GROUP 7

Prototyping

A Comprehensive Look at UI/UX Design Processes

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Lesson Overview

- Prototyping in HCI
- Purpose and Importance of Prototyping
- Types of Prototypes
- Tools and Use Cases for Prototyping
- Wireframes vs Prototypes

Learning Objectives

By the end of this lesson, the learners will be able to:

01 **Define prototyping** in the context of human computer interaction

02 **Discern the objectives** of prototyping (e.g., gathering feedback, testing design, reducing risk).

03 **Describe the types** of prototypes and the use case for each

04 **Compare and contrast** wireframes with prototypes, identifying their differences in fidelity, interactivity, and purpose.

05 **Understand best practices** for creating effective prototypes, including the tools, and tips for testing and iteration.

What is Prototyping?

Prototyping refers to the process of creating a simplified, preliminary version of a digital product or system to gather feedback and test design concepts.

In Human Computer Interaction (HCI), it is an essential step in the iterative design process, allowing designers and developers to quickly explore ideas, refine interactions, and validate design decisions before investing in full-scale development.

Objectives of Prototyping

Gather Feedback

Obtain early and continuous feedback from users to improve the design.

Test Design Concepts

Evaluate different design ideas and interactions to identify strengths and weaknesses.

Refine Interaction Design

Iterate on the design to enhance usability, functionality, and user satisfaction.

Validate Design Decisions

Confirm that the design meets user needs and aligns with project goals.

Improve Communication

Facilitate communication between stakeholders, designers, and developers by visualizing design concepts.

Reduce Development Risks

Identify and address potential issues early in the design process to minimize risks during development.

Why Prototyping is Important

- **User Feedback**

  Prototyping enables early and continuous feedback from actual or prospective users.

- **Visualization**

  Prototyping helps designers and stakeholders visualize and interact with the design concept.

- **Iterative Design**

  Prototyping supports an iterative design process, where designers can quickly create, test, and refine design ideas.

Why Prototyping is Important

- **Risk Reduction**

  Prototyping helps identify potential risks and usability issues early on, reducing the risk of costly rework or product failure.

- **Team Alignment & Communication**

  Prototypes serve as a communication tool between designers, developers, and stakeholders.

- **Cost-Effective**

  Prototyping is often more cost-effective than developing a fully functional product.

What is Fidelity in Prototyping?

Prototype fidelity refers to the level of detail and realism of a prototype, ranging from *low-fidelity* (such as sketches or paper mockups) to *high-fidelity* (such as interactive or pixel-perfect prototypes).

The choice of prototype fidelity depends on various factors, such as the purpose of the prototype, the stage of the design process, the available resources, and the intended audience.

In short, **fidelity** refers to how a prototype closely resembles the final product.

Types of Prototyping in HCI

There are several types of prototypes, each with its own level of fidelity and interactivity. The most common types of prototypes are:

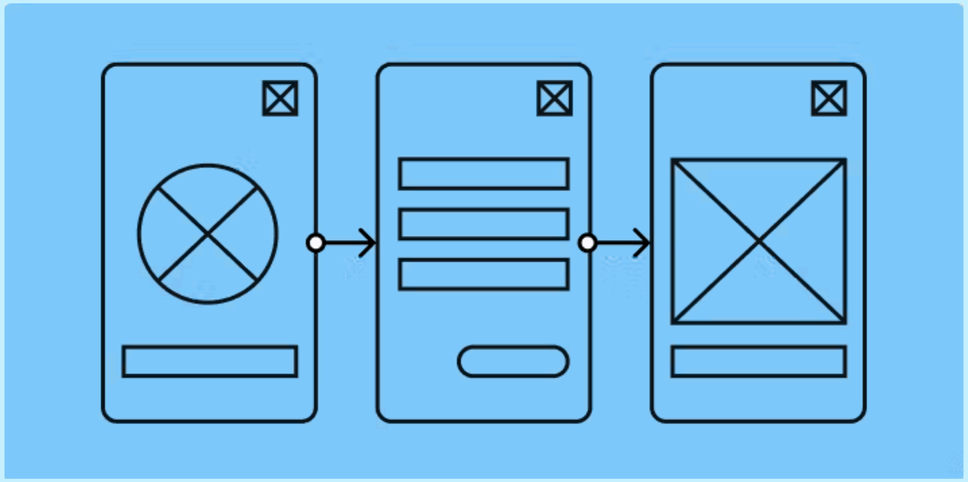
1. **Low - Fidelity Prototypes**
2. **Medium - Fidelity Prototypes**
3. **High - Fidelity Prototypes**
4. **Interactive Prototypes**

Low - Fidelity Prototypes

Low-fidelity prototypes (or *"lo-fi"*) are quick and easy to create, often using simple tools like paper, markers, or digital wireframing software.

These prototypes focus on conveying **basic** design concepts and interactions without getting into detailed visuals or functionality; useful for exploring i**nitial ideas**.

Lo-fi prototypes are **cost-effective** and accessible to both designers and non-designers, making them ideal for early-stage ideation.



Medium - Fidelity Prototypes

*Lo-fi (left), mid-fi (middle), high-fi (right)

Medium-fidelity prototypes (a.k.a *"mid-fidelity"* or *"mid-fi"*) are more detailed than low-fidelity prototypes but less polished than high-fidelity prototypes.

It's **not as basic** as a simple drawing, but it's also **not as fancy** as a fully finished product, offering a **balance** between speed and detail.

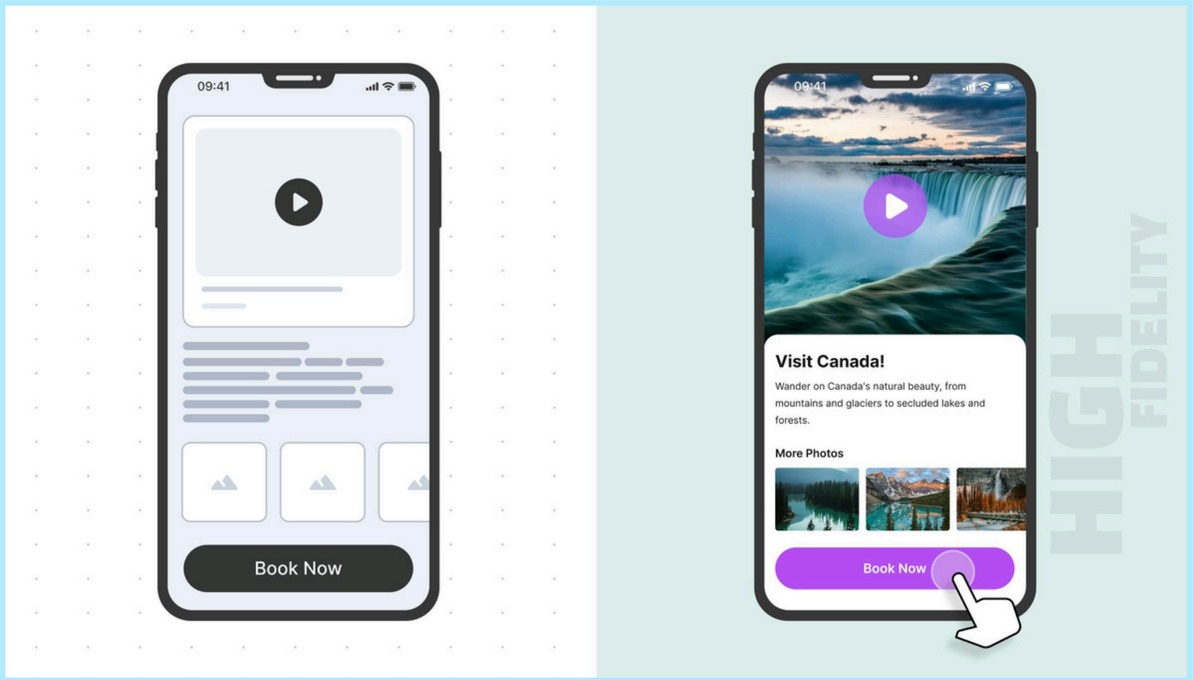
These prototypes typically have **more detailed screens** with basic interactive elements like buttons and links, but without actual content or graphics.

High - Fidelity Prototypes

High-fidelity prototypes (or *"high-fi"*) are **highly detailed** and **realistic** versions of your design idea.

It closely resembles the final product in terms of appearance and functionality but is not yet fully functional.

While high-fidelity prototypes **require more time** and **resources** to create, they offer a **more accurate representation** of the final product, making them valuable for testing complex interactions and gathering detailed feedback from users.



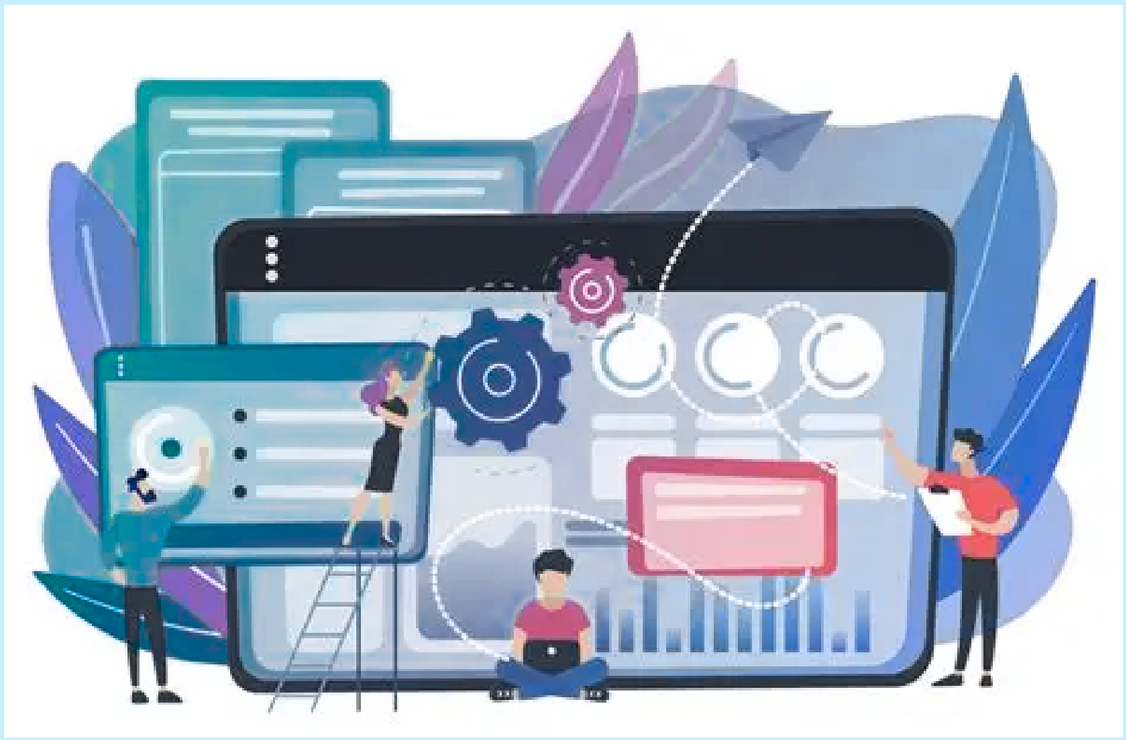
Typically, you would need to use **software tools** to create a high-fidelity prototype of your design.

Interactive Prototypes

Interactive prototypes are working models of a product or app that let users interact with its features as if they were using the final version.

While other fidelity prototypes prioritize visual detail and layout, interactive prototypes distinguish themselves by emphasizing **user interactions** and **functional flow.**

Interactive prototypes can have **any level of fidelity**. They may keep things simple to focus on basic functions and flow, or look a lot like the final product, with detailed design, interactions, and sometimes even real data.



Do interactive prototypes involve code?

Not necessarily. Simulations like clicks and transition can be done with or without code.

When is the best use cases for each type?

According to Alita Kendrick (2019):

- If you're early on the project and still brainstorming and prioritizing ideas, **low-fidelity prototypes** can be effective and fast to develop.
- Alternatively, if you're a bit further from the process and you're trying to communicate the design to others, a **medium-fidelity prototype** will be better received by the audience.
- If you want to learn more about how your users interact and feel about the content or visuals on your site, then you'll need a **higher-fidelity prototype** to get the information you need.

Tools for Prototyping

Several tools can help you create effective prototypes. Here are some of the most popular ones:

Figma

Cloud-based design and prototyping tool

Sketch

Digital design tool for user interface (UI) design

InVision

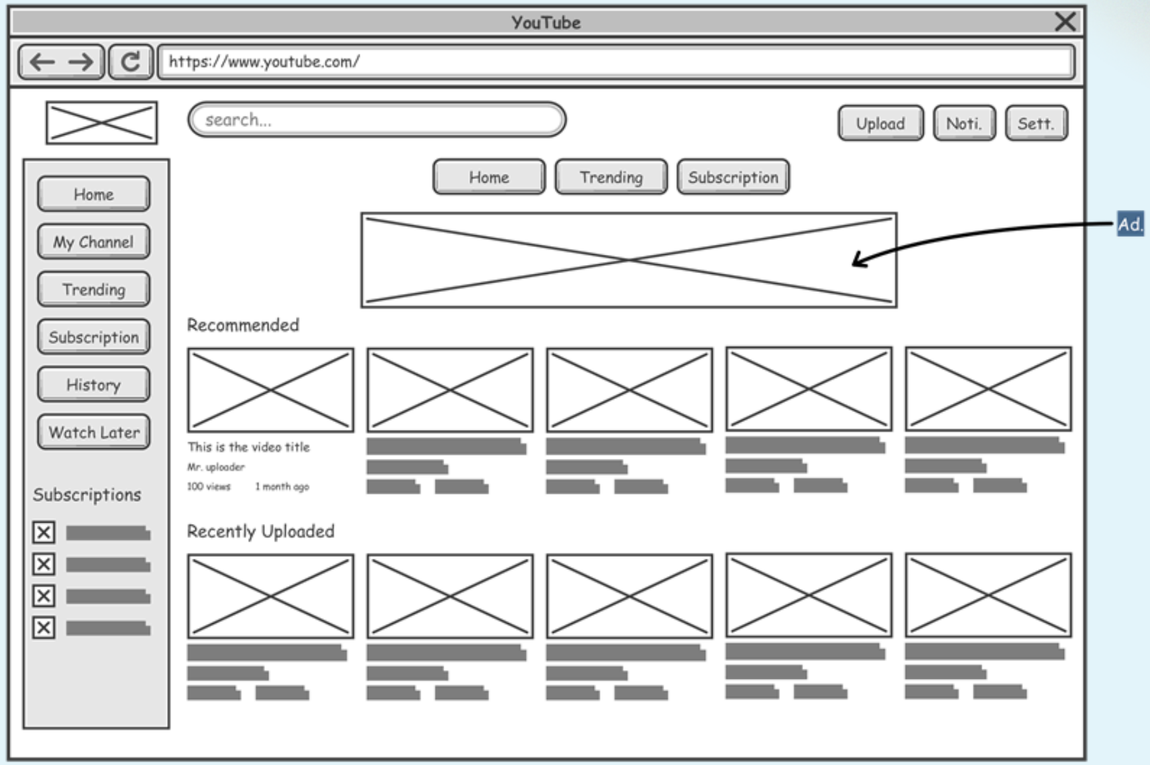
Design and prototyping platform

What are Wireframes?

A **wireframe** is a simplified representation of your site or app. Wireframes can be hand-drawn or digital, but in either case, they consist of **lines and texts.**

Structural elements that represent priority are a focus of wireframes, but visual design and color are **not represented**.

They are **early** and often **static**, usually low to mid fidelity concepts of what a page or app could be. The idea at this point is more to validate the assumptions you have on needs, journeys and solutions.



Wireframes are the *bare bones*; only showing **necessary information** without aesthetics (you'd use "*X*" placeholders when wireframing).

Wireframes vs Prototypes

A **prototype** is a visual representation of the product that the design team puts together. It illustrates the concept.

Compared to wireframes, prototypes are a little bit **more flexible**. They might contain content and images and may be static or responsive.

Note that **all wireframes are prototypes**; they're just low-fidelity prototypes without a lot of detail, but **not all prototypes are wireframes.** This is because prototypes demonstrate **functionality** outside of detail and content.

In simpler terms:

A wireframe is the **skeleton**, while a prototype is an interactive version of a wireframe, with the added **meat and skin** (functions and content).

Best Practices for Prototyping

To get the most out of prototyping, follow these best practices:

- **Keep it Simple and Focused**

  Keep it simple and focus on the specific problem or aspect you're trying to test. Avoid adding unnecessary features or complexity, as this can distract from the primary goal of the prototype.

- **Test and Iterate Early and Often**

  Prototyping is an iterative process. Test your prototype with real users, gather feedback, and make necessary improvements. Repeat this process until you've achieved the desired outcome.

- **Test and Iterate Early and Often**

  Involving users in the prototyping process is critical to ensuring that your design meets their needs and expectations.

Conclusion

Prototyping is an essential part of HCI, helping designers explore ideas, test usability, and refine solutions through iterative, user-centered processes.

As Alita Kendrick (2019) stated, “whether you’re working on a new product, a redesign, a set of new features, remember that prototypes are valuable throughout the entire design process.”

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Thank You!

We hope this presentation enhanced your understanding of prototyping in Human Computer Interaction!