristics: Retningslinjer for at vurdere og forbedre brugervenligheden af et interface.
- Expert Test (Heuristic Evaluation): Ekspertergennemgang af et interface baseret på usability-heuristikker for at identificere problemer.
- Design Principles: Grundlæggende regler for æstetisk og funktionelt design, der sikrer en god brugeroplevelse.

BRUGERTESTS?

RESEARCH? INTERVIEWS?

PRINCIPPER & GUIDELINES?

# DESIGNPRINCIPPER

KAN ANVENDES I DESIGNPROCESSEN TIL AT SIKRE  
VELFUNGERENDE SYSTEMER, HØJNE BRUGERVENLIGHEDEN &  
BRUGEROPLEVELSEN

DESIGNPRINCIPPER  
KAN OGSÅ ANVENDES I EVALUERINGEN  
AF EKSISTERENDE LØSNINGER

# DESIGNPRINCIPPER

## DESIGN - HVAD - FOR - NOGET?



NN/g

## Design Principles

<https://www.nngroup.com/videos/design-principles-101>

“[Designprincipper] er generaliserbare abstraktioner, der skal hjælpe designere med at blive opmærksomme på forskellige dele af deres design [...].”

“Designprincipper baserer sig på en blanding af teoribaseret viden, erfaring og common sense [...].”

“Mere præcist skal de hjælpe designere med at forklare og forbedre deres designs”.

(Preece, Rogers og Sharp 2019, 26, min oversættelse)

“[Designprincipper] skal ikke tjene til at specificere, hvordan man designer en egentlig grænseflade, f.eks. beskrive hvordan designeren skaber et bestemt ikon, eller hvordan man strukturerer en webportal”.

(Preece, Rogers og Sharp 2019, 26, min oversættelse)

# DESIGNPRINCIPPER

## HVORDAN ANVENDER VI DEM SÅ?

Designprincipperne er et **analytisk værktøj**, som kan ligge til grund for **argumenter** for og **refleksioner** over, de valg du har træffer i din designproces - eksempelvis i samtale med **kunder, udviklere eller dit team.**

“De ligger bare i mit hoved, som noget jeg kan støtte mig op ad.”

“Jeg bruger dem underbevidst hver dag.”

Designprincipper kan også anvendes  
**systematisk og struktureret**, princip for princip.

Designprincipper kan anvendes som en del af en  
**heuristisk evaluering**, hvor **eksperter** (5 ideelt  
set) anvender principperne til at analysere et  
website.

# HEAVY HITTERS WITHIN THE FIELD UX

JAKOB NIELSEN

DON NORMAN

BEN SHNEIDERMAN

STEVE KRUG

# NNGROUP

[www.nngroup.com](http://www.nngroup.com)

NIELSEN NORMAN GROUP

JAKOB NIELSEN

DON NORMAN

# 10 USABILITY HEURISTICS

JAKOB NIELSEN

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

# 8 GOLDEN RULES OF INTERFACE DESIGN

## BEN SHNEIDERMAN

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

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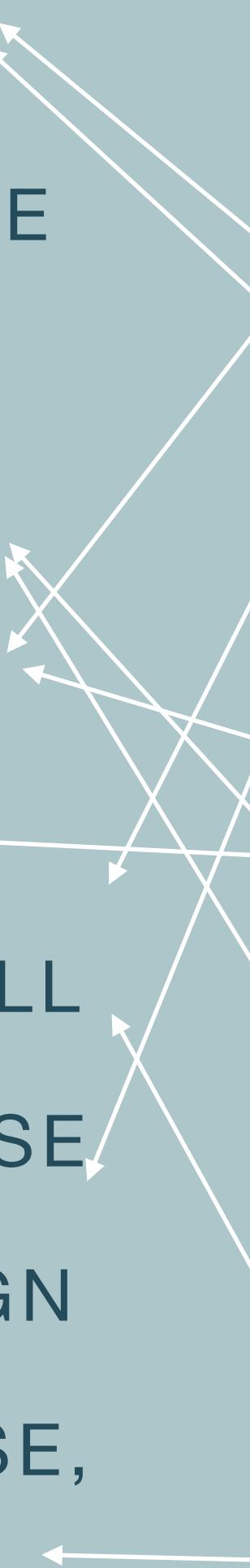
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# DESIGN PRINCIPLES

## PREECE, ROGERS & SHARP (2019)

VISIBILITY

FEEDBACK

CONSTRAINTS

CONSISTENCY

AFFORDANCE

# DESIGN PRINCIPLES

## DON NORMAN

VISIBILITY  
FEEDBACK  
CONSTRAINTS  
MAPPING  
CONSISTENCY  
AFFORDANCE

# DON'T MAKE ME THINK

## STEVE KRUG

<https://www.interaction-design.org/literature/article/don-t-make-me-think-key-learning-points-for-ux-design-for-the-web>



## GØR DET NEMT FOR BRUGEREN

Hvis du får brugerne til at tænke, gør  
du dem utilfredse.

Brugere ønsker ikke at behandle din  
løsning som en slags kryptisk krydsord.

Brugerne vil vide, hvad de skal gøre  
med det samme, for derefter at kunne  
gøre det.

Jo mere du får folk til at tænke, jo mere  
sandsynligt er de at gå andre steder for  
at få arbejdet gjort.

# 5 Visual-Design Principles in UX

Visual-design principles inform us how design elements go together to create well-rounded and thoughtful visuals.

Graphics that take advantage of the principles of good visual design can drive engagement and increase usability.

## BALANCE

Balance occurs when there is an equally distributed amount of visual signal on both sides of an imaginary axis.



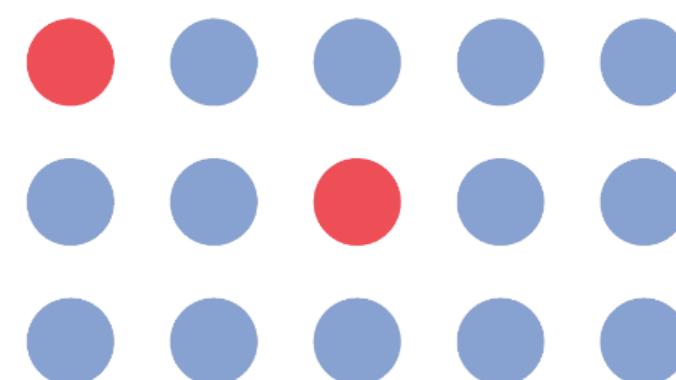
## SCALE

The principle of scale refers to using relative size to signal importance and rank in a composition.



## CONTRAST

The principle of contrast refers to the juxtaposition of visually dissimilar elements in order to convey the fact that these elements are different.



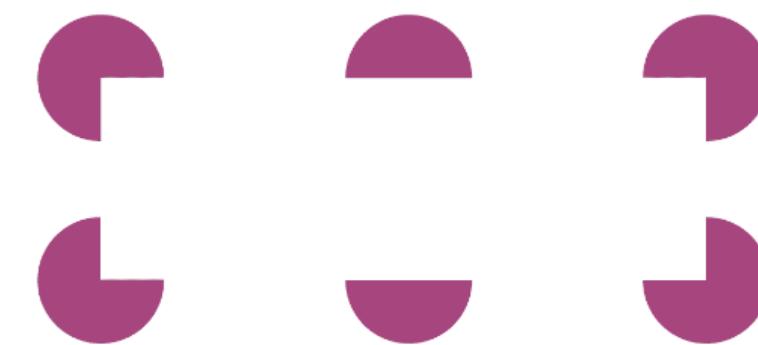
## VISUAL HIERARCHY

The principle of visual hierarchy refers to guiding the eye on the page so that it attends to design elements in the order of their importance.



## GESTALT PRINCIPLES

Gestalt principles capture our tendency to perceive the whole as opposed to the individual elements.



NNGROUP.COM NN/g

Mange designprincipper, tommelfingerregler & retningslinjer.

Hvis du kender:

- **Normans 6 Designprincipper**,
- **Nielsens 10 Heuristikker** og
- **5 Visual Design Principles in UX fra NNGroup**  
... er du godt dækket ind!

# 10 USABILITY HEURISTICS

## JAKOB NIELSEN

<https://linkin.bio/nngux>

<https://www.nngroup.com/articles/ten-usability-heuristics/>

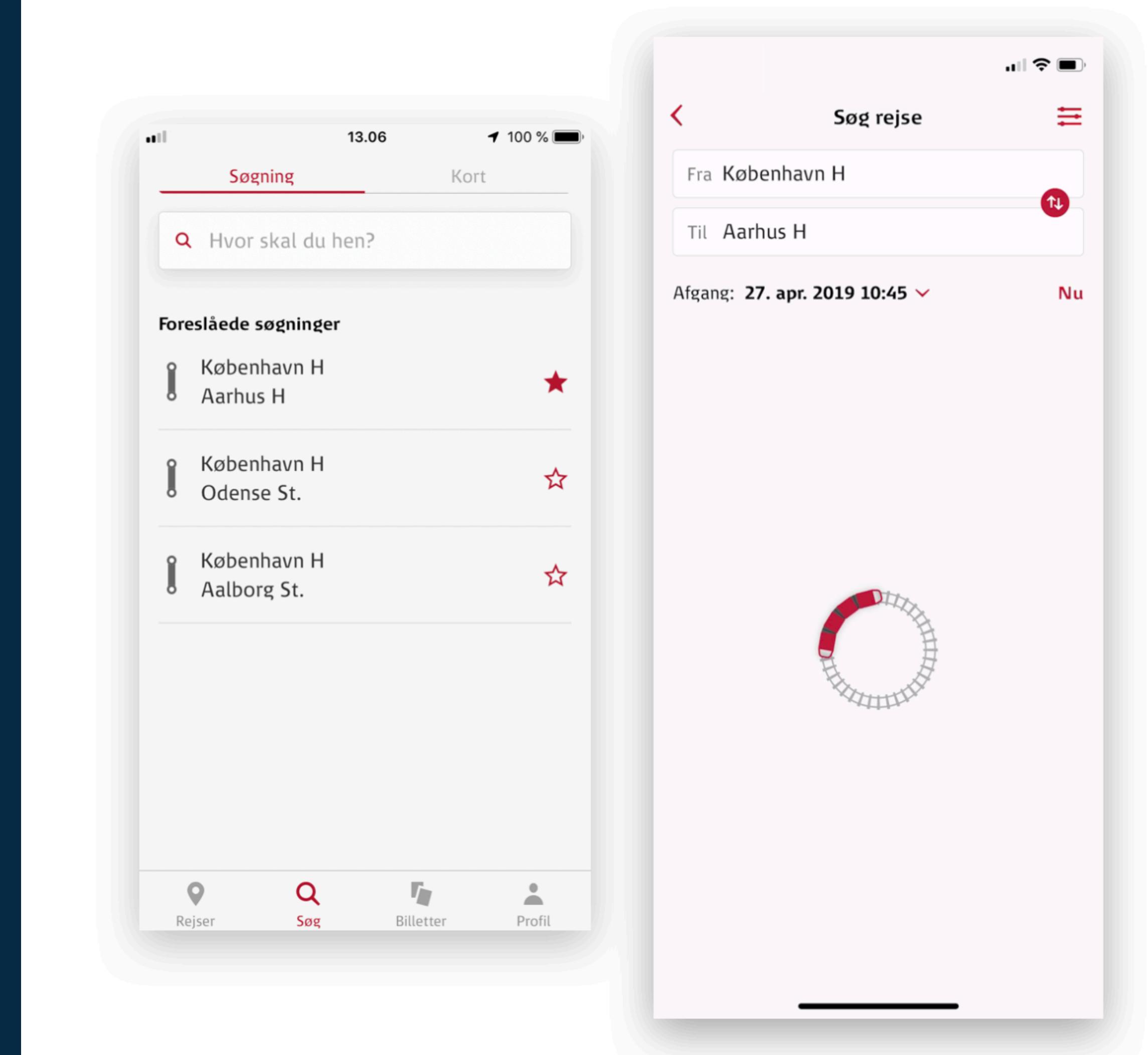
# 1 Visibility of System Status

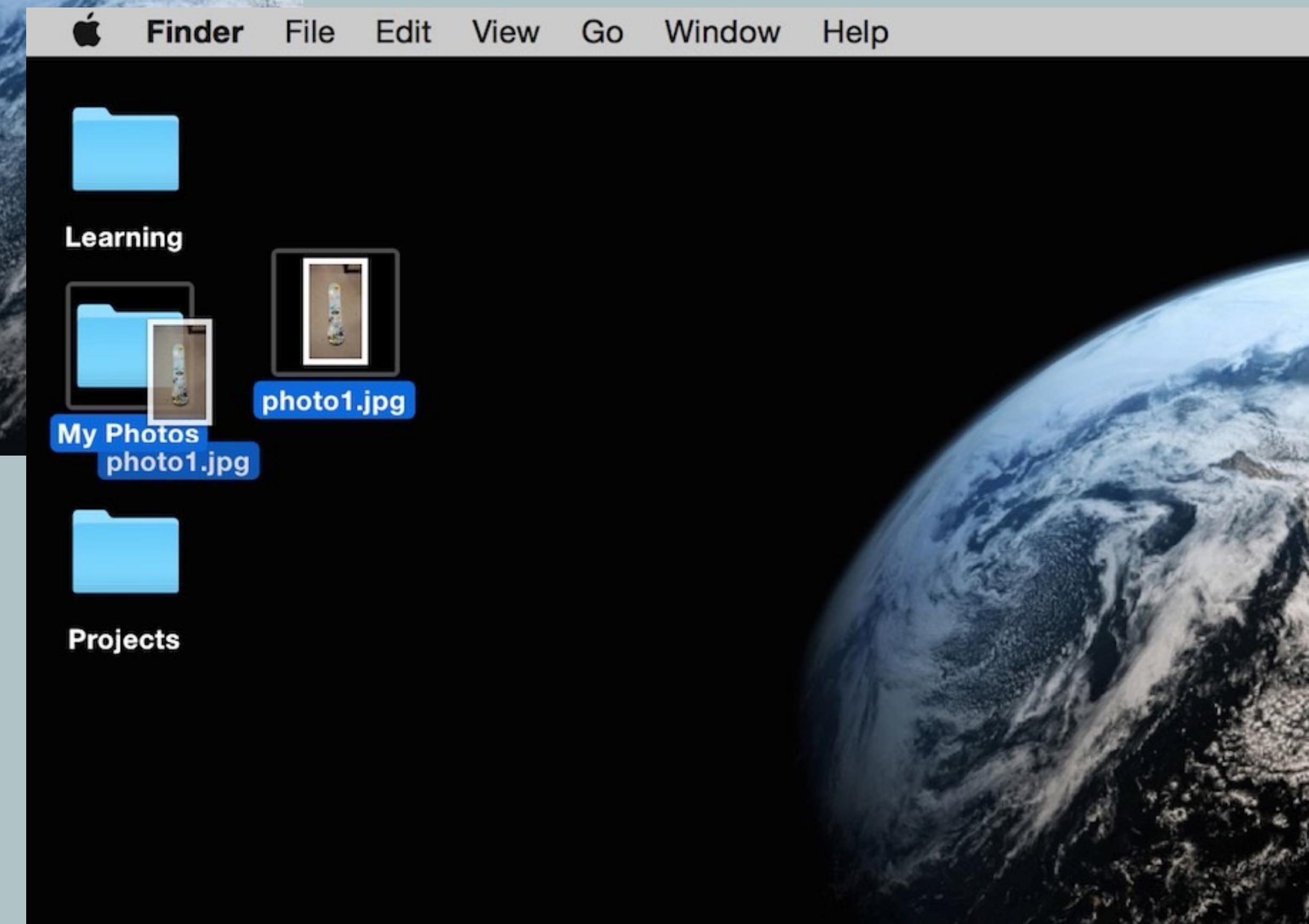
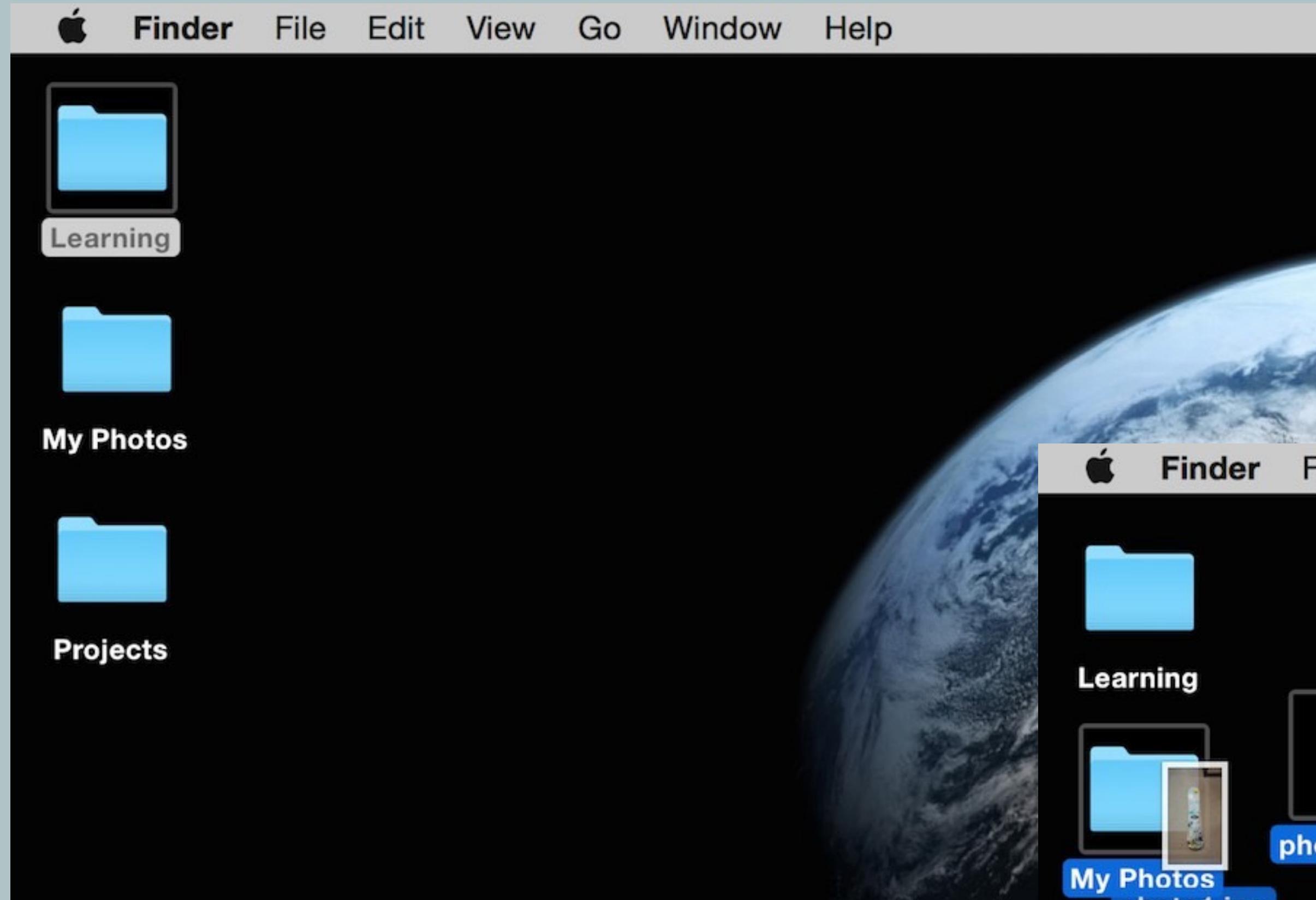
The design should **always keep users informed** about what is going on, through appropriate feedback within a reasonable amount of time.

# 01. SYSTEMSTATUS

Brugeren har behov for at kunne danne sig et tydeligt **overblik** over brugergrænsefladens **struktur**, og hvordan man som bruger **navigerer** denne. Her bør man konstant holde brugeren informeret om eksempelvis sin egen position, men også klart indikere, hvordan man bevæger sig videre - og tilbage.

**Feedback** på **handlinger** dækkes også af denne heuristik - alt fra load-bars, som viser brugeren, at systemet arbejder, til fejlmeddelelser er eksempler herpå.

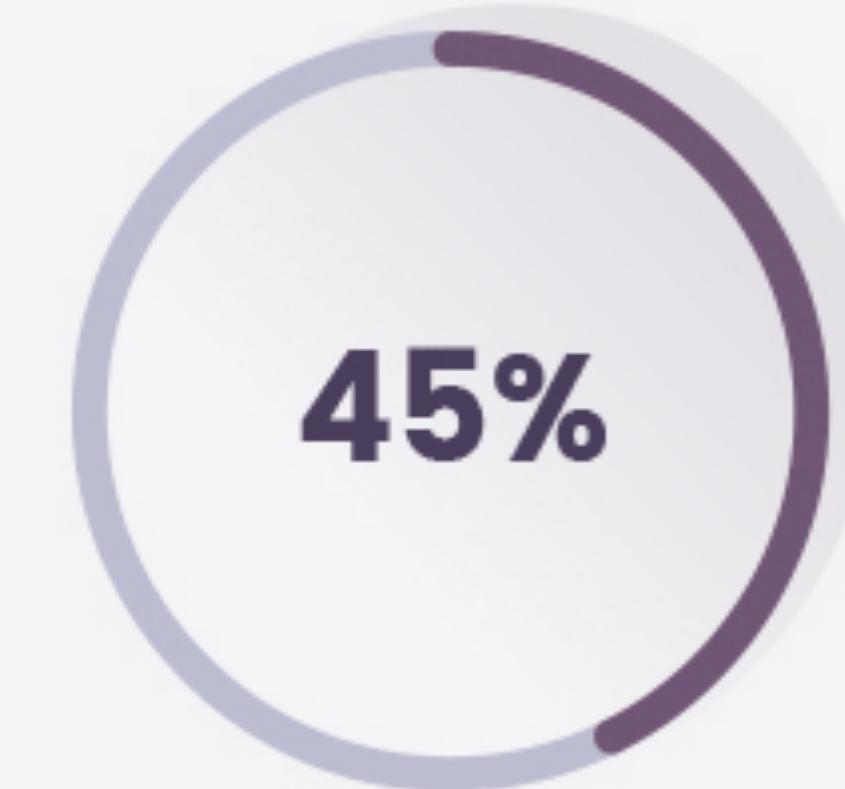






drag & drop  
files to upload

BROWSE FILES



uploading  
uploading 1 file of 5  
3.5 MB uploaded

CANCEL



## BOOK AFHENTNING

## Hent store sække

(dåser + plastikflasker)

Antal

## Hent små sække

(glasflasker)

Antal

## BESTILLING

## Store sække - inkl. hvide strips og stregkoder

Til dåser og plastikflasker

Vælg antal

## Små sække - inkl. hvide strips og stregkoder

Til glasflasker

Vælg antal

## Stativer til store sække



Vælg antal

## Låg til stat



Vælg antal

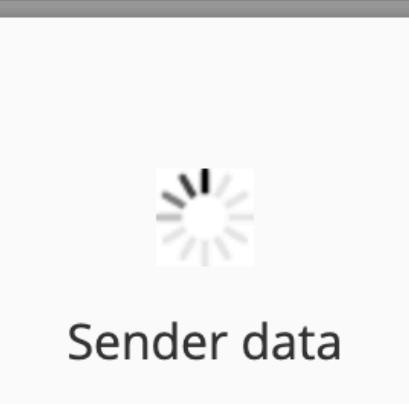
## EKSTRA stregkoder til sække

Pris 5 kr. pr. stregkode

Antal

## Att. på pakkelabel

Svend Christensen



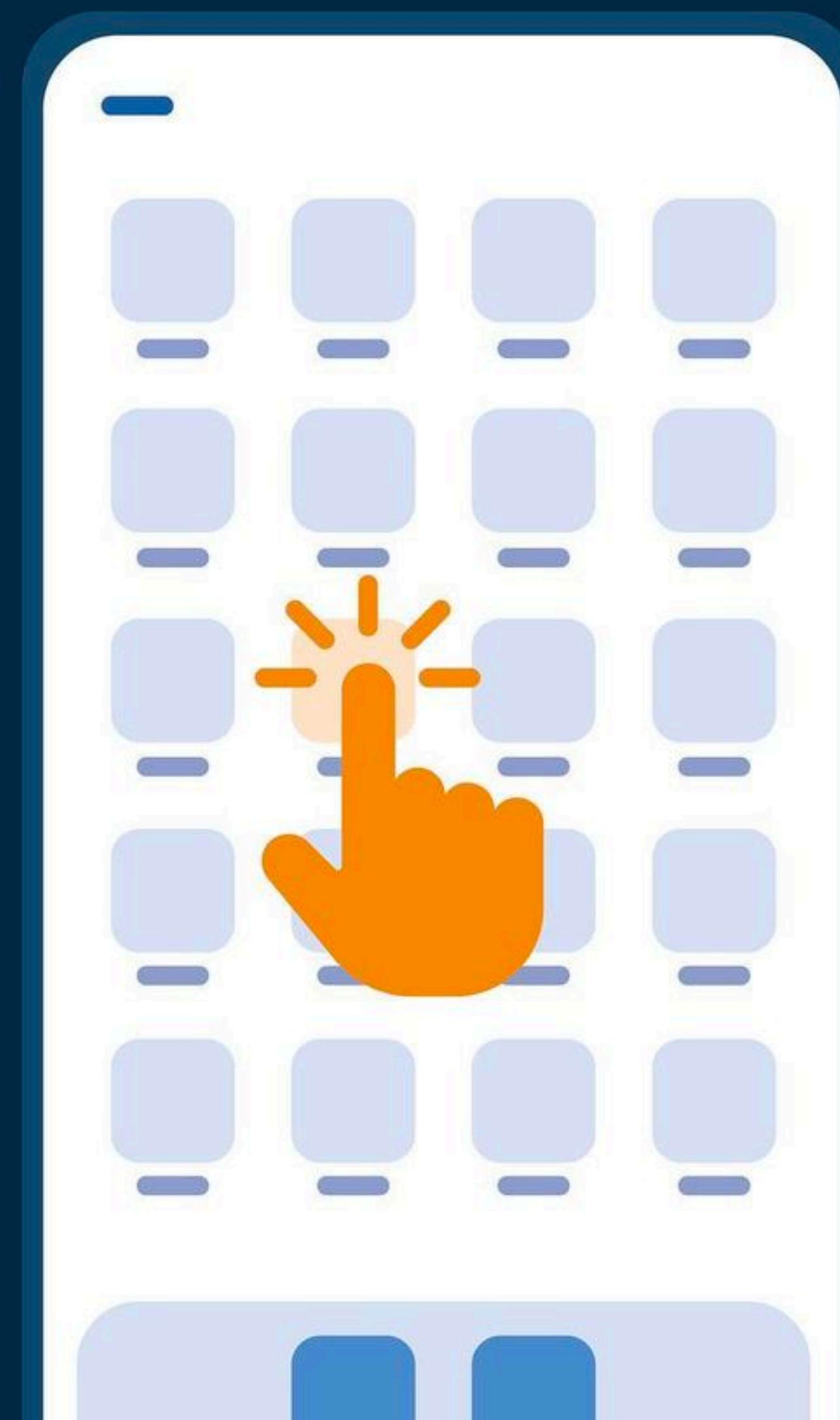
Forrige

Send

# Example of Heuristic 1

## Phone Tap

Touchscreen UIs need to reassure users that their taps have an effect – often through visual change or haptic feedback.

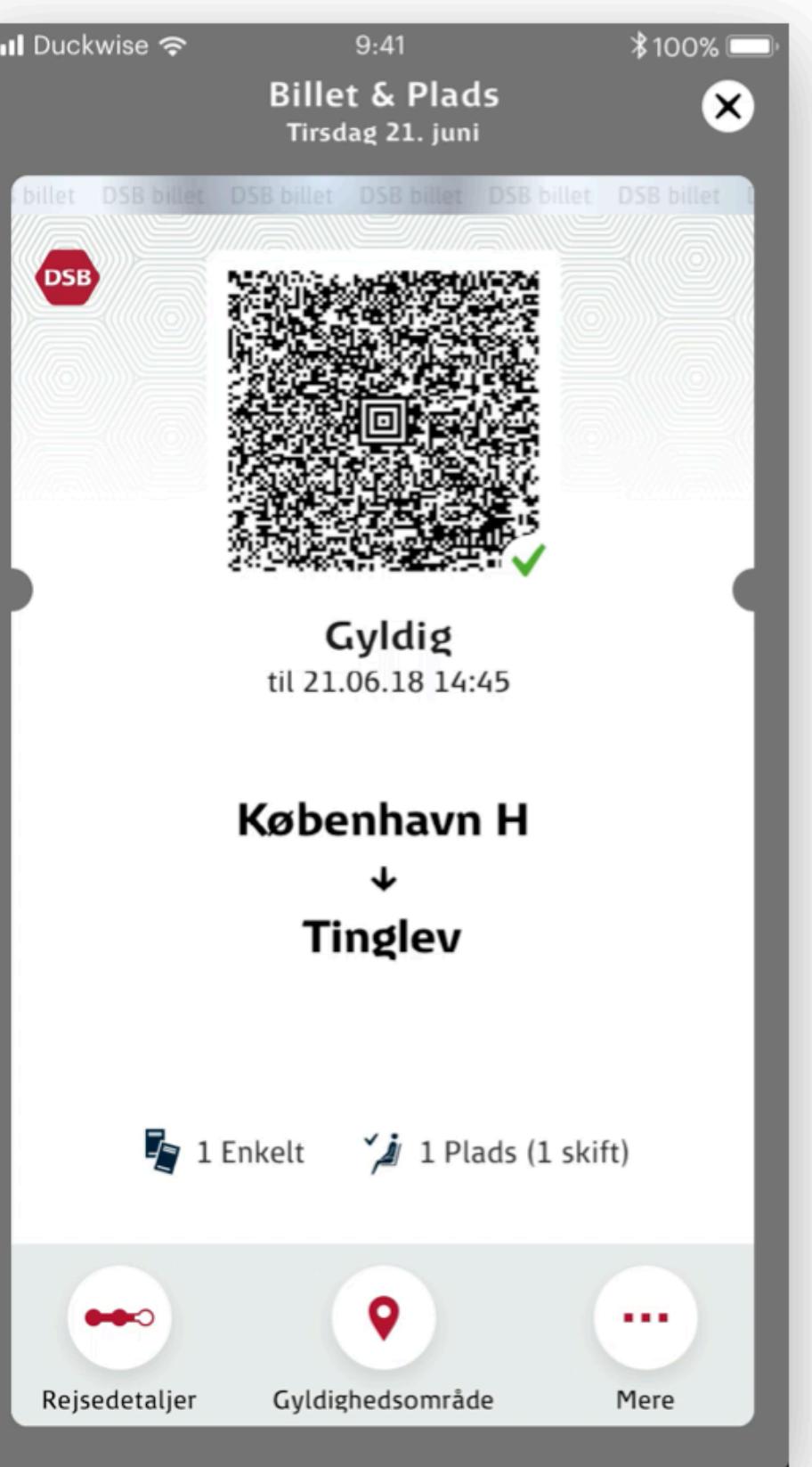


# Tips

- **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.

## 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.



## 02. SAMMENHÆNG MELLEM WEBSITE OG DEN VIRKELIGE VERDEN

Brugeren har behov for at møde et **sprog** på brugergrænsefladen, som denne kender fra sin **hverdag**. Her skal sproget altså ikke være for **teknisk**.

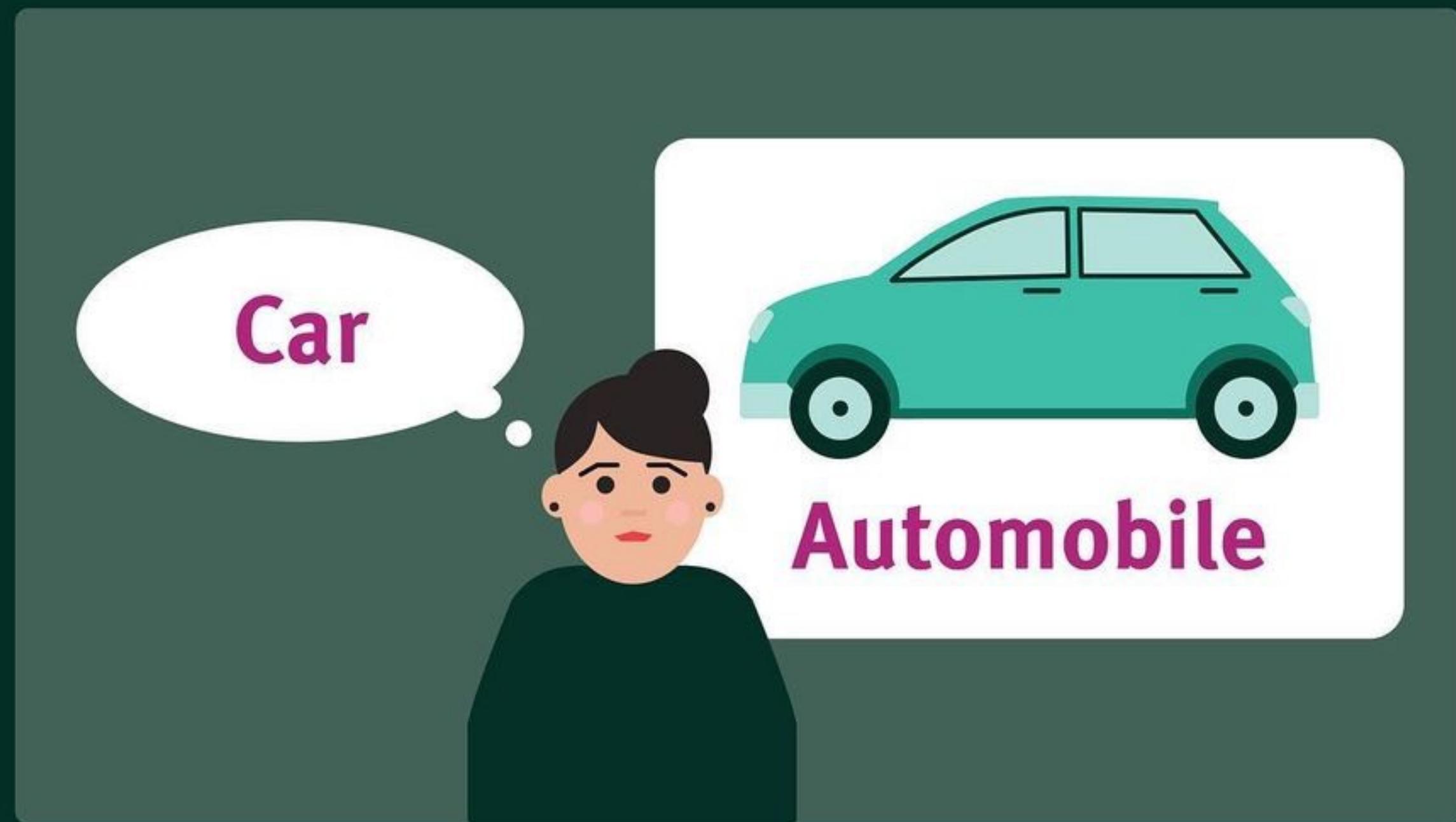
Det gælder dog ikke blot sproget, men websites i sin **helhed**. Vores **erfaringer** spiller i høj grad ind her - både i forhold til, hvordan vi er vant til at navigere andre **lignende grænseflader**, men også i forhold til de **analoge** aspekter af vores dagligdag.

Gregersen og Wisler-Poulsen 2009, 69

# Example of Heuristic 2

**“Car” vs. “automobile”**

If users think about this object as a  
“car,” use that as the label instead.





# Tips

- Ensure users can understand 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 users' familiar terminology, as well as their mental models around important concepts.

# 3 User Control *and Freedom*

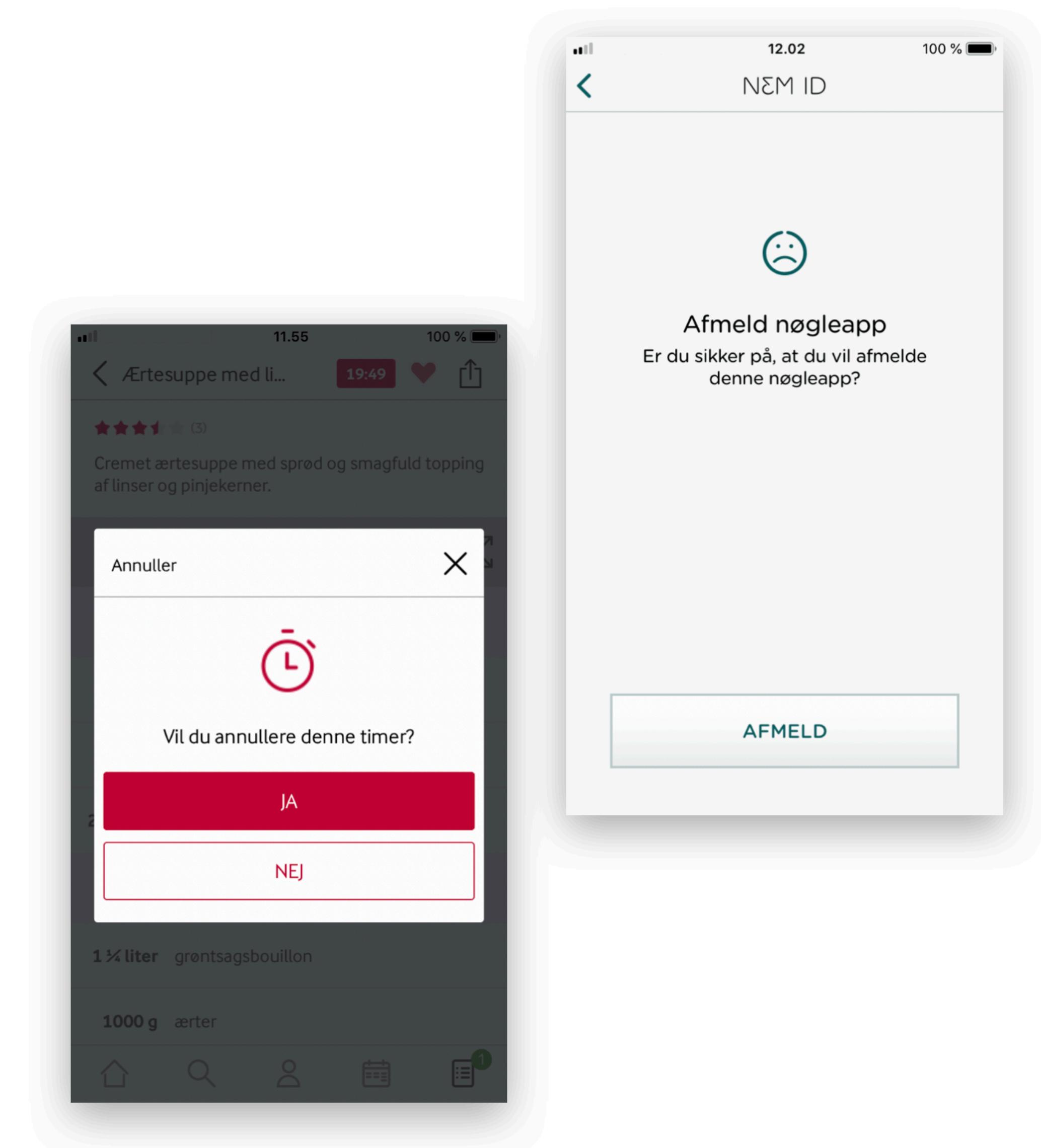
Users often perform actions by mistake. They **need a clearly marked “emergency exit”** to leave unwanted action without having to go through an extended process.

# 03. BRUGERKONTROL OG -FRIHED

Brugeren har behov for let at kunne **fortryde** handlinger på et website og dermed føle sig i **kontrol** over egen færdens.

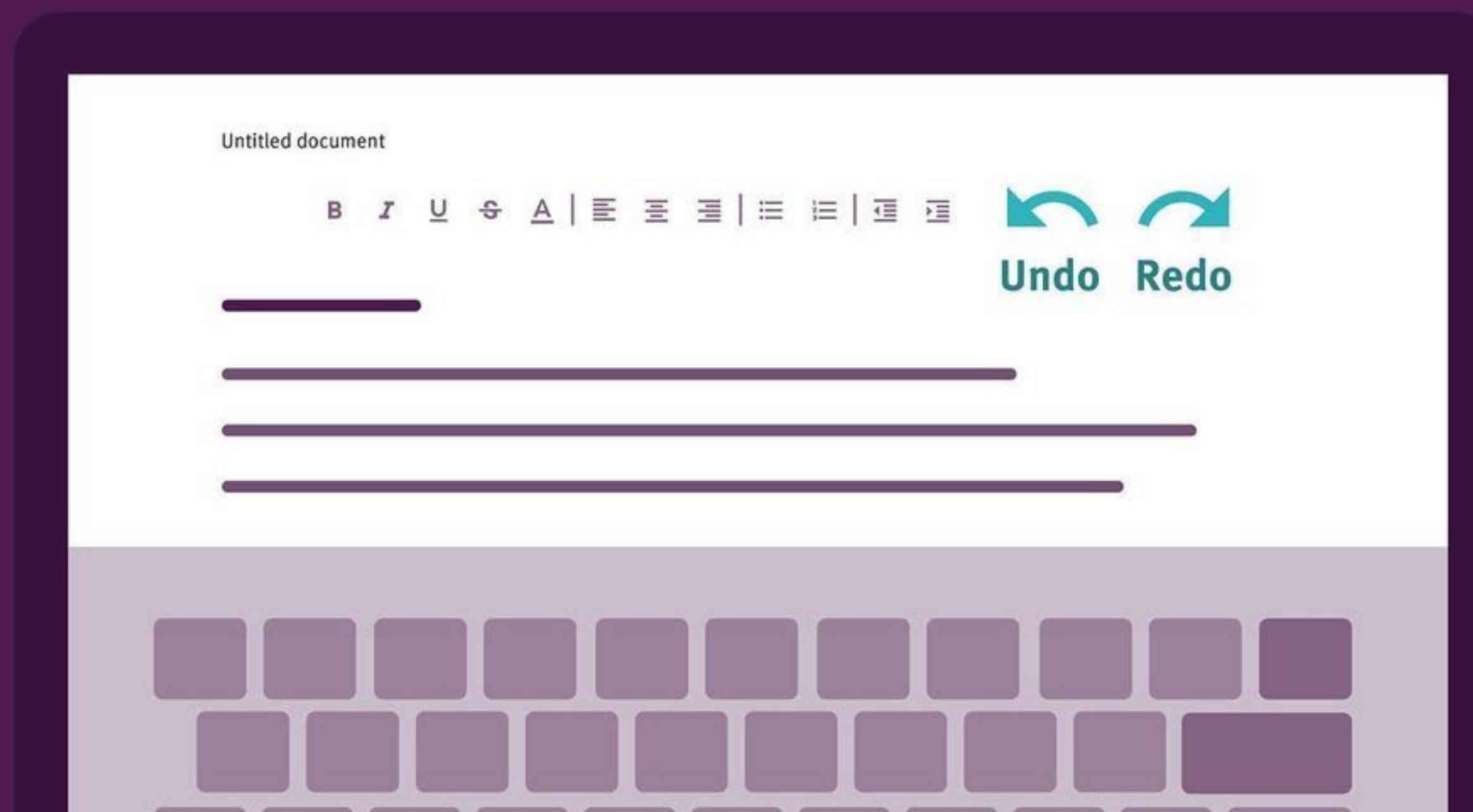
Det er selvfølgelig ikke alle handlinger, man kan fortryde, hvorfor designeren må **opveje** principippet mod, hvad der er muligt i det specifikke tilfælde.

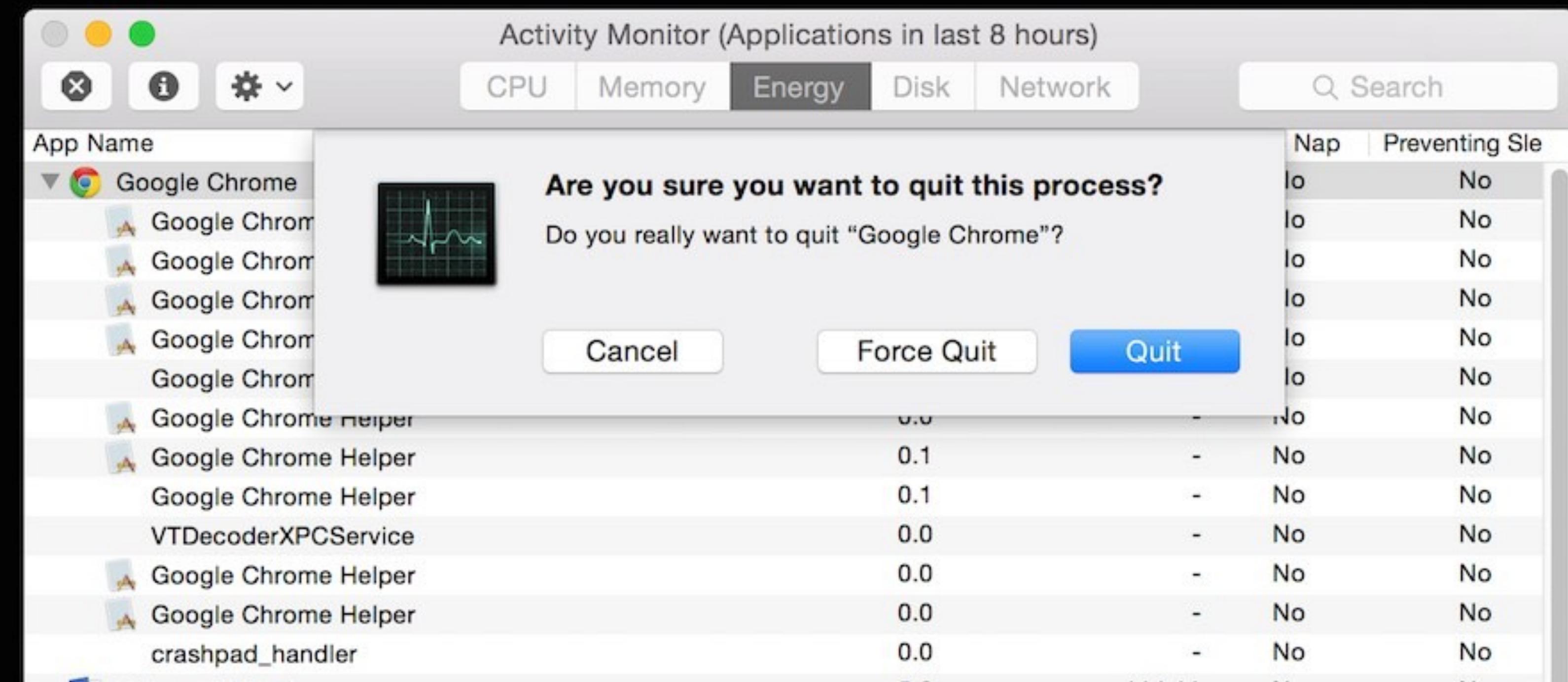
Gregersen og Wisler-Poulsen 2009, 70-71



# Example of Heuristic 3

**Undo and redo** give users freedom because they don't have to worry about their actions — everything is easily reversible.





# Tips

- 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.

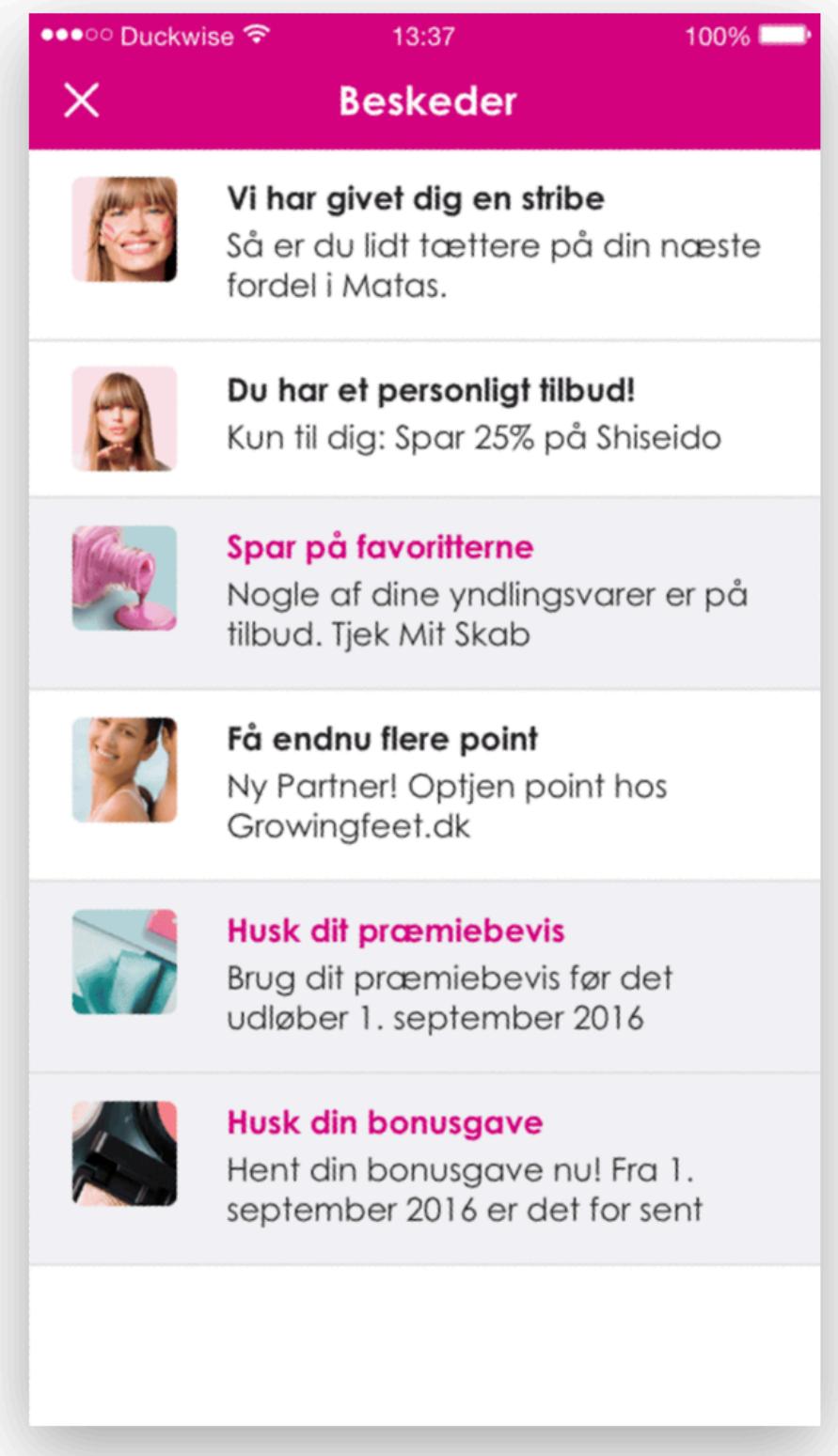
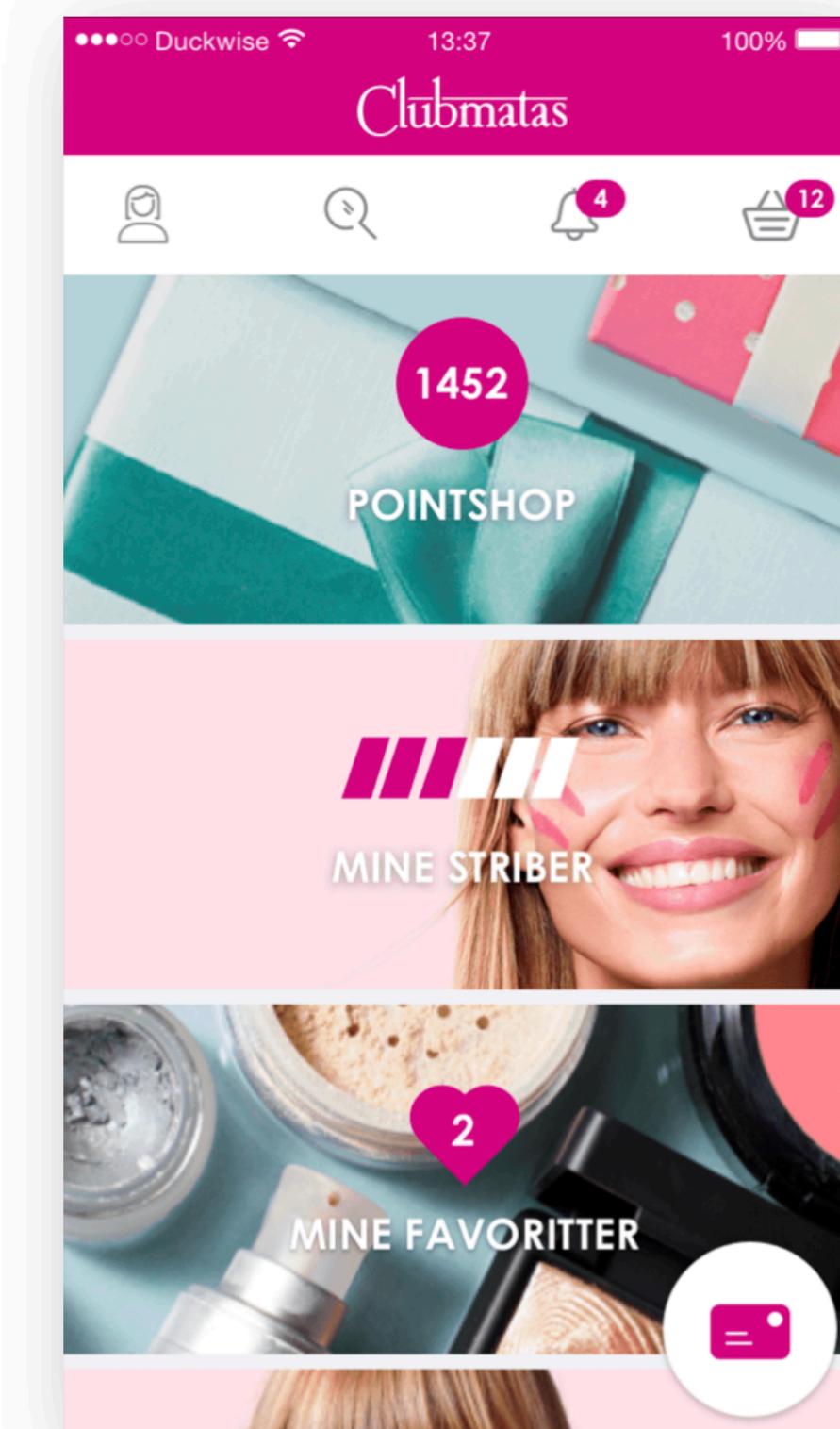
# 4 Consistency *and Standards*

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

# 04. KONSISTENS OG STANDARDER

Brugeren har behov for, at der på tværs af **brugergrænsefladen** anvendes de samme **termer**, de samme **symboler** (med samme mening) og den samme **navigationsstruktur**. Her er det en hjælp for brugeren, hvis disse går igen fra andre **velkendte** brugergrænseflader.

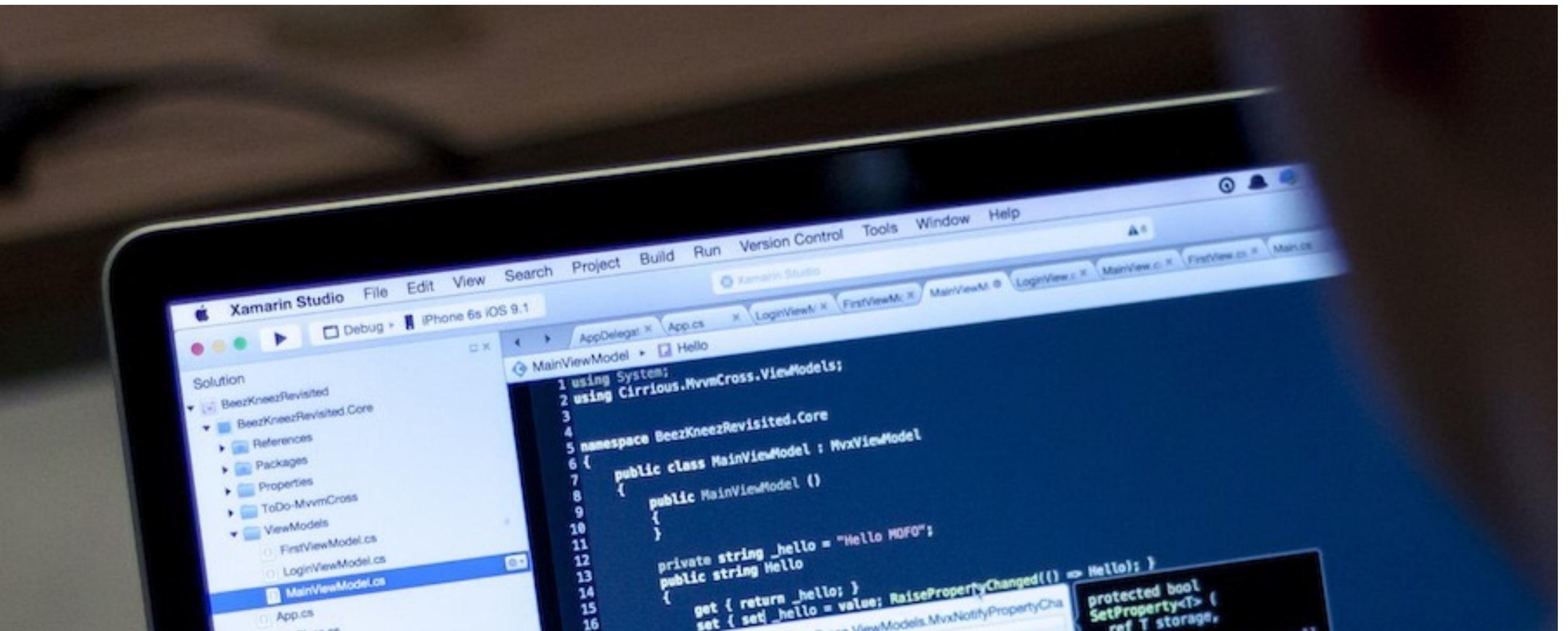
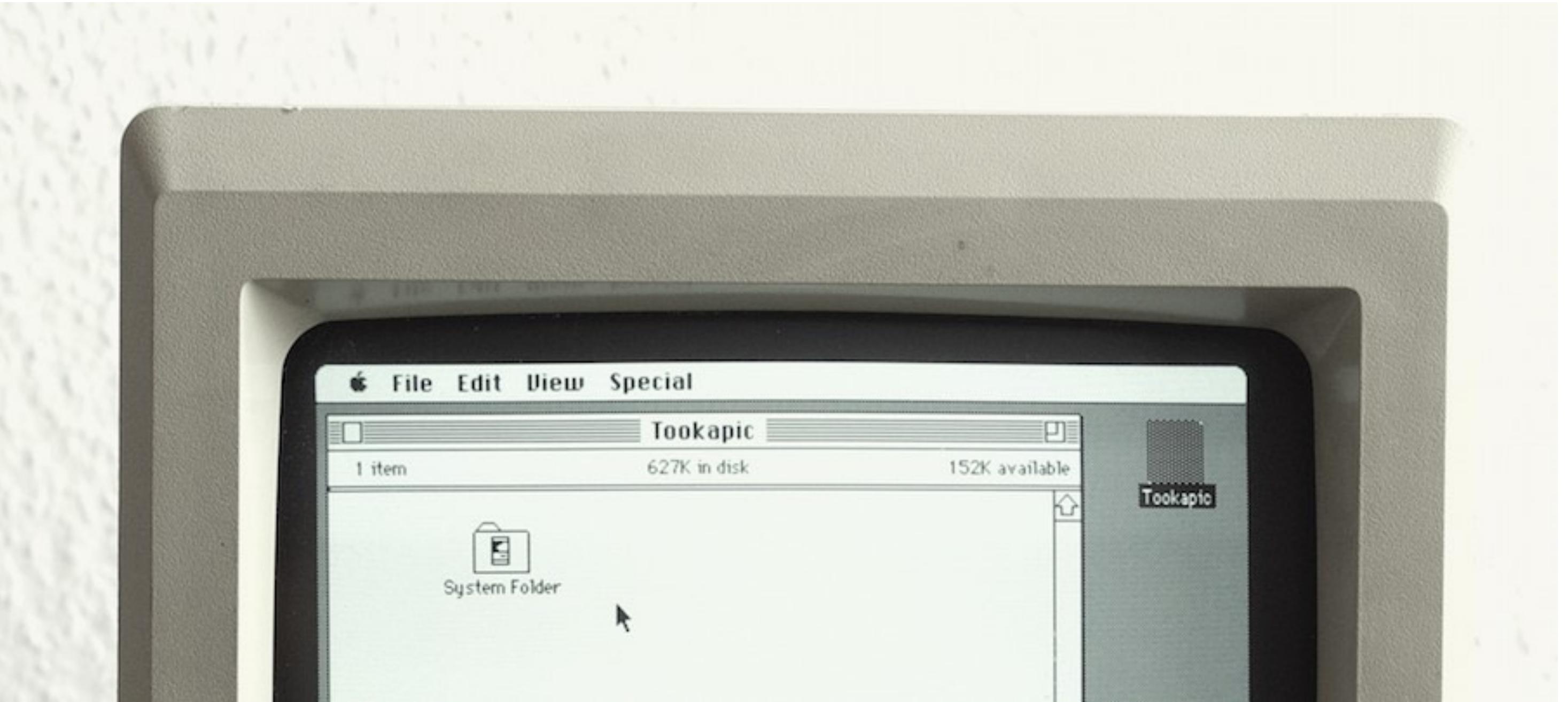
Herunder indgår også standarder for **tilgængeligt** design, som jeg kort vil vende tilbage til.



# Example of Heuristic 4

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





# Colors & Typography

## COLORS



## FONTS

# Aa

A large, semi-transparent circular image of a person's face and shoulders, wearing a light blue shirt. A small green seedling is growing out of the bottom of their shirt.

Create a Free Account

## Why Namastelight?

Personalized Service

Social Media Integration

Pad & Mobile Compatible

## Send emails that plant trees



# Tips

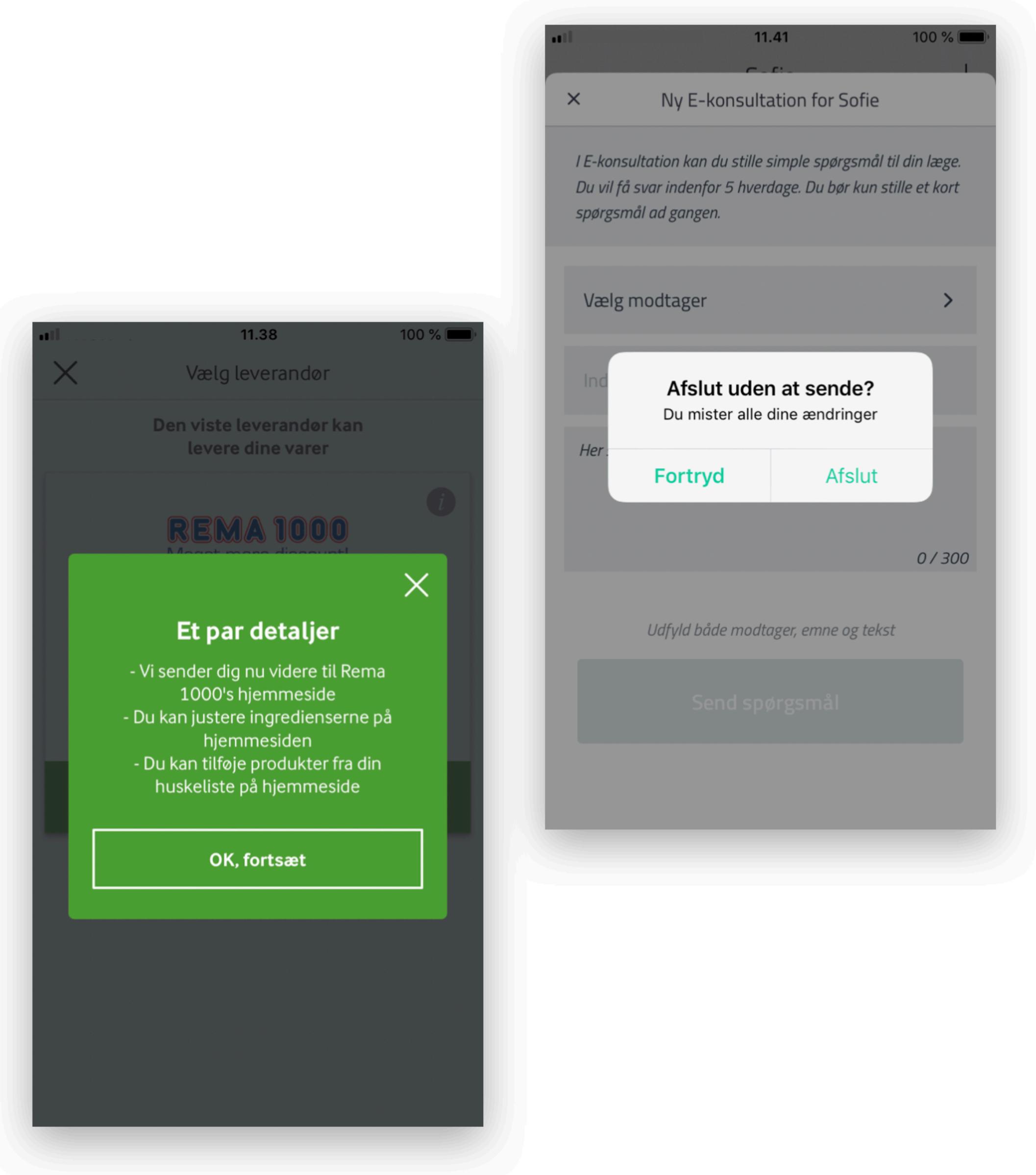
- **Improve learnability** by maintaining both types of consistency: internal and external.
- **Maintain consistency** within a single product or a family of products (internal consistency).
- **Follow established industry conventions** (external consistency).

NN/g

# 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.

# 05. FORHINDRING AF FEJL



Brugeren har behov for, at designet forsøger at **forebygge** potentielle fejl.

Det kan hjælpe brugeren, hvis der er meningsfuld **tekst** i inputfeltene, eller hvis de er kodet til kun at acceptere en **bestemt type input** (eksempelvis tal).

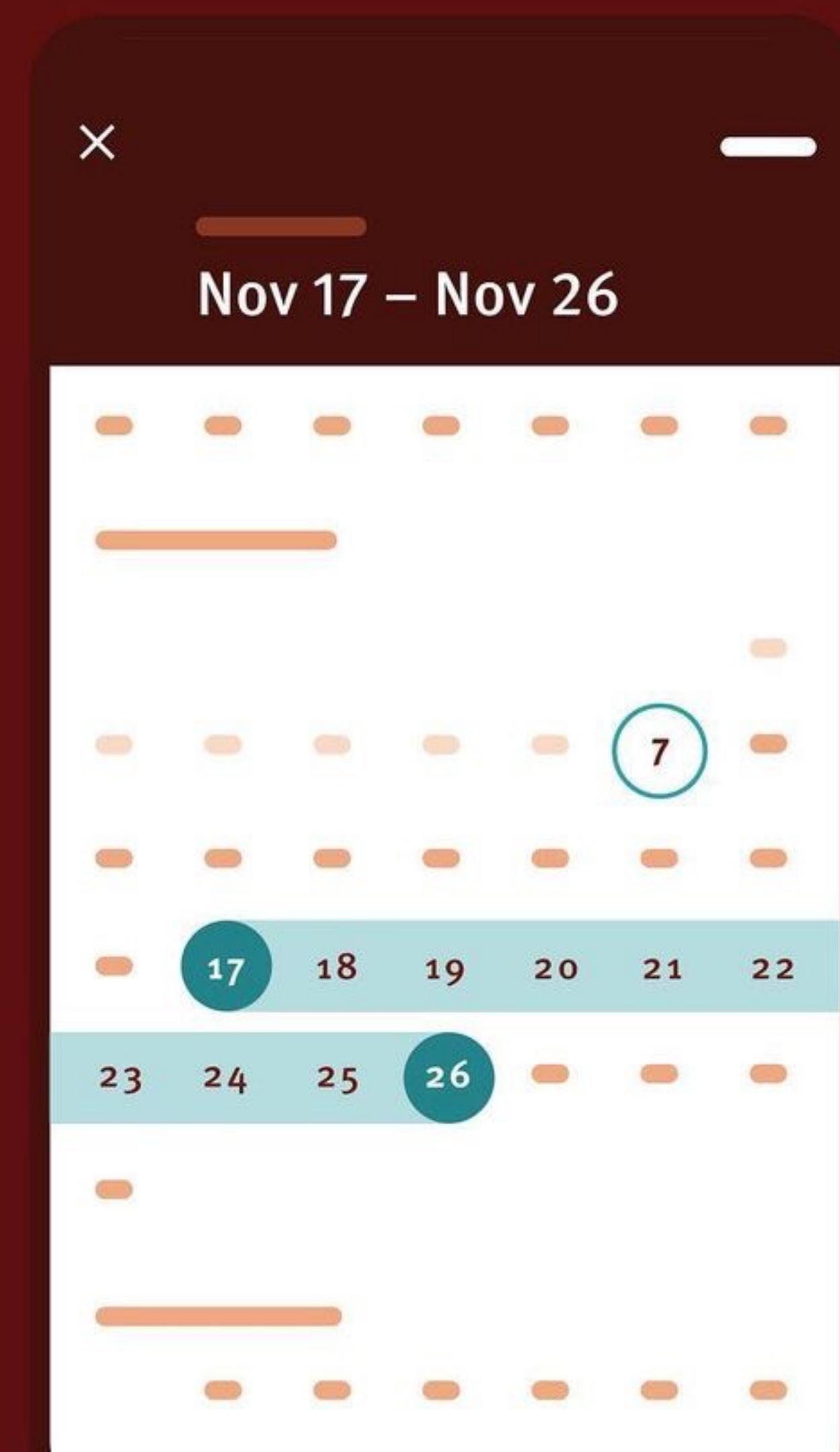
Ved **risikohandlinger** - eksempelvis sletning eller annullering - kan det være en god idé at få brugeren til at **verificere** sit valg.

# Example of Heuristic 5

## Date selection on calendar

Offer good defaults and set boundaries when people book services by dates.

Grey out options that are unavailable.





litmus

## Sign Up for a Litmus Account

Your plan: Litmus Premium

[Change Plan](#)

### Personal details

Jason

Last name

user@litmuscom

Please enter a valid email address

\*\*\*\*\*

Great choice!

Confirm password

Which email service provider do you use?



### Billing

Free for 7 days, we won't charge your credit card, your 7-day free

### Windows Media Player



The file wmploc.dll has a version number of 11.0.6001.7000 where  
11.0.6002.16489 was expected.

Windows Media Player is not installed properly and must be reinstalled.

Do you want to install the Player from the Microsoft Web site?

Yes

No

**Windows**

A fatal exception 0E has occurred at 0028:C0011E36 in UXD UMM(01) +  
00010E36. The current application will be terminated.

- \* Press any key to terminate the current application.
- \* Press CTRL+ALT+DEL again to restart your computer. You will lose any unsaved information in all applications.

Press any key to continue \_



# Tips

- **Prioritize your effort:** Prevent high-cost errors first, then little frustrations.
- **Avoid slips** by providing helpful constraints and good defaults.
- **Prevent mistakes** by removing memory burdens, supporting undo, and warning your users.

# 6 Recognition Rather Than Recall

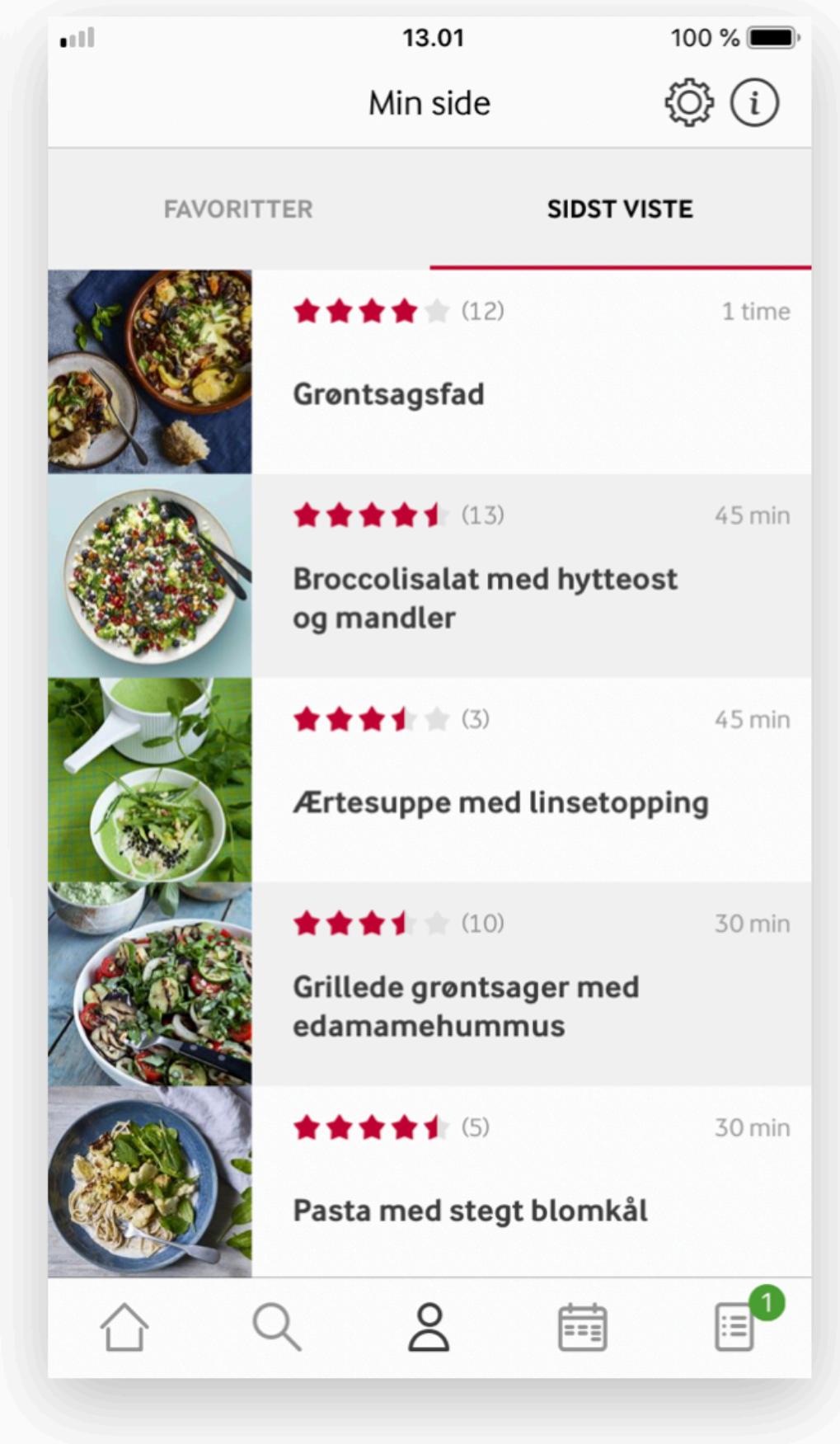
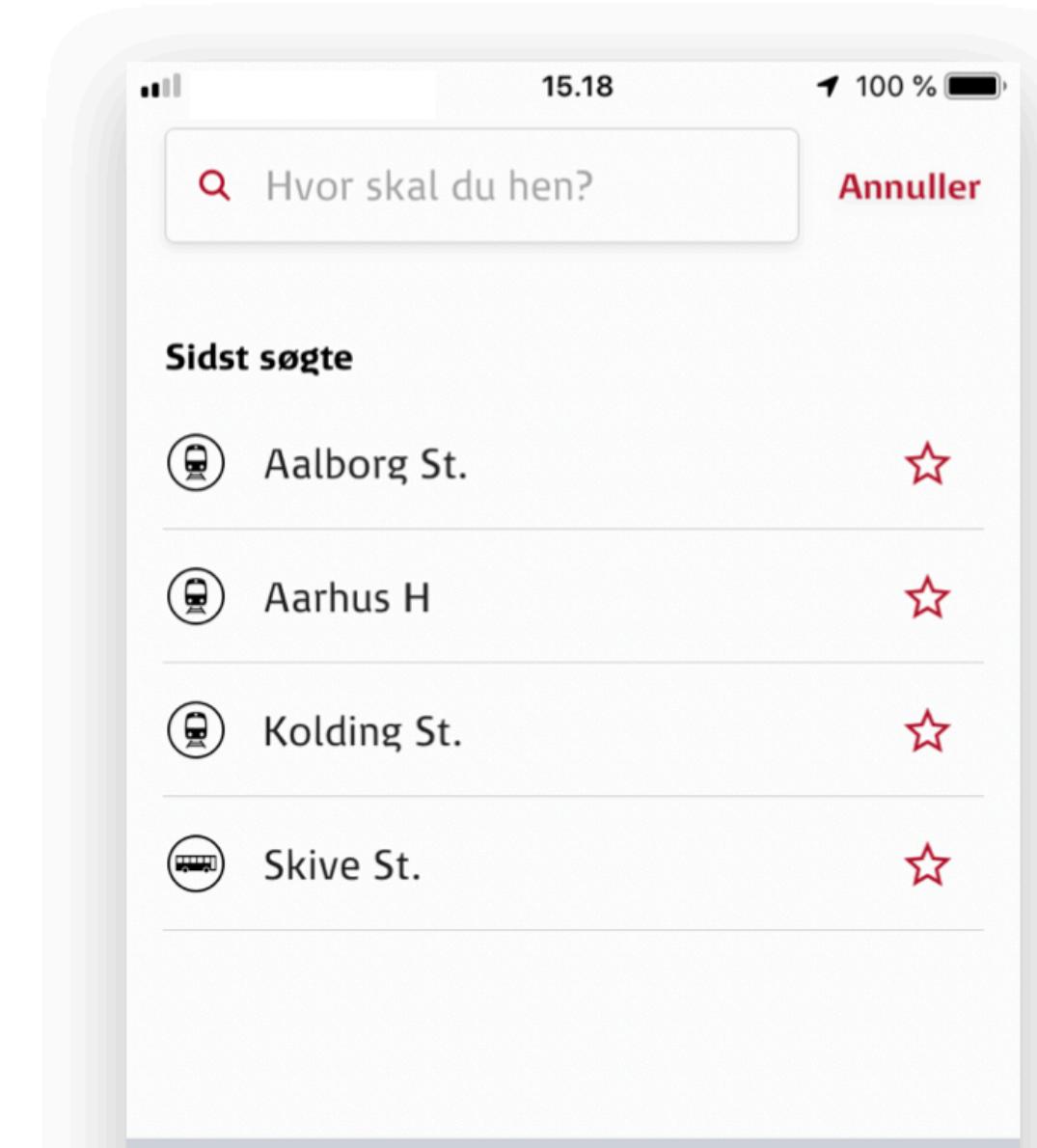
Minimize the user's memory load by making elements, actions, and options visible. The user should **not have to remember information** from one part of the interface to another.

## 06. GENKENDELSE FREM FOR HUKOMMELSE

Brugeren har behov for at de mest **nødvendige** funktionaliteter på brugergrænsefladen er **udstillet**.

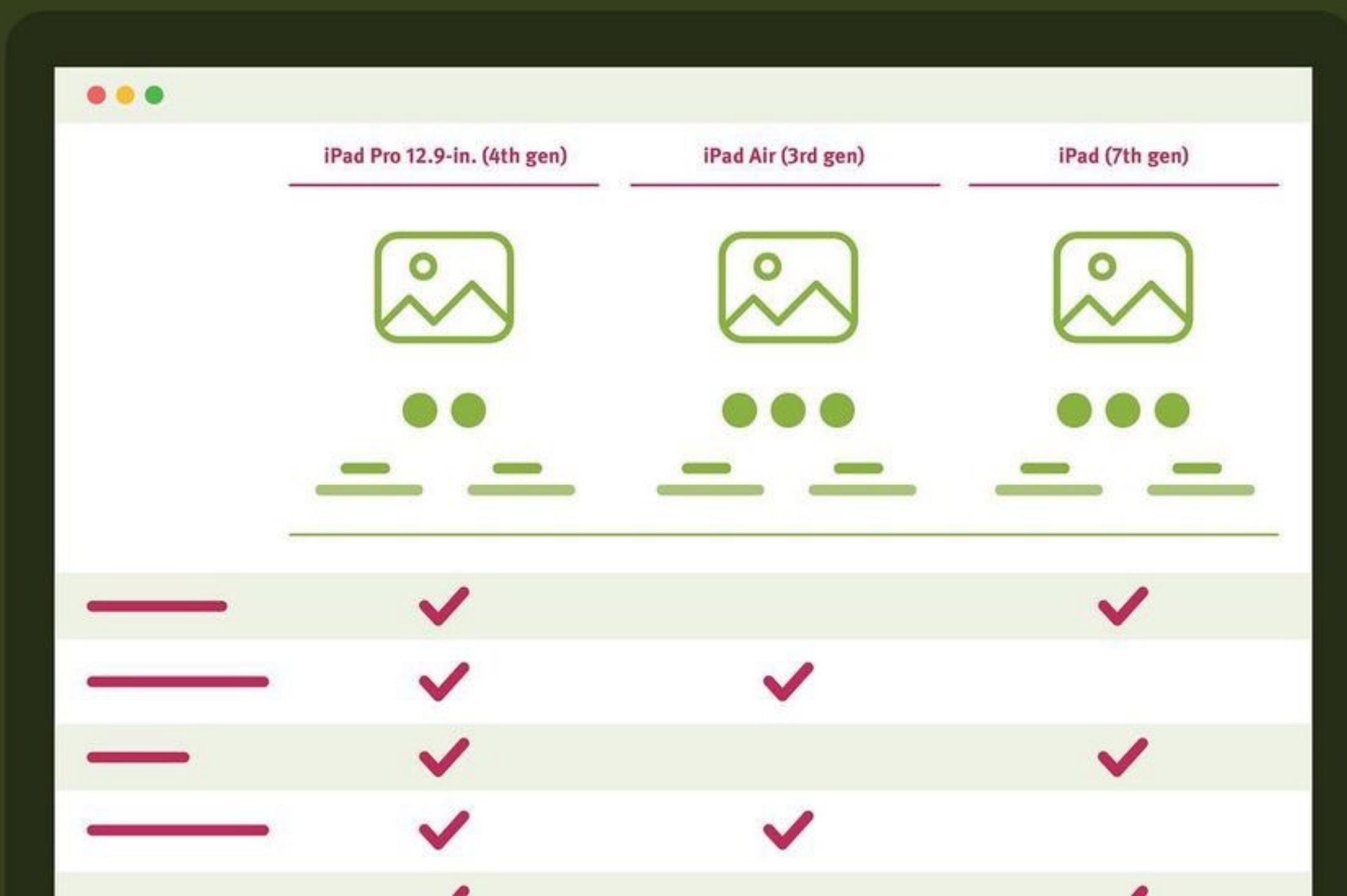
Derudover bør grænsefladen foresøge at assistere brugeren under navigation eksempelvis ved at foreslå brugeren at **gentage senest** udførte handlinger.

Gregersen og Wisler-Poulsen 2009, 73



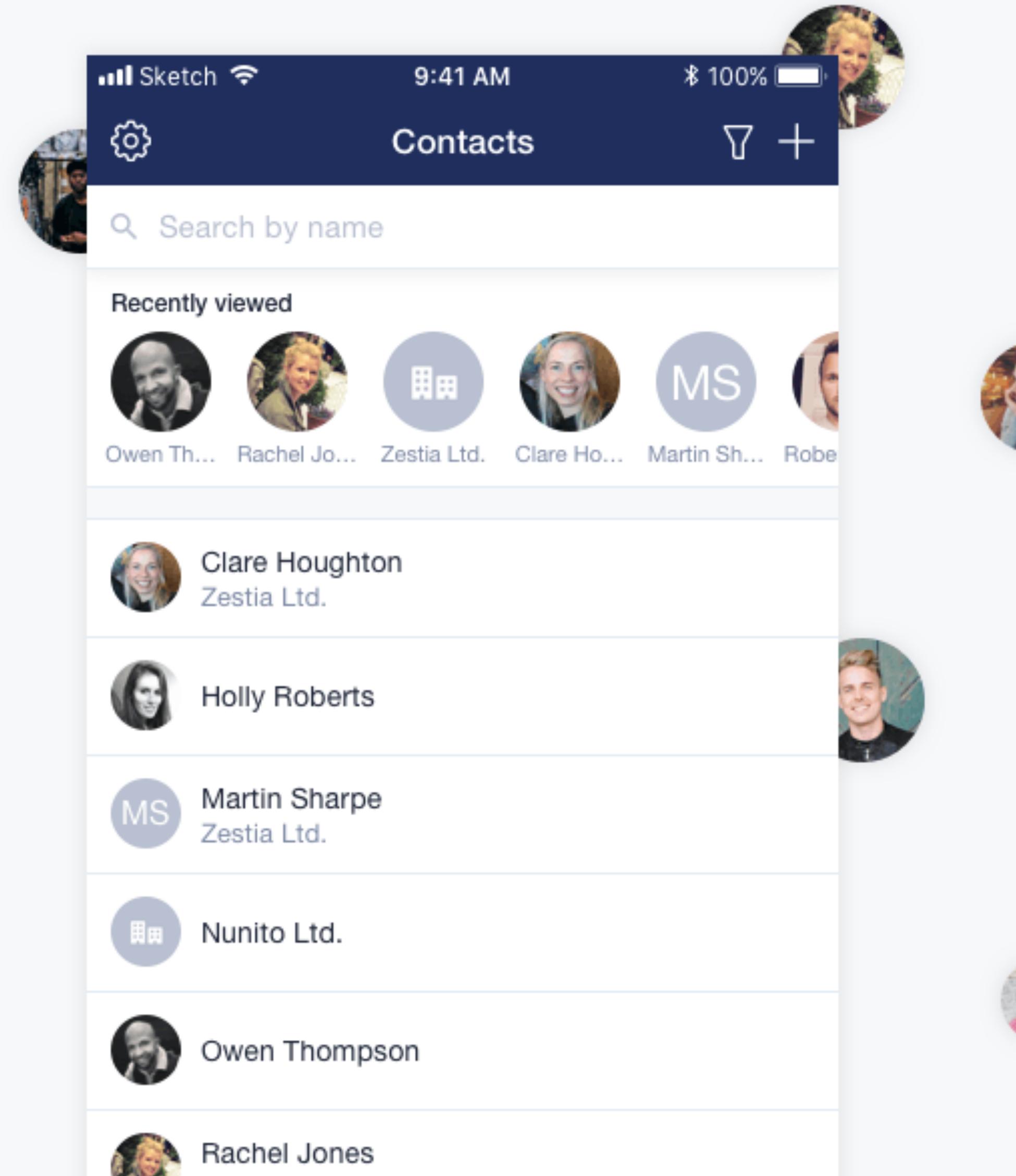
# Example of Heuristic 6

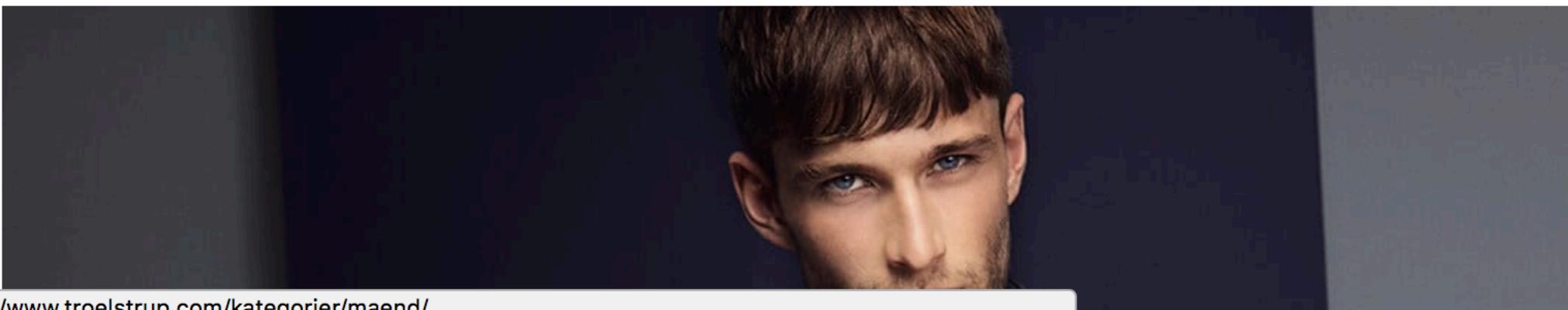
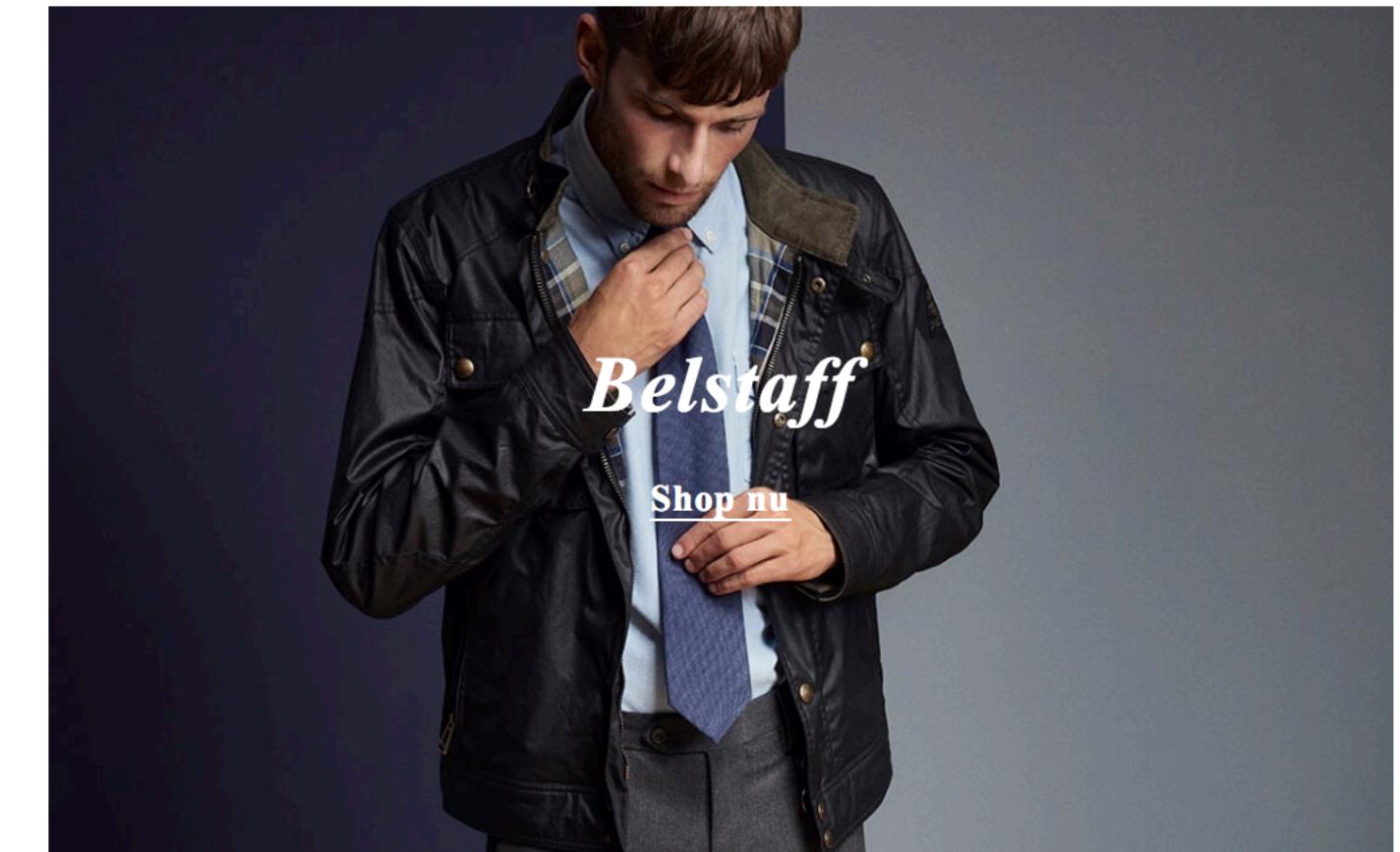
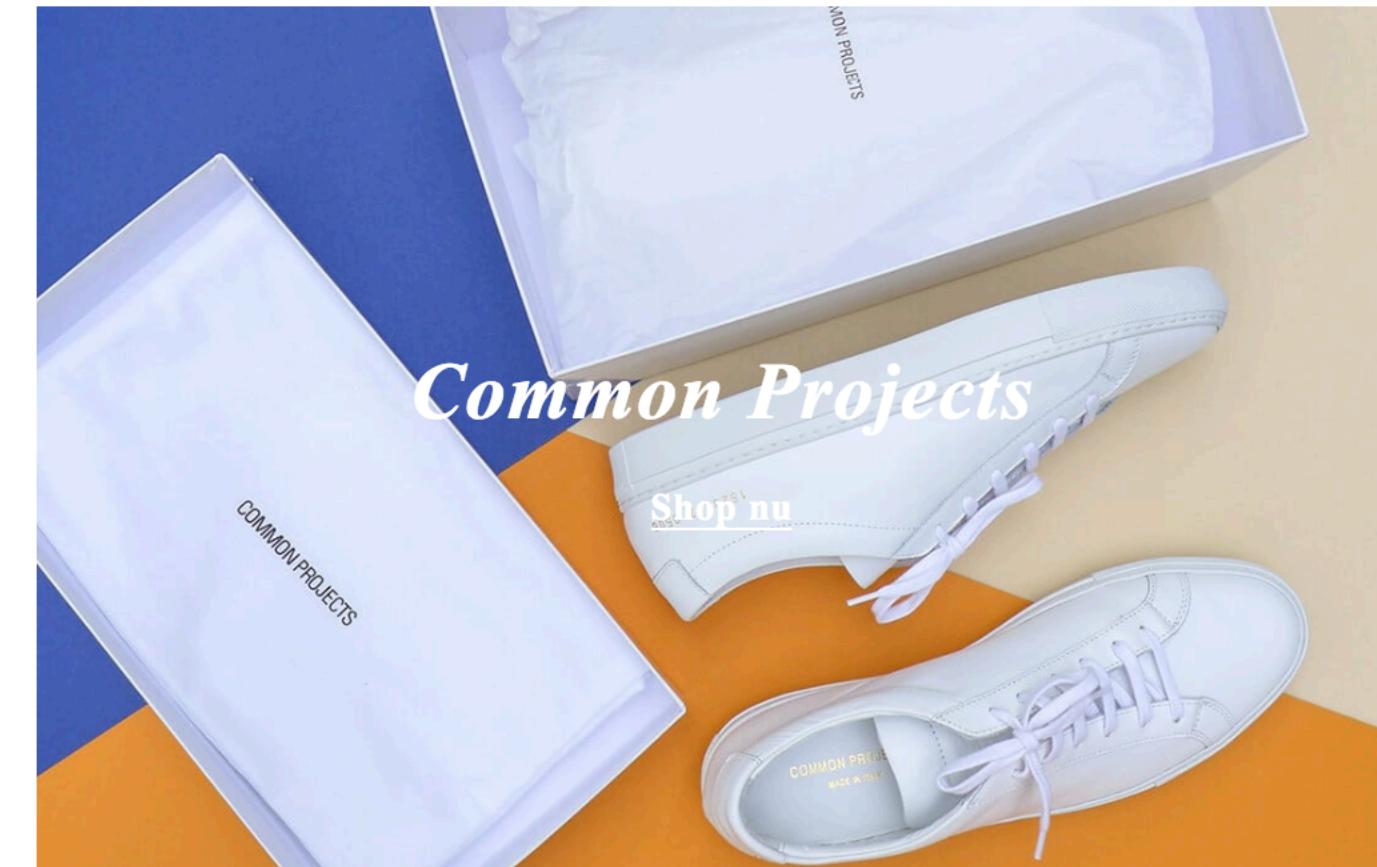
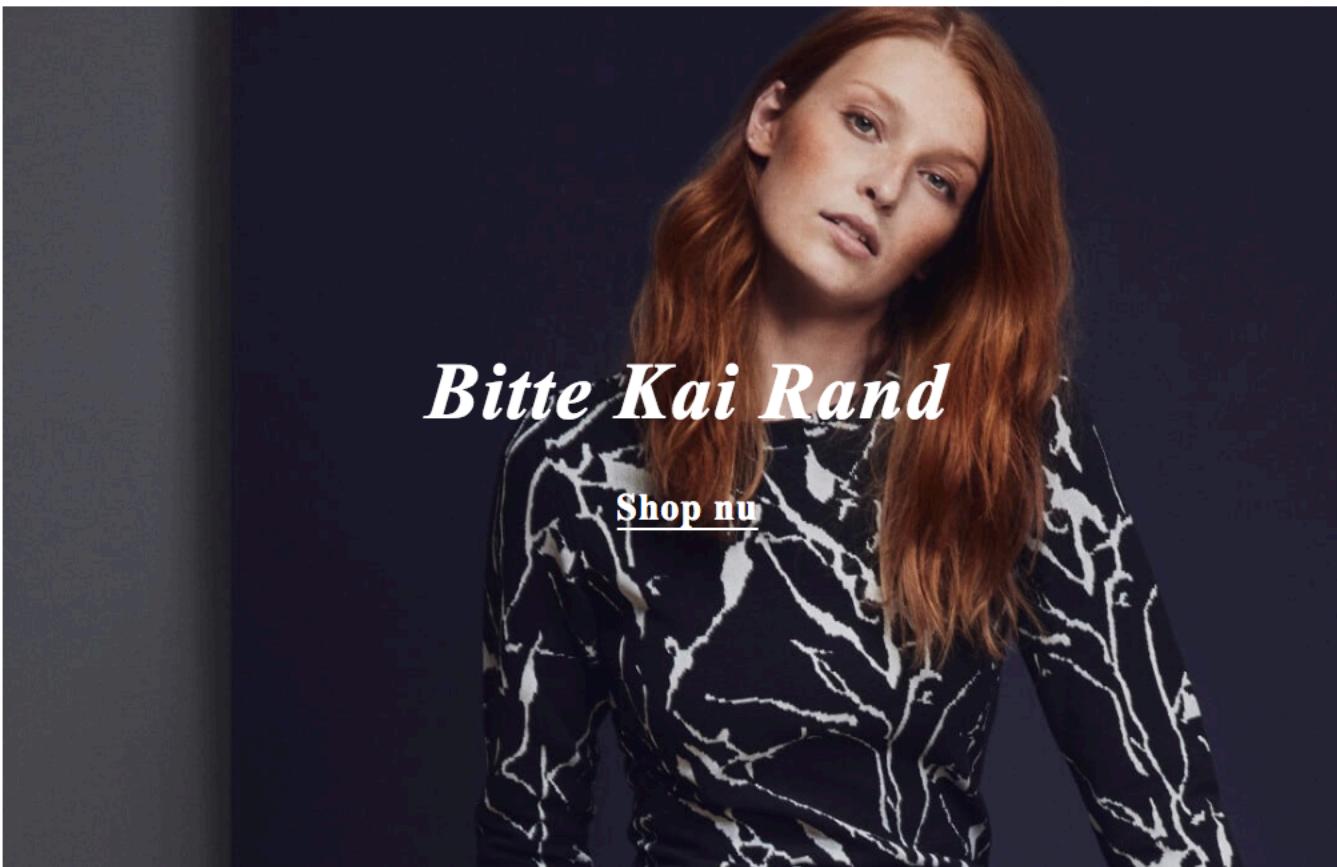
**Comparison tables** list key differences so that users don't need to remember them to make comparisons.

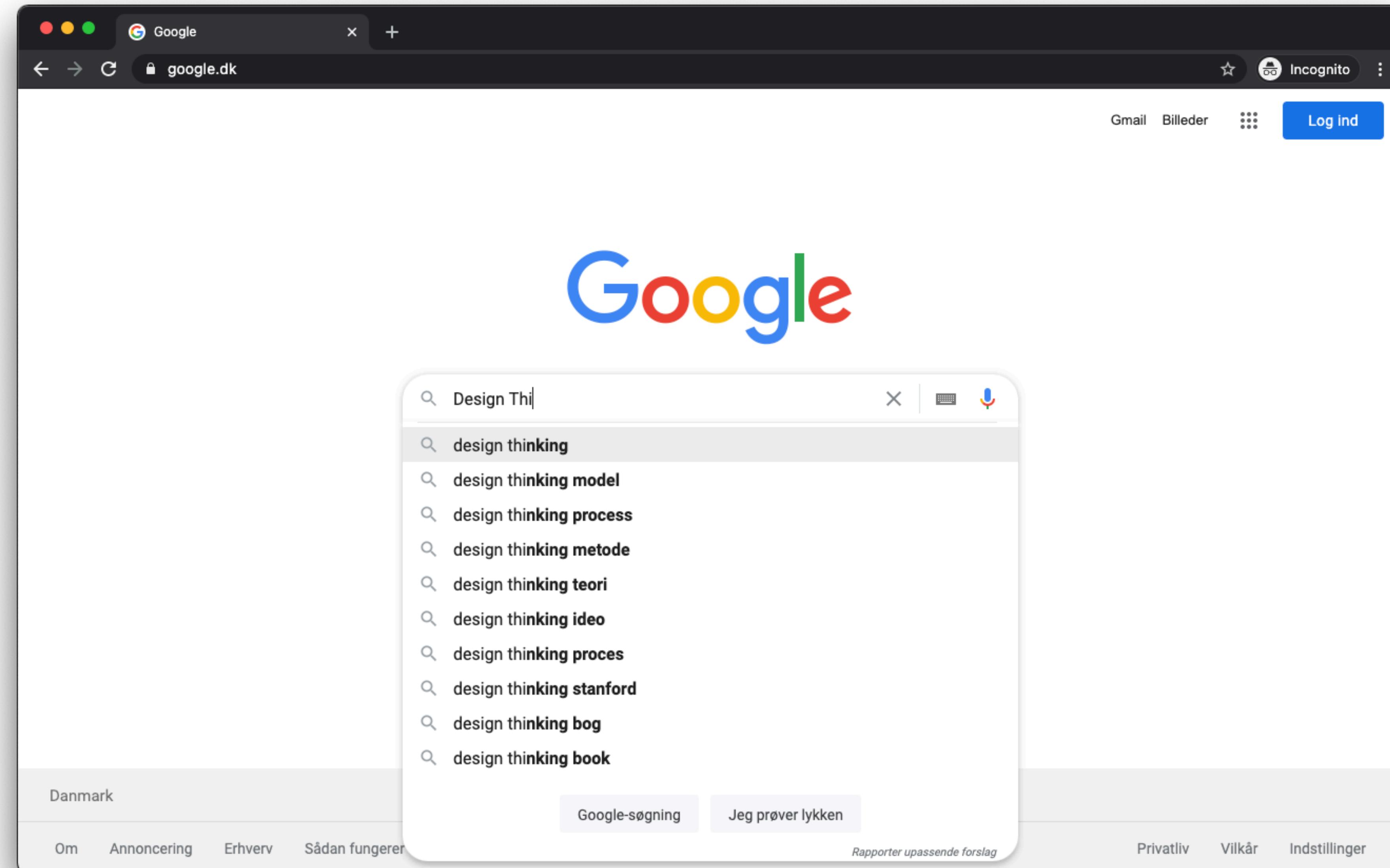


A comparison table titled "Comparison of iPad Models" showing features across three models: iPad Pro 12.9-in. (4th gen), iPad Air (3rd gen), and iPad (7th gen). The table includes icons for camera, screen size, and battery life, followed by a grid of checkmarks indicating feature availability.

	iPad Pro 12.9-in. (4th gen)	iPad Air (3rd gen)	iPad (7th gen)
Camera			
Screen Size	••	•••	•••
Battery Life	—	—	—
Feature 1	✓		✓
Feature 2	✓	✓	
Feature 3	✓		✓
Feature 4	✓	✓	
Feature 5			



**Inspiration**[Bryllup](#)  
[Custom Made](#)  
[Essentials](#)**Nyheder****Outlet****Mærker**[Izipizi](#)  
[Barbour](#)  
[Belstaff](#)  
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[Blazere](#)  
[Habitter/Jakkesæt](#)  
[Smokings](#)  
[Kjolesæt](#)  
[Skjorter](#)  
[Casual skjorter](#)  
[Kortærmede skjorter](#)  
[Sweaters og strik](#)  
[Sweatshirts](#)  
[T-shirts](#)  
[Polo shirts](#)  
[Bukser](#)  
[Badetøj](#)  
[Joggingtøj](#)  
[Pyjamas](#)  
[Undertøj](#)  
[Accessories](#)



# Title of a longer featured blog post

Multiple lines of text that form the lede, informing new readers quickly and efficiently about what's most interesting in this post's contents.

[Continue reading...](#)

World

## Featured post

Nov 12

This is a wider card with supporting text below as a natural lead-in to additional content.

[Continue reading](#)

Thumbnail

Design

## Post title

Nov 11

This is a wider card with supporting text below as a natural lead-in to additional content.

[Continue reading](#)

Thumbnail

## From the Firehose

# Sample blog post

January 1, 2014 by [Mark](#)

This blog post shows a few different types of content that's supported and styled with Bootstrap. Basic typography, images, and code are all supported.

Cum sociis natoque penatibus et magnis [dis parturient montes](#), nascetur ridiculus mus. Aenean eu leo quam. Pellentesque ornare sem lacinia quam venenatis vestibulum. Sed posuere consectetur est at lobortis. Cras mattis consectetur purus sit amet fermentum.

Curabitur blandit tempus porttitor. **Nullam quis risus eget urna mollis** ornare vel eu leo. Nullam id dolor id nibh ultricies vehicula ut id elit.

Etiam porta sem malesuada magna mollis euismod. Cras mattis consectetur purus sit amet fermentum. Aenean lacinia bibendum nulla sed consectetur.

## About

Etiam porta sem malesuada magna mollis euismod. Cras mattis consectetur purus sit amet fermentum. Aenean lacinia bibendum nulla sed consectetur.

## Archives

[March 2014](#)  
[February 2014](#)  
[January 2014](#)  
[December 2013](#)  
[November 2013](#)  
[October 2013](#)  
[September 2013](#)  
[August 2013](#)  
[July 2013](#)  
[June 2013](#)

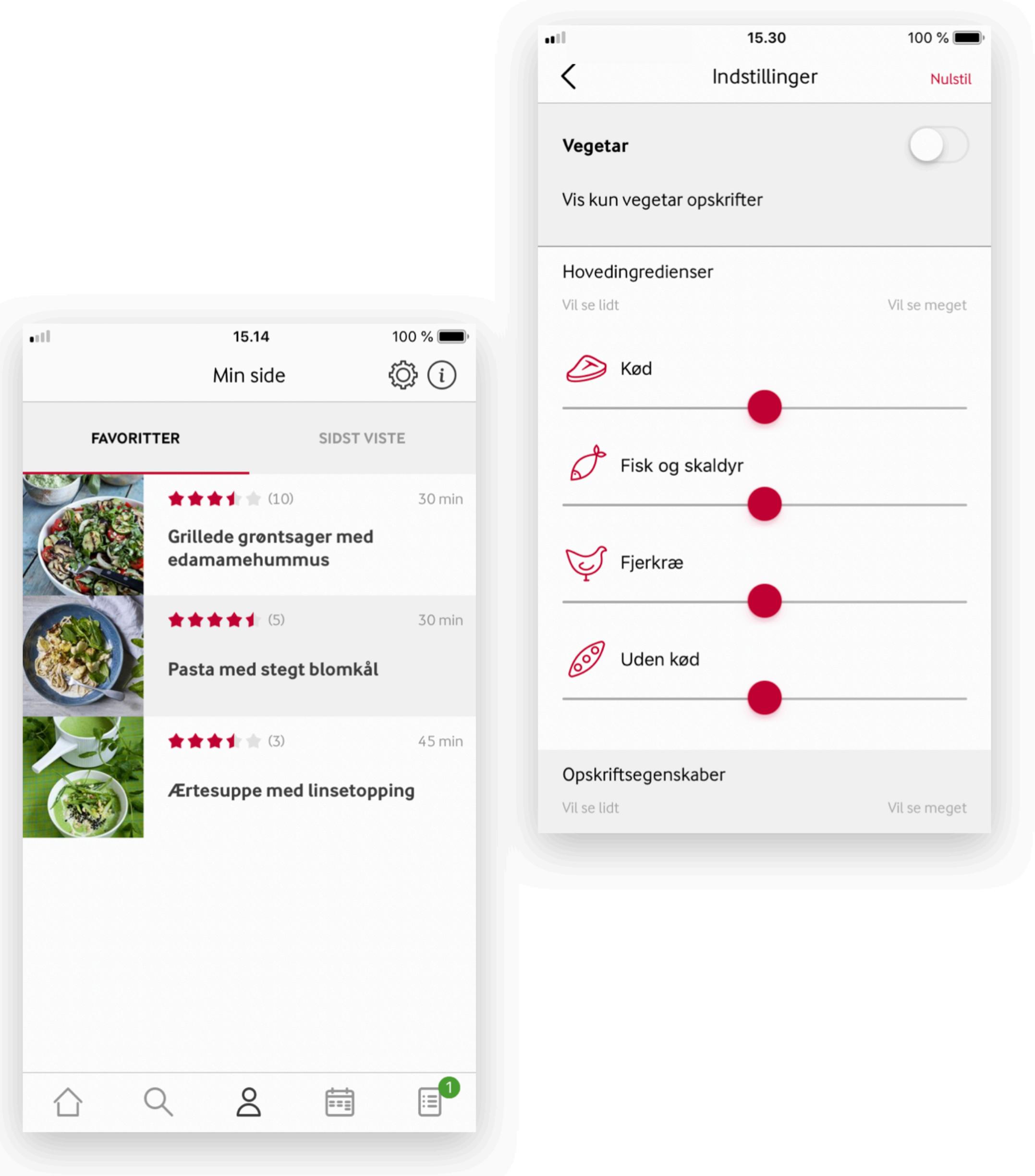


# Tips

- 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.

# 7 Flexibility and Efficiency of Use

Shortcuts – hidden by novice users – may speed up the interaction for the expert user such that the design can **cater to both inexperienced and experienced users.**



## 07. FLEKSIBILITET OG EFFEKTIVITET I BRUGEN

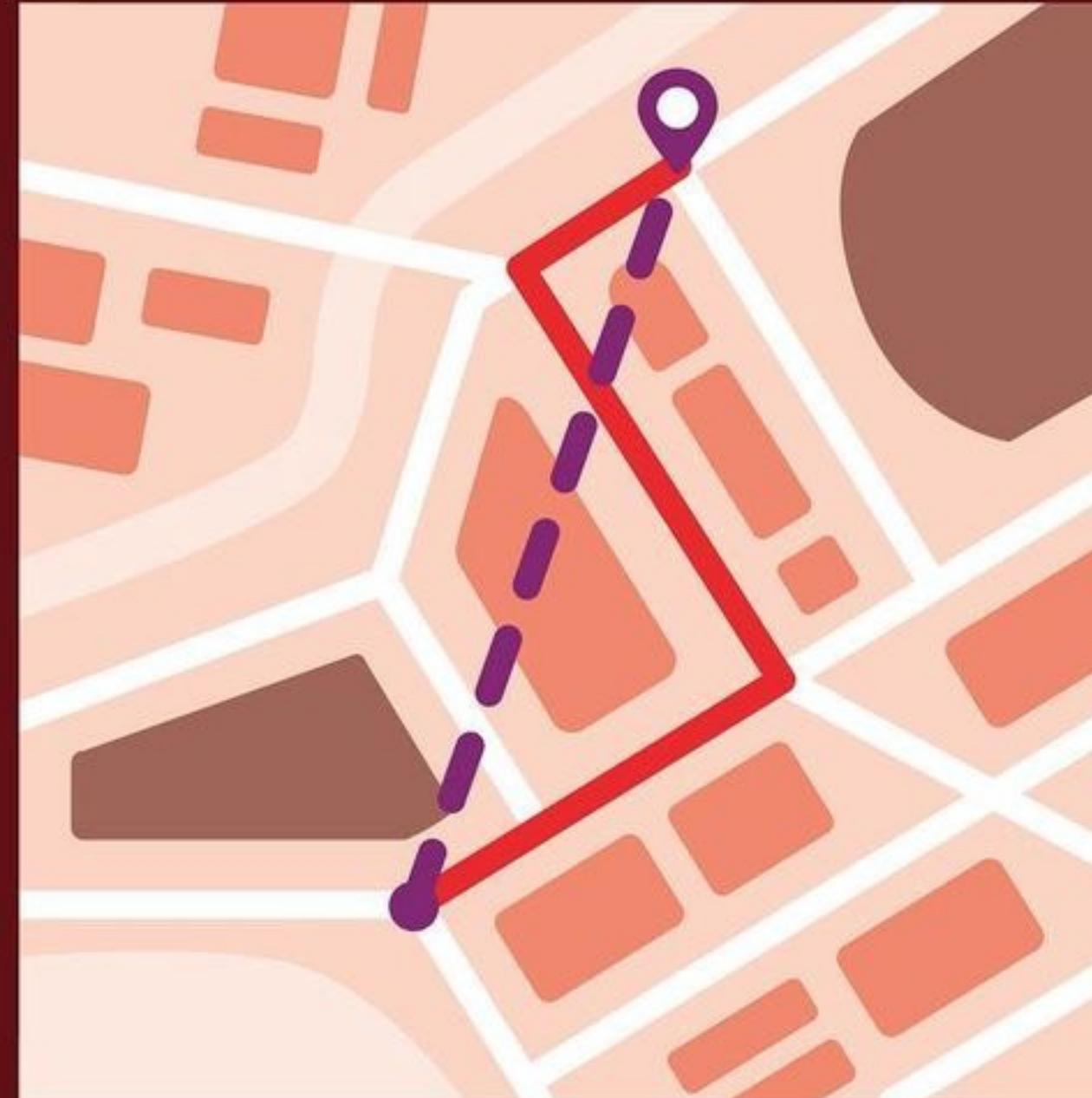
Man bør i sit design tage højde for både **nye** og **tilbagevendende** brugere, som kan have forskellige behov i forhold til, hvordan de ønsker at **navigere** brugergrænsefladen.

Her kan **genveje** være en måde at højne effektiviteten.

Gregersen og Wisler-Poulsen 2009,

# Example of Heuristic 7

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



Google

user experience



All

Images

News

Videos

Books

More ▾

Search tools

SafeSearch ▾



Size ▾

Color ▾

Type ▾

Time ▾

Usage rights ▾

More tools ▾

✓ Any size

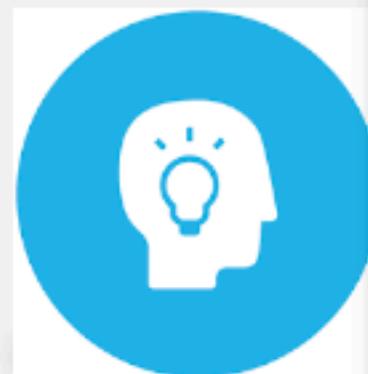
Large

Medium

Icon

Larger than...

Exactly...



Icon



Good



Website



Customer



Mobile

USER EXPERIENCE

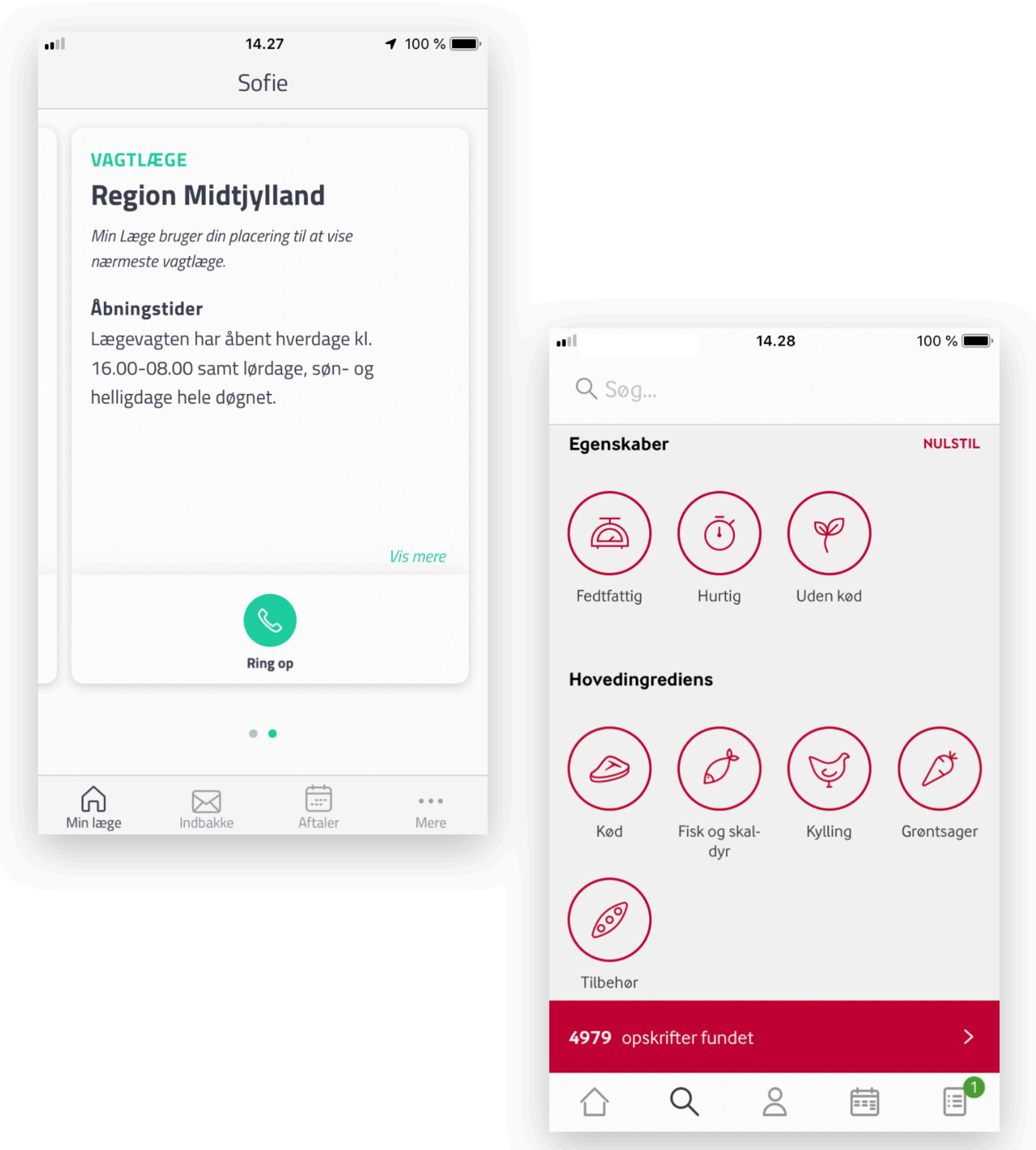
# Tips

- **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.

# 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.

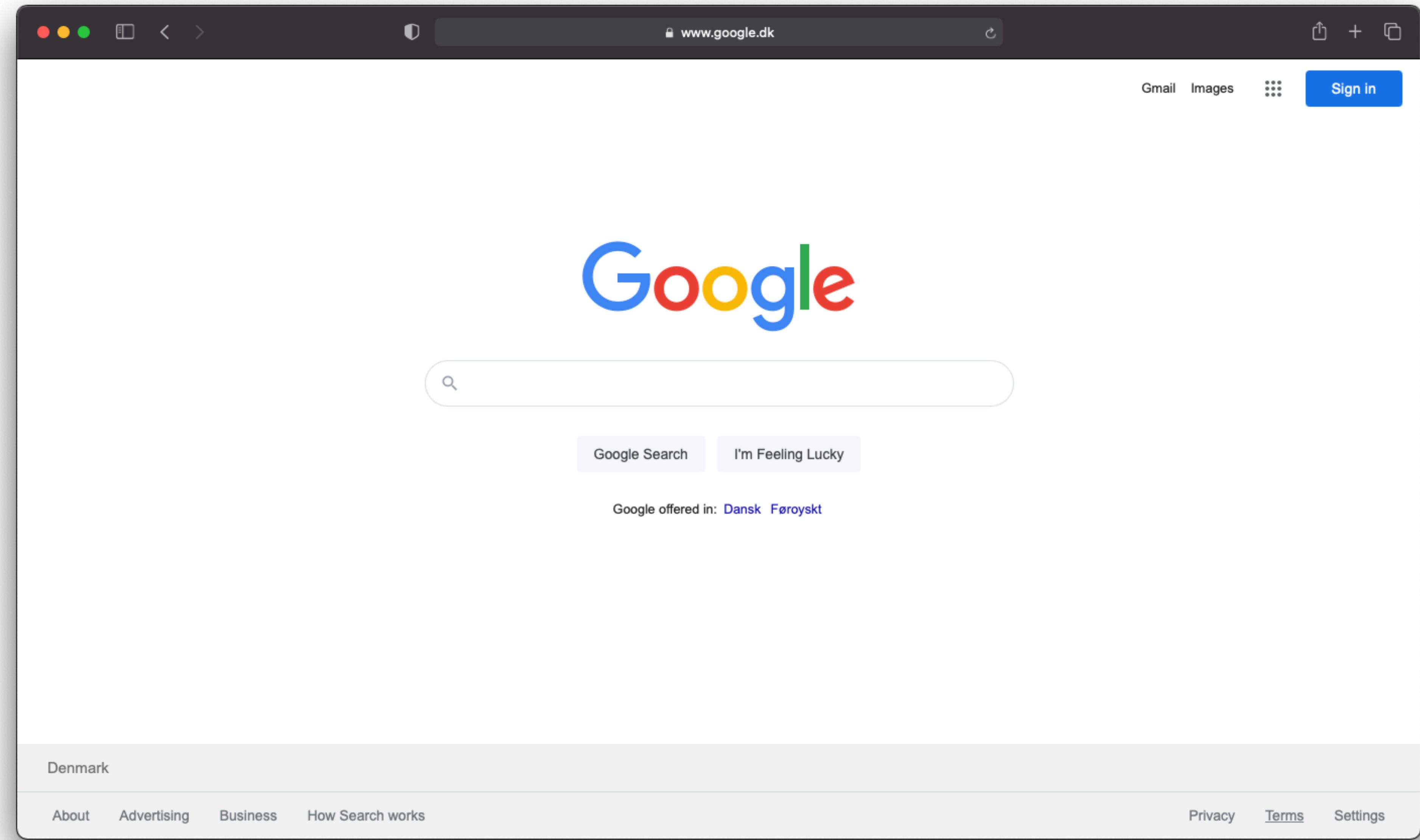
# 08. ÆSTETISK OG MINIMALISTISK DESIGN



Man bør som bruger kun få udstillet de mest **nødvendige** informationer. Her skal man som designer overveje hvilke informationer, der skal være **umiddelbart tilgængelige**, og hvilke, der skal være tilgængelige ved at foretage **ekstra klik**.

Her er kategorisering og hierarki alfa og omega.

Gregersen og Wisler-Poulsen 2009,  
75-76



www.eaaa.dk

DA / INT Q

ERHVERVSAKADEMI AARHUS

Menu X

Forside

Videregående uddannelser

Efteruddannelse og kurser

Virksomhedssamarbejde

Forskning og innovation

Om os

Kontakt



Efteruddannelse og kurser

Få nye kompetencer, du kan bruge i dit job med det samme eller som springbræt videre i karrieren.

# Example of Heuristic 8

## Ornate vs. simple teapot

Excessive decorative elements can interfere with usability.



# Tips

- 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.

# 9

# Help Users Recognize, Diagnose, and Recover from Errors

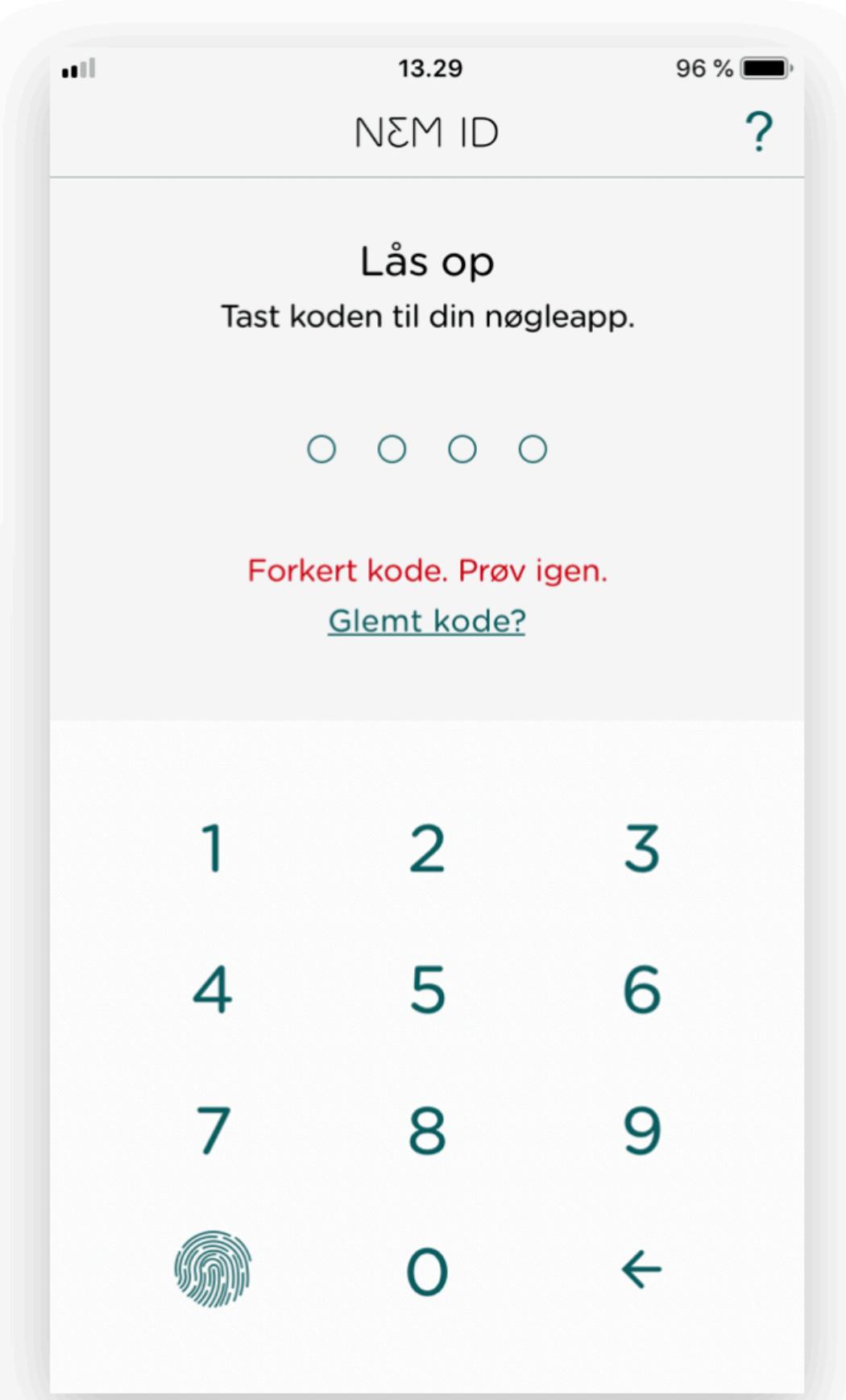
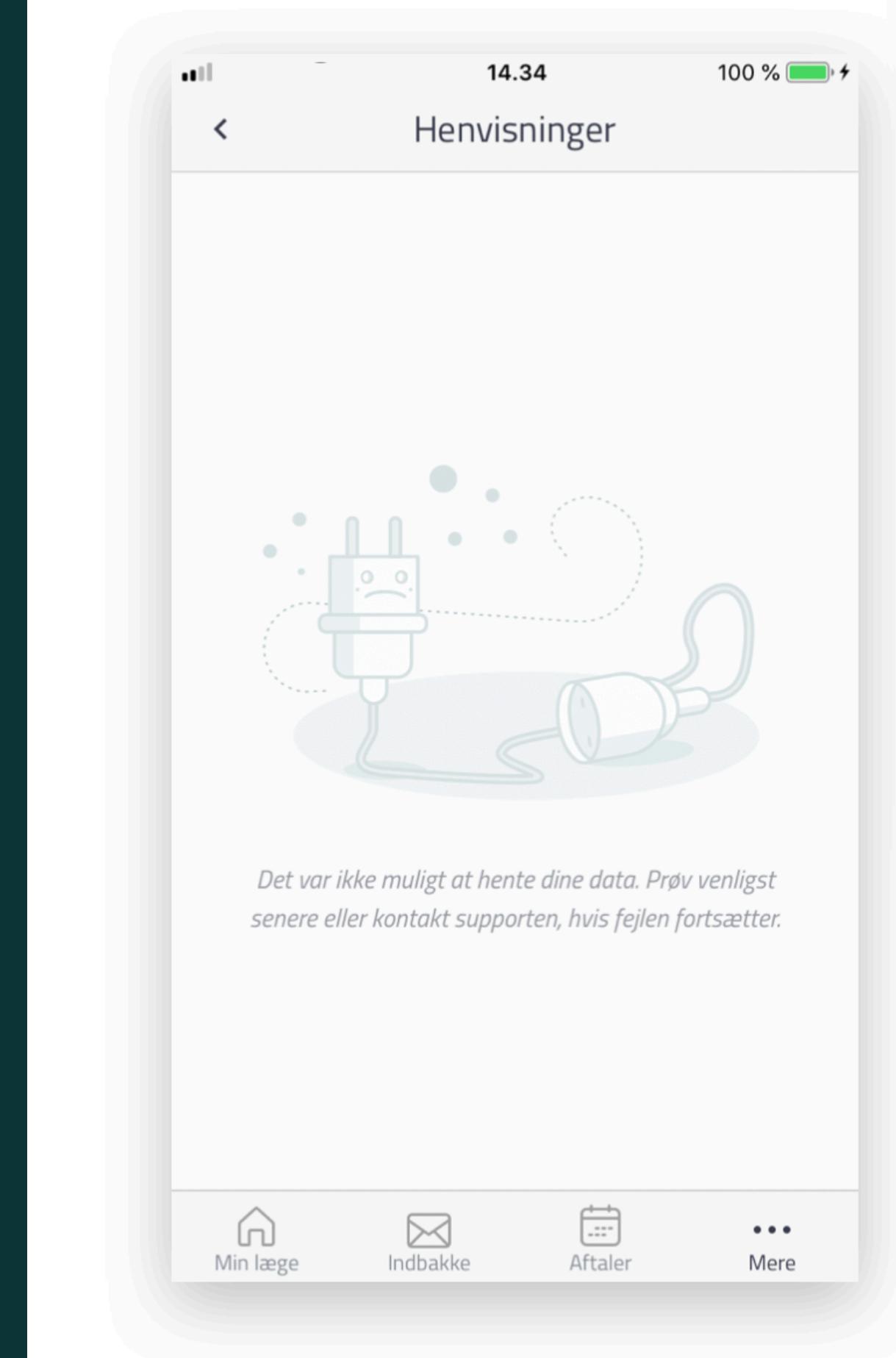
Error messages should be expressed in **plain language** (no error codes), precisely indicate the problem, and constructively suggest a solution.

## 09. HJÆLP BRUGEREN MED AT OPDAGE OG KOMME TILBAGE EFTER FEJL

Brugeren har behov for, at systemet tilbyder hjælp, hvis der opstår en fejl.

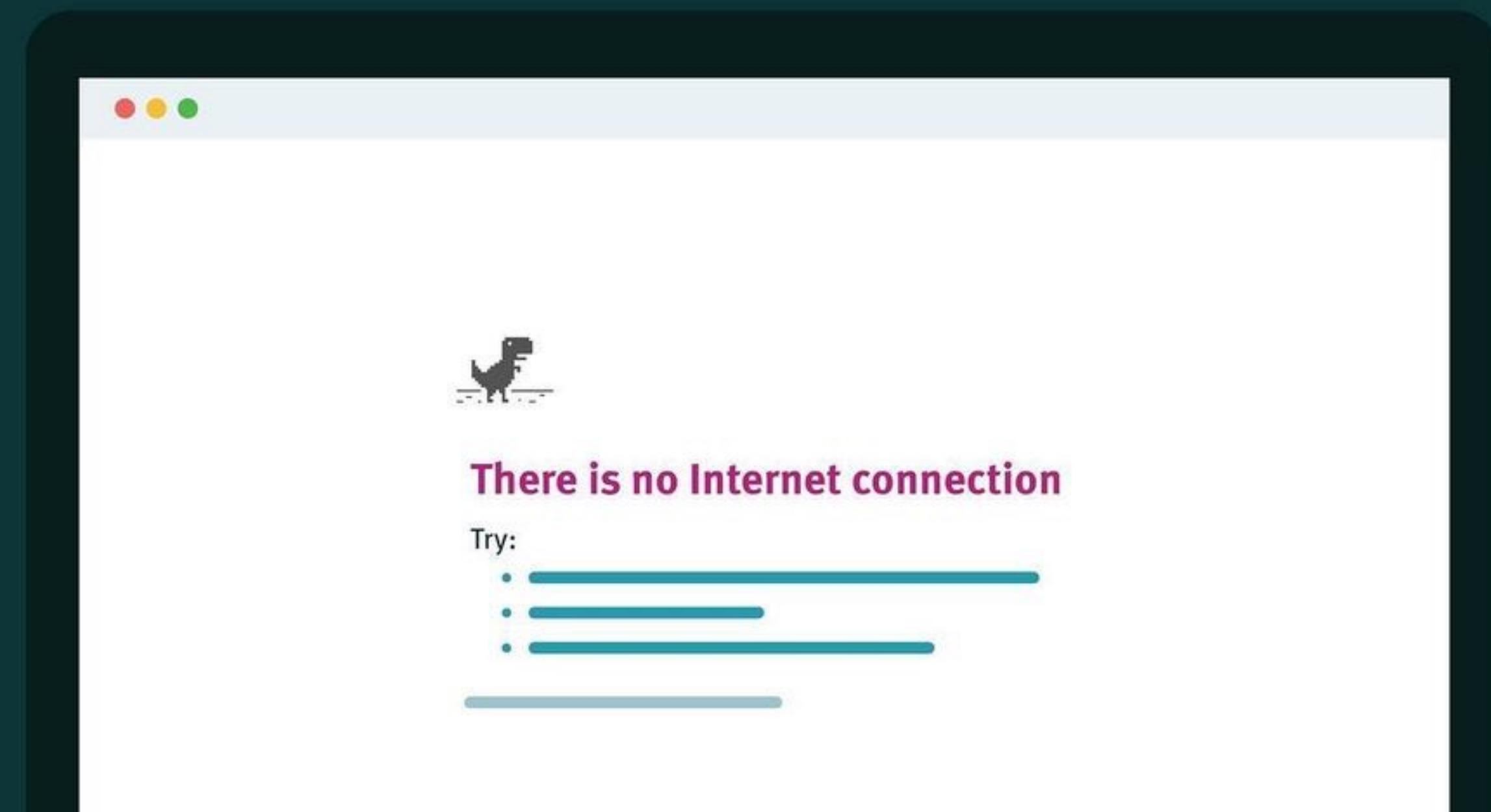
Her er **fejlmeldelser** i et **meningsfuldt og guidende sprog** afgørende.

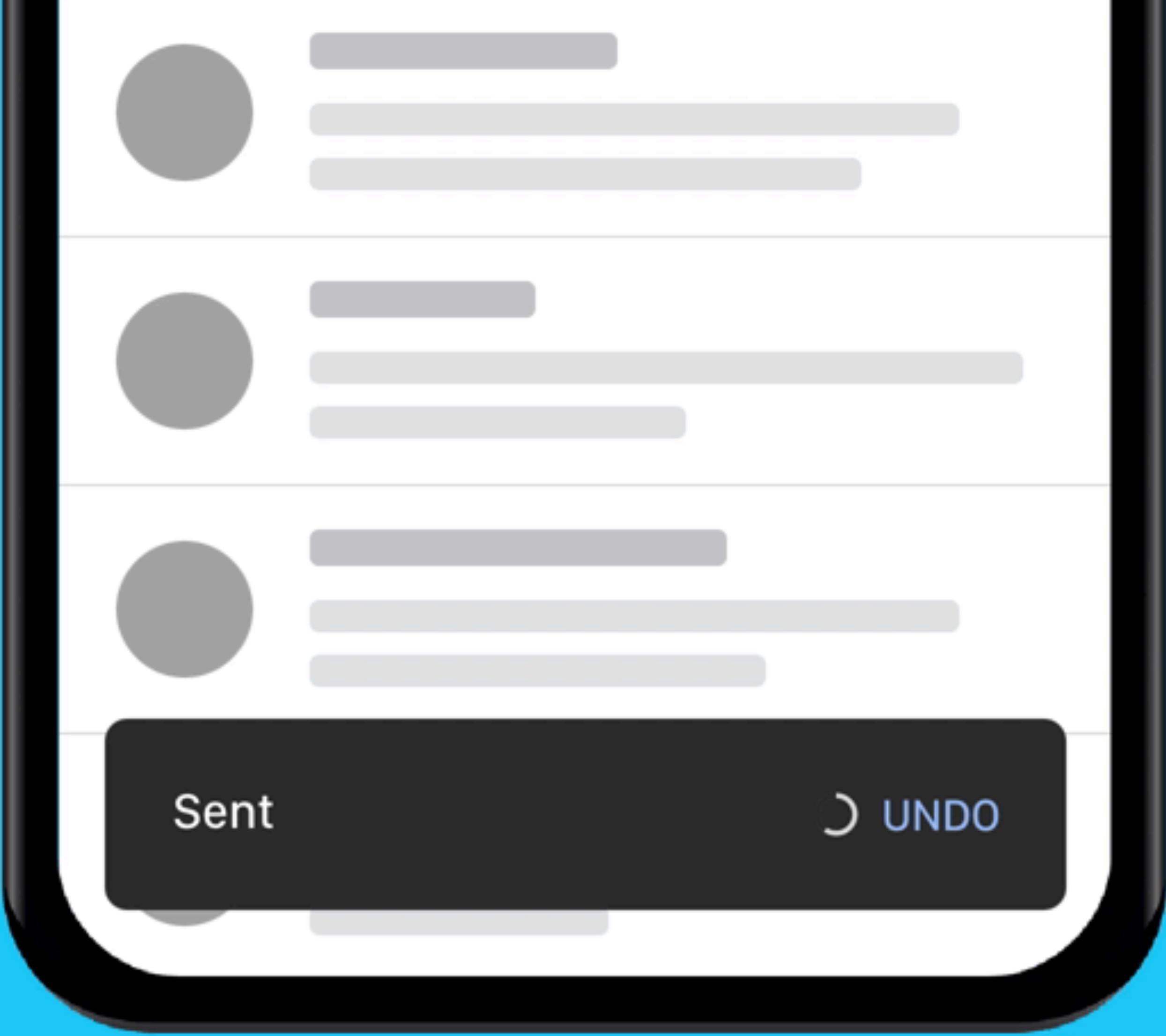
Gregersen og Wisler-Poulsen 2009,  
76-77

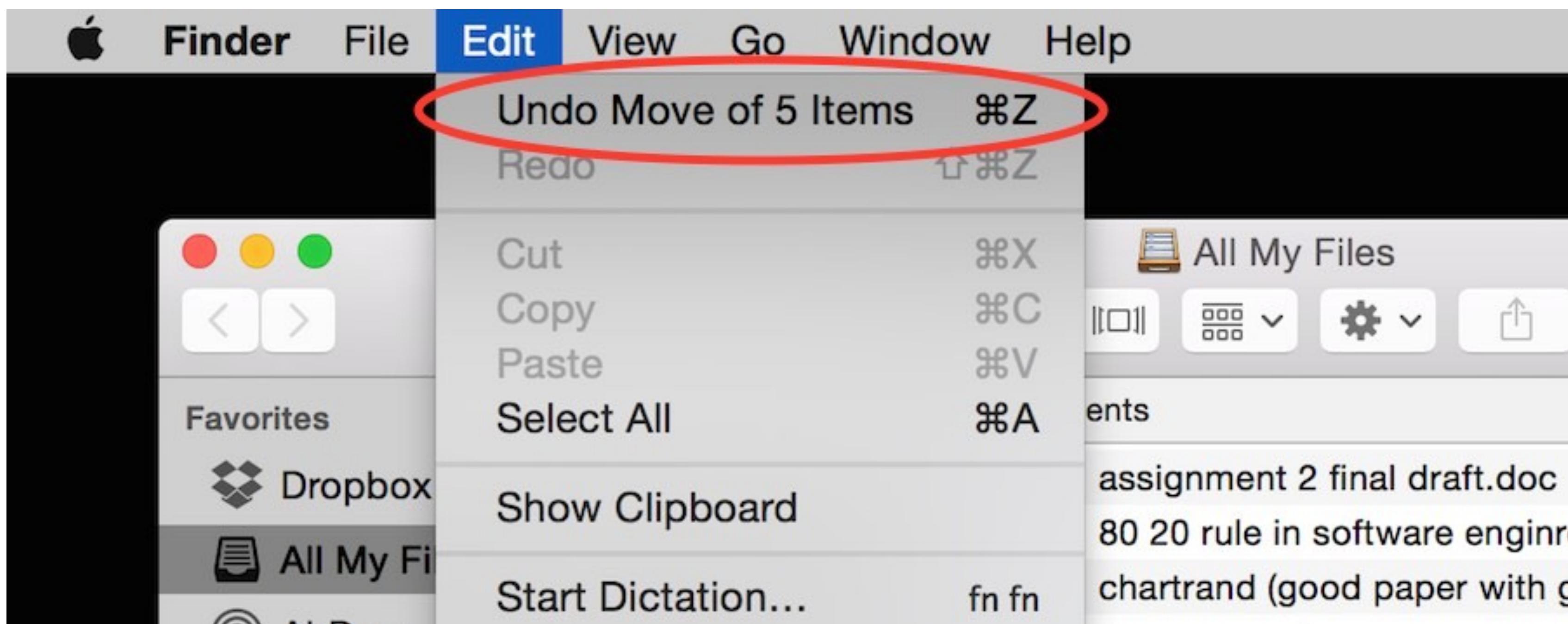


# Example of Heuristic 9

**Good internet connection error**  
pages show what happened and  
constructively instruct users on how  
to fix the problem.







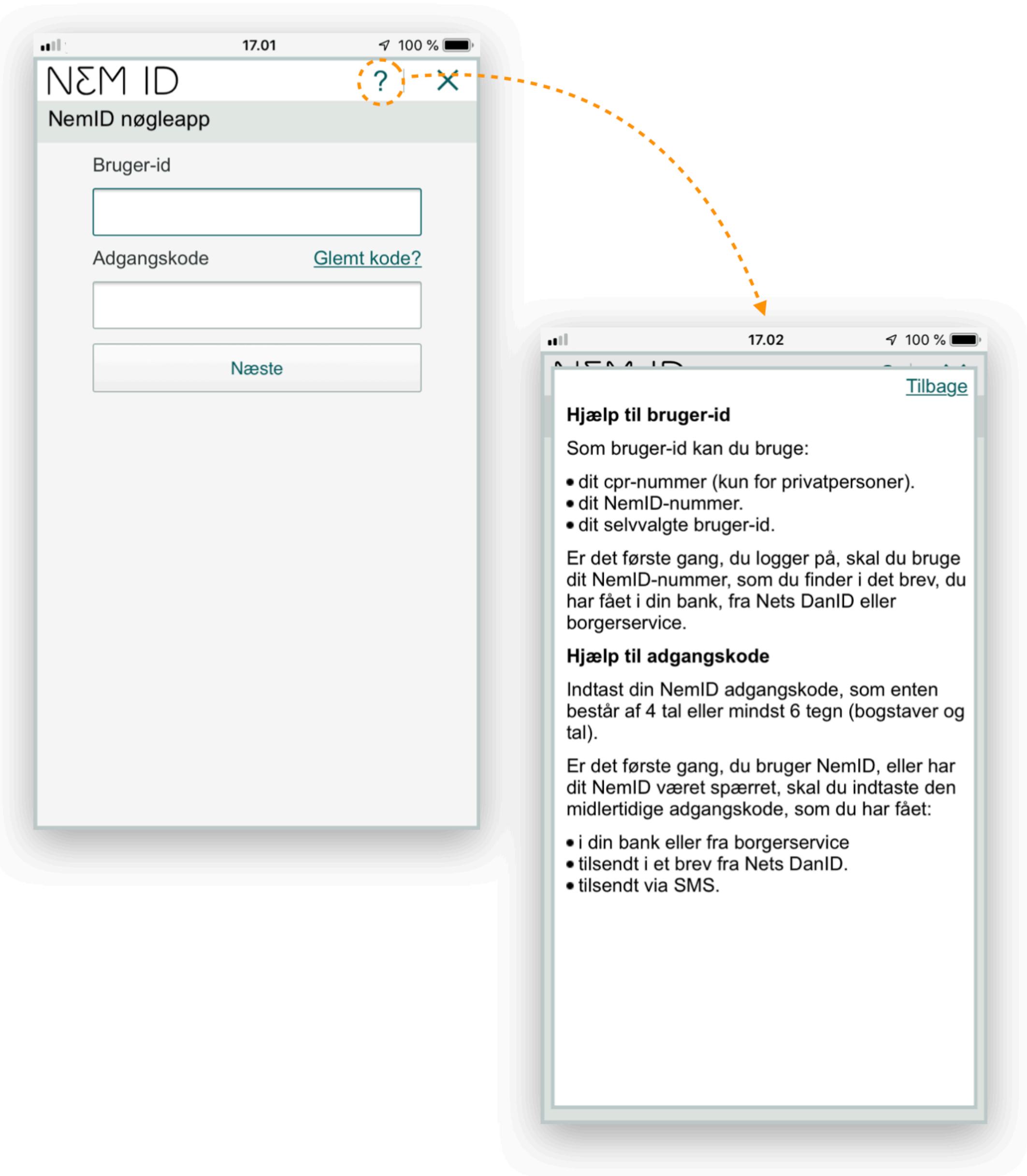
# Tips

- 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.

# 10 Help and Documentation

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

# 10. HJÆLP OG DOKUMENTATION



Man bør bestræbe sig på at designe en brugergrænseflade, der er så **brugervenlig**, at brugeren ikke har behov for hjælp for at navigere den. Dog bør man stille **hjælp til rådighed** for de brugere, som kan have behov for det.

Gregersen og Wisler-Poulsen  
2009, 77

# Example of Heuristic 10

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



# Tips

- 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.

# ANVENDELSE AF HEURISTIKKER

Heuristisk Evaluering - “slavisk gennemgang” -  
supplement til test

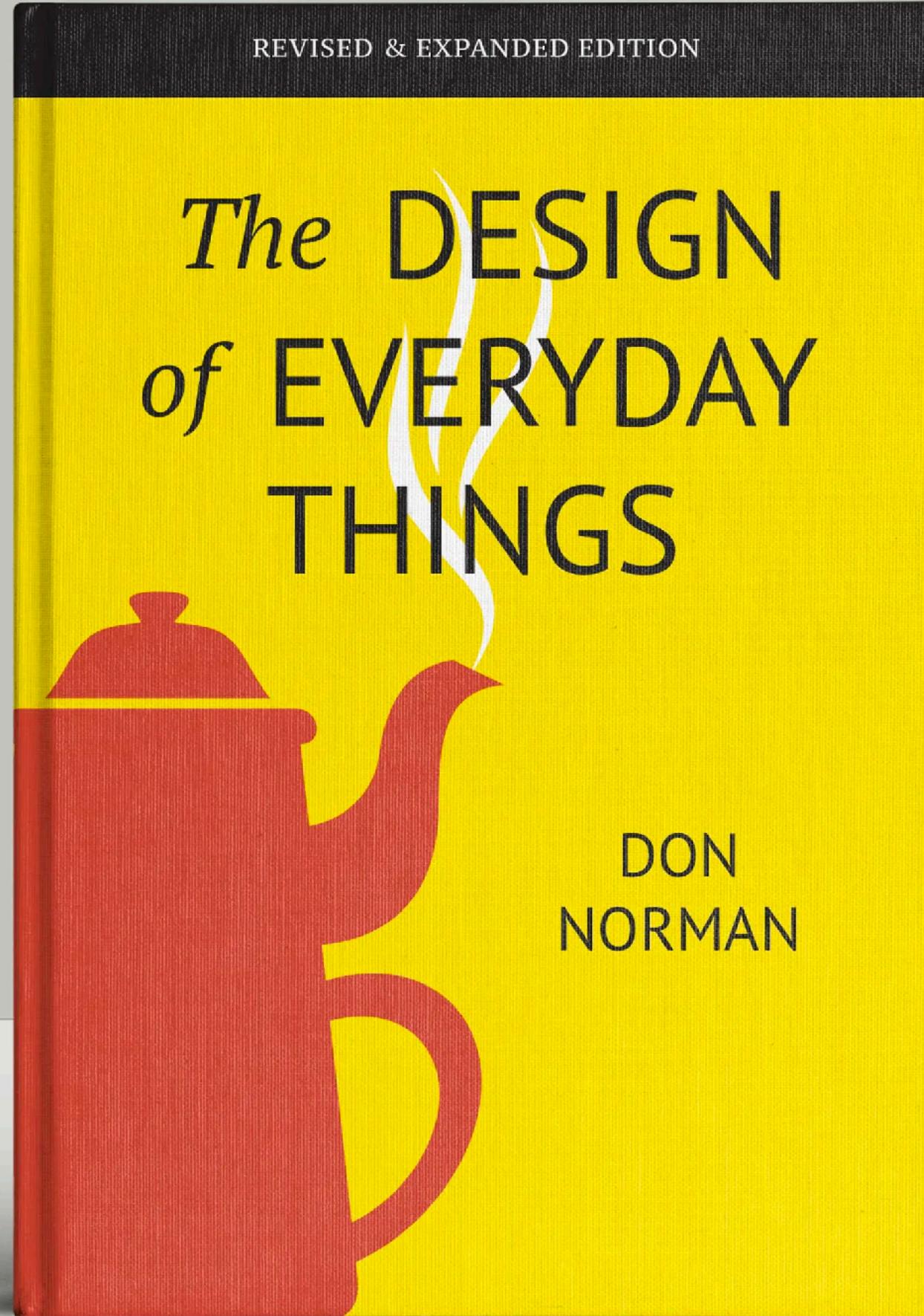
[nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/](https://www.nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/)

Tommelfingerregler & designprincipper du kan  
støtte dig op af, når du designer brugeroplevelser.

# 6 DESIGN PRINCIPLES

DON NORMAN

- **VISIBILITY** - Can I see it?
- **FEEDBACK** - What is it doing?
- **CONSTRAINTS** - Why can't I do that?
- **MAPPING** - Where am I & where can I go?
- **CONSISTENCY** - Have I seen this before?
- **AFFORDANCE** - How do I use it?



# THE DESIGN OF EVERYDAY THINGS

Don Norman introducerer i 1988 for første gang begrebet User Experience og er også kendt for et sæt velkendte designprincipper:

Visibility, feedback, constraints, mapping, consistency & affordance

Don Norman er især kendt for designprincippet *affordances*, som dækker over, hvordan vi som brugere afkoder et produkts anvendelighed.

Et populært eksempel er stolen - som vi ved, at vi kan sidde på, frem for at anvende den til en række andre handlinger.

**Did this ever  
happen to you?**





**There's**

# Visibility

The screenshot shows the homepage of the Danish State Railways (DSB) website. At the top, there's a yellow banner with the text "Vi oplever i øjeblikket problemer med DSB Plus. Derfor kan du ikke logge ind - vi arbejder på at løse problemet". Below the banner is a red header bar with the text "Find rejse og pris i Danmark". The main search form has fields for "FRA" (Station / stoppested / vej / by / lokalitet) and "TIL" (Station / stoppested / vej / by / lokalitet). To the right of the search form is a "Feedback" button. Below the search bar, there are four main navigation links: "Trafikinformation", "Kundeservice og kontakt", "Billetter og services", and "Billetter til udlandet". Under each link, there are promotional banners. The first banner for "DSB Orange" says "Rejs billigt udenfor myldretiden". The second banner for "Lad os passe på hinanden" says "Bedre plads på rejsen" and features an icon of two people. The third banner also says "Lad os passe på hinanden" and "Husk at bruge mundbind" (Remember to wear a mask), featuring an icon of a person wearing a mask. The fourth banner says "Følg myndighedernes anbefalinger" and features icons of a clock, a person sneezing, a hand being washed, and a thermometer.

The screenshot shows a Google search results page. The top result is the official DSB website, which is currently down as indicated by the yellow banner. Below the search results, there are two buttons: "Google Search" and "I'm Feeling Lucky". At the bottom, it says "Google offered in: українська русский".

The screenshot shows a Microsoft WordPad window titled "Document - WordPad". The document contains a single line of text: "Pladsbilletkravet for rejser med InterCity- og".



Marketplace Help & FAQs 

**asos** WOMEN MEN Search for items, brands and inspiration    

Sale New in Clothing Shoes Accessories Activewear Face + Body Brands Outlet Marketplace Inspiration

**WOMEN** **MEN**

BANK HOL SPECIAL!  
EXTRA 20% OFF SALE STUFF (THE UP-TO-70% SALE)\*  
With code: ASOSSALEHOLS

Home > Women > Sale > ASOS DESIGN wrap tie jumpsuit in mono spot print



ASOS DESIGN wrap tie jumpsuit  
in mono spot print

£38.00 **£32.30 (-15%)**

Free delivery & returns (Ts&Cs apply)

Or 3 payments of £10.76 with **Klarna**, or 4 of £8.07 with **clearpay**, always interest-free.

 EXTRA 20% OFF SALE STUFF  
With code: **ASOSSALEHOLS**

COLOUR: Mono spot

SIZE:  [Find your Fit Assistant size](#)

Please select

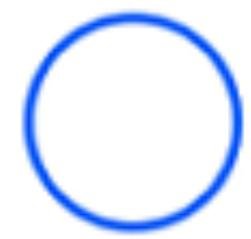
**ADD TO BAG** 

 **SIZING HELP**

# Feedback



## What Do Messenger Icons Mean?



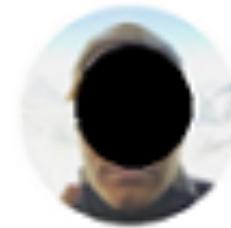
Sending...



Sent

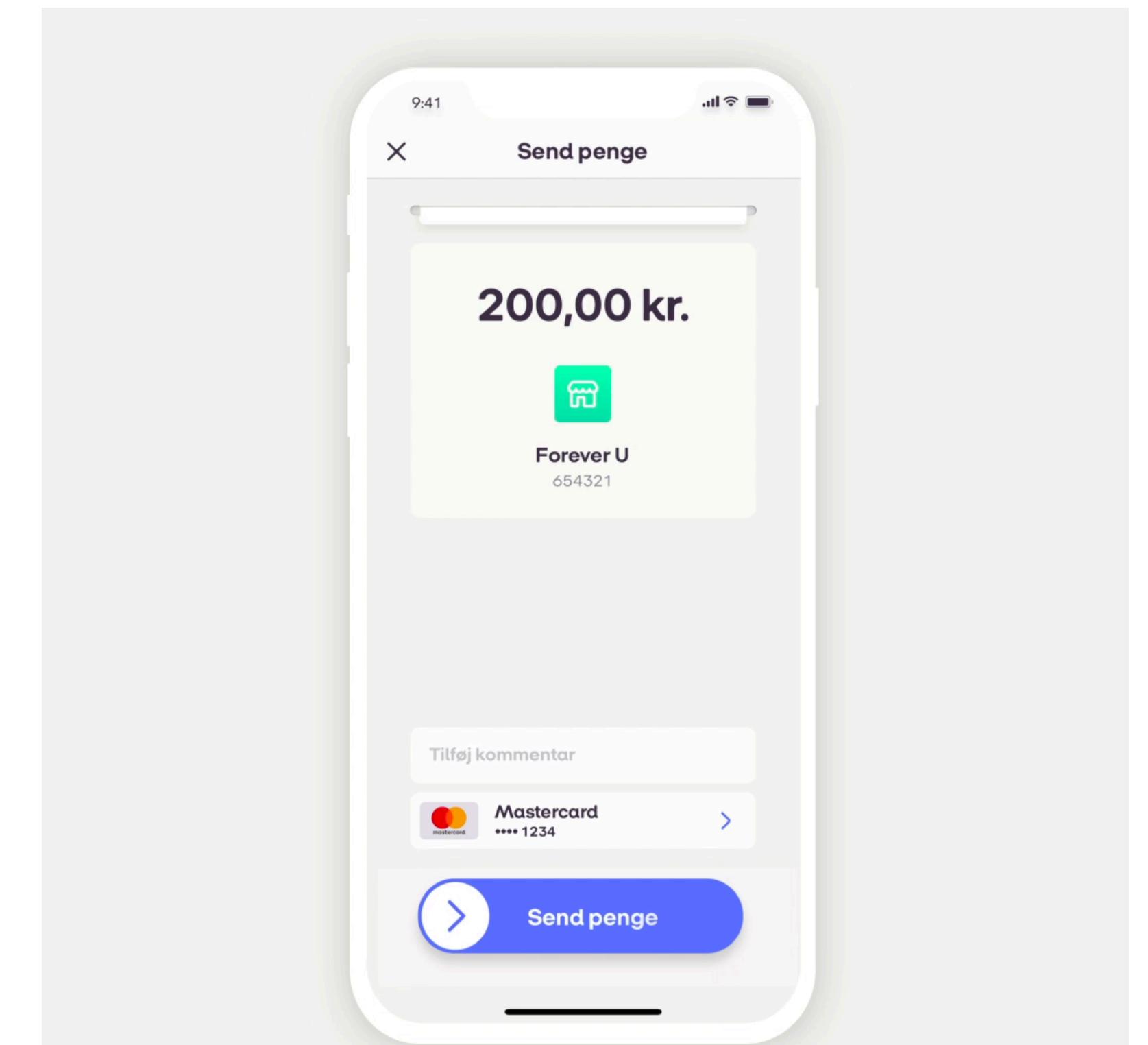
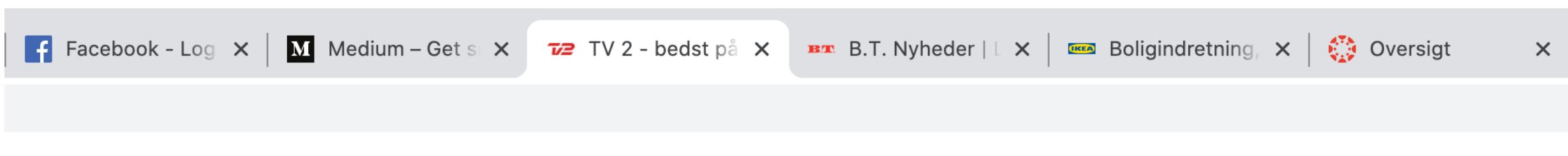
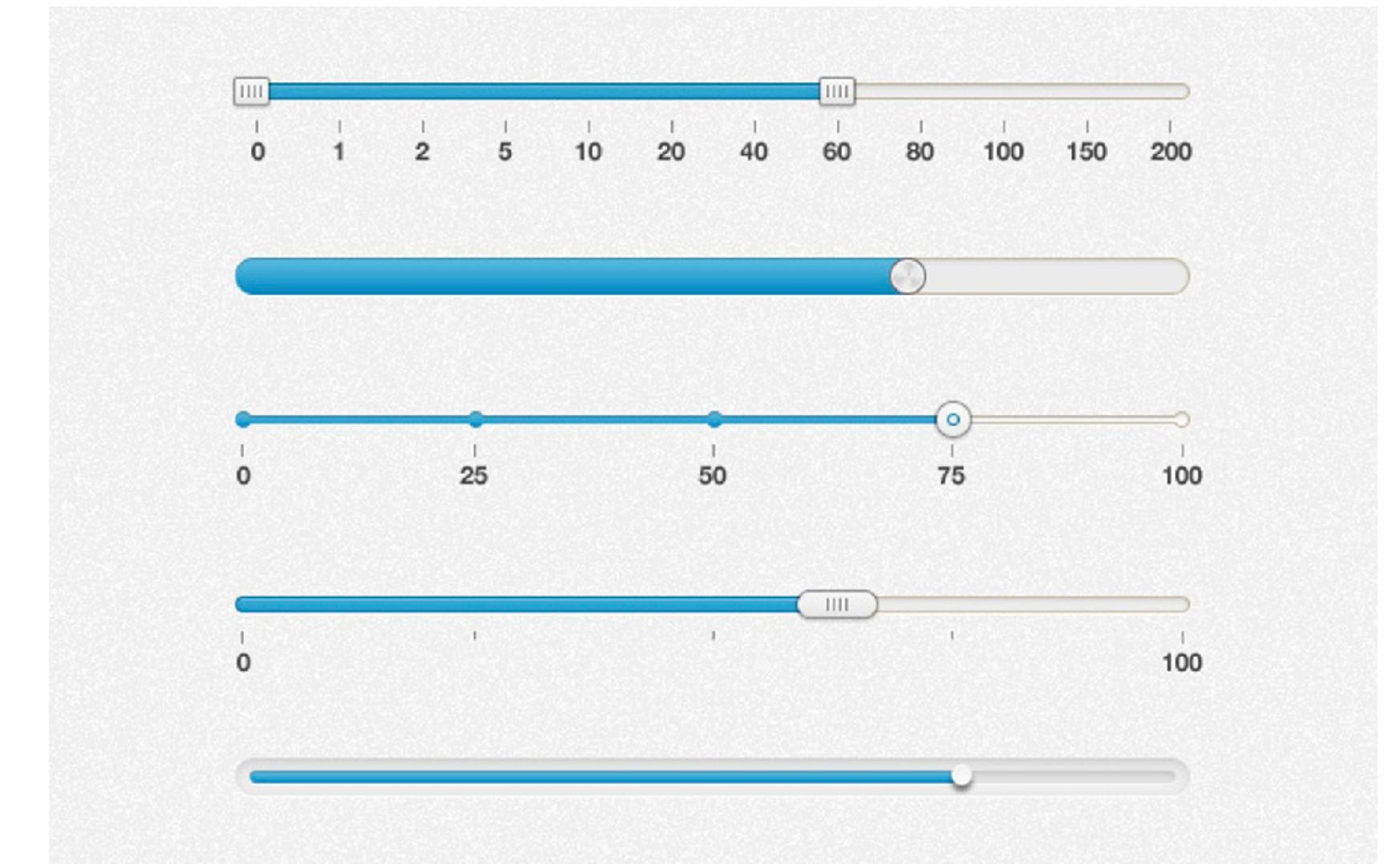
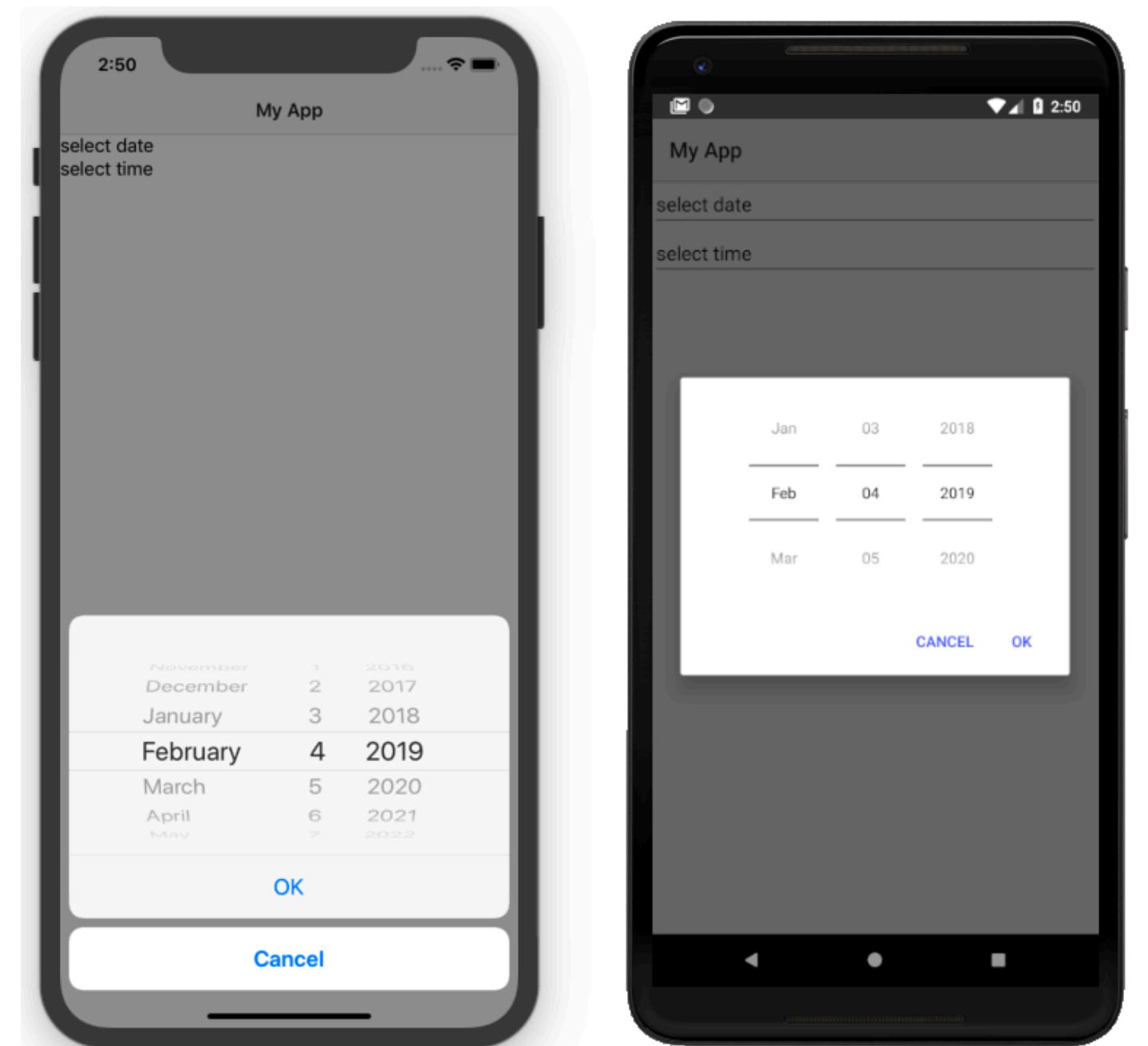


Delivered



Read

# Affordances





YOU KNOW HOW  
TO USE IT, RIGHT?



# KOMBARDO EXPRESSEN

LYNBUS MELLEM LANDSDELENE

[BOOK BILLET](#)[ÆNDRE BILLET](#)

KRAV OM  
MUNDBIND

Læs mere her



## Mapping

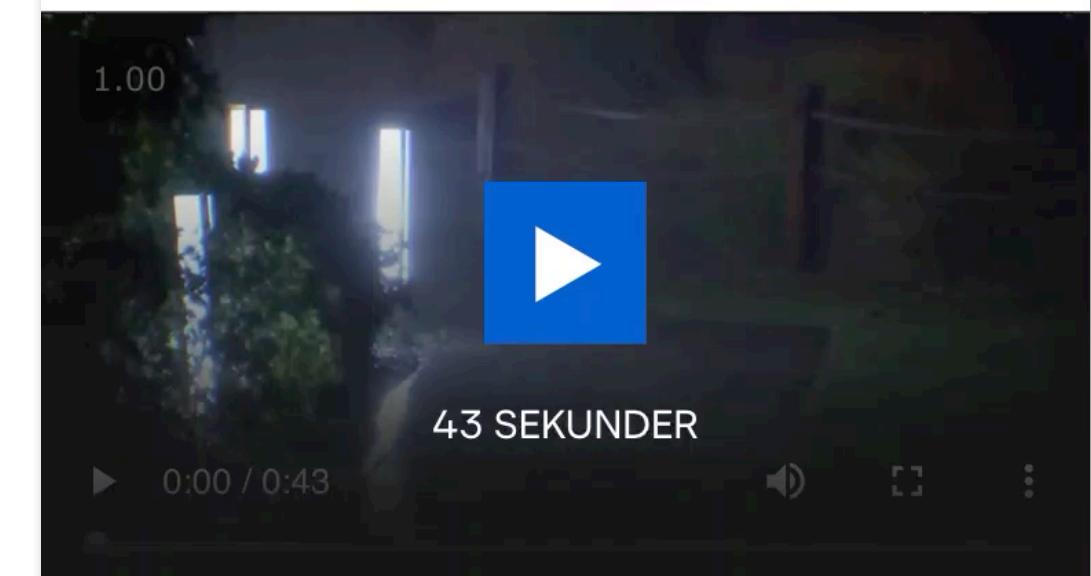
DR Nyheder TV Radio ≡

SENESTE NYT INDLAND UDLAND **PENGE POLITIK**

 **UDLAND**

**Orkanen Laura går i land i det sydlige USA med livstruende styrke**

Orkanen har kostet mere end 20 mennesker livet i Caribien.

  
43 SEKUNDER

AF MALTHE SOMMERAND | DAG KL. 08:01 | OPDATERET I DAG KL. 11:10

[?] FORKLAR ORD [AA] STØRRE TEKST

[o] LÆS OP

# Constraints

River Island parker cargo trousers in black

£35.00

Free delivery & returns (Ts&Cs apply)

COLOUR: Black

SIZE: [Size Guide](#)

Please select

ADD TO BAG

VIDEO

SELLING FAST

PRODUCT DETAILS

Trousers by River Island

PRODUCT CODE

1663339

SIZE & FIT



Text link

Primary button

Text link

Primary button

Text link

Primary button

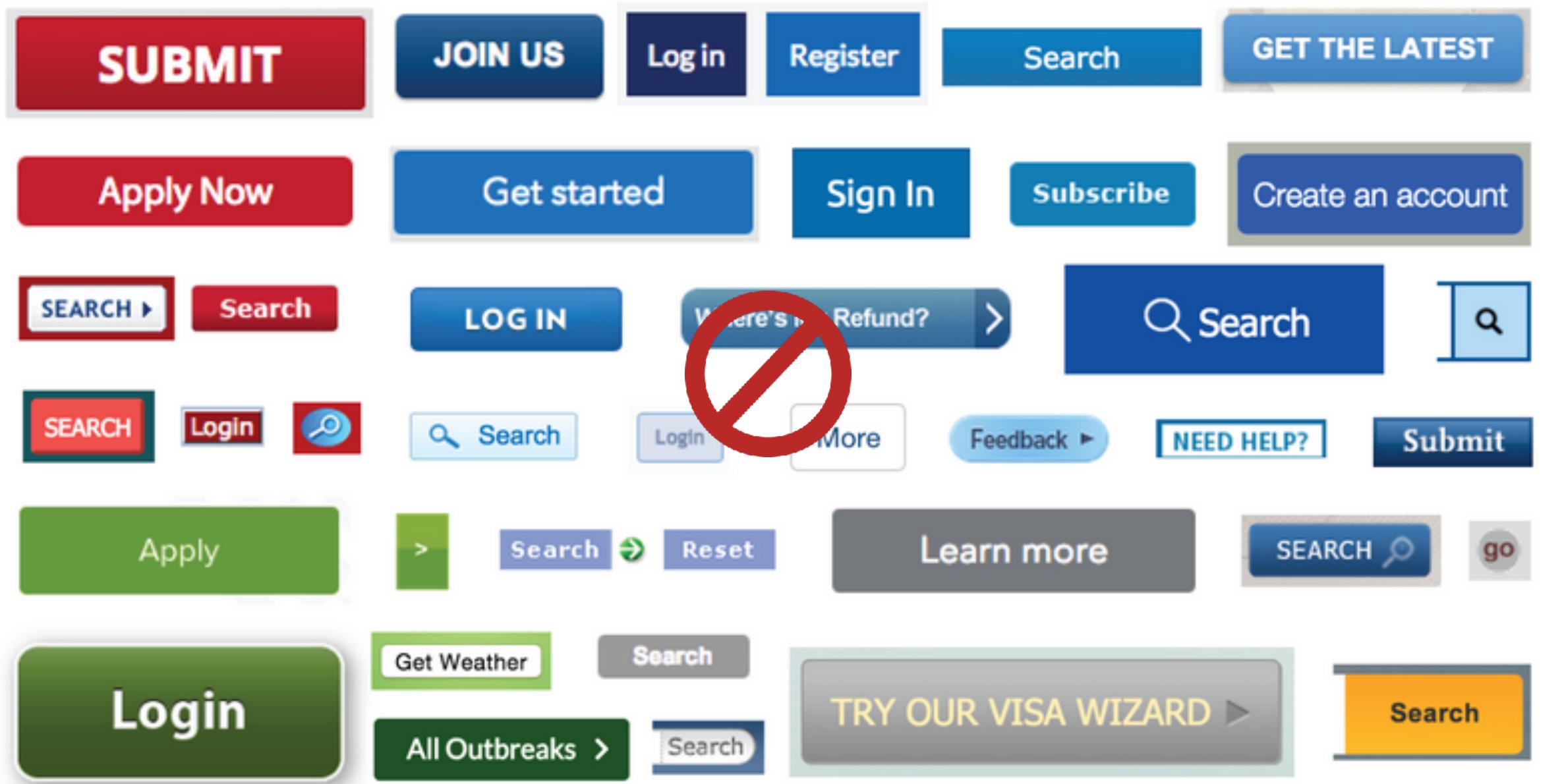
Enabled

Disabled

Disabled:hover

MORE  
CHOICES,  
MORE  
TROUBLE

@nngux • nngroup.com



# Consistency





## Box office: 'Beauty and the Beast' doubles 'Power Rangers' weekend gross

POSTED 03.28.2017

### MORE FROM ENTERTAINMENT WEEKLY

Here's a complete roundup of EW's 'Rogue One' revelations

James Gunn announces 'Guardians of the Galaxy' double feature



## Most Popular

1. 'This Is Us' star Mandy Moore on the finale — and final moment
2. 'Iron Fist' actress Jessica Henwick addresses whitewashing controversy
3. 'Orange Is the New Black's Samira Wiley and Lauren Morelli are married
4. 'Westworld': Which host achieved free will in finale?
5. **TWIN PEAKS**

# Consistency

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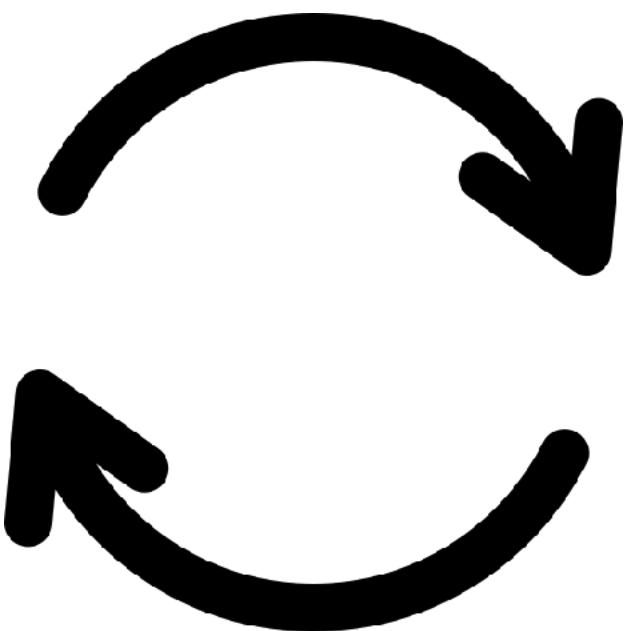
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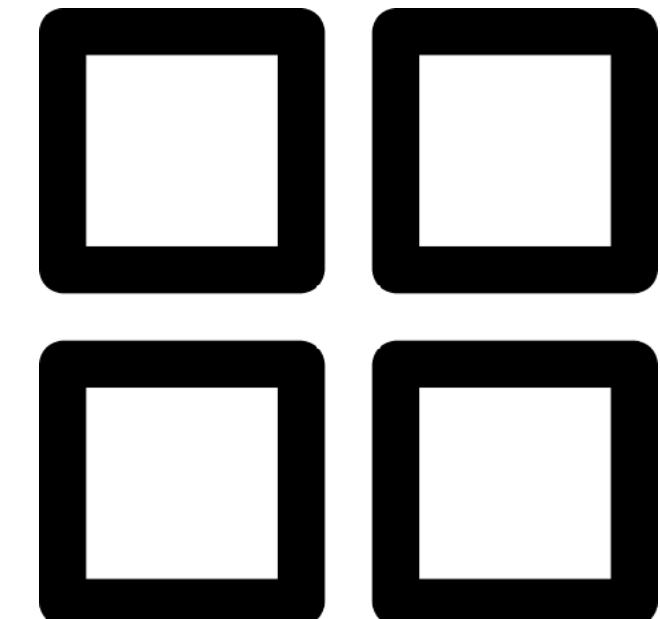
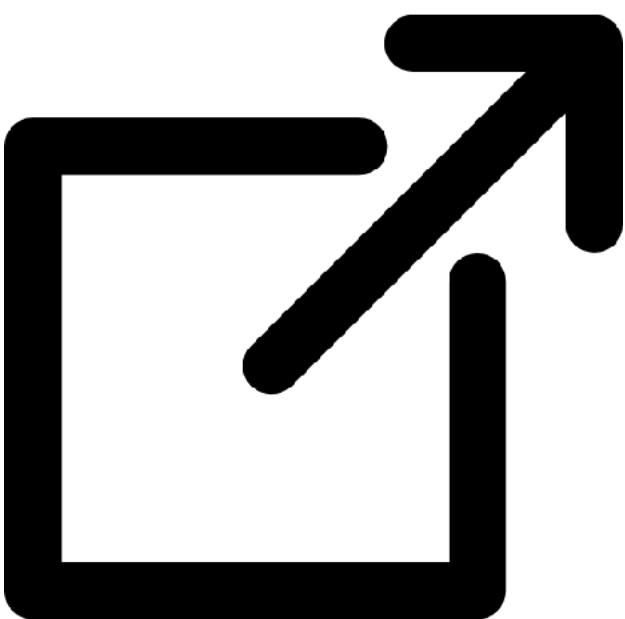
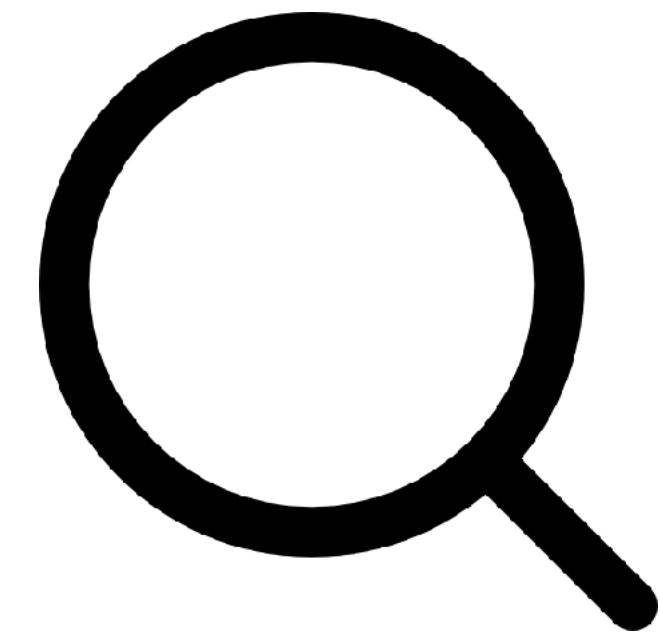
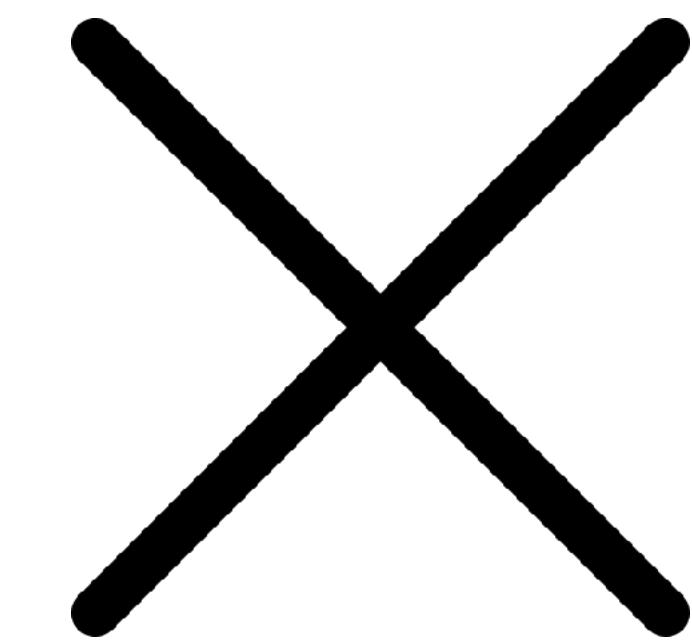
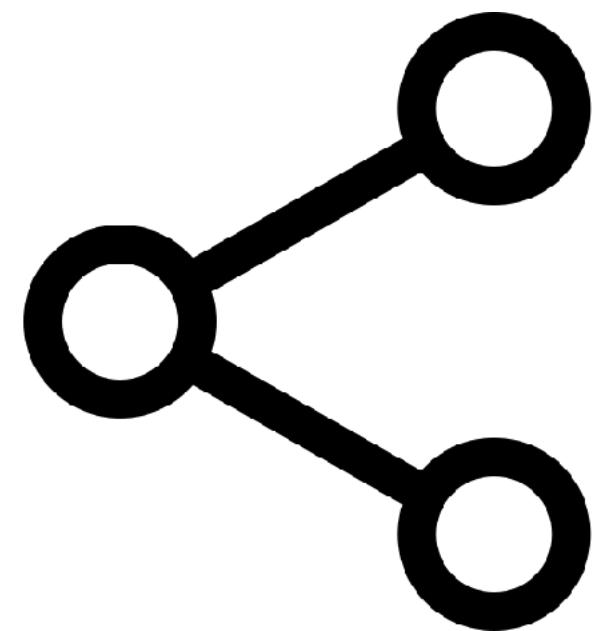
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[Click here](#) for a list of supported browsers.  
[Click here](#) for a list of available devices.



**Consistency**



# ANVEND HEURISTIKKER & DESIGNPRINCIPPER

Anvend Nielsens heuristikker og Normans 6 designprincipper til at gennemgå din udvalgte UI.

Brug heuristikkerne og designprincipperne til at argumentere for, hvorfor UI'en fungerer godt eller dårligt.

Overvej om der er dele af din udvalgte UI som heuristikkerne eller designprincipperne ikke berører.

# DESIGNPRINCIPPER

ANDRE GODE TOMMELFINGERREGLER,  
RETNINGSLINJER & QUOTES

Jakob's Law of the Internet  
User Experience:

Users spend most of  
their time on **other**  
websites than yours.

Jakob Nielsen

NN/g



## Jakob's Law of Internet UX

<https://www.nngroup.com/videos/jakobs-law-internet-ux/>

One of usability's  
most hard-learned  
lesson is that you  
**are not the user.**

Jakob Nielsen

YOU



USER

NN/g [nngroup.com/swag](http://nngroup.com/swag)

@nngux

NN/g

Designers are not users;  
users are not designers;  
**vice presidents are  
neither.**

Jakob Nielsen

@nngux

NN/g

Designers are not  
users. Users are  
not designers.

Jakob Nielsen

@nngux

NN/g

UX is not about  
technology,  
**it's about humans**

Jakob Nielsen

@nngux

NN/g

**User needs first.**  
Technology second.

Don Norman

# First Rule of Usability? Don't Listen to Users.

Jakob Nielsen

@nngux

NN/g

Pay attention to  
**what users do,**  
not what they say.

Jakob Nielsen

@nngux

NN/g

We must design for  
the **way people**  
**behave**, not for how  
we would wish them  
to behave.

Don Norman

Good design is actually a lot  
harder to notice than poor  
design, in part because good  
designs fit our needs so well  
that the **design is invisible.**

Don Norman

Sometimes, users do  
read down an entire  
page. It does happen.

Rarely.

Jakob Nielsen

**Users.**

**Don't.**

**Read.**

L E S S  
I S  
M O R E

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IT  
DEPENDS

# LAWS OF UX

[laws of ux](http://lawsofux.com)

lawsofux.com

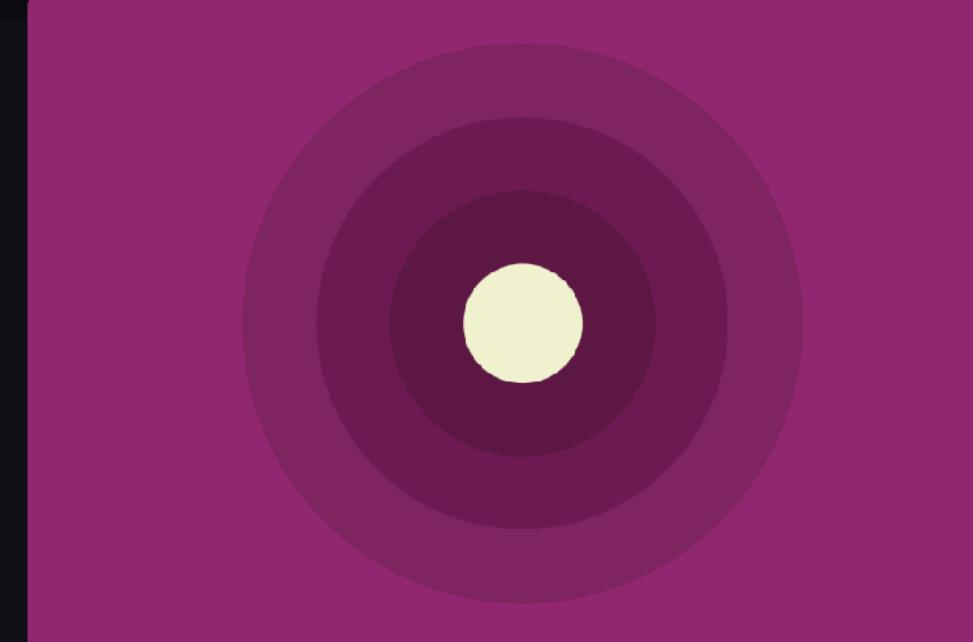
INFO BOOK STORE ↗

Laws of UX is a collection of best practices that designers can consider when building user interfaces.

• ALL HEURISTIC PRINCIPLE GESTALT COGNITIVE BIAS



Aesthetic-Usability Effect



Doherty Threshold



Fitts's Law

lawsofux.com



[youtube.com/watch?v=fYs2Mdyasuc](https://youtube.com/watch?v=fYs2Mdyasuc)

Meget stof & mange eksempler...

Men kan I se det? De støtter sig alle op  
ad hinanden.

# EKSPERTTEST

## TEST MED EKSPERTER

# HEURISTISK EVALUERING

TEST PÅ BAGGRUND AF DE KENDTE  
TOMMELFINGERREGLER

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## Heuristic Evaluation



<https://www.nngroup.com/videos/heuristic-evaluation/>

Designprincipper kan anvendes **systematisk** og **struktureret**, princip for princip.

Designprincipper kan anvendes som en del af en **heuristisk evaluering**, hvor **eksperter** (5 ideelt set) anvender principperne til at analysere en løsning.

Udføres af (UX) eksperter og er en  
billig og hurtig måde at afdække  
rigtig mange usability problemer.

# HUSK

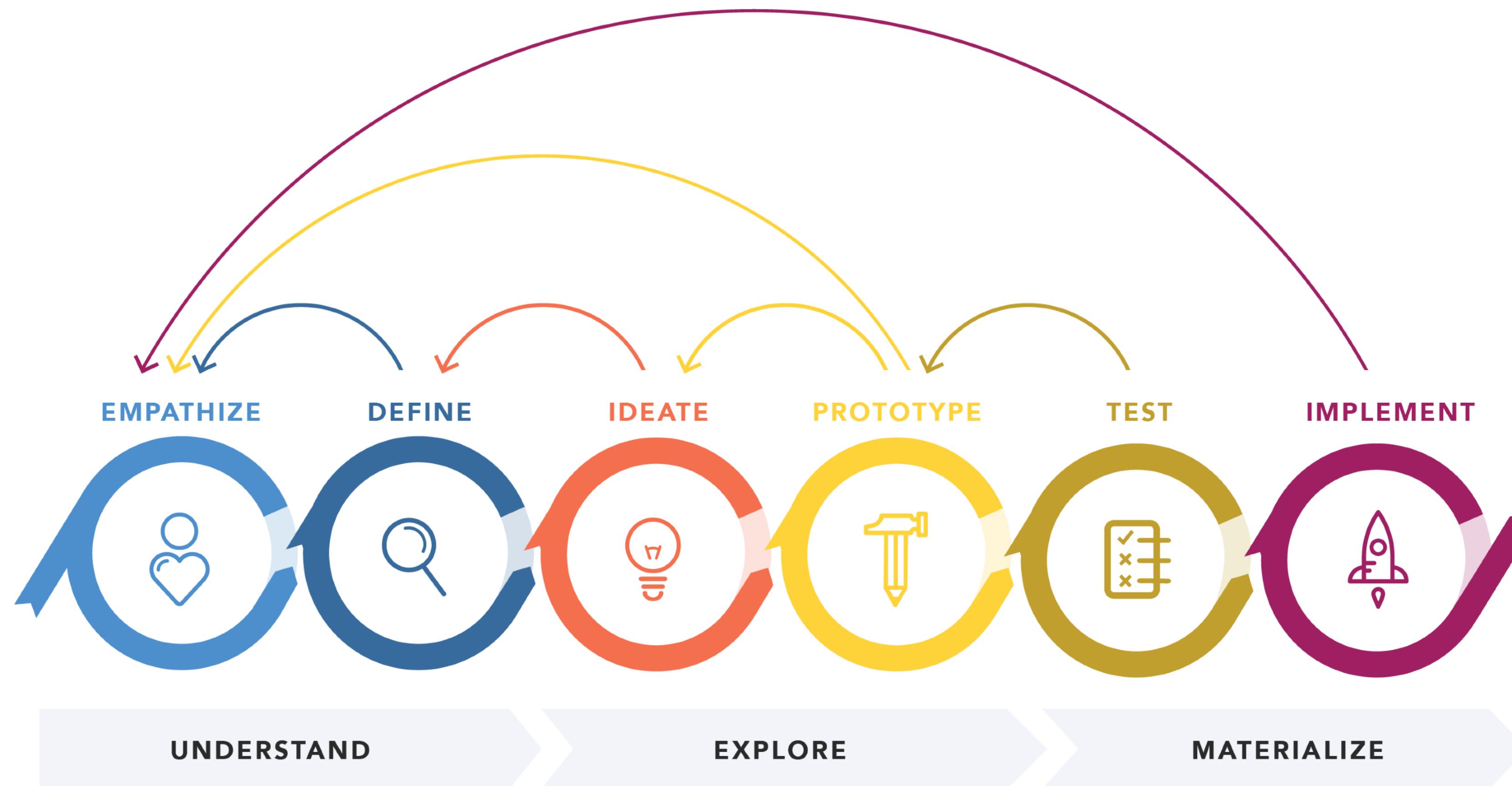
Heuristisk evaluering er en usability metode, der IKKE involverer rigtige brugere.

Du kan lave en heuristisk evaluering forud for eksempelvis en tænke-højt test, og derfor ikke bruge denne metode, som en alenestående Usability Test.

Heuristisk Evaluering og Usability Testing supplerer hinanden godt. På den måde sikrer du en kvalificeret og gennemarbejdet evaluering.

Heuristisk Evaluering kan med fordel  
anvendes til at teste eksisterende  
løsninger.

Derfor kan du også anvende metoden  
i forbindelse med research og  
*Lightning Demo*.



DESIGN THINKING 101 NNGROUP.COM

# FORDELER

Afslører mange usability problemstillinger ved få ressourcer.

Kan gøres mere grundig end usability test.

Billigere testmetode sammenlignet med Usability Testing.

# ULEM PER

Tester ikke rigtige brugere

Afdækker ofte problemer, der ikke er  
rigtig problemer (falske positiver).

Kræver ofte at du supplerer med  
andre testmetoder.

# SÅDAN GENNEMFØRER DU EN HEURISTISK EVALUERING

[https://www.nngroup.com/articles/how-to-conduct-a-  
heuristic-evaluation/](https://www.nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/)

# HEURISTIC EVALUATION TEMPLATE

Heuristic	Where: URL	Issue: Description	Category: 0-4 point	Recommendations: How to improve
#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				

# SEVERITY RATINGS FOR USABILITY PROBLEMS

The following 0 to 4 rating scale can be used to rate the severity of usability problems:

0 = I don't agree that this is a usability problem at all

1 = Cosmetic problem only: need not be fixed unless extra time is available on project

2 = Minor usability problem: fixing this should be given low priority

3 = Major usability problem: important to fix, so should be given high priority

4 = Usability catastrophe: imperative to fix this before product can be released

# TJEKLISTE

## 1. Visibility of System Status

**The system should always keep user informed about what is going on, through appropriate feedback within reasonable time.**

#	Review Checklist	Yes	No	N/A	Comments
1.1	Does every display begin with a title or header that describes screen contents?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.2	Is there a consistent icon design scheme and stylistic treatment across the system?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.3	Is a single, selected icon clearly visible when surrounded by unselected icons?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.4	Do menu instructions, prompts, and error messages appear in the same place(s) on each menu?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.5	In multipage data entry screens, is each page labeled to show its relation to others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.6	If overtype and insert mode are both available, is there a visible indication of which one the user is in?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.7	If pop-up windows are used to display error messages, do they allow the user to see the field in error?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.8	Is there some form of system feedback for every operator action?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.9	After the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.10	Is there visual feedback in menus or dialog boxes about which choices are selectable?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.11	Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.12	If multiple options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.13	Is there visual feedback when objects are selected or moved?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
1.14	Is the current status of an icon clearly indicated?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

# HEURISTISK EVALUERING

- 1) Aftal hvad og hvilke dele I vil gennemgå.
- 2) Ekspert gennemgår individuelt på baggrund af arbejdskemaet. Husk at rate.
- 2) Præsenter dine findings for de andre ekspert.
- 3) Diskuter og argumenter for jeres findings med fokus på at blive enige om en samlet evaluering (arbejdskema).

# USER TESTING

## TEST MED BRUGERNE

# USABILITY TESTING

OBSERVERINGSMETODE TIL AT AFDÆKKE PROBLEMER  
& MULIGHEDER I ET DESIGN



[nngroup.com/videos/user-testing-jakob-nielsen/](http://nngroup.com/videos/user-testing-jakob-nielsen/)

Virkelighedsnært.

Målet er at teste prototypen med  
brugere så tæt på den virkelige  
brugssituation som muligt.

Husk, at du tester prototypen  
- ikke testbrugeren.

YOU



USER

NN/g [nngroup.com/swag](http://nngroup.com/swag)

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# Why Usability Test?



**Uncover Problems**  
in the design



**Discover Opportunities**  
to improve the design



**Learn About Users**  
behavior and preferences

# Core Elements of Usability Testing



## Facilitator

Guides the participant through the test process



## Tasks

Realistic activities that the participant might actually perform in real life



## Participant

Realistic user of the product or service being studied

# Usability Testing: Flow of Information

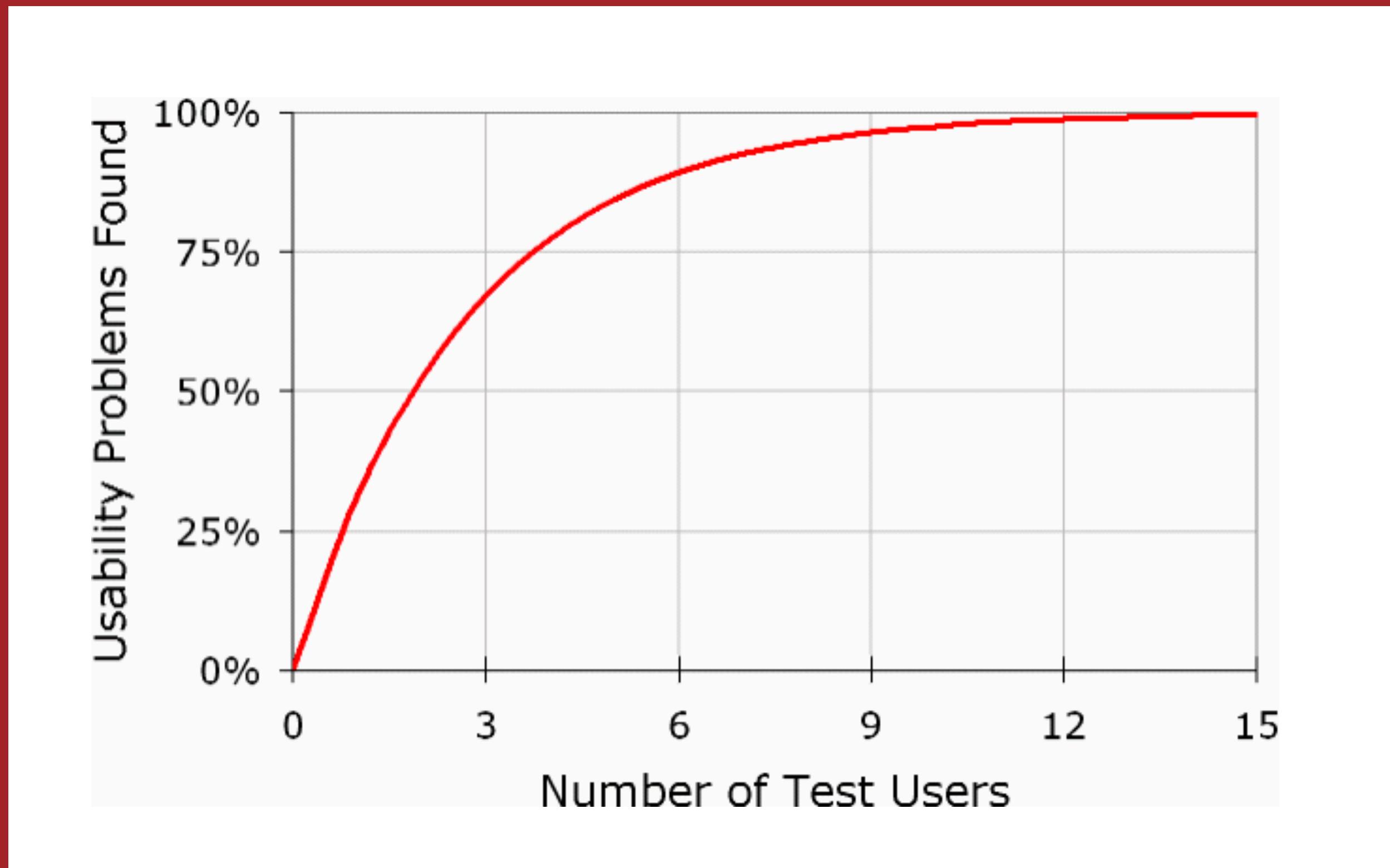


**Testing with 5 users**  
is infinitely more than  
testing with zero users.

Jakob Nielsen

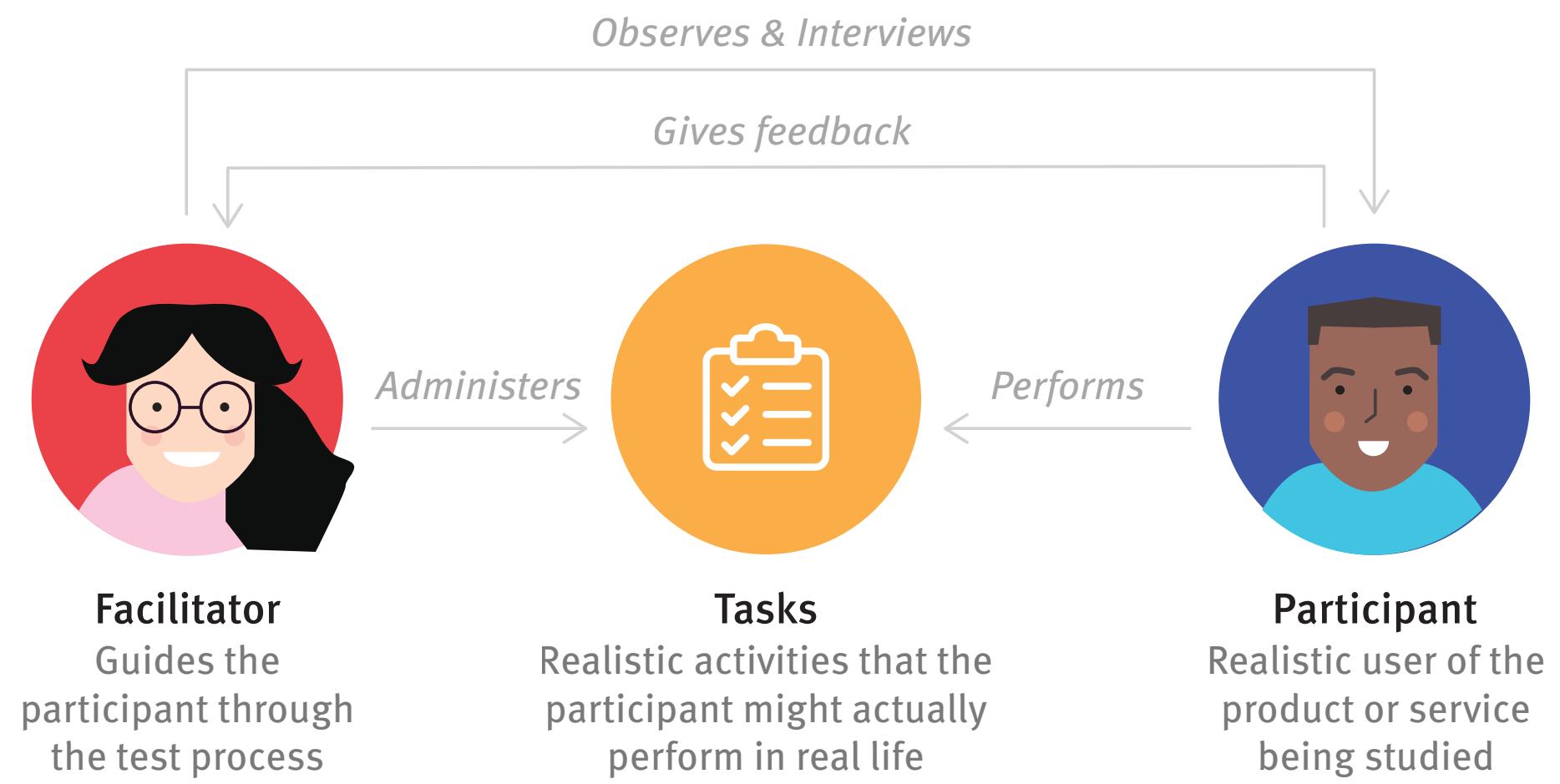
# THE MAGIC FIVE

WHY YOU ONLY NEED TO TEST WITH 5 USERS



# USABILITY TESTING 101

Usability testing is a popular UX research methodology. In a session, a researcher asks a participant to perform tasks, usually within a specific product or service. While the participant completes each task, the researcher observes the participant's behavior and listens for feedback.



## Why Usability Test?



Uncover Problems



Discover Opportunities



Learn About Users

## Top Tips

- **Recruit realistic participants.**  
People who would actually perform these tasks in real life
- **Use 5-8 participants** for qualitative usability testing
- **Avoid influencing participants** during testing. The easiest way to do this is stay quiet during the study
- **Ask open-ended, neutral questions** when you speak to the participant. For example, say “What do you think about this?” instead of “Do you like this?”

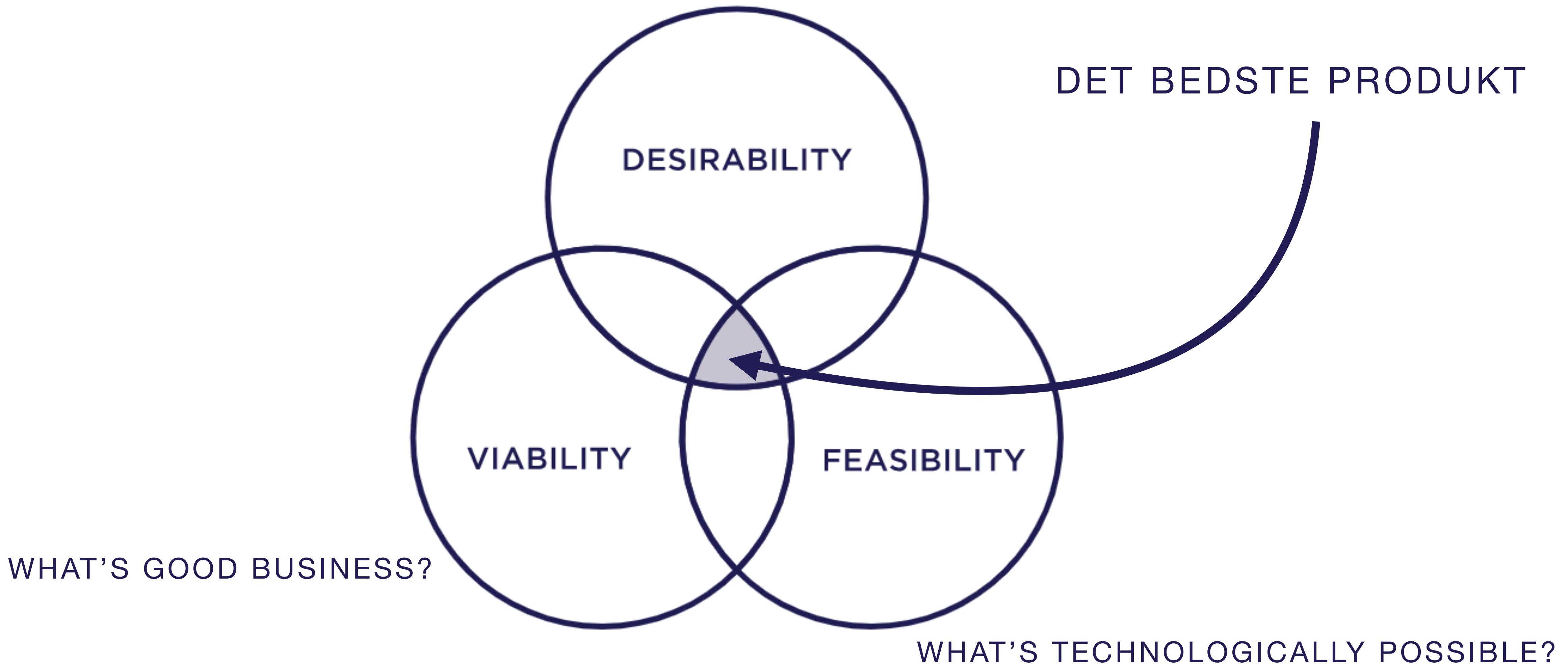
# USABILITY TESTING 101

[nngroup.com/articles/usability-testing-101](https://nngroup.com/articles/usability-testing-101)

# TÆNKE - HØJT - TEST

[nngroup.com/articles/thinking-aloud-the-1-usability-tool/](https://nngroup.com/articles/thinking-aloud-the-1-usability-tool/)

WHAT DO USERS WANT?



# USABILITY TEST

Brug artiklerne:

- 1) <https://www.nngroup.com/articles/thinking-aloud-the-1-usability-tool/>
- 2) <https://www.interaction-design.org/literature/article/stage-5-in-the-design-thinking-process-test>

Hvorfor er det vigtigt at foretage usability tests?

Hvilke fordele og ulemper har usability metoden?

Tænk på jeres case - hvordan kan test hjælpe og understøtte jeres proces?

Hvordan kan test hjælpe med at imødekomme det ideelle center for design thinking?