Human–computer interaction (HCI) is the study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings.

HCI consists of three parts:

1) the user

2) the computer itself

3)the ways they work together.

USERS

By "user", we may mean an individual user, a group of users working together.

COMPUTERS

When we talk about the computer, we're referring to any technology ranging from desktop computers, to large scale computer systems. For example, if we were discussing the design of a Website, then the Website itself would be referred to as "the computer”

INTERACTION

The communication between user and system is called the interaction.

To know your users,

**Who are they?**

Are they young or old,experienced computer users or novices? You may need to ask this question again as you find out more about the system and its context.

**Talk to them**

There are many ways to talk with users: structured interviews about their job or life, open-ended discussions, or bringing the potential users fully into the design process.

**Watch them**

Watch what people do as well as hear what they say.The observations tell you what they do, they will tell you why.

**Use your imagination**

If you cannot involve actual users you can at least try to imagine their experiences. One method that has been quite successful in helping design teams produce user- focused designs is the persona. A persona is a rich picture of an imaginary person who represents your core user group.

**What is a Persona?**

Personas are fictional characters, which we create in order to represent the different user types.

That might use service, product, site, or brand in a similar way. Creating personas will help us to understand users’ needs, experiences, behaviors and goals. Persona answers the question "Who do we design for?"

**Why to use personas?**

Relatively more realistic and concrete object, although not a real person, it is the most typical image of many real Personas. And it can remind us of the users’ needs and help us make a better user experience.

**2 types of personas:**

1. Marketing Personas are typical characters of the customers of a product or a company; they have similarities in buying preference, social relations, mode of consumption and ages.
2. Design Personas refer to the representatives of users of a product or service that have similar points in usage customs, product requirements, preferences and goals.

**Each persona should include:**

1. Name: Could be realistic or not
2. Photo: to give identity
3. Personal quote/motto
4. Bio: Give a little backstory
5. Demographics: Age, sex, income, location—whatever attributes are relevant to your industry.
6. Personality Traits: Personality traits are one of the most useful features of personas, so choose these with care.
7. Motivations: This helps you get inside the customer’s head and understand how they think. For example, would a customer be more likely to buy a product that improves their career or their personal life? It depends on which motivates them more.
8. Goals and frustrations
9. Preferred brands and influencers

**Characteristics of a good Persona**

1. Sufficiently reflect the data and conclusions of investigations;

2. Show the current state of the interviewees instead of their expectation of the future;

3. Be more realistic than idealistic;

4. Propose a challenge to the group (but it is not impossible);

5. Help the group understand the users better.

**What is contextual inquiry?**

Contextual inquiry is a type study that involves in-depth observation and interviews of a small sample of users to gain a robust understanding of work practices and behaviors.

Its name describes exactly what makes it valuable — inquiry in context:

* Context: The research takes place in the users’ natural environment as they conduct their activities the way they normally would. The context could be in their home, office, or somewhere else entirely.
* Inquiry: The researcher watches the user as she performs her task and asks for information to understand how and why users do what they do.

The four principles of contextual inquiry are:

1. Focus - Plan for the inquiry, based on a clear understanding of your purpose.

2. Context - Go to the customer's workplace and watch them do their own work.

3. Partnership - Talk to customers about their work and engage them in uncovering unarticulated aspects of work.

4. Interpretation - Develop a shared understanding with the customer about the aspects of work that matter.

**What is Prototyping?**

Prototyping refers to an initial stage of a software release in which developmental evolution and product fixes may occur before a bigger release is initiated.

The main purpose of prototyping is to involve the users in testing design ideas and get their feedback in the early stage of development, thus to reduce the time and cost.

**Why Use it?**

1. Saves money -

2. Brings the design to life

3. Clarifies requirements

4. Supports user involvement and feedback

5. Identifies problems early - can be used to explore usability issues

6. Improves communication

7. Supports exploration of imagined use

**Different types of Prototyping:**

Prototyping can be divided into three groups

1. Low-fidelity prototyping,

2. Medium-fidelity prototyping

3. High-fidelity prototyping

Low-fidelity prototyping:

Low-fidelity prototypes are quickly constructed to depict concepts, design alternatives, and screen layouts, rather than to model the user interaction with a system. Low-fidelity prototypes provide limited or no functionality.

Sketches, storyboard, PICTIVE(PICTIVE PICTIVE stands for Plastic Interface for Collaborative Technology )

Medium-fidelity prototyping:

Medium-fidelity prototypes simulate or animate some but not all features of the intended system.

Three approaches:

Horizontal prototyping:

Horizontal prototyping reduces the level of functionality so that the result is a surface layer that includes the entire user interface to a full-featured system without underlying functionality.

Vertical prototyping:

Vertical prototyping cuts down on the number of features, so that the result is a narrow system that includes in-depth functionality, but only for a few selected features.

Scenario

Scenario reduces both the number of features and the level of functionality. a user can use a specific set of computer facilities to achieve a specific outcome under specified circumstances.

High-fidelity

These prototypes are fully interactive, simulating much of the functionality in the final product.

**What is Usability?**

Usability refers to the ***quality of a user's experience*** when interacting with products or systems, including websites, software, devices, or applications. Usability is about effectiveness, efficiency and the overall satisfaction of the user.

‘Usability’ is a combination of factors including:

Intuitive design, Ease of learning, Efficiency of use, Memorability, Error frequency and severity, Subjective satisfaction

Usability Evaluation Methods:

1. Usability Inspection Method:

This section describes methods that can be used by experienced practitioners to assess usability issues. While these methods ***do not involve users directly***, they can provide some useful insights.

However, the goal is to use them to supplement, not replace, direct user involvement in testing designs and systems.

2. Usability Testing with Users:

Usability testing involves observing users while they perform tasks with a hardware or software system.