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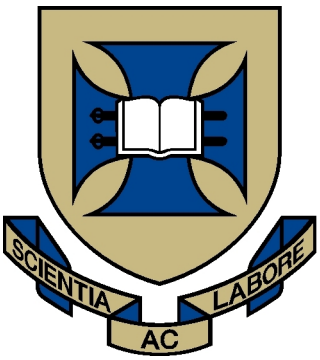

University of Queensland

DECO2500 – Human Computer Interaction Design

Lecture Summary

Table of Contents

What is interaction design

1. Explain difference between good and poor interaction design
2. Describe what interaction design is and how it relates to human-computer interaction etc
3. Explain relationship between user experience and usability
4. Describe what and who is involved in interaction design
5. Outline different forms of guidance used in interaction design
6. Enable you to evaluate an interactive product and explain what is good and bad about it in terms of the goals and core principles of interaction design

What are HCI and ID

Human-computer interaction (HCI)

Concerned with the design, evaluation, and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them

One set of usability principles (Norman 1998):
Visibility can you see your options for action?
Feedback can you see the effect of what you did?
Constraints is your activity usefully shaped towards successful paths?
Mapping is there a natural relation between your actions and their effects on the world?
Consistency are there similar operations and similar elements for similar tasks?
Affordance do interfacce elements correctly "signal" how they are to be used?

Another set of usability principles (Nielsen 2001):

- Visibility of system status
- Match between system and real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose and recover from errors
- Help and documentation

Interaction Design (ID)

Designing interactive products to support the way people communicate and interact in their everyday and working lives

Key Components of ID process

- Establishing user requirements
- Developing alternatives
- Prototyping
- Evaluating

Interaction Design Process

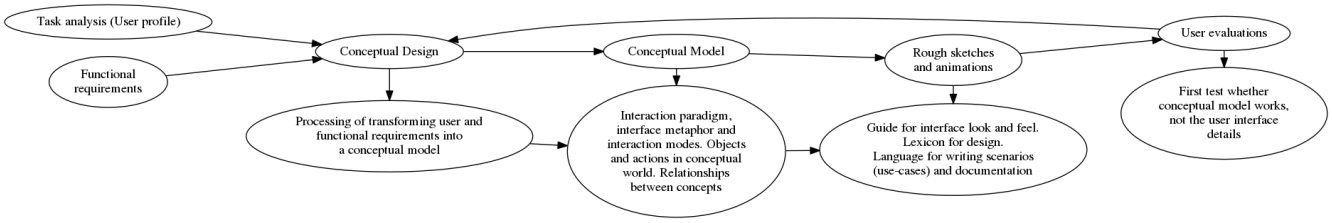

Figure 1: Interaction Design Process

Users shoud be involved throughout the project. Specific usability and user experience goals should be identified, clearly documented and agreed at start of project, and *tracked empirically throughout development*. Iteration is needed through the core activities

Help designers:

- Match what people want, need, and may desire
- Appreciate that one size does not fit all (e.g. teenagers very different from adults)
- Correct incorrect assumptions about user groups (e.g. not all old people want or need big fonts)
- Know people's sensitivities and capabilities

Architecture vs Engineering Analogy (ID vs soft engg)

Architects are specialists in how people will interact with spaces. Engineers are specialists in specifying and constructing the spaces

User Experience (UX)

How people feel about a product and their pleasure and satisfaction when using it, looking at it, holding it, and opening or closing it. It includes their overall impression of how good it is to use, right down to the sensual effect small details have on them, such as how smoothly a switch rotates or the sound of a click and the touch of a button when pressing it

Can't design user experience; can only design for it

Usability Goals

- Effective to use
- Efficient to use
- Safe to use
- Have good utility
- Easy to learn
- Easy to remember how to use

Understanding and Conceptualising Interaction

1. Explain what is meant by the problem space
2. Explain how to conceptualize interaction
3. Describe what a conceptual model is and how to formulate one
4. Discuss interface metaphors as part of a conceptual model
5. Outline core interaction types for informing development of a conceptual model

Conceptual Design

Processing of transforming user and functional requirements into a conceptual model before starting physical design. "Designing what to design"

1. Problem space
2. Conceptual model
3. Interface metaphor
4. Design space

Intial Problem Space

"In the process of creating an interactive product, it can be tempting to begin at the nuts and bolts level of design…better to make thses kinds of decisions after articulating the nature of the problem space; (that is, after) understanding and conceptualizing what is currently the user experience/product and how this is going to be improved or changed" Preece et al., p.37

- Question the assumptions
- Challenge the claims
  - Are there problems with existing product or user experience?
  - If so, what are they?
  - Why do you think there are problems?
  - How do you think your proposed design ideas might overcome these?
  - If designing for a new user experience how do you think your proposed design ideas support, change, or extend current ways of doing things?
- Get others to challenge your ideas – hard to do it yourself

Conceptual Model

"A description of the proposed system in terms of a set of integrated ideas and concepts about what it should do, behave and look like, that will be understandable by the users in the manner intended." (Preece, et al., 2002)

Three considerations when developing a conceptual model:

1. Interaction paradigm – ICT framework experienced
   - ICT framework within which interaction takes place (WIMP, mobile, ubiquitous computing, etc)
   - May be familar or novel to user
2. Interaction mode/type – what does the user have to DO?
   - How does the user interact with the system?
   - Helps user know what to do, in particular
3. Interface metaphor – exploiting user experience
   - How is the user's prior knowledge used?
   - Helps user know what to do and how to interpret feedback

- Not same as "user interface"
  - It's the concepts people need to understand in order to *use* the interface
- Not same as "user's mental model"
  - It's the conceptual basis for the user's mental model
- Not same as "use-cases"
  - It focuses on *system as a whole*, not individual tasks
- Not same as "implementation architecture"
  - It involves *abstract* constructs, not technical or implementation-level constructs

Formulating a Conceptual Model

- **Will the user understand the underlying conceptual model?**
- What will users be doing when carrying out tasks?
- How will the system support those activities?
- What kind of *interface metaphor* is appropriate?
- What kinds of *interaction modes* and styles to use?

Interaction mode/interaction type

- Giving instructions
  - Issuing commands using keyboard and selecting options via menus
- Conversing
  - Interacting with the system as if having a conversation
- Manipulating and navigating
  - Acting on objects and interacting with virtual objects
- Exploring and browsing
  - Finding out and learning things

Interface metaphor

"This works like a …"

Key Points

Chapter 1

- Interaction design is designing interactive products to support how people communicate and interact in their everyday and working lives
- Interaction design is multidisciplinary
- User Experience is central to interaction design
- "Optimizing" interaction requires taking into account context of use, types of activity, accessibility, cultural difference, and user groups
- Specifying usability and user experience goals helps design of good products
- Design principles are useful heuristic for analyzing and evaluating an interactive product