Interaction Design -ID

Unit 6

Learning outcomes

- **Understand** what ID is
- Understand and apply PACT analysis
- Understand the basic step of the user-centred design

What do you think of as design?

Discuss in groups ---

- What is design?
- What factors should a designer consider when developing a new product?
- Is fashion design different from engineering design?
- What differentiates good design from bad design?
- What does an interactive system designer design?
- Are interface designers artists or software engineers? What is the difference?
- How can we promote good design when designing interactive systems?
- How can YOU become an interactive system designer?

What is Interaction Design (ID)?

- Designing interactive products to support people in their everyday and working lives
- ID is a process:
  - a goal-directed problem solving activity informed by intended use, target domain, materials, cost, and feasibility
  - a creative activity
  - a decision-making activity to balance trade-offs

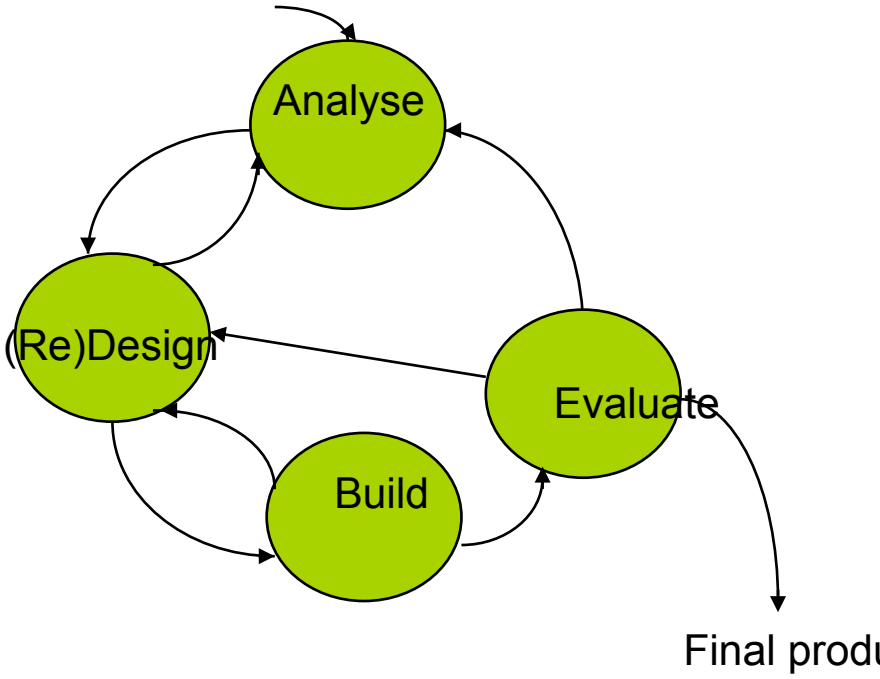
Goals of interaction design

- Develop usable products
  - Usability means easy to learn, effective to use
- Which provide an enjoyable experience
- Involve users in the design process – User-centred system design

User-centred design process

1. Analyse: identify needs and establish requirements
2. Design: Generate solutionS/
3. Build: interactive prototypes that can be communicated and assessed
4. Evaluate: analytically, with user, in the field

ITERATE…



User centred design

Good design

- Takes into account:
  - Who the users are – People
  - What activities are being carried out - Activities
  - Where the interaction is taking place - Context
  - What technologies are used - Technologies

- User-centric View of Design Problems: ***PACT Analysis***

PACT Analysis

- ‘User-centric’ framework for thinking about a design problem
- Take each category –---People-Activities- Context and Technology --- and work through it
- Use the analysis to help focus/orient early design thinking
- Important: revisit the analysis
  - As you get deeper into the problem the analysis should change and/or get richer

People: Who are the users/stakeholders?

- Those who interact directly with the product
  - those who manage direct users
  - those who receive output from the product
  - those who make the purchasing decision
  - those who use competitor's products

- Three categories of user (Eason, 1987):
  - primary: frequent hands-on
  - secondary: occasional or via someone else
  - tertiary: affected by its introduction, or will influence its purchase

People: variability

- Consider range of characteristics of people
- Physiologically
  - Age differences, physical abilities
- Psychologically
  - Attention, perception, memory
  - Forming the right ‘mental model’
- Socially and Culturally

People: What are the users' capabilities?

Humans vary in many dimensions:

— size of hands may affect the size and positioning of input buttons

— motor abilities may affect the suitability of certain input and output devices

— height if designing a physical kiosk

— strength - a child's toy requires little strength to operate, but greater strength to change batteries

— different abilities (e.g. sight, hearing, dexterity)

Activities

- What is the overall purpose of the activity?
  - What has to be satisfied
  - Hedonic vs. Pragmatic
- Temporal aspect
  - Regular or infrequent
  - Time pressure
  - Continuous or interruptions
  - Processing time
- Cooperation
  - One or more actors
- Complexity
  - Well defined or vague?
- Safety critical
  - Impact of error (how much?)
- The nature of the content
  - Type of data to be processed
  - Type of media

Context

- Where does the interaction occur?
  - Physical context
    - Noise, light, time
    - In the office, on the move
  - Social context
    - Individual activity, group activity
    - Computer-mediated social activity
    - Social norms
  - Psychological context
    - Motivation, attitudes
    - Cognitive demands
    - Level of arousal

Technology

- Input
  - Getting data in; getting commands; security
- Output
  - video vs. photographs; speech vs. screen
- Communication
  - Between people, between devices, speed,
- Content
  - What data in the system: a web site is all about content

Key characteristics

– Focus on users early in the design and evaluation of the artefact

– Identify, document and agree specific usability and user experience goals at the beginning of the project

– Iteration is inevitable. Designers never get it right first time

Understanding user needs

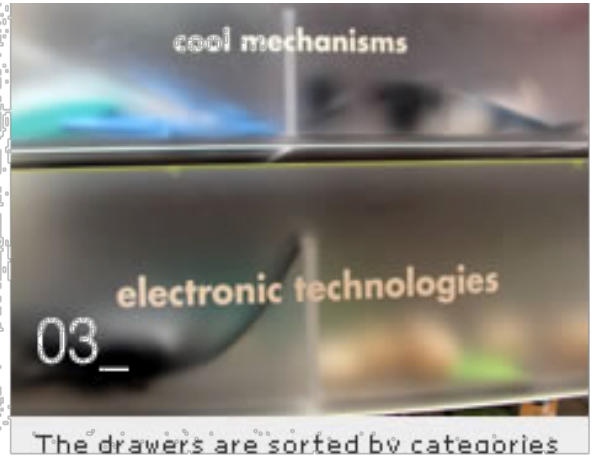
- ASK-WATCH-ANALYSE
- Users rarely know what is possible they can't tell you what they 'need' to help them achieve their goals
- Take into account people's capabilities
- Look at existing tasks:
  - their context
  - what information do they require?
  - who collaborates to achieve the task?
  - why is the task achieved the way it is?
- Envisioned tasks:
  - can be rooted in existing behaviour
  - can be described as future scenarios

Develop alternative design

- Considering alternatives is important to ‘break out of the box’
- Designers are trained to consider alternatives, software people generally are not
- How do you generate alternatives?
  - ‘Flair and creativity’ : research and synthesis
  - ‘Seek inspiration’ : look at similar products or look at very different products

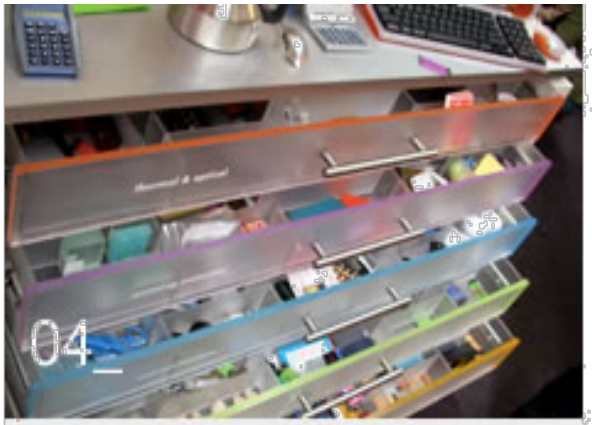
IDEO TechBox

- Library, database, website - all-in-one
- Contains physical gizmos for inspiration



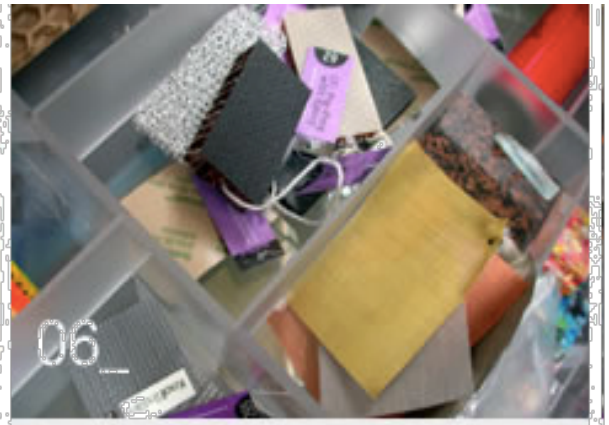
From: www.ideo.com/

The TechBox



Each drawer resembles a bento box

The curator keeps order



All the entries are tagged

It really is used daily

Two demonstrations units on top

How do you choose among alternatives?

- Evaluation with users or with peers, e.g. prototypes
- Technical feasibility: some not possible
- Quality thresholds: Usability goals lead to usability criteria set early on and checked regularly
  - —safety: how safe?
  - —utility: which functions are superfluous?
  - —effectiveness: appropriate support? task coverage, information available
  - —efficiency: performance measurements
    - Easy to learn
    - Easy to remember how to use

Idea generation

- http://grouplab.cpsc.ucalgary.ca/papers/videos/

Key points

- ID is concerned with designing interactive products to support people in their everyday and working lives
- ID involves taking into account a number of interdependent factors including context of use, type of task and kind of user and available technology
- PACT framework
- Four basic activities in the design process:
  - Analyse: Identify needs and establish requirements
  - Design potential solutions (re-design)
  - Choose between alternatives (evaluate)
  - Build the artifact

Exercise

- How does making a call differ when using:
  - Smart phone
  - Public phone box
  - Home phone
- Brainstorm the variety of P, A, C and Ts that are possible
- Explore design implications
  - Write detailed concrete stories…
  - Think about how these might affect design

Videos

- http://www.youtube.com/watch?v=-FzFk3E5nxM

Reading

- Sharp et al. (2007)
  - Chapter 1: What is Interaction design
  - Chapter 9: The process of Interaction design
    - (Chapter 6 in 1st Edition)
- Benyon: chapter 2