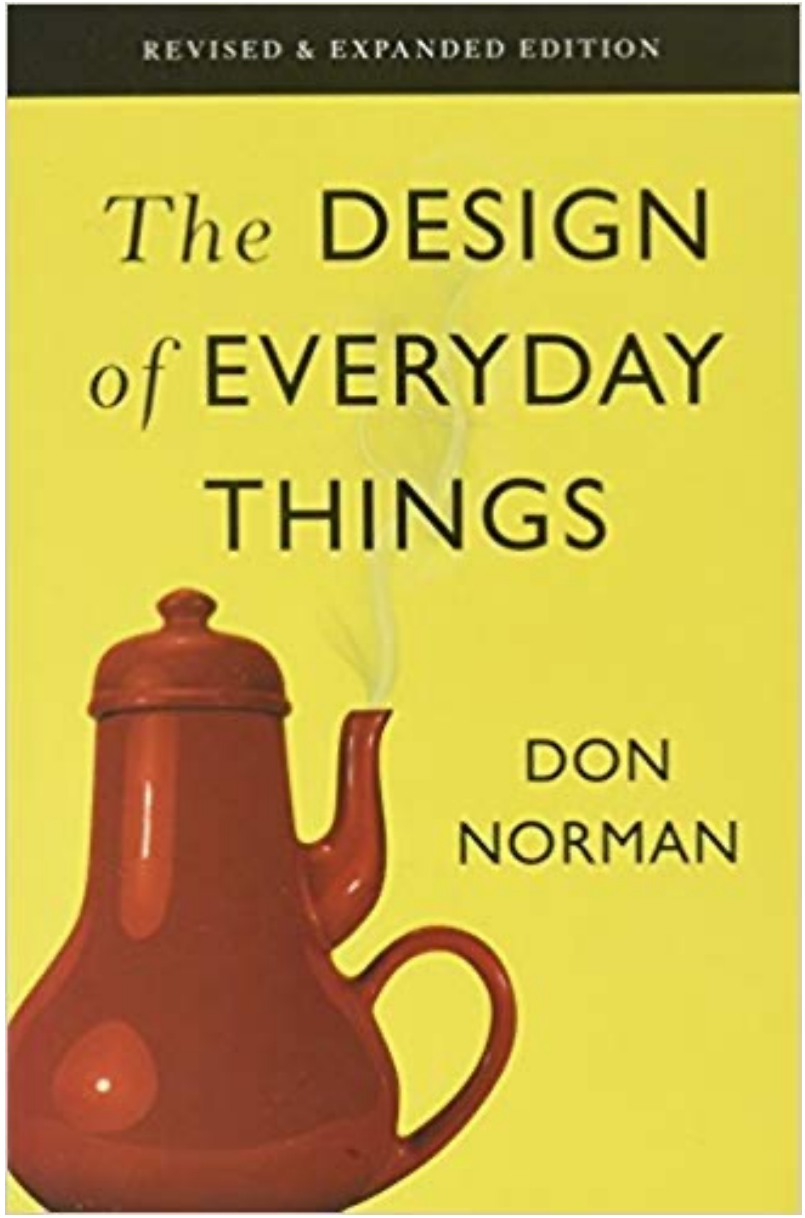
Human-Computer Interaction and Interfaces

Lecture 3

Mario Verdicchio

Università degli Studi di Bergamo

Academic Year 2024-2025

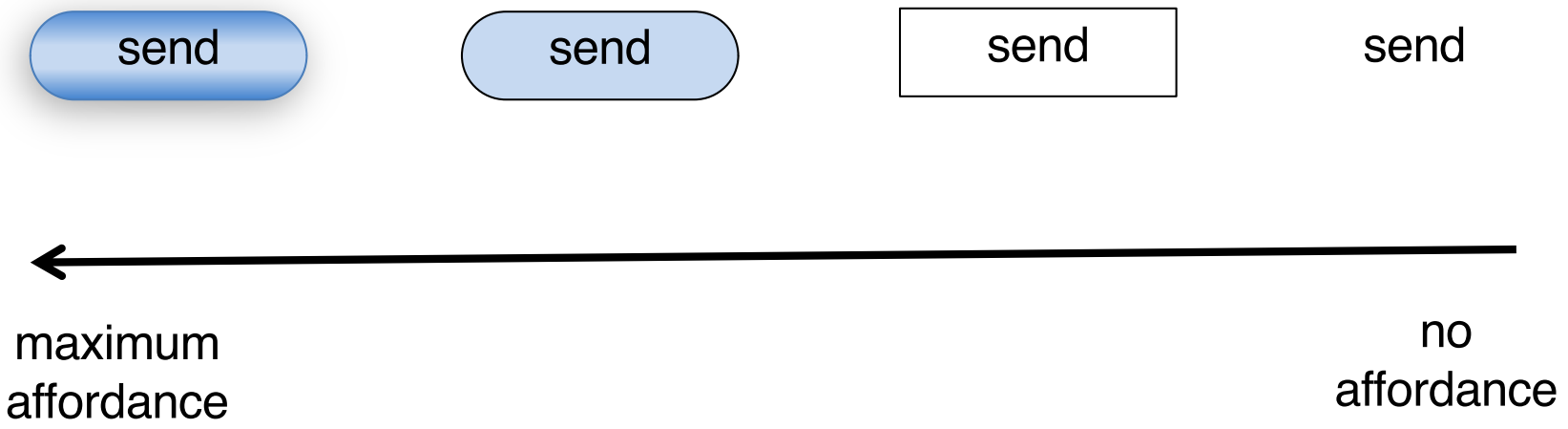

REVISED & EXPANDED EDITION
The DESIGN of EVERYDAY THINGS
DON NORMAN

Affordance

- It is a term made famous in the design world by Donald Norman in «The Design of Everyday Things»
- It refers to a visual cue in the design of objects that aims to suggest how to use them
- In the case of the water bottle, the indentation encourages the user to grasp the bottle right there

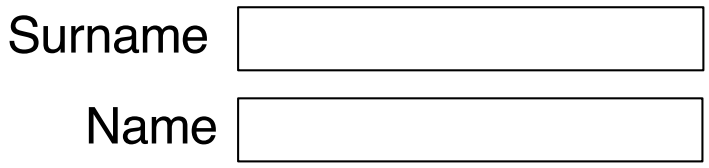
Affordance in the graphical interface

- Example: the three-dimensional style of buttons makes it clear that they are meant to be clicked.

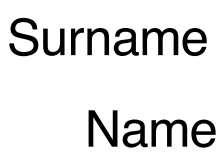


Affordance in the graphical interface

- Example: The border of a text box constitutes its affordance.



with affordance



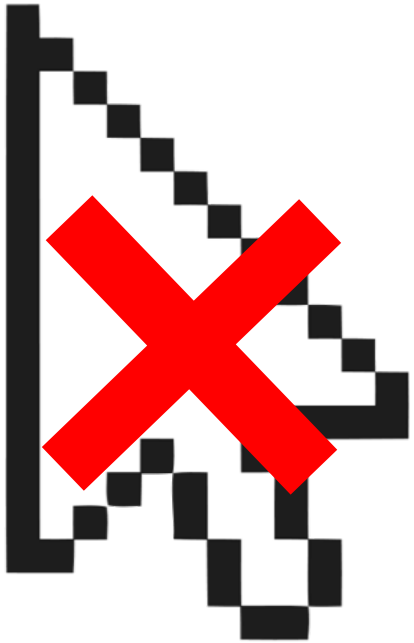
without affordance

The rule of affordance

- Affordances, to be effective, must be visible, so they should *not* be hidden or removed.
- Very often, to make the most of the limited space available and to keep the graphical interface lightweight, affordances on mobile websites are made less noticeable or even eliminated.
- The rule is: leave just enough affordances to help users complete their tasks.

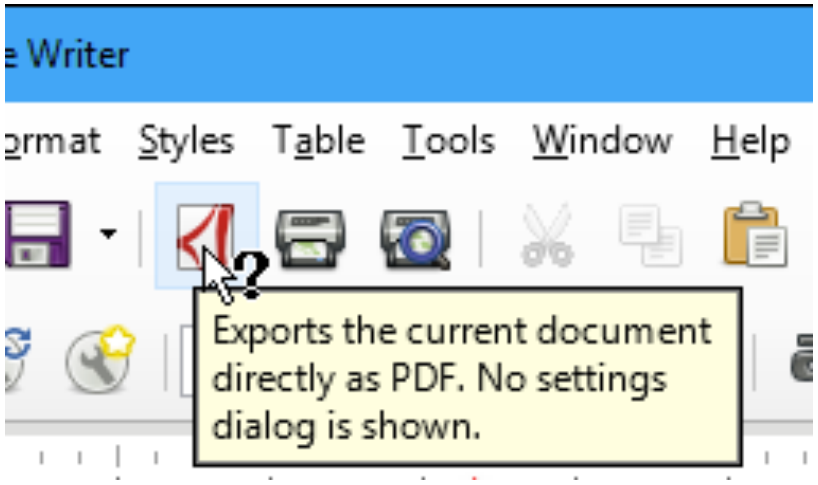
Missing the pointer

- Have you noticed? There is no pointer on mobile devices.
- Touchscreen technology cannot precisely detect the position of your finger until it actually touches the screen.
- Creating a pointer under the finger that touches the screen is useless—it wouldn't be visible.
- Creating a pointer slightly offset from the finger's position causes confusion.
- Solution: remove the pointer.

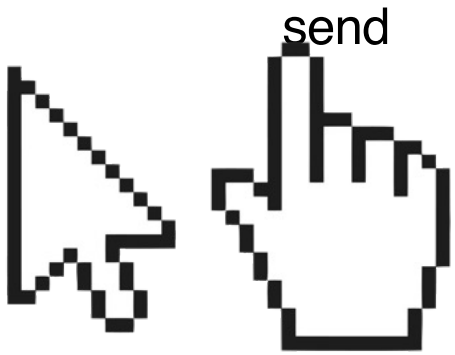


Goodbye hovering

- Without a pointer, screen interaction loses the hovering effect: the ability of certain on-screen elements to change when the pointer moves over them, or for the pointer itself to change when entering specific areas.



Button color changes, appearance of explanations.



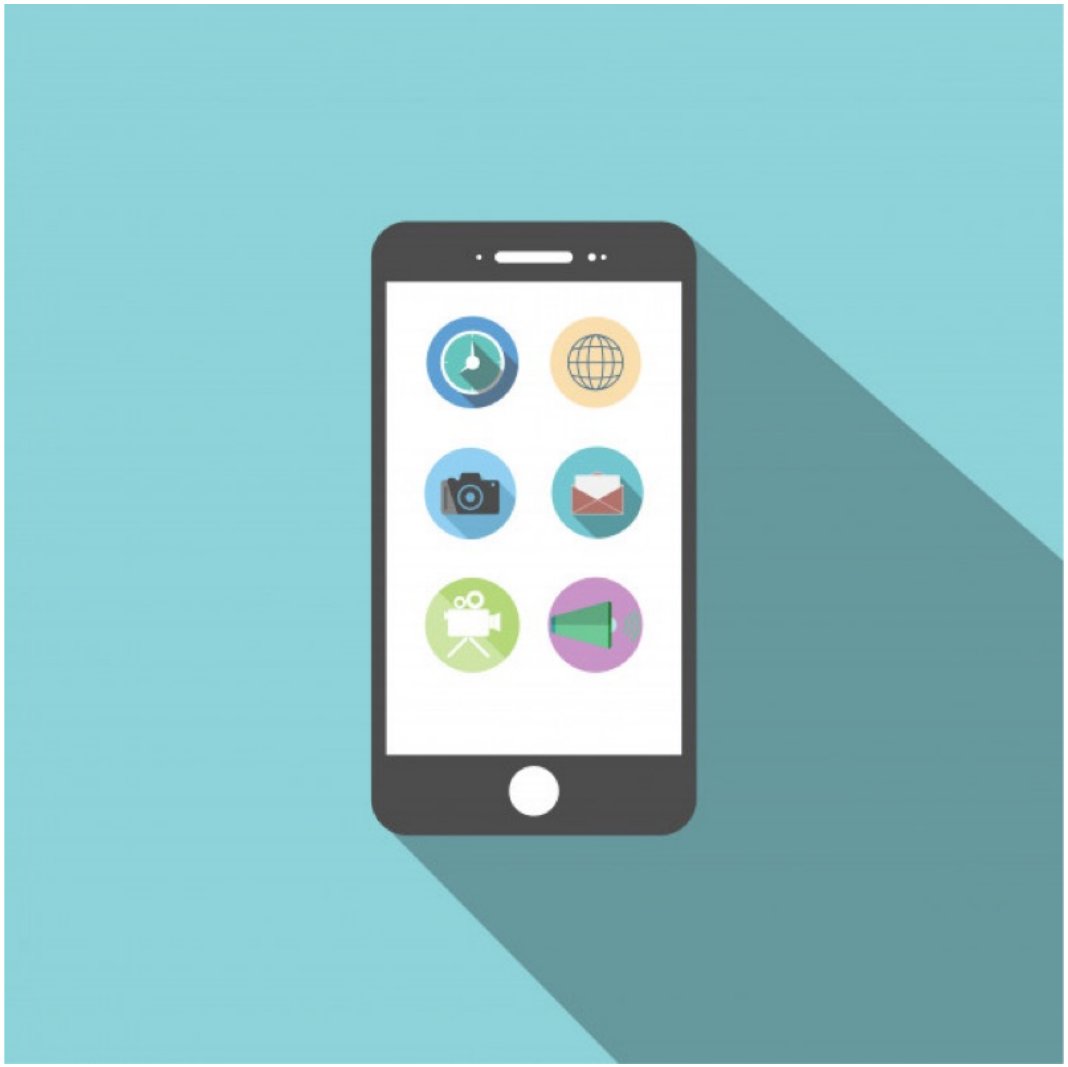
The pointer turns into a hand to indicate clickability.

Flat design

- The absence of hovering reduces affordances.
- Worsening the situation is the widespread trend of creating a flat UI design, meaning the removal of visual distinctions to make the screen look less cluttered.
- This clean and orderly look comes at the cost of button and link recognizability.

Alternatives for affordance

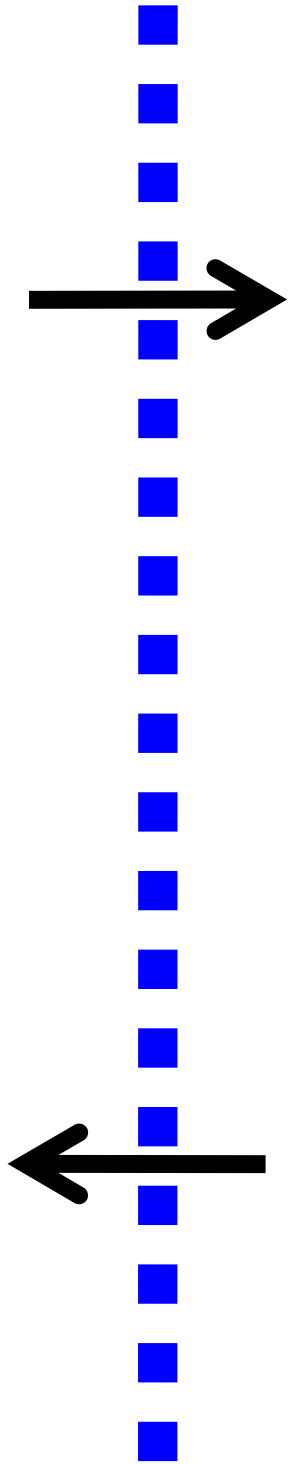
- Even in the context of flat design, there are ways to make distinctions and preserve affordance:
  - Positioning of an element (e.g., navigation bar, section list)
  - Element formatting (e.g., different colored text, all-uppercase characters)



The recommendation is to compensate for everything lost with a flat design using these adjustments.

Peripheral

The external components of the computer are called peripherals.



Input peripheals

Input peripherals are those that allow the flow of information from the outside to the inside of the computer.

Output peripherals

Output peripherals, vice versa, are those that allow the flow of information from inside the computer to the outside.

Did you notice that the Wii controller was in both peripheral groups? This is because there are peripherals that allow the flow of information in both directions. In the case of the Wii controller, it allows the user to move the cursor in the Wii menu or control the game (input), but, in certain game situations or when the cursor passes over a selectable menu item, it vibrates, providing information to the user (output).

In the following slide, the Wii controller is shown with other peripherals that are both input and output.

Wii controller (Nintendo)

PS3 Dual Shock controller (Sony)

USB stick (Lacie)

External Hard Disk (WD)

iPhone touch screen (Apple)

iPhone touch screen (Apple)

Mobile

- Mobile technology is called this way because, thanks to its smaller size, it can be easily carried around and is therefore characterized by mobility, which desktop and laptop computers do not have.
- For UX designers, there is a specific moment when mobile web, as we know it today, was born.

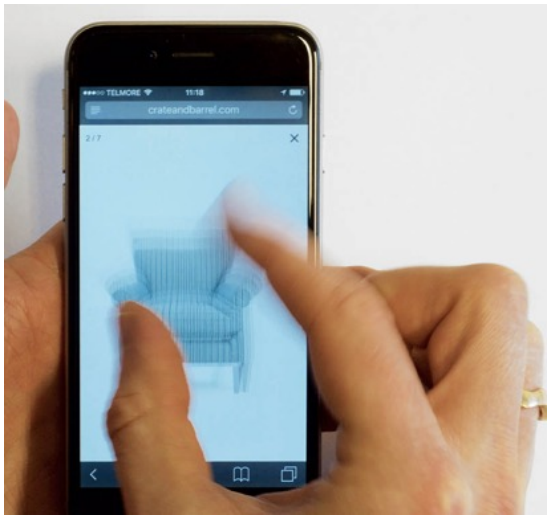
Steve Jobs presents the iPhone at MacWorld 2007 (San Francisco, January 9, 2007).

«Apple reinvents the phone.» For once, a grandiose slogan speaks the truth.

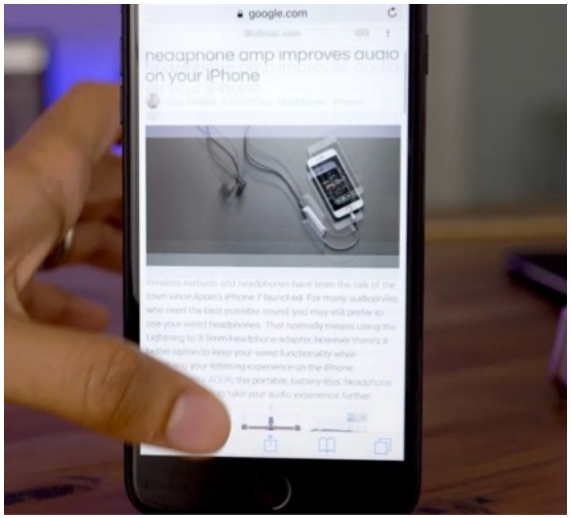
The big difference…

- ...was made possible by fast yet compact hardware that enabled new gestures.

tap



pinch & zoom



scroll

Before…

Given the usability challenges, only those who needed mobile access to the Web used these devices.

Now…

The mobile web UX is so smooth and easy that people browse while walking.

...and even while driving (with disastrous consequences).

A monumental shift

- It became possible to search for anything, anywhere, at any time.
- Not just the Web, but also a camera and photo album, video recorder, maps and GPS, clock and alarm, music…
- In emerging countries, the smartphone is effectively the first personal computer for many.

The future is mobile

- It is undeniable that mobile devices are the trend of the future.
- With the exception (for now) of:
  - Tasks requiring immense computing power that mobile processors cannot yet provide (e.g., advanced video editing, 3D graphics creation).
  - Tasks that require a very large screen (e.g., photo editing, CAD: computer-aided design).

Usability in Mobile Devices

- The basic principles are the same as when designing UX for a desktop site.
- However, there is an obvious difference: the reduction of space.

A matter of space

- It is not possible to fit all the content of a desktop webpage into a mobile webpage: some content must be left out.

Strategies of compromise

- **Complete version -> mobile version:**
  The full webpage is traditionally worked on first, then the content to be removed is evaluated to create the mobile version.
- **Mobile version -> complete version:**
  The mobile version is designed first, based on the features and content considered most important for users, then additional features and content are added to create the full version.

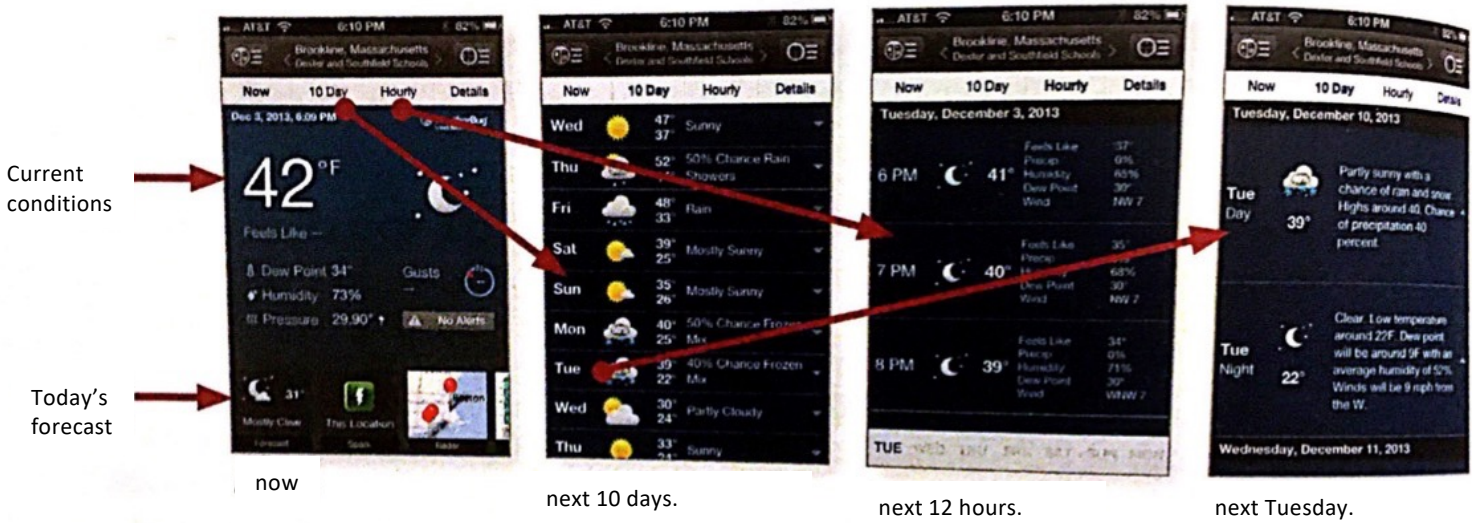
Kinds of selection

- Attention: There are two ways to interpret the selection of features for the mobile version.
- **Outdated interpretation:**
  Only what users want to do while on the go is included in the mobile version; everything else is reserved for the full version, which users will access from home or the office.

Kinds of selection

- **Current and correct interpretation:**
  Giving up does not mean completely excluding content or a feature from the mobile site, but simply from one page (e.g. the homepage).
- **Why?**
  Smartphones are always within reach and easy to use, and users access them even at home or in the office, expecting to be able to do everything they can do with a computer.
- **So?**
  All content and features should be included in the mobile site. Only the highest-priority elements will be accessible from the homepage. Other elements will be accessible by users through taps, navigating through the pages of the mobile site.

Less space, greater depth.



- This means that mobile sites are deeper compared to their desktop counterparts, requiring more taps from the user.
- With smaller screens, the trade-off of additional taps is inevitable if the same amount of information, products, and services is to be maintained.
- The greater number of taps is not a problem as long as the user continues to know that the product or service they are looking for is where they expect to find it during their journey.
- A general rule: space issues should not be solved at the expense of usability.

The issue of scalability

- «Scalable design,» «dynamic layout,» «fluid design,» «adaptive design,» and «responsive design» are all synonyms.
- They refer to a Web design paradigm aimed at creating just one site that adapts to screens of all sizes.
- Steve Krug (American UX design consultant, «Don’t make me think» 3rd edition 2014), warns that this approach requires a lot of work, and achieving a good result that works well on all screens is far from guaranteed.

Multiple versions

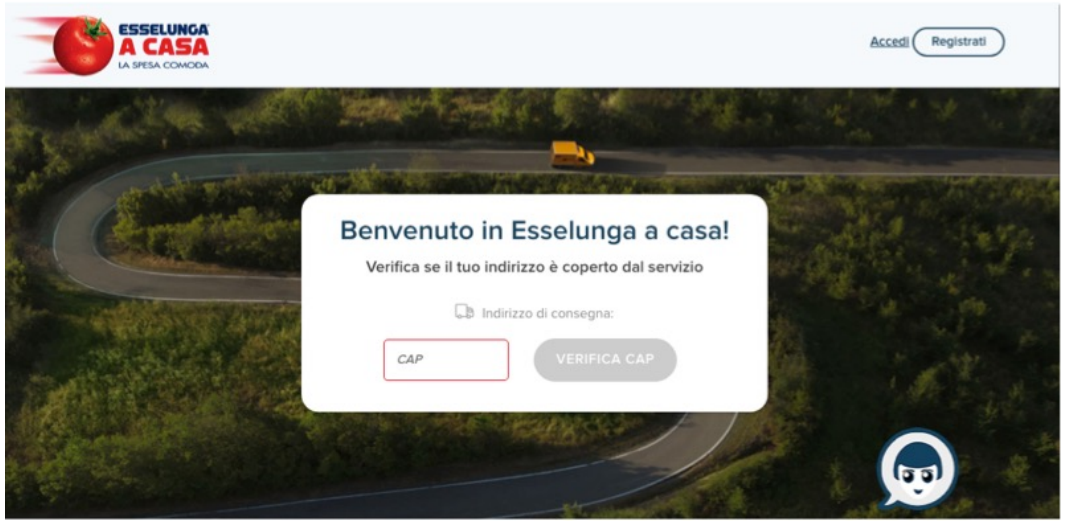
- An alternative approach to scalable design is to create the site in multiple versions: desktop and mobile.
- Krug warns that creating different versions of a site presents several issues:
  - It doubles the effort, if not more.
  - There is a risk of not updating the different versions with the same frequency.
  - There is a risk that they may not always be synchronized with each other.
- Krug (2014) considers the issue between scalable design and multiple versions still unresolved...

2025: case closed

- The verdict is clear: the approach of multiple versions has won.
- In fact, the versions have even increased, as very often users have access to:
  - a desktop site
  - a mobile site
  - an app

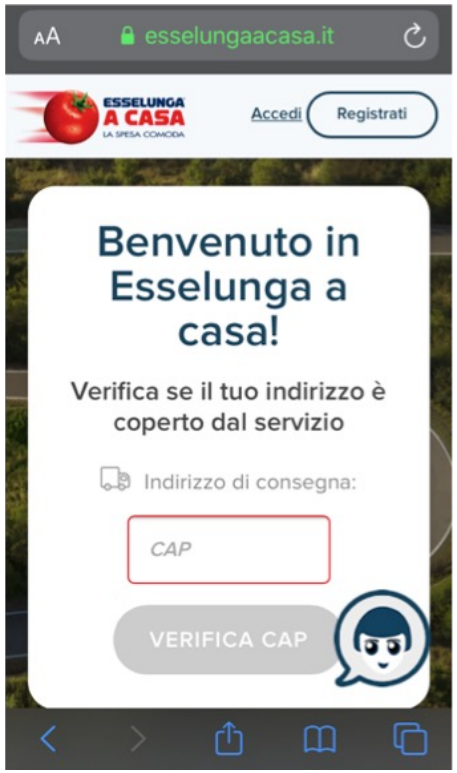
  for the same company.

Example: Esselunga a casa



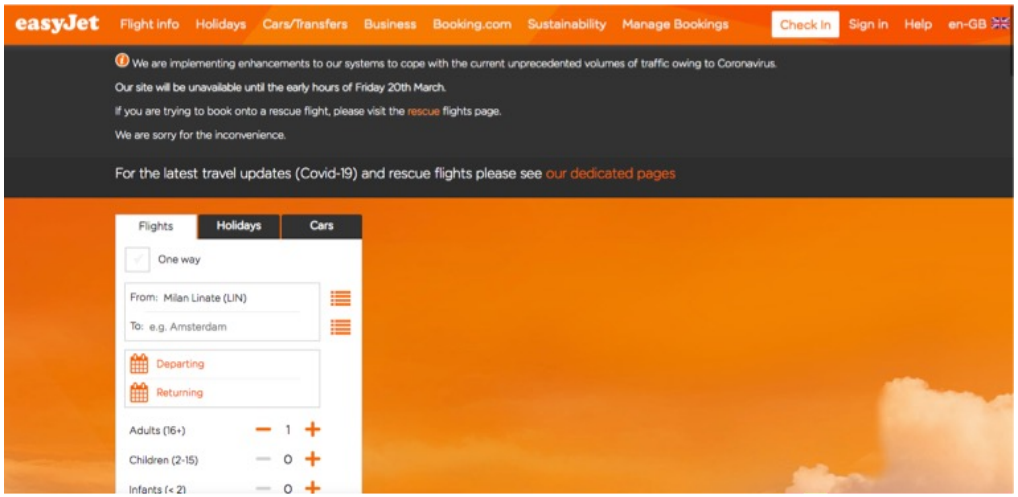
desktop

mobile



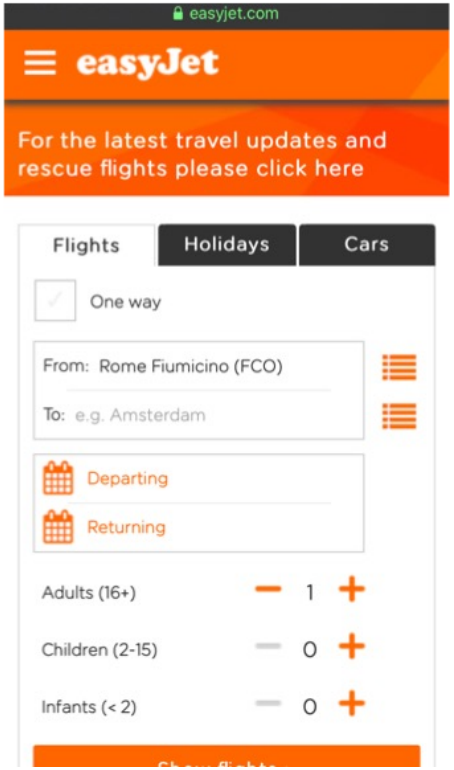
app

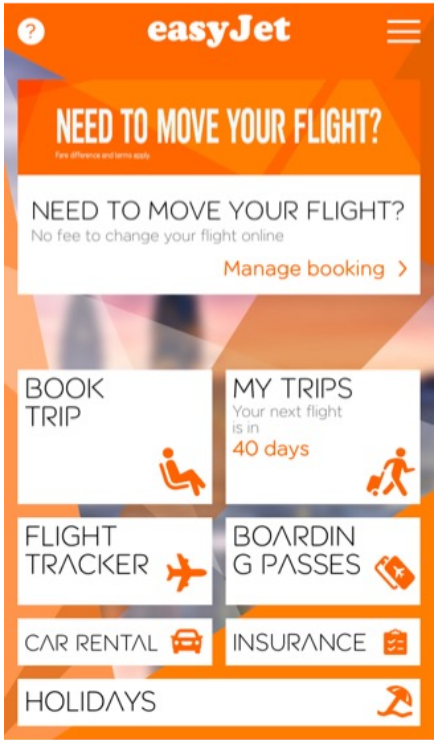
Example: Easyjet



desktop

mobile





app

2014 – 2025: an eternity

- Mobile UX is rapidly evolving, and 11 years are more than enough to resolve issues and make certain recommendations obsolete.
- Krug (2014):
  - Always allow zoom
  - Always provide the link to the desktop version

True for mobile websites, but not for apps.

- Krug (2014):
  - Always allow zoom
  - Always provide the link to the desktop version

Almost no mobile website provides this link (exception: imdb.com, but it is a scalable design site).

Here is an image of a modern door handle, designed with clear affordance. Its shape and ergonomic design intuitively suggest how it should be used, embodying the concept of affordance in object design.