UI Study - Midterm

Intro

Autres types d'interfaces

- Interface humain-objet
- Interface humain-produit

Definition: what is a Human-Machine-interface?

In industrial settings, HMIs can be used to:

- Visually display data
- Track production time, trends, and tags
- Oversee KPIs
- Monitor machine inputs and outputs
- And more

Common uses of HMIs

HMIs communicate with **Programmable Logic Controllers (PLCs)** and **input/output sensors** to get and display information for users to view.

HMI screens can be used for a single function, like monitoring and tracking, or for performing more sophisticated operations, like switching machines off or increasing production speed, depending on how they are implemented.

La question centrale:

Supposons que:

- l'utilisateur sait ce qu'il veut faire
- l'objet en est capable

Est-ce que l'interface permet à l'utilisateur de faire ce qu'il veut?

plus précisement:

Dans quelle mesure l'interface permet-t- elle à l'utilisateur de faire ce qu'il veut?

Definition: Usability

The **degree** to which a product can be **used** by specific users, to accomplish precise goals with effectiveness, effiency *and* satisfaction.

- **Effectiveness:** the product allows the user to reach the end goal that was expected.
- **Efficiency**: the user reaches the end result with as little effort or little time as possible.
- **Satisfaction**: comfort from the user/positive (subjective) feedback about the experience.

The importance of usability

- The product sells better
  - The iPhone vs. IBM Simon
- Unusable websites are often abandoned
  - Source of frustration and often source of failure
- Badly used objects can be dangerous

Le problème

La solution

The responsibility of making something usable

...goes to the designer

Mental and physical capabilities of a human user

- la perception (visuelle, tactile, auditive)
- la mémoire
- l'interprétation des informations cognitifs
- Prise des décisions
- la motricité, i.e., d'interagir physiquement avec les machines

(all but the last one)

Examples of theoretical models that simplify and formalize the process of conception that takes into account these cognitive and motor processes (from above)

Model Human Processor

GOMS

Fitts' Law

Getting to know the user

- les objectifs
- les connaissances
- la terminologie
- la façon de travailler
- les éventuelles limitations de perception

How do we find this out?

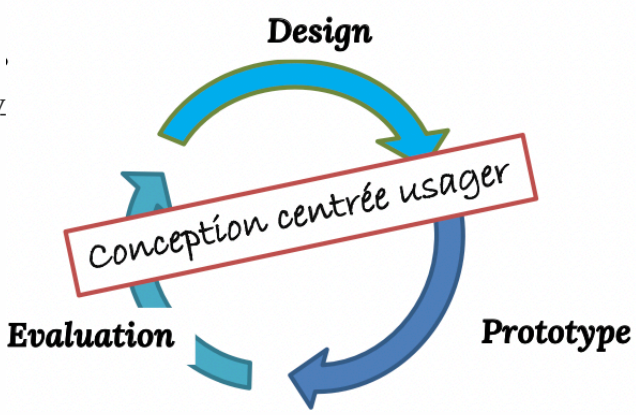
- **Reflection**: think about how hanita would use this UI
- **Observation**: observe hanita using her apps
- **Surveys**: ask hanita why she do this
- **Usage scenarios:** imagine hypothetical hanita with hypothetical UI

Development and usability

Analysing to better...

- Understand human performance
- Getting to know the user

However, creating a good UI from the first go is highly <u>unlikely</u>



...Enter: iterative development

Design -> Prototype -> Evaluation

Why is it so hard to conceive good UIs?

- You're not the user and can't put yourself in their shoes as a programmer
- The user is **always** right: recurrent problems are blamed on the system
- ...But the user *isn't* always right: users aren't always designers. They don't always know what's best for them.

Performance humaine

Perception, mémoire, motricité

MOST problems with interfaces are due to the designer not recognizing the limitations and tendency to be wrong of humans

→ Mistake because of the DESIGN, NOT human error

The myth of human error

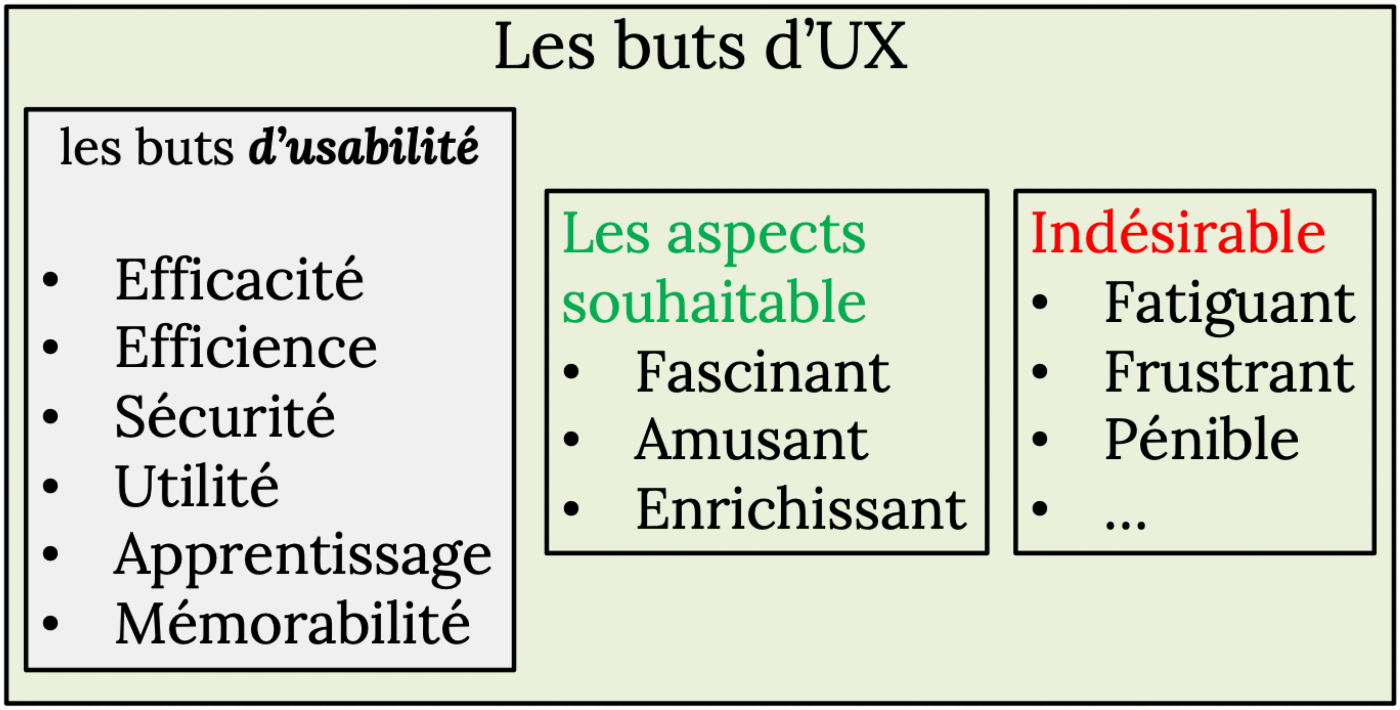
Most humans are imperfect & inprevisible

- Bad memory
- We don't see things that are right there
- We're really confused
- We tire ourselves and become annoying

What's actually to blame

- **Functionality** problem : what are the functions of the object? are they doing what i want them to do?
- **Visibility**: what's the current mode? control sequence: what control sequence must I do to obtain what I want?
- **Feedback**: how do I know if my operations went well? (!!!!)
  - How do i know my button clicked properly??

Goals of UX (User eXperience)/Usability



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EESUAM -> Efficacity Efficiency Security Usability Apprentissage Memorability

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- Simplicity of learning: the ease at which the users get used to and use the surface

Where do designers go wrong?

-

Principes de design

Facilité d'apprendre, visibilité, erreurs, efficience

Techniques de design

Analyse de tâches, prototypage, tests utilisateur

Évaluation

Conception de tests, statistiques

Réalité virtuelle

Interaction personne-robot