

# Human Computer Interaction

## Chapter One



# Outline

- 1- Introduction**
- 2- Good and Poor Design**
- 3- What is Interaction Design?**
- 4- The User Experience**
- 5- The Process of Interaction Design**
- 6- Interaction Design and the User Experience**

## Introduction

**How many interactive products are there in everyday use?**

smartphone, tablet, computer, remote control, coffee machine, ATM, ticket machine, printer, iPod, GPS, e-reader, TV, electric toothbrush, radio, games console . . . the list is endless.



**How many are actually easy, effortless, and enjoyable to use?**  
the iPod, are a joy to use.



Others, like a ticket machine, can be very frustrating.



**What do you think, why is there a difference?**

Many products that require users to interact with them, such as smartphones and social networking sites, **have been designed primarily with the user in mind**. They are generally easy and enjoyable to use.



Others, such as switching from viewing a rented movie on your smart TV to watching a sports channel, or setting the alarm on a digital clock, **have not necessarily been designed with the users in mind**, but have been engineered primarily as systems to perform set functions. While they may work effectively, it can be at the expense of how they will be used by real people.

### One main aim of interaction design is:

To **reduce the negative aspects** (e.g. frustration, annoyance) of the user experience while enhancing the positive ones (e.g. enjoyment, engagement).

In essence, it is about **developing interactive** products that are easy, effective, and pleasurable to use – from the users' perspective.

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## Good and Poor Design

A central concern of interaction design is to **develop interactive products that are usable**. By this is generally meant **easy to learn**, **effective to use**, and **providing an enjoyable user experience**.

A good place to start thinking about how to design usable interactive products is to **compare examples of well and poorly designed ones**. Through identifying the **specific weaknesses and strengths** of efferent interactive products, we can begin to understand what it means for something to be usable or not.

**1- Voice Mail System**

**2- Remote Control Device**

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## Voice Mail System

Imagine the following scenario.

- You are staying at a hotel for a week while on a business trip.
- You discover you have left your cell phone at home so you have to rely on the hotel's facilities.
- The hotel has a **voice mail system** for each room.
  - ❖ To find out if **you have a message**, you pick up the handset and listen to the tone. If it goes 'beep, beep, beep' there is a message.
  - ❖ To find out how to access the message you have to read a set of instructions next to the phone.
  - ❖ You read and follow the first step:

## ‘1. Touch 41.’

The system responds: ‘**You have reached the Sunny Hotel voice message center. Please enter the room number for which you would like to leave a message.**’ You wait to hear how to listen to a recorded message. But there are no further instructions from the phone. You look down at the instruction sheet again and read:

## ‘2. Touch\*, your room number, and #.’

You do so and the system replies:

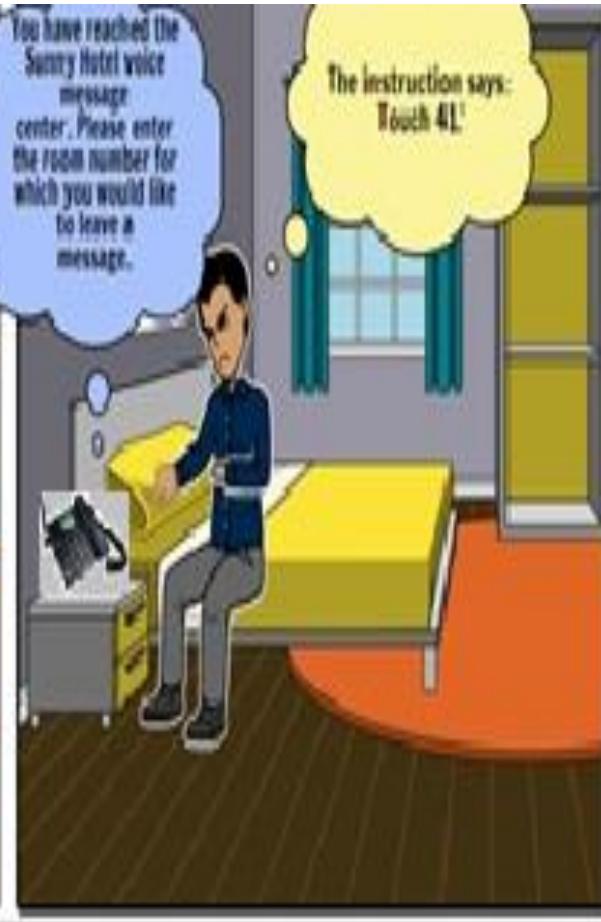
‘**You have reached the mailbox for room 106. To leave a message, type in your password.**’

You type in the room number again and the system replies:

‘**Please enter room number again and then your password.**’

You don't know what your password is. You thought it was the same as your room number, but clearly it's not. At this point you give up and call reception for help. The person at the desk explains the correct procedure for recording and listening to messages. This involves typing in, at the appropriate times, the room number and the extension number of the phone (**the latter is the password, which is different from the room number**). Moreover, it **takes six steps** to access a message and **five steps** to leave a message.

**You go out and buy a new cell phone.**



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## What is problematic with this voice mail system?

- It is infuriating.
- It is confusing.
- It is inefficient, requiring you to carry out a number of steps for basic tasks.
- It is difficult to use.
- It has no means of letting you know at a glance whether any messages have been left or how many there are. You have to pick up the handset to find out and then go through a series of steps to listen to them.
- It is not obvious what to do: the instructions are provided partially by the system and partially by a card beside the phone.

Now consider the following **phone answering machine**. Figure 1.1 shows two small sketches of an answering machine phone. Incoming messages are represented using physical marbles. The **number of marbles** that have moved into the pinball-like chute indicates the **number of messages**. Dropping one of these marbles into a slot in the machine causes the recorded message to play. Dropping the same marble into another slot on the phone dials the caller who left the message.

### **How does the marble answering machine differ from the voice mail system?**

- It uses familiar physical objects that indicate visually at a glance how many messages have been left.
- It is aesthetically pleasing and enjoyable to use.
- It only requires one-step actions to perform core tasks.
- It is a simple but elegant design.
- It offers less functionality and allows anyone to listen to any of the messages.



**Figure 1.1: The marble answering machine**

## Remote Control Device

- Every home entertainment system, be it the TV, cable, smart TV, music system, and so forth, **comes with its own remote control device**. Each one is **different in terms of how it looks and works**. Many have been designed with a dizzying array of small, multicolored, and **double-labeled buttons** that often seem **arbitrarily positioned** in relation to one another.
- Many viewers, especially when sitting in their living room, **find it difficult to locate the right ones**, even for the simplest of tasks, like **pausing or finding the main menu**. It can be **especially frustrating** for those who need to put on their **reading glasses each time to read the buttons**. The remote control device appears to have been put together very much as an afterthought.



- In contrast, much effort and thought went into the **design of the TiVo remote control**. The buttons were **large**, **clearly labeled**, and **logically arranged**, making them **easy to locate** and **use in conjunction** with the **menu interface** that appears on the TV monitor.
- In terms of its **physical form**, the remote device was designed to **fit into the palm of a hand**, having a **peanut shape**.
- It also has a **playful look and feel about it**: **colorful buttons** and **cartoon icons** were used that are very distinctive, making it **easy to identify them in the dark** and without having to put reading glasses.)

**How was it possible to create such a usable and appealing remote device where so many others have failed?**



## What to Design

**Designing interactive products requires considering:**

- ❖ Who is going to be using them,
- ❖ How they are going to be used,
- ❖ Where they are going to be used.

Another key concern is to **understand the kind of activities** people are doing when interacting with the products. The appropriateness of **different kinds of interfaces and arrangements of input and output devices** **depends** on what **kinds of activities** are to be supported.

**For example:**

If the **activity** is to enable people to **bank online**, then an **interface** that is **secure**, **trustworthy**, and **easy to navigate** is essential. In addition, an interface that allows the user to **find out new information** about the **services offered by the bank** without it **being intrusive** would be useful.

**The world is becoming suffused with technologies that support increasingly diverse activities.**

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**A key question for interaction design is:**

**How do you optimize the users' interactions with a system, environment, or product, so that they support and extend the users' activities in effective, useful, and usable ways?**

One could use **intuition** and **hope for the best**. Alternatively, one can be more principled in deciding which choices to make by basing them on an **understanding of the users**. **This involves:**

- 1- Taking into account what people are good and bad at.**
- 2- Considering what might help people with the way they currently do things.**
- 3- Thinking through what might provide quality user experiences.**
- 4- Listening to what people want and getting them involved in the design.**
- 5- Using tried and tested user-based techniques during the design process.**

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## What Is Interaction Design?

**By interaction design, we mean**

**“designing interactive products to support the way people communicate and interact in their everyday and working lives”.**

Put another way, it is about creating user experiences that enhance and augment the way people work, communicate, and interact.

**A number of terms have been used** to emphasize different aspects of what is being designed, including **user interface design, software design, user centered design, product design, web design, experience design, and interactive system design**.

**Interaction design** is increasingly being accepted as the umbrella term, covering all of these aspects. Indeed, many practitioners and designers, who in the 1990s would have described what they were doing as **interface design** or **interactive system design**, now promote what they are doing as **interaction design**.

The **focus of interaction design** is very much concerned with practice, i.e. how to design user experiences. It is not wedded to a particular way of doing design, but is more eclectic, promoting the use of a range of methods, techniques, and frameworks.

**How does interaction design differ from other approaches to the design of computer-based systems, such as software engineering?**

# Activity

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- Assess the design of a system/app/device of your choice in terms good and poor design of it;  
Write them down
- In your opinion how it could be enhanced?

- Thank you