Professors d'IDI - UPC

Interacció i Disseny d'Interfícies

IDI – Organització

- **Temari de teoria**
  - Introducció a la HCI i principis usabilitat. (1 sessió)
  - Principis generals de disseny. Percepció i color (1 sessió)
  - Interacció (2 sessions)
    - Hicks, Fitts…
    - Sistemes i mètodes interacció i selecció
  - Usability testing. Mètodes quantitatius per experiments (1 sessió)
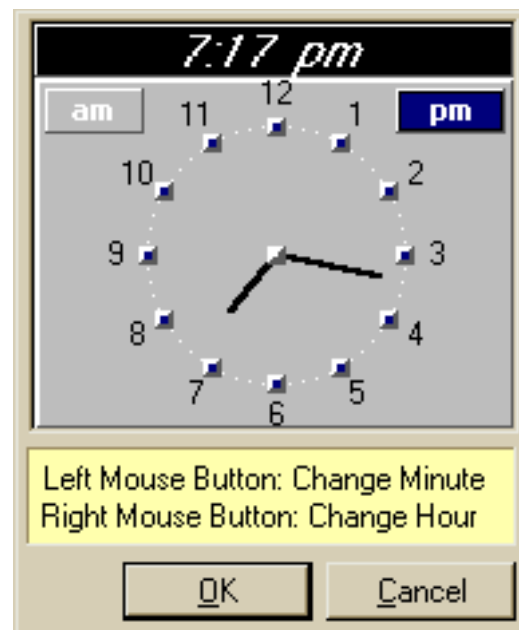 - Mètodes d'interacció avançada. RV, RA (1 sessió)

Continguts

- Apunts i transparències de suport
- Referències útils a la web:
  - http://usability.gov
  - http://uxbooth.com
  - https://usabilitygeek.com
  - http://www.nngroup.com/articles/
  - http://www.interaction-design.org/encyclopedia/
  - https://uxdesign.cc/
  - http://uxplanet.org/

Motivation

Enter your Social Security Number:

[0 ▼] [0 ▼] [0 ▼] - [0 ▼] [0 ▼] - [0 ▼] [0 ▼] [0 ▼] [0 ▼]

7:17 pm

am · 11 · 12 · 1 · pm
10 · · 2
9 · · 3
8 · · 4
· 7 · 6 · 5 ·

Left Mouse Button: Change Minute
Right Mouse Button: Change Hour

OK   Cancel

Definitions: HCI

- What does HCI mean? Which are its objectives?
  - **Human computer interaction** is a field that deals with the <u>study _(to improve) of how humans interact with machines/devices</u>.
  - HCI is a very relevant issue when evaluating the quality of an application.
    - An application must fulfill its requirements,
    - It has to provide an easy access to its features.

Definitions: UI

- When an application is difficult to use, it is perceived as a low-quality application.

    - **User Interfaces**: tools and methods that are used to communicate between the user and the system

    - **User Interfaces** may be <u>determinant</u> on ease of use perception of application

Definitions

- ## HCI is about

    - *understanding* and critically *evaluating* the <u>interactive technologies</u> people use and experience

    - understanding contemporary <u>human practices and aspirations</u>

HCI. Initial models

- Software crisis in the 70s lead to focus software engineering with a new view
  - Including non functional requirements such as <u>usability</u> and <u>maintainability</u>

HCI. Initial models

- One of the original focus of HCI was *usability*.
  - Originally stated as "easy to learn, easy to use"
  - More on this later today…
  - GUI: **comprehensible**, **accessible**, **easy to use**
- Helped to influence computer science and technology development more broadly and effectively
- It grew to include other areas, not restricted to computer science

Usability

- Usability: Defined in ISO 9241 standard as

  - The ability in which a product may be used by **specific** users in order to carry out **specific** tasks *effectively, efficiently, and with satisfaction* in a **specific** use environment.

  - **Usability is always referred to a concrete user group and a concrete user application**

Usability

- Usability:
  - **Efficacy** is the ability of correctly and completely achieving a certain goal.
  - **Efficiency** is the relation of used resources and the completeness and correctness of achieved goals.
  - **Satisfaction** is the comfort and acceptation of a system by the users and other people that are affected by its use.

HCI and its neighborhood
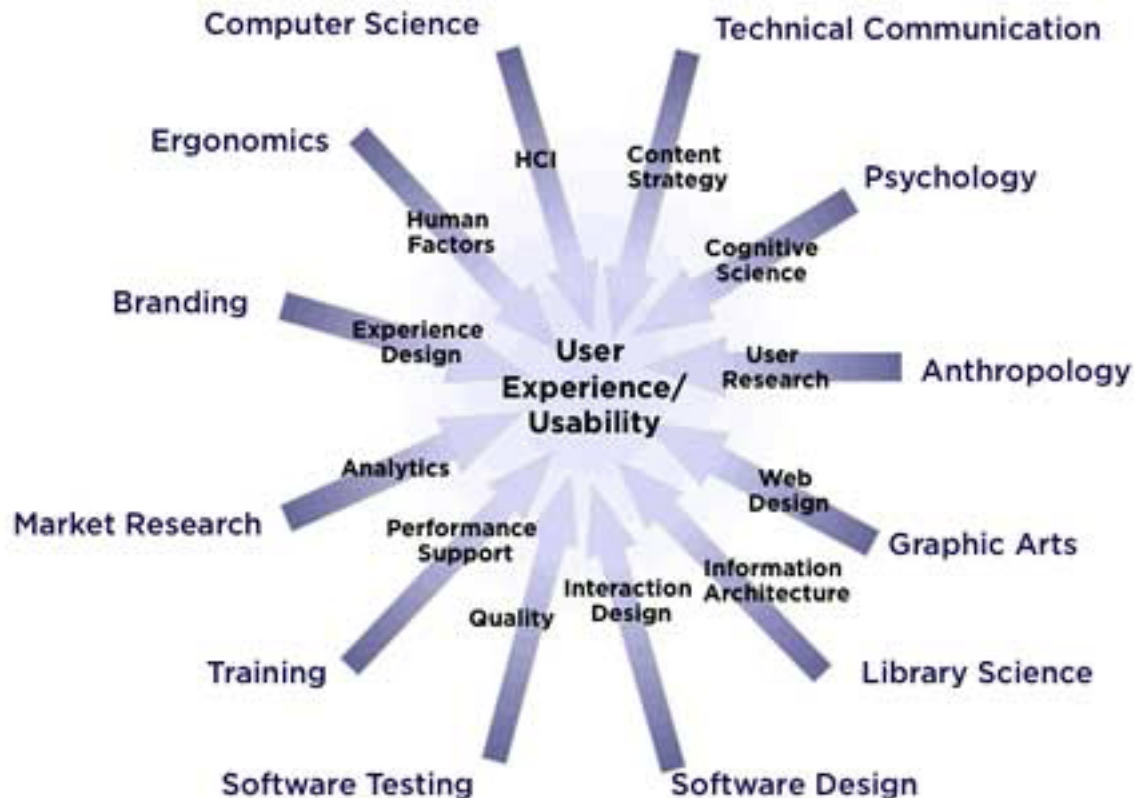
Definitions

- **User experience (UX)**:
  - "Experience or User Experience is not about technology, industrial design, or interfaces. It is about **creating a meaningful experience through a device**."
  - "the perception left in someone's mind following a series of interactions between people, **devices**, and events"
  - What you **remember and feel** from the use of a device

Definitions

- User experience (Peter Morville's honeycomb):

Definitions

- Interaction Design:
    - "Interaction design is about shaping digital things for people's use"
        - How we interact with **devices** ("digital things")

Definitions

- Interaction Design:
  - Unlock with your face?

This Is Why the iPhone's Screen Will Always Be 3.5 Inches

iPhone
3.5" screen

Galaxy S II
4.21" screen

Why does the iPhone have a 3.5-inch screen? Why do larger smartphones feel awkward on your hand? Dustin Curtis has an answer, and I think it is spot on:

> Touching the upper right corner of the screen on the Galaxy S II using one hand, with its 4.27-inch screen, while you're walking down the street looking at Google Maps, is extremely difficult and frustrating. I pulled out my iPhone 4 to do a quick test, and it turns out that when you hold the iPhone in your left hand and articulate your thumb, you can reach almost exactly to the other side of the screen.

iPhone
3.5" screen

Galaxy S II
4.21" screen

His graphic shows this clearly. It makes total sense. And that is exactly why we would never see any larger screen iPhone. That 3.5-inch screen will be the ideal size until all humans are 7-feet tall and have hands the size of frying pans. [dcurtis]
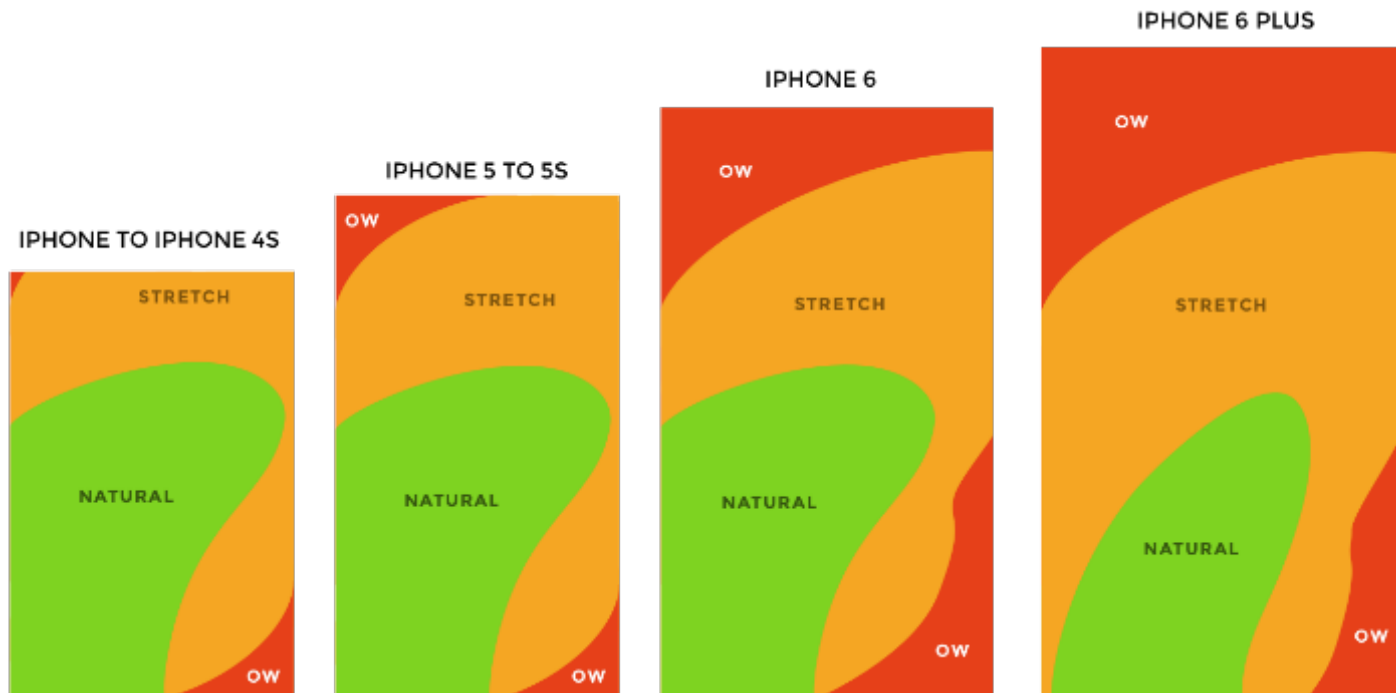
HCI & UX. Some requirements

HCI & UX. Some requirements

- For mobile take into account the thumb zones

HCI. Desktop systems

- Desktop systems:
  - Large screens
    - Space for *everything*
  - Mouse pointer
  - Keyboard
    - Adequate for creating content

HCI. Mobile systems

- Mobile systems:
  - (Relatively) Small size
    - Must carefully think on what to fit
    - Notifications often not properly solved
  - Interaction with the finger/stylus
  - (Almost) No keyboard
  - Software limitations

HCI. Mobile systems

- Tablet systems:
  - (Relatively) Large size
    - May fit what we need
  - Interaction with the finger/stylus
  - (Almost) No keyboard
  - Software limitations

HCI. GUI (& app) Programming

- Tools for Mobile Development:
  - Native tools
    - Provided by the OS designers
    - Focus on the OS features
  - Cross-platform
    - Provided by third-party institutions
    - Focus on facilitating the development
  - Other third-party software
    - Focus on facilitating the development

HCI. GUI (& app) Programming

- Two main ways to develop:
  - Web apps
  - Native OS apps

HCI. GUI (& app) Programming

- **Web apps**. Pros:
  - Develop once & deploy everywhere
    - Almost any system has a capable browser
  - Easy updating
    - App is loaded everytime the browser connects to the page
      - Only needed to change the server code
  - Well-known tools and techniques
    - PHP, Java…

HCI. GUI (& app) Programming

- **Web apps.** Cons:
  - Limited user interfaces
  - Not as rich as native apps in terms of:
    - UI, Communication, Access to local resources (camera,GPS,…)
  - Inefficient and insecure communication protocol
  - Mainly designed for large displays with mouse

HCI. GUI (& app) Programming

- **Native apps.** Pros:
  - Richer UI
  - Many controls
  - Safe and fast access to local resources
    - GPS, camera, files…
    - Efficient communication
    - Any protocols allowed
  - Smaller variety in languages and tools (SDK)
  - Designed for small screens and touch controls

HCI. GUI (& app) Programming

- **Native apps.** Cons:
  - No universal access
    - Each OS has a different app format and development environment
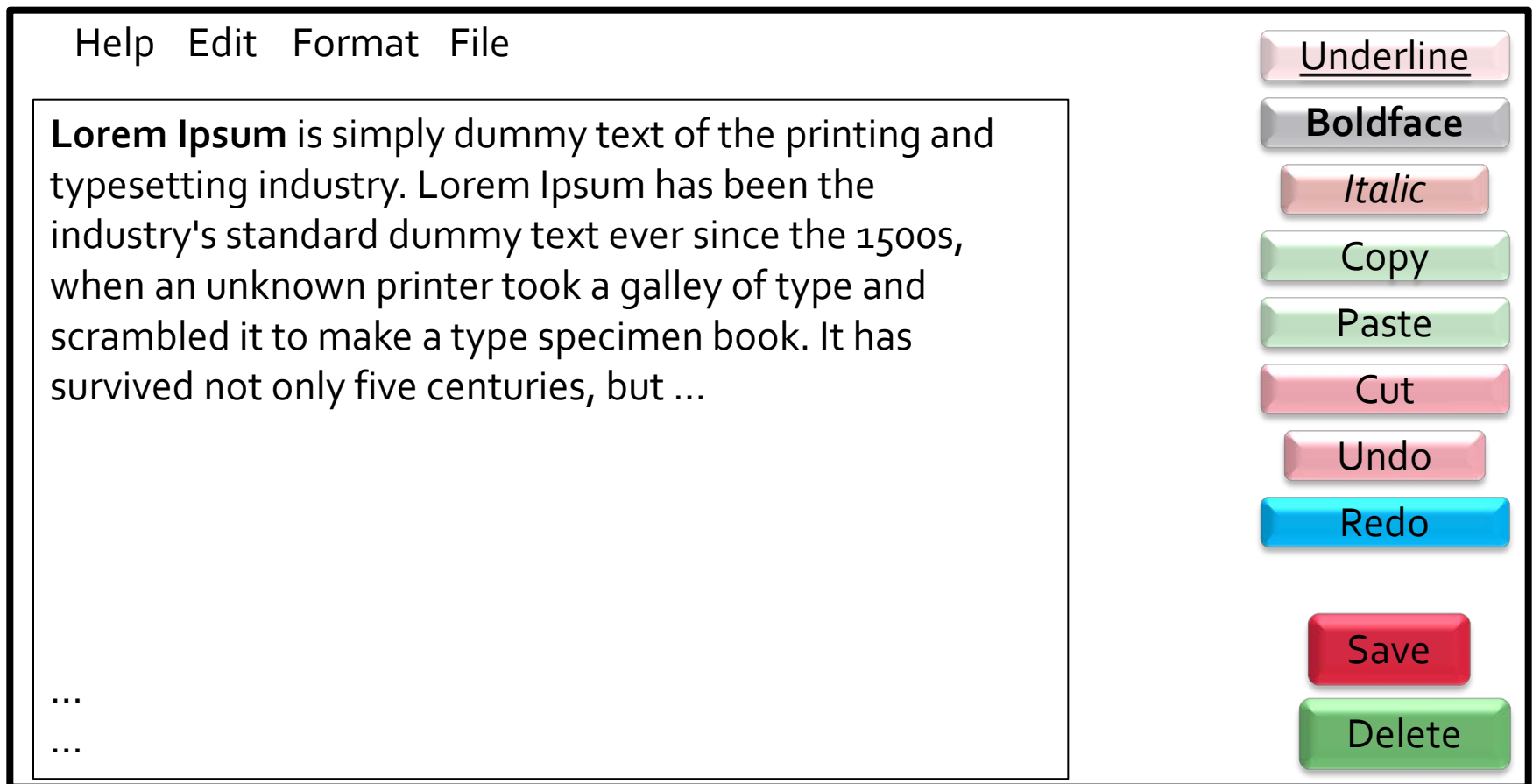 - Difficult to manage updates
    - Require individual (user guided) updates per device
  - Less general than desktop programming
    - Though a lot of new material is on the web

UI Example. Redesign

What's wrong with this simple text editor?

Help   Edit   Format   File

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but ...

...
...

Underline

Boldface

Italic

Copy

Paste

Cut

Undo

Redo

Save

Delete

UI Example. Redesign

Side to side (modified)

File Edit   Format   Help

Underline

Boldface

Italic

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but …

Copy

Paste

Cut

Undo

Redo

…
…

Save   Delete

Professors d'IDI - UPC

Interacció i Disseny d'Interfícies