1. Introduction to web usability

The objects and tools we use were thought of by someone and probably designed and built by several people. A product that is not pleasant to use, or that is not functional, will not be used.

A user's interaction with a website, their ease of navigation, the learning they do for future accesses, the ease with which they find information, the pleasant condition of an interface and many other aspects are what determine this success. All these aspects are part of what is called usability.

1.1. Key aspects of web usability

Internationally, the concept of usability is more general. It is defined as the ease of use and learning of products and/or systems. In other words, the term indicates the degree of ease with which a user can use a particular tool, product or interface.

Sometimes there are pages that have design or operational flaws that can be barriers for all or some users, and can even cause some to never visit the page again.

Some of these barriers can be:

- Accessibility problems
- Slow page loading issues
- Display issues on mobile devices. For example, a floating element that takes up the entire mobile screen and cannot be closed, or an element that is so small that it cannot be interacted with your fingers.

A website is "friendly" when its interface is understandable and easy to use. Put like this, it may seem easy, but for a website to be user-friendly, you must take care of all the elements that are part of the user experience:

- **Web design** It is necessary to use legible fonts, appropriate colors, photographic treatment, arrangement of elements...
- **Web contents** must be clear, direct, simple and appropriate to the objectives of the website and to the type of user to whom the page is directed. The contents are not only the text, but also images, animations, audios and videos.
- **Navigation** The most basic interaction that the user makes on the web must be intuitive, transparent and consistent. All pages of a website must display an easily accessible menu that allows the user to move through all its pages.

- **Web interface design**. It is important to consider the appearance of the main page and that of the landing pages (landing pages), since it is the first impression that the user has of the web and the first step to capturing their attention Also, all pages on the site must have a consistent design. The design must consider the goals of the website and the type of user.
- **Interaction design**. That the page is interactive and that the elements it offers allow users to communicate with the web page is a fundamental element for the success of the web and to improve the user experience.

To avoid usability problems, it is important that the work on web usability begins at the moment of defining the web. You need to know some key points, which are fundamental to making decisions about both the design and the architecture of the content, navigation and language. For example:

- What are the goals of the website?
- What type of user will use it?
- What tasks will the user have to complete?
- What difficulties or barriers can you encounter?
- How can information be presented in an attractive and accessible way?

1.2 Type of web page according to its objective

We can distinguish several types of websites according to their objectives:

Informative or content. Its objective is to offer and disseminate information on one or several topics. They can have an economic purpose (making money from advertising) or simply informative.

Corporate and institutional. They aim to provide specific information about an organization (either a private company or a public administration).

Service oriented. In the case of companies, they can be websites with a promotional objective intended to advertise certain products.

Creating a brand. The goal of creating a brand can be confused with the goal of service-oriented websites.

Staff Those responsible for these websites want to express and share their experiences and concerns.

Artistic They are websites similar to those whose objective is personal promotion, but in this case the design of the website is also part of the artistic expression of each creator.

Entertainment and leisure. They offer all kinds of multimedia materials to their users. The purpose is usually to generate income through advertising and the designs often break with many of the established principles.

Academics Websites with an academic objective must be differentiated from those that offer a virtual campus.

Commercial, transactional or electronic commerce (e-commerce). These are websites that allow financial transactions between end users and companies, or between companies.

Search engines These websites help in searching for information on the Internet.

Collaboratives, forums or social networks. These are websites where the responsibility for uploading content does not fall only on the owners, but are open to the fact that all users can upload their opinions or concerns or, directly, part of their content.

1.3 Dimensions of usability

Usability is linked to the simplicity, ease, convenience and practicality of web interfaces. All these features seem quite subjective, which is why usability dimensions come into play.

These dimensions are: efficiency, effectiveness, satisfaction, attractiveness, ease of learning and error tolerance.

Efficiency Ability to achieve a planned or desired goal.

Efficiency In economic terms, the relationship between the resources used and the results obtained.

Satisfaction State of mind of a user, depending on the fulfillment of their needs, expectations or desires.

Attractiveness An interface is attractive to a user when he willingly accepts its features and use and shows a willingness to use it.

Ease of learning Quality of the interface that allows the user to carry out basic tasks without having interacted with it before. If the functionalities or icons are difficult to interpret, every time the user has to interact with the interface they will probably need to use the user manual to get to certain functionalities.

Error tolerance When a user interacts with an application, it is possible that an action cannot be taken because it does not meet some software validation when making an error. Applications must be prepared for user errors in their use and for quick recovery.

1.4 False myths about web usability

Here are some myths about web usability:

- The content does not need to be there to design a website.
- The main page is the most important page.
- Icons improve usability.
- Users don't scroll.
- People read on the web.
- If you're an expert, you don't need to do user testing.
- The number of choices should always be limited to 7.

1.5. Theory of web usability

To guide those responsible for the design and organization of web content, since the origins of usability (around the 90s of the 20th century), a series of theories and rules born from observation and international studies have been proposed. Some of these theories, the best known, are still used.

We will look at Steve Krug's laws of usability, Jakob Nielsen's heuristics and Bruce Tognazzini's interaction design principles.

1.5.1 The laws of usability according to Steve Krug

Steve Krug's contributions to usability can be summarized in his three laws:

- Don't make me think.
- It doesn't matter how many clicks he must make, as long as each click is an unconscious and unequivocal choice.
- Get rid of half the words on each page; then get rid of half of the remaining ones.

And a series of tips:

- The user does not read but jumps through the content.
- Create visual hierarchies.
- Use conventional methods.
- Use visible navigation signs.
- Create well-defined areas.
- Make it obvious what is "clickable".

- Minimize noise (distracting elements).
- Write only what is fair and necessary.

1.5.2 Jakob Nielsen's usability heuristics

1. **Visibility of the state of the system**. The design should always keep users informed about what is going on. When users know the current state of the system, they learn the outcome of their previous interactions and determine next steps.

Communicate clearly to the user the status of the system; no action should be taken with consequences for the user without informing the user.
Provide feedback to the user as quickly as possible (ideally, immediately).

https://www.youtube.com/watch?v=cTtc90jCULU

2. **Match between the system and the real world**. The design must speak the language of the users.
Use words, phrases and concepts familiar to the user instead of internal jargon.
Follow real-world conventions, making information appear in a natural and logical order.
When the controls in a design follow real-world conventions and correspond to the desired results, it is easier for the user to learn and remember how the interface works.

https://www.youtube.com/watch?v=0TAt9Pln51g

3. **User control and freedom**. Users often perform actions by mistake.
Provide a clearly marked "emergency exit" to leave the unwanted action without having to go through a complicated and cumbersome process.
Provide multiple ways to reach the same goal.

https://www.youtube.com/watch?v=MXuk-fdbr0A

4. **Consistency and standards**. Users should not have to wonder if different words, situations or actions mean the same thing. Follow platform and industry conventions.
Follow established industry conventions (external consistency).
Maintain consistency within the same product or product family (internal consistency).

https://www.youtube.com/watch?v=Ibndy9KLOSQ

5. **Error prevention**. Good error messages are important, but the best designs prevent problems from occurring.
Prioritize your effort: Avoid high-cost mistakes first and frustrations later.

Avoid oversights by providing useful constraints and good defaults.
Avoid errors by removing memory loads, supporting undo, and warning the user.

https://www.youtube.com/watch?v=imS9s1DUY-I

6. **Recognition instead of memory**. The information needed to use the layout (field labels, menu items…) should be visible or easily retrievable.

https://www.youtube.com/watch?v=6gIQPp6q4Jc

7. **Flexibility and efficiency of use**. Shortcuts (hidden for novice users) can speed up the interaction of the expert user, so that the design can cater to both inexperienced and experienced users.
Provide accelerators such as keyboard shortcuts and touch gestures.
Provide personalization by tailoring content and functionality for individual users.
Allow customization so the user can make selections about how they want the product to work.

https://www.youtube.com/watch?v=LoTdRTBB8BQ

8. **Aesthetic and minimalist design**. Interfaces should not contain information that is irrelevant or rarely needed.
Keep your content and visual UI design focused on the essentials.
Don't let unnecessary elements distract the user from the information they really need.
Prioritize content and features to support primary goals.

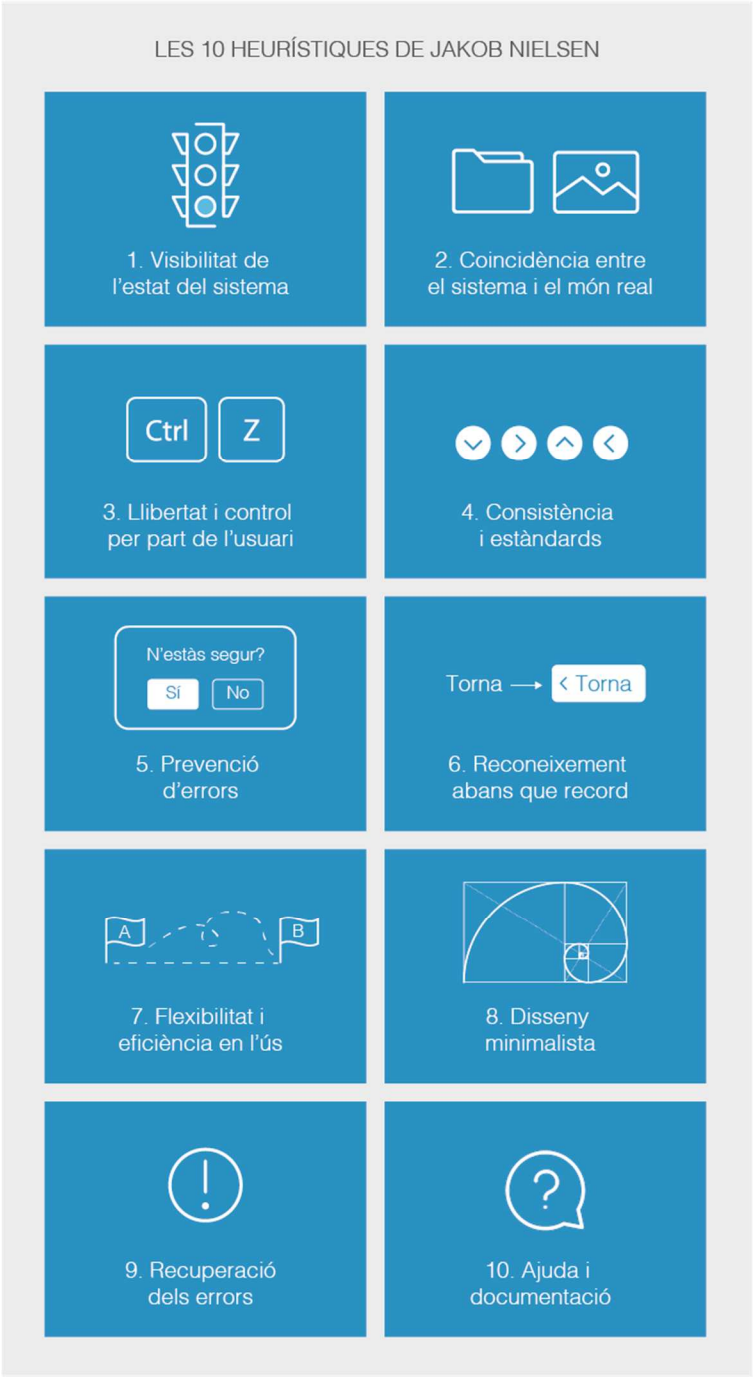
https://www.youtube.com/watch?v=ZgbRmeWDgd0

9. **Recovery of errors**. Help users recognize, diagnose, and recover from errors.
Error messages should be expressed in plain language and should accurately state the problem and constructively suggest a solution.
These error messages must also be presented with visual treatments that help users recognize them.

https://www.youtube.com/watch?v=cCun-ReLTFI

Provide help content and documentation that is easy to search and focused on the user's task.
Keep your content concise and list specific steps to take.

https://www.youtube.com/watch?v=ilQVRzatb50



1.5.1 Principles of Interaction Design by Bruce Tognazzini

Aesthetics. Aesthetic design should be left to the experts, the graphic designers.

Anticipation. Show all the information and tools you think the user might need.

Autonomy. The user must be given free rein to feel comfortable and free, but certain restrictions must also be placed on him. For this it is essential to keep him informed of the state of the system.

Color Consideration. Should be given to colorblind and other visually impaired people.

Consistency. "The most important consistency is the one the user expects" (and that's why it's important to test with users).

Default values. Values should be able to be corrected quickly (for example, text areas should appear already selected so that the user only needs to type over them to correct the value).

User efficiency. The efficiency of the user must be sought before that of the computer: the less the human has to think and the less he is made to wait, the better.

Explorable interfaces. It is important to offer stable visual elements to facilitate quick navigation, enable buttons to undo, show clear exits to cancel a process...

Fitt's Law The time it takes to reach a target is related to its distance and size.

Human objects. Human interface objects must be comprehensible, consistent and stable.

Latency reduction. Latency is the feeling that something is taking time to happen.

Learning Although ideally. the user would know how to use the system from the first time, this almost never happens.

Use of metaphors. Metaphors can be used to help the user understand the details of the model conceptually.

Protection of the user's work. An example of this can be the automatic saving that many online editing tools have, such as Google Docs.

Readability. To guarantee it (it is also an accessibility criterion) it is necessary to use text colors with sufficient contrast to the background.

Simplicity. You need to find the balance between ease of installation and ease of use.

Saving of the state. The user's state information should be able to be saved so that the user can disconnect and reconnect from anywhere else and continue their work as they left off.

Visible navigation. Invisible navigation must be avoided, the user must always know where he is.