User Interface Software Projects

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INF 134 Winter 2013

Tuesday, March 12, 13

Interaction design in business

- Increasing number of ID consultancies, examples of well known ones include:
    - Nielsen Norman Group: "help companies enter the age of the consumer, designing human-centered products and services"
    - Cooper: "From research and product to goal-related design"
    - Swim: "provides a wide range of design services, in each case targeted to address the product development needs at hand"
    - IDEO: "creates products, services and environments for companies pioneering new ways to provide value to their customers" http://vimeo.com/33544142
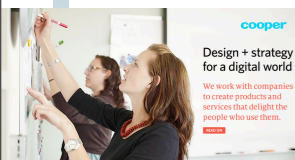
What do professionals do in the ID business?

- **interaction designers** - people involved in the design of all the interactive aspects of a product
- **usability engineers** - people who focus on evaluating products, using usability methods and principles
- **web designers** - people who develop and create the visual design of websites, such as layouts
- **information architects** - people who come up with ideas of how to plan and structure interactive products
- **user experience designers (UX)** - people who do all the above but who may also carry out field studies to inform the design of products

The User Experience

- How a product behaves and is used by people in the real world
  - the way people feel about it and their pleasure and satisfaction when using it, looking at it, holding it, and opening or closing it
  - "every product that is used by someone has a user experience: newspapers, ketchup bottles, reclining armchairs, cardigan sweaters." (Garrett, 2003)
- Cannot design a user experience, only design *for* a user experience

The iPod Nano Touch

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Why was the iPod user experience such a success?

- Quality user experience from the start
- Simple, elegant, distinct brand, pleasurable, must have fashion item, catchy names, cool, etc.,

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What is involved in the process of interaction design

- Establishing requirements
- Developing alternatives
- Prototyping
- Evaluating

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Core characteristics of interaction design

- users should be involved through the development of the project

- specific usability and user experience goals need to be identified, clearly documented and agreed at the beginning of the project

- iteration is needed through the core activities

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Why go to this length?

- Help designers:
  - understand how to design interactive products that fit with what people want, need and may desire
  - appreciate that one size does not fit all
    - e.g., teenagers are very different to grown-ups
  - identify any incorrect assumptions they may have about particular user groups
    - e.g., not all old people want or need big fonts
  - be aware of both people's sensitivities and their capabilities

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Are cultural differences important?

- 5/21/2012 versus 21/5/2012?
    - Which should be used for international services and online forms?

- Why is it that certain products, like the iPod, are universally accepted by people from all parts of the world whereas websites are reacted to differently by people from different cultures?

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Anna, IKEA online sales agent

- Designed to be different for UK and US customers

- What are the differences and which is which?

- What should Anna's appearance be like for other countries, like India, South Africa, or China?

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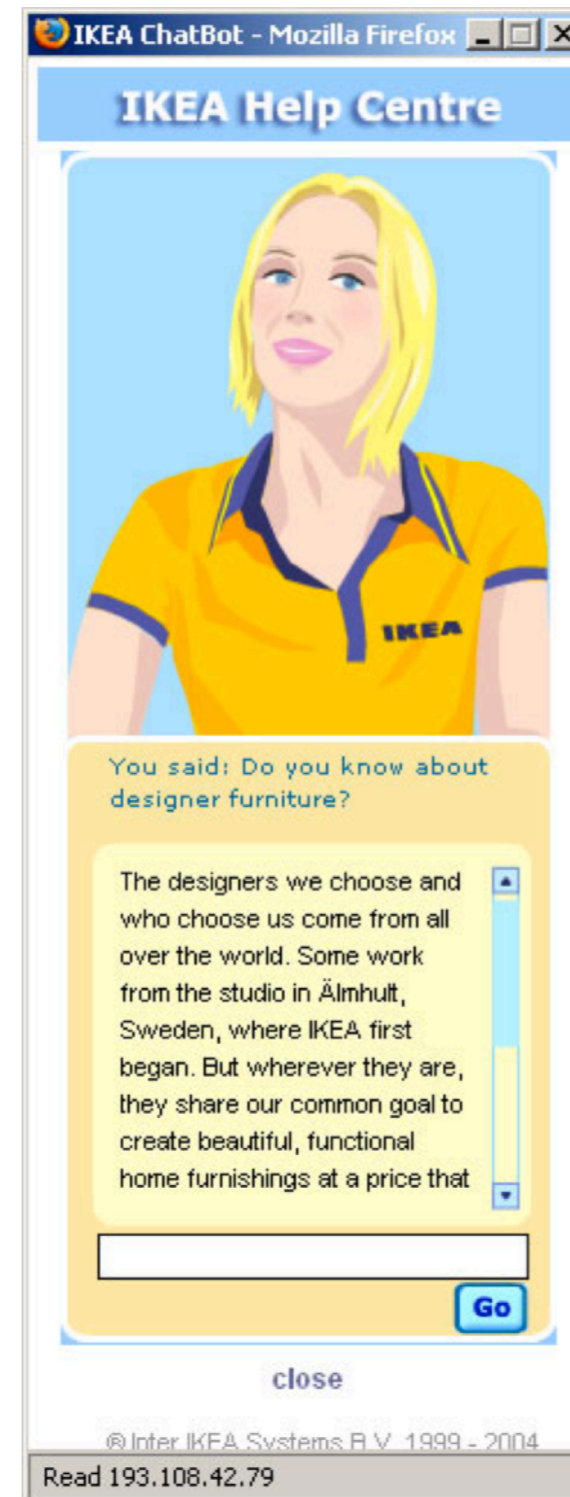
Usability goals

- Effective to use

- Efficient to use

- Safe to use

- Have good utility

- Easy to learn

- Easy to remember how to use

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Activity on usability

- How long should it take and how long does it actually take to:
  - Using a DVD to play a movie?
  - Use a DVD to pre-record two programs?
  - Using a web browser tool to create a website?

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User experience goals

Desirable aspects

satisfying

enjoyable

engaging

pleasurable

exciting

entertaining

helpful

motivating

challenging

enhancing sociability

supporting creativity

cognitively stimulating

fun

provocative

surprising

rewarding

emotionally fulfilling

Undesirable aspects

boring

frustrating

making one feel guilty

annoying

childish

unpleasant

patronizing

making one feel stupid

cutesy

gimmicky

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Usability and user experience goals

- Selecting terms to convey a person's feelings, emotions, etc., can help designers understand the multifaceted nature of the user experience

- How do usability goals differ from user experience goals?

- Are there trade-offs between the two kinds of goals?
  - e.g. can a product be both fun and safe?

- How easy is it to measure usability versus user experience goals?

Design principles

- Generalizable abstractions for thinking about different aspects of design

- The do's and don'ts of interaction design

- What to provide and what not to provide at the interface

- Derived from a mix of theory-based knowledge, experience and common-sense
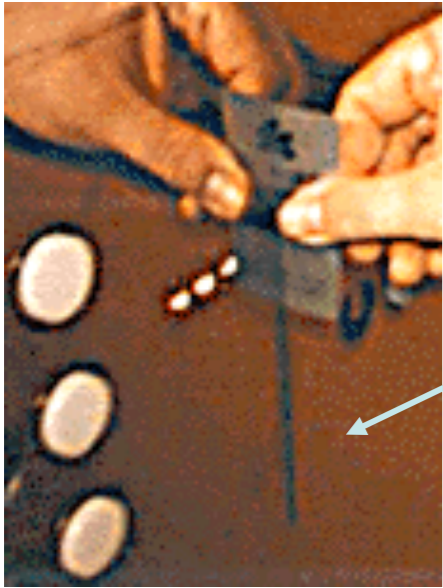
Visibility

- This is a control panel for an elevator

- How does it work?

- Push a button for the floor you want?

- Nothing happens. Push any other button? Still nothing. What do you need to do?

It is not visible as to what to do!

From:
www.baddesigns.com

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Visibility

...you need to insert your room card in the slot by the buttons to get the elevator to work!

How would you make this action more visible?

- make the card reader more obvious
- provide an auditory message, that says what to do (which language?)
- provide a big label next to the card reader that flashes when someone enters

- make relevant parts visible
- make what has to be done obvious

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What do I do if I am wearing black?

- Invisible automatic controls can make it more difficult to use

AUTOMATIC FAUCETS
TO TURN ON/WALK UP TO SINK
TO TURN OFF/WALK AWAY FROM SINK
(BLACK CLOTHING DOES NOT OPERATE FAUCETS)

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Feedback

- Sending information back to the user about what has been done

- Includes sound, highlighting, animation and combinations of these

  - e.g. when screen button clicked on provides sound or red highlight feedback:

  Previous ⟶ "ccclichhk"

  Previous ⟶ Previous

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Constraints

- Restricting the possible actions that can be performed
- Helps prevent user from selecting incorrect options
- Physical objects can be designed to constrain things
  - e.g. only one way you can insert a key into a lock

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Logical or ambiguous design?

- Where do you plug the mouse?

- Where do you plug the keyboard?

- top or bottom connector?

- Do the color coded icons help?

From: www.baddesigns.com

How to design them more logically

(i) A provides direct adjacent mapping between icon and connector

(ii) B provides color coding to associate the connectors with the labels

From: www.baddesigns.com

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Consistency

- Design interfaces to have similar operations and use similar elements for similar tasks

- For example:
  - always use ctrl key plus first initial of the command for an operation – ctrl+C, ctrl+S, ctrl+O

- Main benefit is consistent interfaces are easier to learn and use

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When consistency breaks down

- What happens if there is more than one command starting with the same letter?
  - e.g. save, spelling, select, style
- Have to find other initials or combinations of keys, thereby breaking the consistency rule
  - e.g. ctrl+S, ctrl+Sp, ctrl+shift+L
- Increases learning burden on user, making them more prone to errors

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Internal and external consistency

- Internal consistency refers to designing operations to behave the same within an application
  - Difficult to achieve with complex interfaces
- External consistency refers to designing operations, interfaces, etc., to be the same across applications and devices
  - Very rarely the case, based on different designer's preference

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Keypad numbers layout

- A case of external inconsistency

(a) phones, remote controls

1	2	3
4	5	6
7	8	9
	0	

(b) calculators, computer keypads

7	8	9
4	5	6
1	2	3
0		

Affordances: to give a clue

- Refers to an attribute of an object that allows people to know how to use it
  - e.g. a mouse button invites pushing, a door handle affords pulling

- Norman (1988) used the term to discuss the design of everyday objects

- Since has been much popularised in interaction design to discuss how to design interface objects
  - e.g. scrollbars to afford moving up and down, icons to afford clicking on

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What does 'affordance' have to offer interaction design?

- Interfaces are virtual and do not have affordances like physical objects

- Norman argues it does not make sense to talk about interfaces in terms of 'real' affordances

- Instead interfaces are better conceptualized as 'perceived' affordances
  - Learned conventions of arbitrary mappings between action and effect at the interface
 - Some mappings are better than others

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Activity

–Physical affordances:

How do the following physical objects afford? Are they obvious?

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Activity

–Virtual affordances

How do the following screen objects afford?

What if you were a novice user?

Would you know what to do with them?

Up Arrow →

Elevator Button

Down Arrow →

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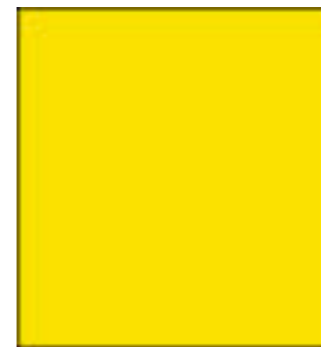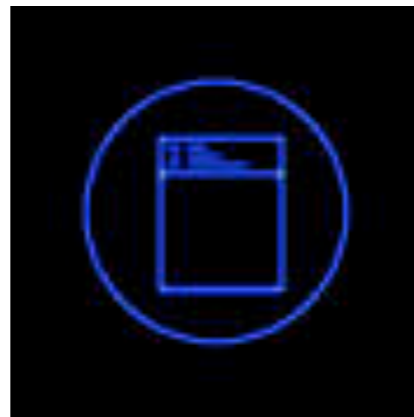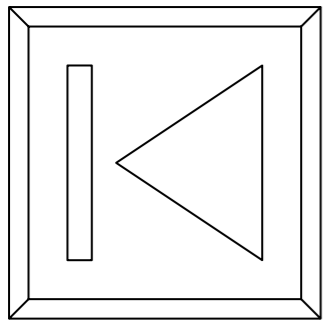
Summary

- Interaction design is concerned with designing interactive products to support the way people communicate and interact in their everyday and working lives
- It is concerned with how to create quality user experiences
- It requires taking into account a number of interdependent factors, including context of use, type of activities, cultural differences, and user groups
- It is multidisciplinary, involving many inputs from wide-reaching disciplines and fields