Human-Computer Interaction and Interfaces

Lecture 2

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Università degli Studi di Bergamo

Academic Year 2024-2025

Exam dates

- Tuesday, July 1, 15:00
- Wednesday, July 16, 11:00
- Thursday, July 31, 14:00
- Friday, August 29, 11:00
- Friday, September 12, 10:00

Lecture 2 (February 27 2025)

- The concept of user
- User experience

What is a User?

I resist using the word "user" in most contexts because it implies things we may not intend (drug users come to mind). In the context of human-computer interactions, "user" implies a power relationship and a kind of experience that tends to mischaracterize both technology and people. When we began to define human-computer interaction back in the 1970s and 1980s, the term "user" became quickly over-generalized. A person isn't typically defined as a "user" of the *New York Times* (unless you are house-breaking the dog) or of an automobile or a doctor. Over the years, I have exhorted my students not to use "user" unless it's really the correct word. For example, the "user" of a computer game is better characterized as a "player"; the "user" of an e-book is a "reader." Char Davies has called participants in VR experiences "immersants." Because this book covers a wide variety of human-computer interactions, I have used the word "interactor" as a general term, although I use "user" when I really mean it!

Laurel is right in thinking that terms change their meaning through time. The meaning of «user» has expanded a lot lately, even too much according to Laurel.

Another term whose meaning has dramatically changed in the last century is «computer».

What is a Computer?

Computers were originally people. "Computer" was a title that described those people—mostly women—whose job it was to "perform the repetitive calculations required to compute such things as navigational tables, tide charts, and planetary positions for astronomical almanacs" (Kopplin 2010).

When I first wrote this book, the Macintosh computer was entering its fifth year in the marketplace. The personal computer was still a revolutionary device. Laptops, first envisioned by Alan Kay as what he called the "Dynabook" (Kay 1972), were developed. The Osborne Computer was designed in 1979 by Lee Felsenstein for Adam Osborne's company. Lee's primary design criterion was that the Osborne 1 had to fit under an airplane seat, and it did. The Grid Compass—the first successful "clamshell" portable—was released in 1981.*

Since those days, we have all seen an explosion of personal computing devices, from laptops to tablets to smartphones and smart wrist-watches, and change will keep coming. When I use the word "computer," I am speaking of it in the way it is defined by the *Oxford English Dictionary* (2013):

> *noun*
>
> *an electronic device which is capable of receiving information (data) in a particular form and of performing a sequence of operations in accordance with a predetermined but variable set of procedural instructions (program) to produce a result in the form of information or signals.*

However, Laurel's attempt to drop «user» for other terms like «interactor» or «immersant» (very clunky words that will hardly take over) is, at least for now, destined to fail, because there are very vast fields related to HCI that use the term «user» in their names…

User Experience (UX) - Definition

- *"User experience (UX) encompasses all aspects of the end-user's interaction with a company, its services, and its products."* (Nielsen Norman Group, 1998)
- **Key Components of UX:**
  - **Usability:** How easy and efficient a system is to use.
  - **Accessibility:** Ensuring inclusivity for diverse users.
  - **Desirability:** Emotional appeal and aesthetics.
  - **Credibility:** Trustworthiness and reliability.
  - **Usefulness:** Value and relevance to the user.
- UX is an interdisciplinary field drawing from **psychology, design, human-computer interaction (HCI), and cognitive science** to optimize user satisfaction and engagement.

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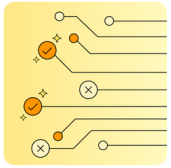
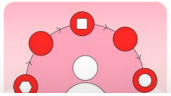


Common-Sense AI Integration: Lessons from the Cofounder of Condens

Feb 21 · Alexander Knoll

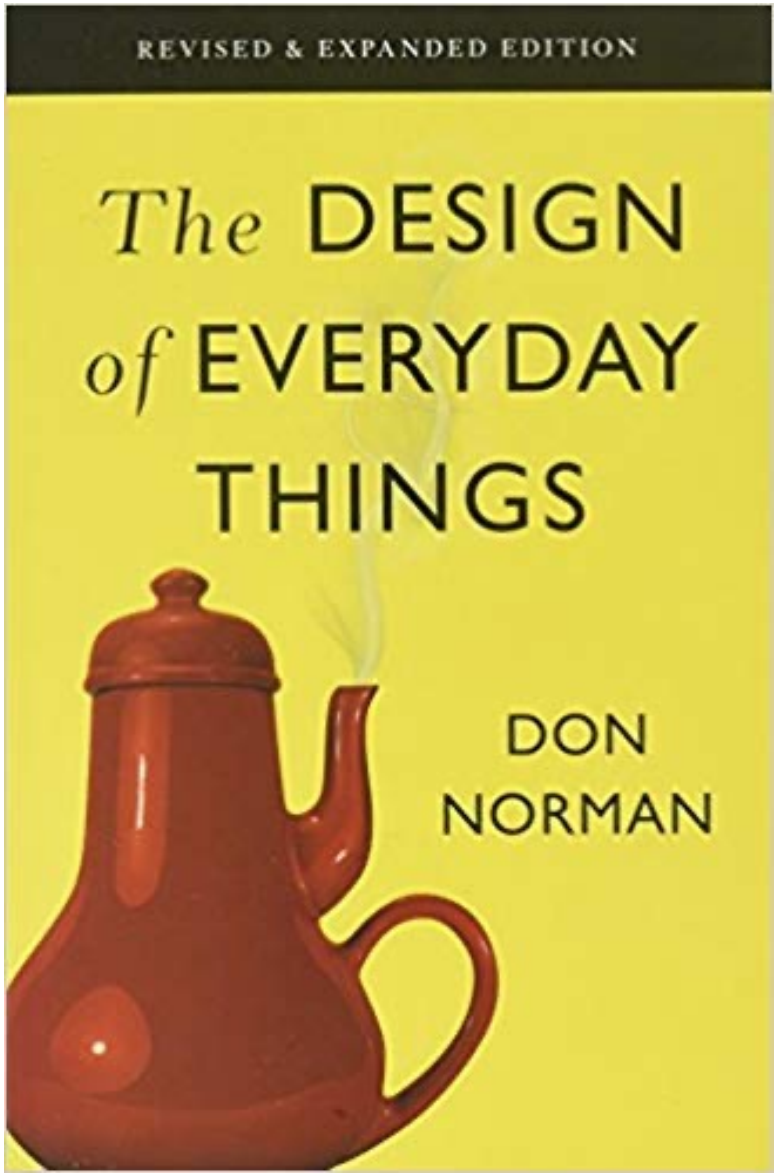
8 Best Things About Working in UX

3 min video · Kim Flaherty



UX Is Dead, Long Live UX

The Hawthorne Effect: 5 Guidelines to Avoid it


REVISED & EXPANDED EDITION
The DESIGN of EVERYDAY THINGS
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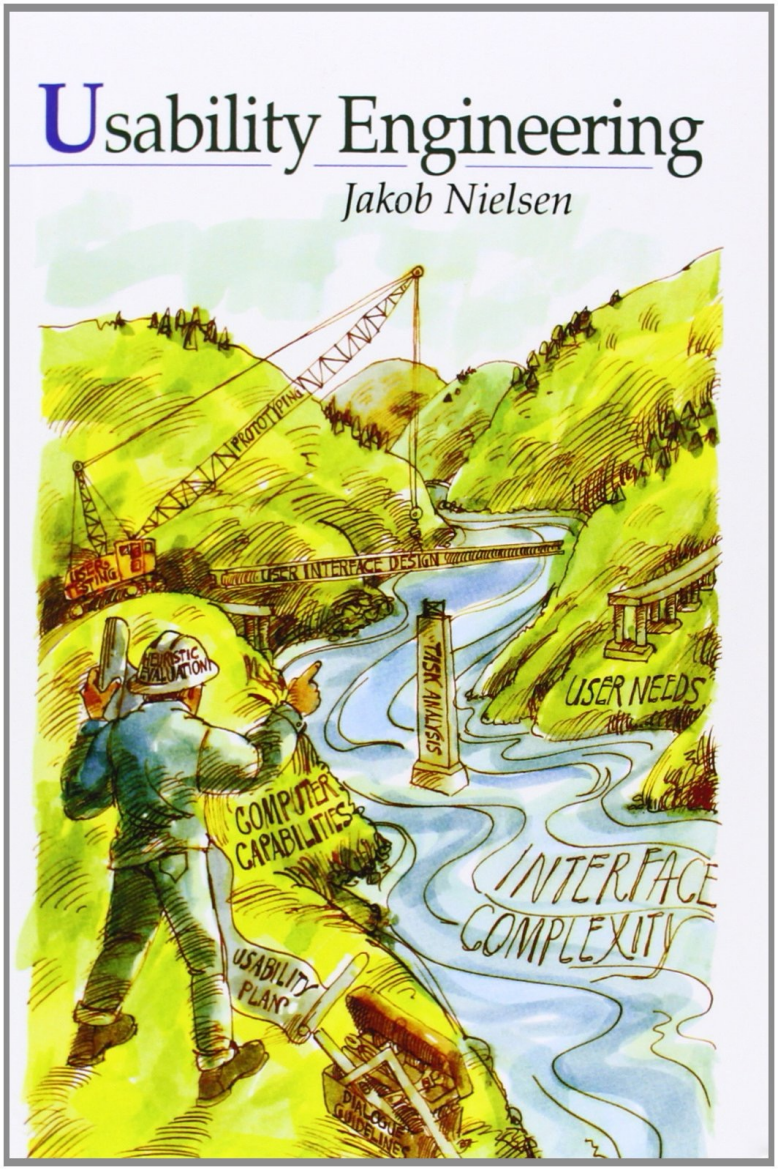
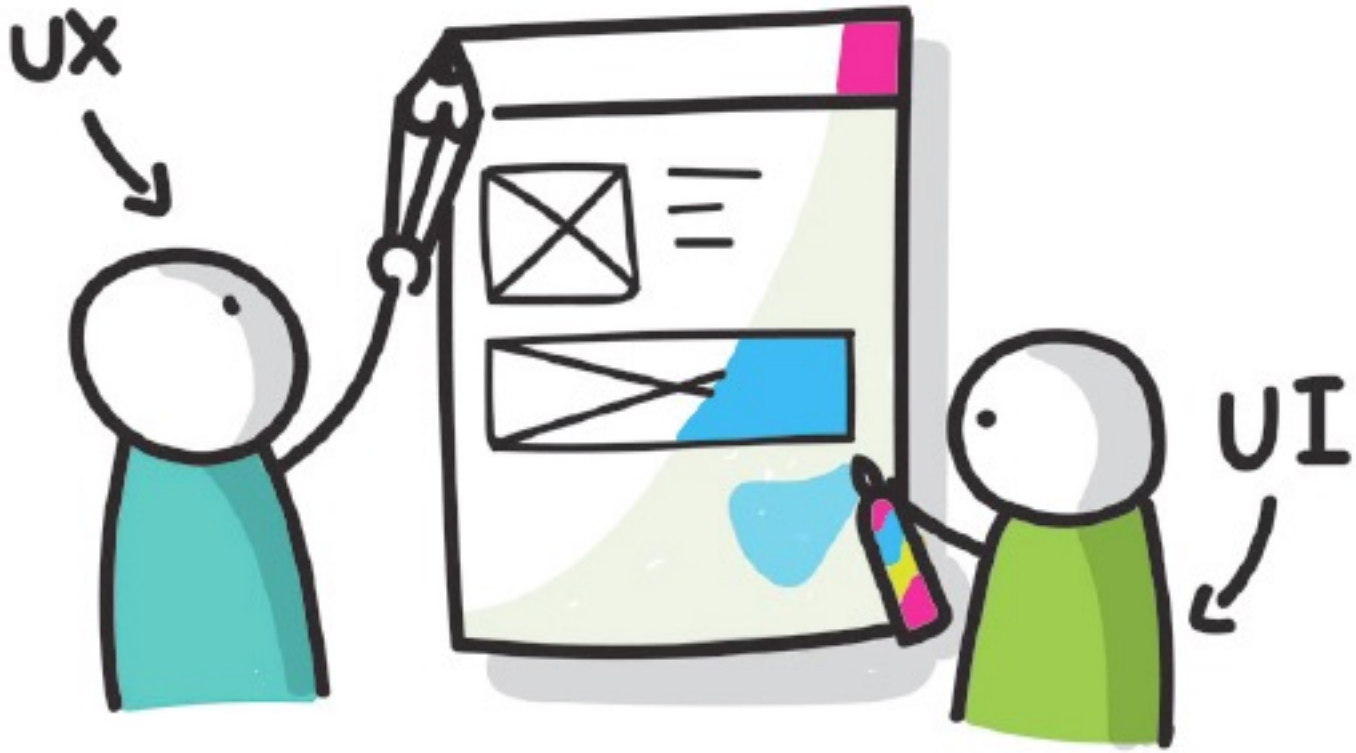

Usability Engineering
Jakob Nielsen
USER INTERFACE DESIGN
USER TESTING
HEURISTIC EVALUATION
TASK ANALYSIS
USER NEEDS
COMPUTER CAPABILITIES
INTERFACE COMPLEXITY
USABILITY PLANS

UX today

- Nowadays a UX designer mainly deals with digital products: apps, websites, operating systems, games, etc.
- Although the definition of UX is very broad, today it mainly refers to digital products.
- Hence, the boundaries with HCI (Human-Computer Interaction) are becoming thinner and thinner.

UX vs UI



From “Manuale di sopravvivenza per UX Designer” by Matteo di Pascale

Definitions and differences

User Experience (UX): Focuses on the overall experience a user has with a product, system, or service, including usability, accessibility, and emotional response.

User Interface (UI): Concerns the visual and interactive elements of a digital product, such as buttons, menus, typography, and color schemes.

Differences:

- **Scope:** UX encompasses the entire user journey, while UI is limited to the product's interface.
- **Focus:** UX emphasizes user needs, research, and testing, whereas UI focuses on aesthetics and interactivity.
- **Process:** UX involves user research, wireframing, prototyping, and testing; UI includes design, branding, and visual consistency.

Commonalities

- Both aim to enhance user satisfaction and engagement.
- UX and UI require collaboration between designers, developers, and stakeholders.
- UI is an essential component of UX, ensuring that the visual design aligns with the overall user experience goals.

While UX and UI are distinct disciplines, they are interconnected and must work together to create effective, user-friendly digital products.

User research

- A fundamental decision at the core of every good design is to place the end user at the center of the project.
- Always ask yourself the following questions:
  - Who am I designing for?
  - Where will the result of my work be used?
  - What user needs must I fulfill?
  - And what client needs?

User research

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client

designer

user

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before that, briefing with client

Briefing: interview with the client

- Ask very specific questions to the client about their business objectives:
  - What is expected from the product?
  - What are they afraid of?
  - What do they want for the users?
- Ensure that the client's objectives are realistic:
  - Do the objectives make sense?
  - How can we help the client achieve them?
- Problem definition:
  - Understand what problems the client wants to solve with the new product.
  - It is necessary to find real solutions for real problems.

User research

- Only then can the user research begin.
- Define a target audience and conduct surveys and interviews to determine whether the hypothesized problems exist.

User research

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- Define a target audience and conduct surveys and interviews to determine whether the hypothesized problems exist.
- Surveys and interviews are extremely resource demanding and they may not be affordable.

User personas

- We create realistic profiles of potential product users, including:
  - photos
  - biography
  - goals
  - needs
  - …

Bridget DAY

AGE 26
OCCUPATION Marketing Director
STATUS Single
LOCATION New York, NY

TIER Enthusiast
ARCHETYPE The Marketer

Ambitious | Admired | Focused

"I would like to find and learn skills that would help me grow my business footsprint online."

MOTIVATIONS

- Incentive
- Fear
- Acheivement
- Growth
- Power
- Social

GOALS

- To grow a strong industry reputation
- To build her own Blog
- To expand and learn new skills

FRUSTRATIONS

- Slow download times
- Data crashes
- Poor communication

BIO

Bridget's business has been slowing lately and she could really use a set of skills that would help her undertsand evolution of her work.

ACTION

Read How To articles
Looking for expert analysis

PERSONALITY

Extrovert — Introvert
Sensing — Intuition
Thinking — Feeling
Judging — Perceiving

TECHNOLOGY

- IT and Internet
- Software
- Mobile Apps
- Social Networks

JLeclainche.wordpress.com

Why use user personas

- Empathize with users and see the project through their eyes
- Prioritize certain product features based on users' needs and expectations
- Align the entire team so that everyone has a common point of reference in the personas
- Save money

How to create personas

- The first and fundamental step is to determine the target groups.
- The product we are developing is not intended for the entire population:
  - There will be one or more primary audiences.
  - There will be secondary audiences, and so on.
- These relevant groups should be identified through user research (using surveys and interviews).
- For each group, we must create a fictional representative—a character that embodies the group's values, habits, needs, and expectations.

How to create personas

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How to create proto-personas

- Designers use their experiences, common sense, and immagination to create proto-personas without any survey or interview.

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Wireframing

- We design the product screens without the graphical elements:

  Low-fidelity: using pen and paper.

  Mid-fidelity: on a computer

Interactive Sketch Notation

by

Linowski Interaction Design (Canada)

It is not a standard, as its adoption is still limited and it is not a convention widely accepted by most website creators. However, it is certainly an interesting proposal aimed at establishing a common language for describing website dynamics. Even if it never attains the status of a standard, if all members of an organization decide to adopt it for discussing websites, this language can be highly useful in supporting the process of creating and improving the websites managed by the organization.

What do we mean by “dynamics” of a website?

All aspects of the site that change over time.

Note: There is a technical concept of a "dynamic web page," but in this context, we use the adjective "dynamic" in its general meaning.

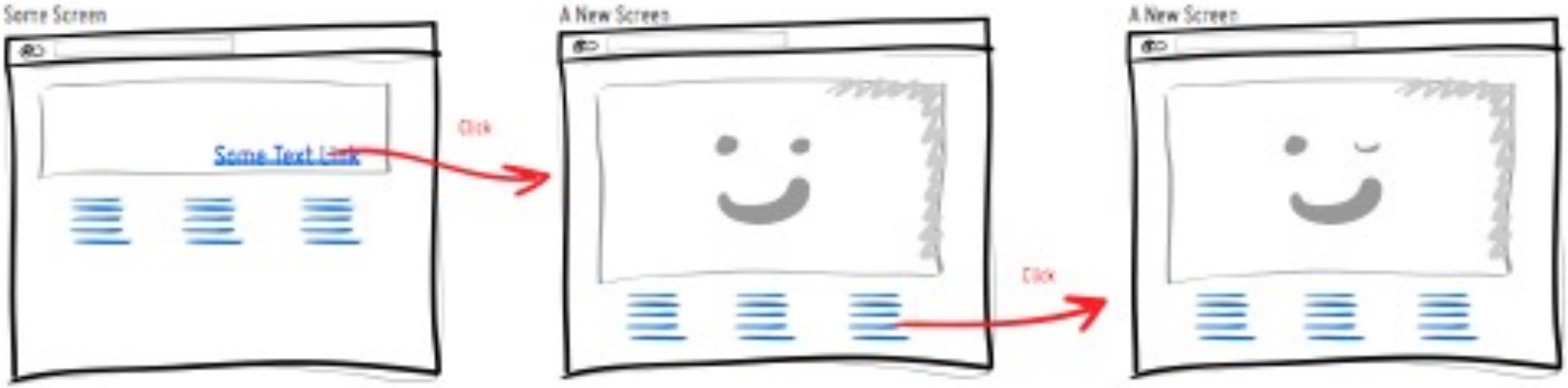
The aspects of a website change over time primarily for two reasons: because the site has been built to modify certain aspects over time (e.g., the website opens with a carousel of images that change every 3 seconds), or because the user has performed an action (e.g., navigated to the next page by clicking on a link).

Let's focus for now on the changes that occur by the actions of a website user. The Interactive Sketch Notation (ISN) uses two colors to indicate the objects presented on the site (blue) and to indicate the actions that a user can perform on the site (red).

1) What a user sees

2) What a user does

The basic idea of ISN is to create drawings of the web pages (either existing or just imagined) that we want to describe. The color blue is used to indicate the objects on the page that the user can interact with (typically by clicking), and the color red is used to indicate the transitions from page to page caused by the user's actions. For everything else, black is used.


Some Screen
Some Text Link
Click
A New Screen
Click
A New Screen

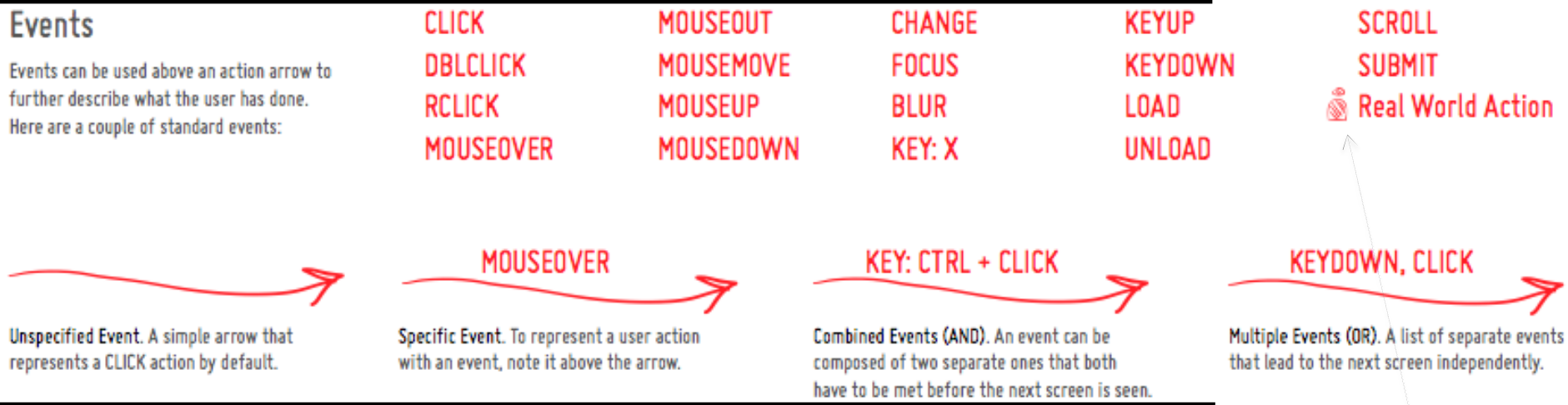
Actionable objects are typically text links (in blue and underlined) or clickable buttons (colored areas in blue).

Text Links. Standard blue text with an underline.

Buttons. A blue background shape for more emphasis.

Events:

There are numerous events that can be triggered by the user. The type of event can be specified with a label above the red transition arrow.



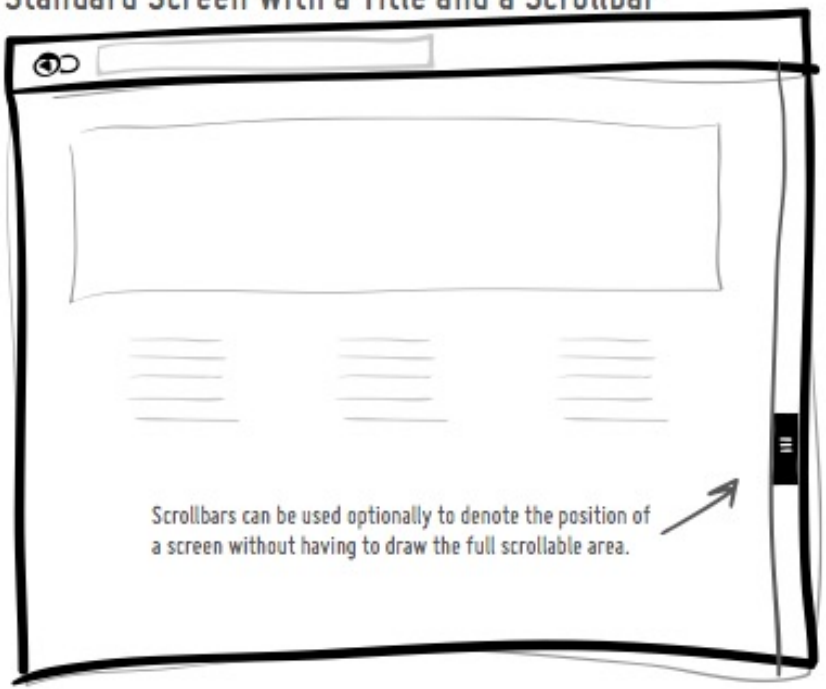
The most common events include: click, double click, right-click, mouse hover over an area, mouse exit from an area, key presses on the keyboard, and scrolling with the mouse wheel.

If the event occurs outside of the computer (e.g., scratching off the silver coating of a card to reveal a code to enter on the site), a small drawing representing a person is added.

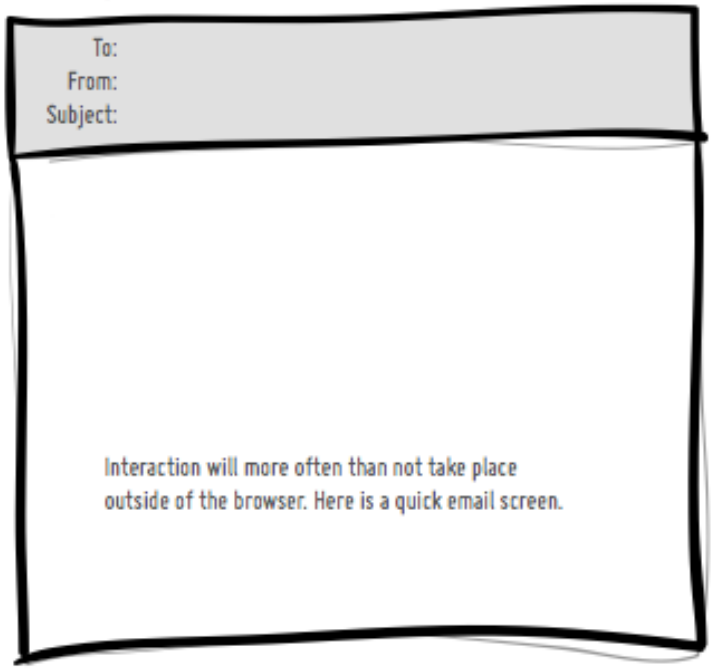
In the design of a website, it is essential to remember that today users access sites using a myriad of different devices, characterized by screens of various shapes and sizes.

ISN recommends incorporating this factor into the graphical representation of the site as well.

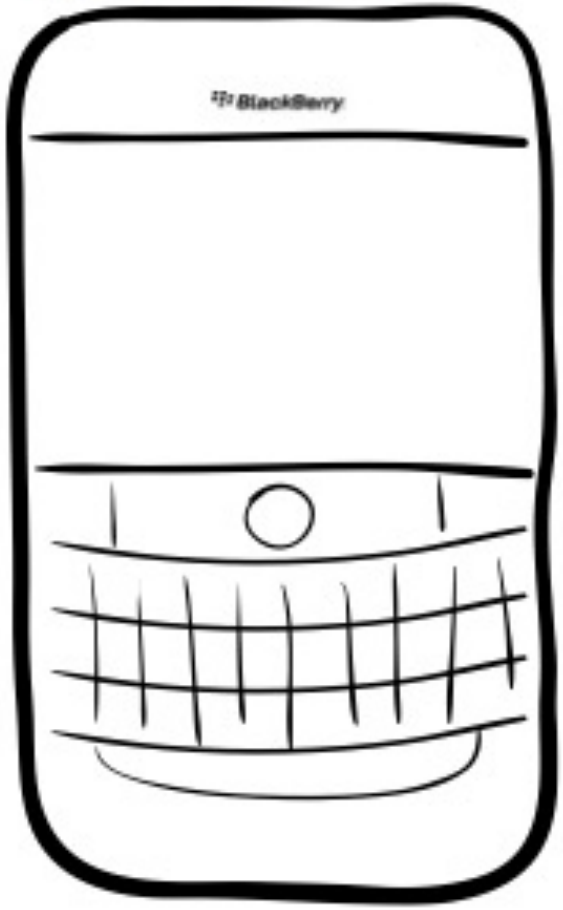
Standard Screen with a Title and a Scrollbar



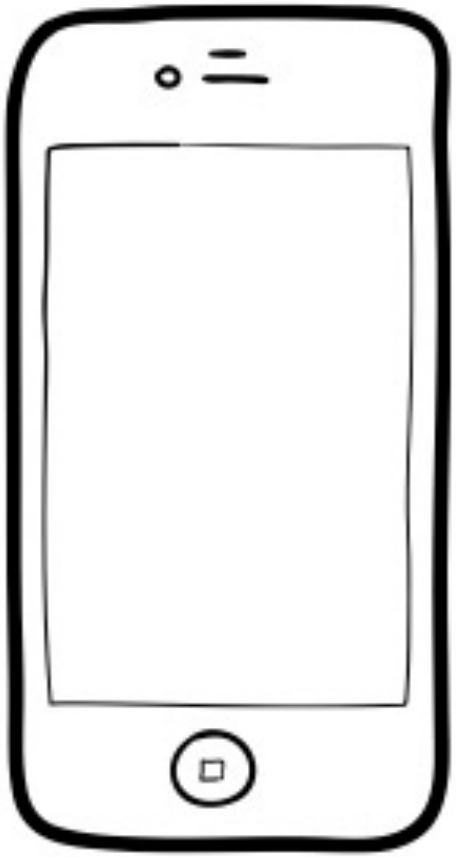
Email Screen

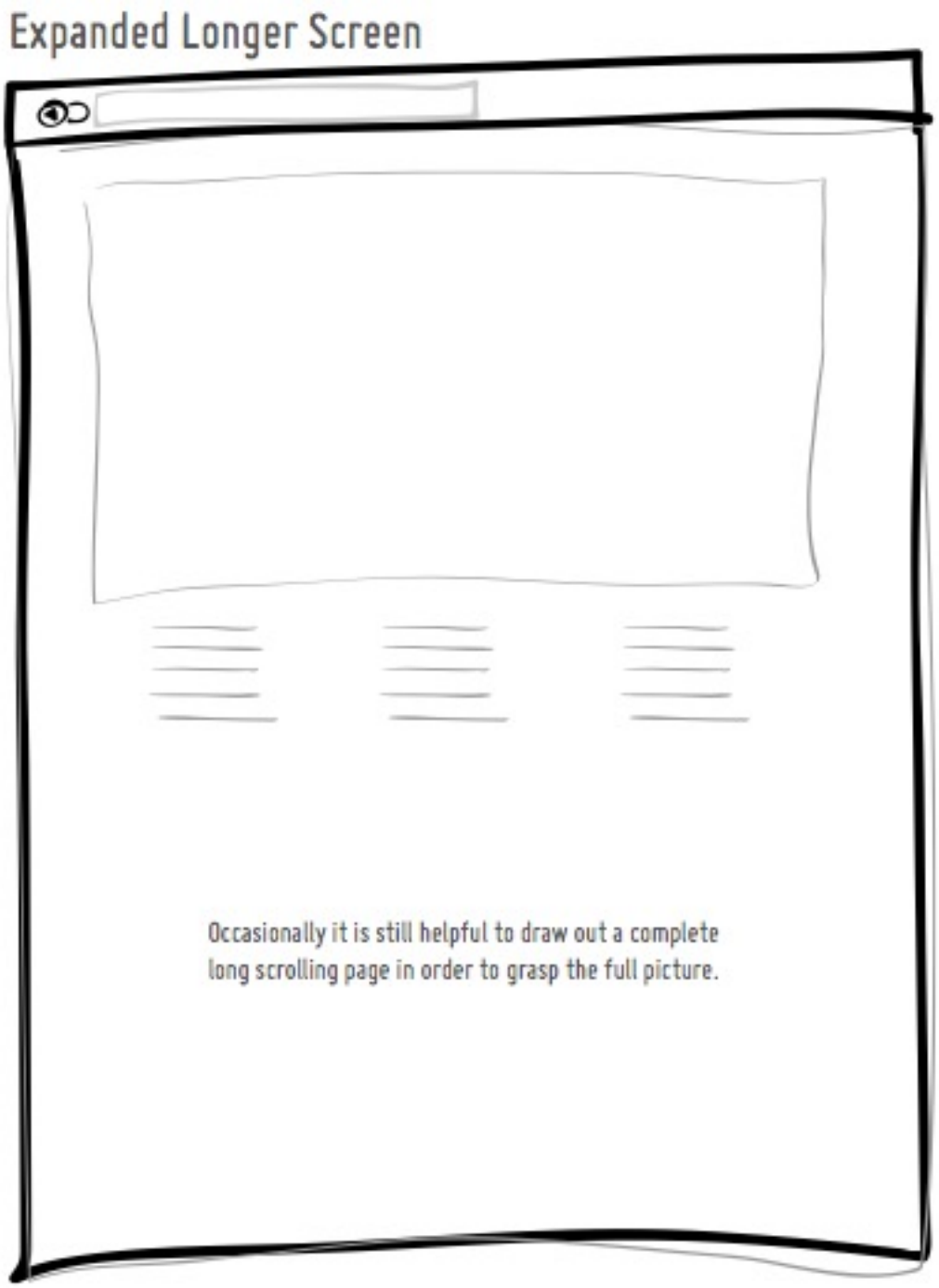


Blackberry Screen



iPhone Screen

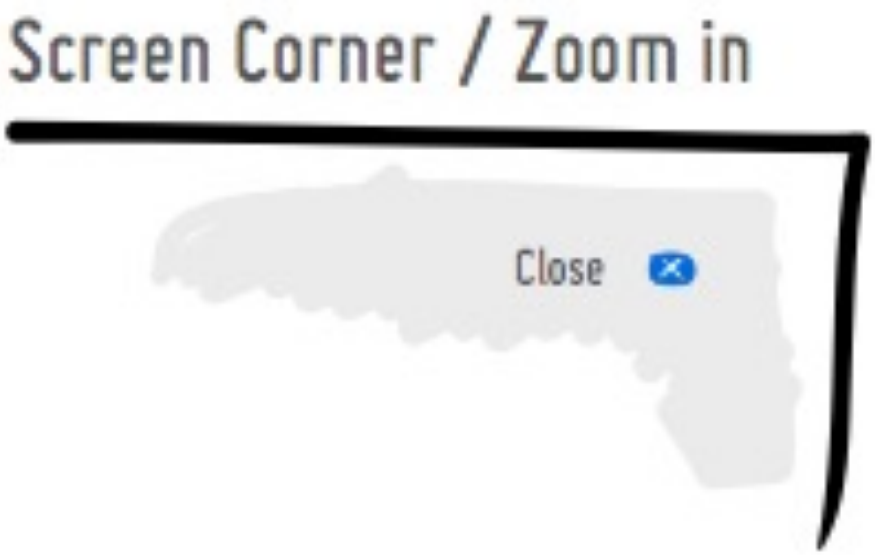




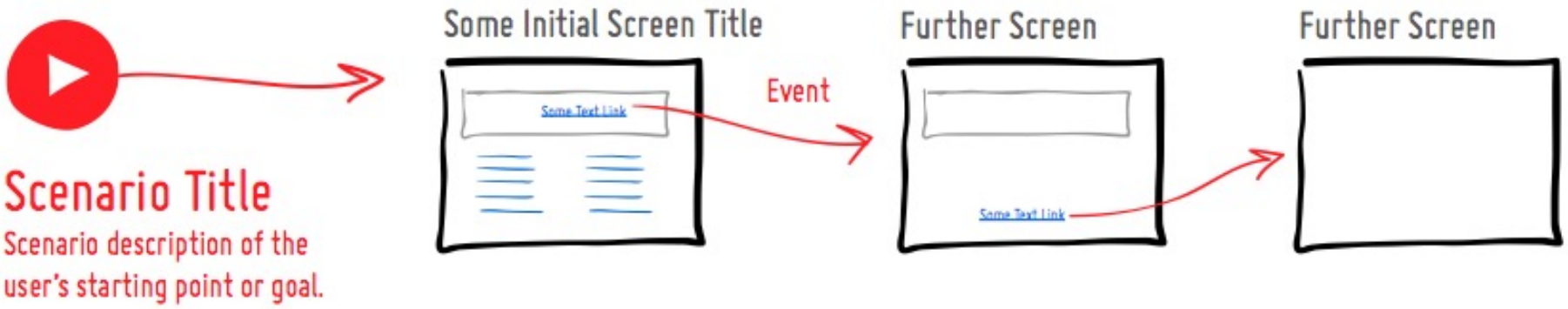
Sometimes it can be helpful to represent the complete contents of a page.

In this case, the screen dimensions and any scroll bars are disregarded, and an expanded screen (which does not exist in reality) is drawn.

You can focus on a corner of a page…

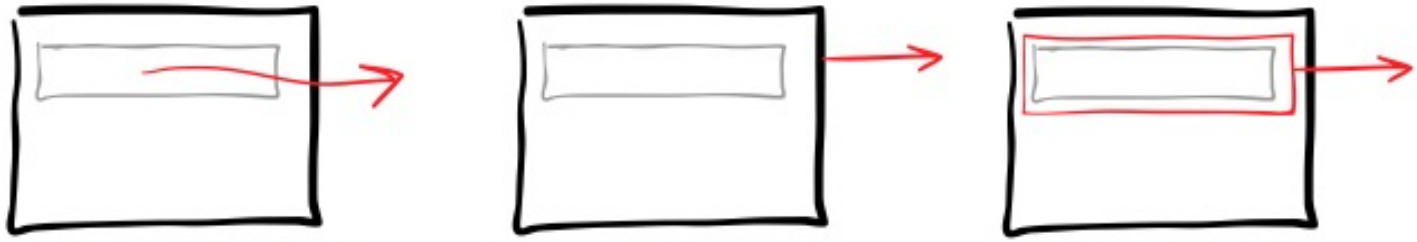


…or on a specific element.



To describe how a website evolves in a specific use case, a scenario is created. The scenario will have a title and a starting point from which, event by event, the scenario unfolds.

The events that drive the dynamics of a website can be related to various factors:



To Element. A starting point of an arrow that originates from an element inside the screen suggests a user acting upon that element.

To Anywhere. An event is attached to the full window. (ex: a key press)

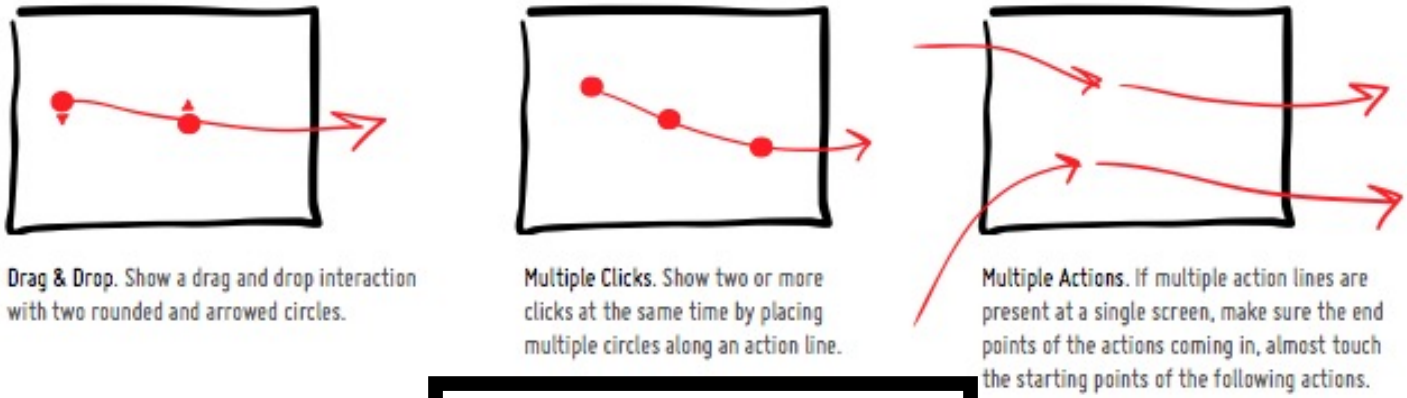
To Area. An event is bound to a very specific area on the screen. (ex: hover with a larger hot spot area)

1) a specific element on the page (e.g., clicking a button)

3) to an area of the page (e.g., when the pointer hovers over it)

2) to the entire page or to no specific element (e.g., when pressing "Enter" on the keyboard)

Events can be characterized by multiple interactions.



Drag & Drop. Show a drag and drop interaction with two rounded and arrowed circles.

Multiple Clicks. Show two or more clicks at the same time by placing multiple circles along an action line.

Multiple Actions. If multiple action lines are present at a single screen, make sure the end points of the actions coming in, almost touch the starting points of the following actions.

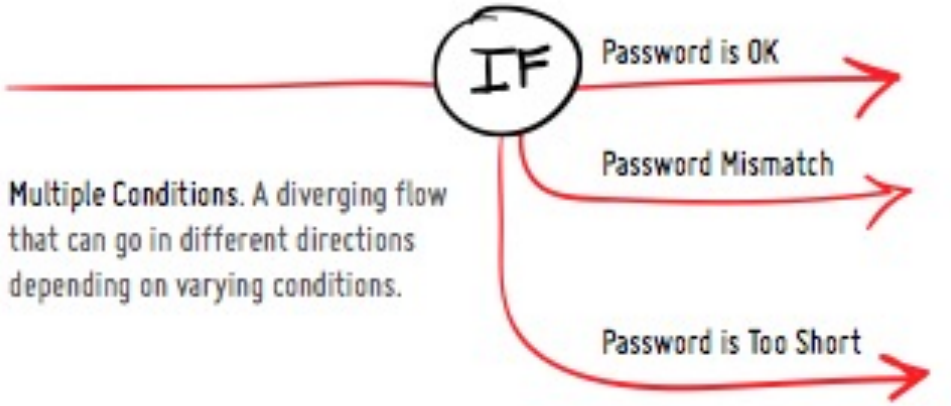
2) multiple clicks

1) drag & drop (clicking the mouse, moving the mouse while holding the button down, and then releasing the button)

3) Multiple events can occur on the same screen (be careful to ensure that the different scenarios do not get confused).

Events can be conditional, meaning they occur only if certain conditions are met.

Basic Condition. A single IF statement that needs to be true in order to proceed further. Otherwise, the flow stops.



Multiple Conditions. A diverging flow that can go in different directions depending on varying conditions.

Events can be timed.

Unspecified Transition. A default transition happens instantly without any delays.

1) instantaneous

Start Delay. A plus symbol with a time suggests that there is a delay before the next screen comes into view.

2) with delay

Duration. The duration of a screen change from start to finish can also be represented.

3) the event is a transition with a certain duration.

When events are not triggered by the user, they are represented in black.

Automatic Change. A screen changes to the next screen automatically.

Automatic Change with Condition. A screen changes to the next screen automatically if a condition is met.

Examples: an automatically scrolling image carousel; a user inactive for more than 5 minutes causes the session to expire, resulting in a page change.

Types of users: if the described scenarios involve more than one type of user, they should also be distinguished graphically.

For example: website developer, website designer, etc.

Developer

Quick description or rough persona.

Dev

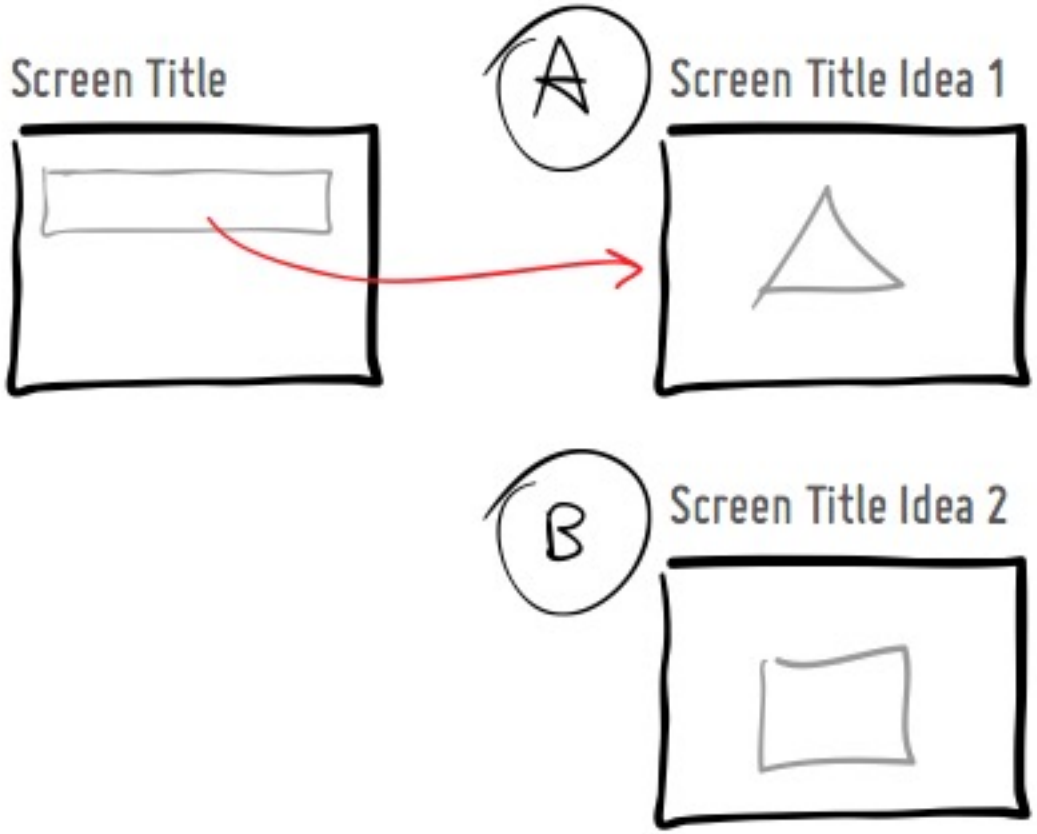
Designer

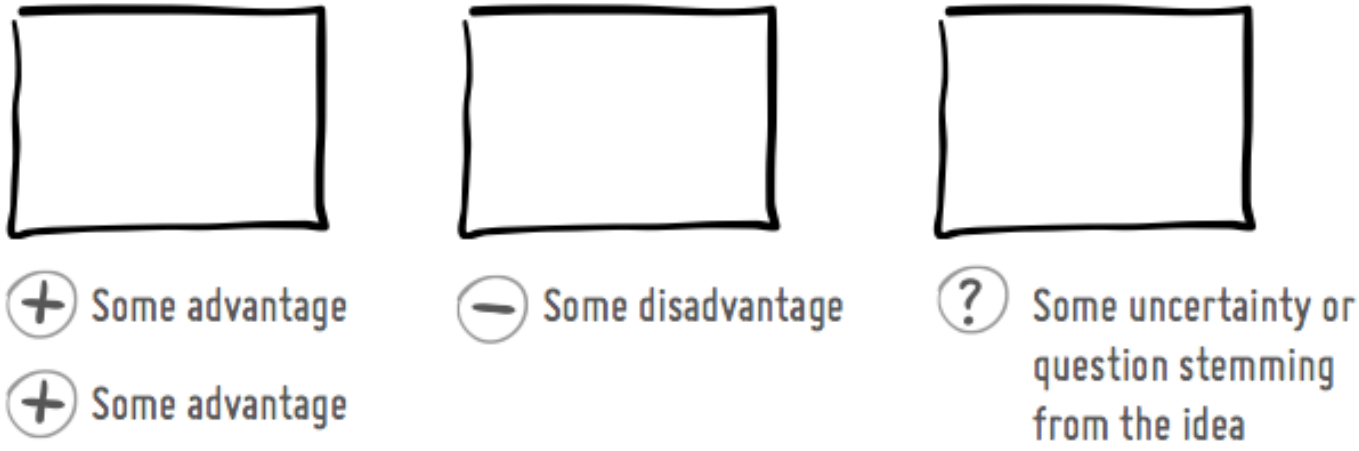
Quick description or rough persona.

Des

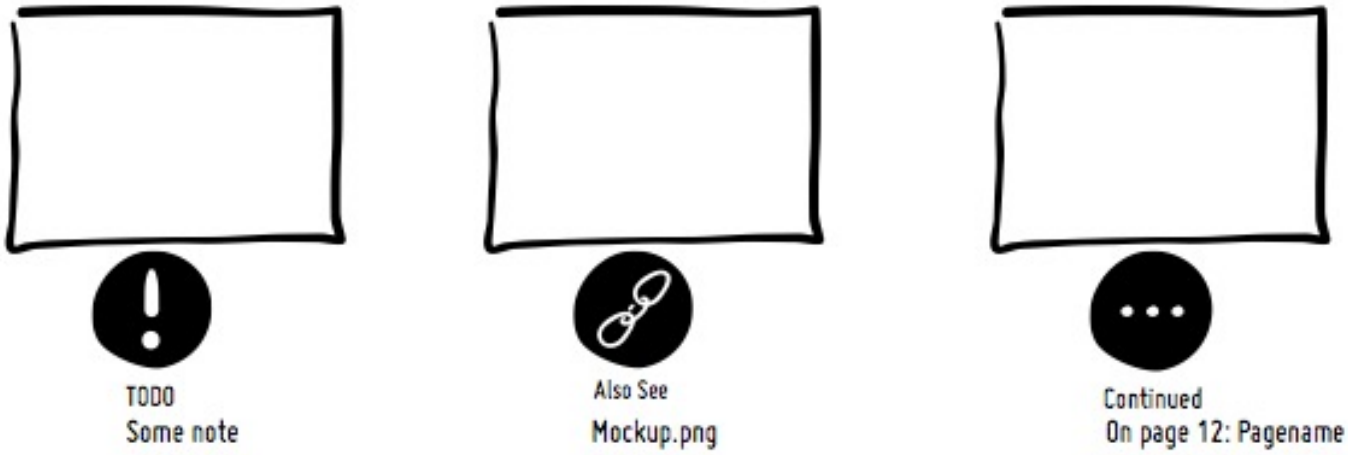
User Type Definition. In the beginning of a document, all the user types that will be used can be described.

Alternatives:
if there are different options on the pages, they should be labeled clearly to distinguish them.





Notes for discussions:
clearly label the advantages, disadvantages, and concerns related to specific proposals.



References:

1) Clearly indicate the items still to be done (to-do list)

2) Indicate references to files that need to be reviewed

3) Indicate references for the documents on which the scenario continues.

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Exercise:

Choose a website or app of your choice and describe its most significant aspects using ISN.