Lecture 1

Concepts of user-centered design

The important of usable system
- Increased productivity
- Reduced errors
- Reduced training and support costs
- Improved acceptance
- Enhanced reputation

Transformation

Traditional Approach
- Technology driven
- Component focus
- Limited multidiscipline cooperation
- Focus on internals architecture
- No specialization in user experience
- Some competitive focus
- Development prior to user validation
- Product defect view of quality
- Limited focus on user measurement
- Focus on current customers

UCD Approach
- User driven
- Solutions focus
- Multidisciplinary team work
- Focus on external design
- Specialization in user experience
- Focus on competition
- Develop only user validated designs
- User view of quality
- Prime focus on user measurement
- Focus on current and future customers

What is UCD
- Primary goal: making products usable
- Involving users in the design and testing of the system
- Modify prototypes based on user’s feedback

History
- ISO TC159/SC4 ergonomics of human-system interaction (1986)
- ISO 9241-11 Ergonomic requirements for office work with visual display terminals – guidance on usability (1999)
- ISO 13407 (1999)

INUZE 6.2, Handbook of user-centred Design.
Obstacle factors

- Resource constraints (28.6%)
- Resistance to UCD/usability (26%)
- Lack of understanding of the usability concept (17.3%)
- Lack of communication between design and results (13.3%)
- Lack of trained usability experts (6.1%)

Rosenbaum, et al, 2000

Informal, low-cost, UCD methods, in particular heuristic evaluations were widely used but ranked less effective than more costly methods.

Rosenbaum, et al, 2000

Making a difference – a survey of the usability profession in Sweden

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No longer a lack of HCI knowledge within the industry
A lack of respect and support for usability issues
A lack of involving management and other stakeholders in the process.

Definition of UCD?

- User engagement in the design process
  - Users having real decision-making powers
  - Users having appropriate mechanism for communication with, and negotiation with, developers
- A socio-technical design process
  - Containing iterative and evolutionary approach
  - Where consideration is given to job satisfaction

Main principles

- An appropriate allocation of function between user and system
- The active involvement of users
- Iterative design solutions
- Multi-disciplinary design teams
1. Plan the human centred process
   - Design philosophy
   - Identify design team and users
   - Time-line
   - Success criteria

2. Specify the context of use
   - Understand the characteristics of
     User, tasks, organization, Environment
   - Task analysis

3. Specify the user and organizational requirements
   - Allocation of tasks among users
   - Functional requirements
   - Performance criteria
   - Usability criteria

4. Produce design solutions
   - Collect knowledge for design
   - Concrete design solution
   - Prototypes and user tests
   - Iterating above process untill satisfy

5. Evaluate designs against user requirements
   - Getting feedback for design
   - Assess the achievement of user and Organizational objectives

6. Context of evaluation
   - Usability evaluation
   - Meets all the requirements
   - ISO 13407
   - UCD process
   - Prepare for UCD (1)
     - Incorporated into existing development strategies
     - Rigour in planning and management
     - Identify the activities and relationship with development
   - Prepare for UCD (2)
     - Resources: time, equipment, skill, number of participants
     - Sufficient time to integrate user feedback into the development
   - Usability cost-benefit analysis
     - Meeting with project manager, usability specialist and user representatives
     - Cost of UCD activities
     - Potential saving
     - Balance the cost of allocation of resources
   - The UCD Team
   - Total User Experience Marketing Specialist
     - Leader
   - User Research Specialist
   - Technology Architect
   - Service & Support Specialist
   - User Assistance Architect
   - Visual Designer
   - HCI Designer
   - The benefits of UCD
     - Reduced development time
       - Reducing later changes, reducing cost of future design
     - Increased sales
     - Usage savings
       - Reducing task time
       - Fewer user errors
       - Less training and support and documentation
       - Reduced staff turnover
     - Support savings
     - Improve the quality of life
     - Health and safety legislation
Context of use analysis (CoU)
- Identify user and tasks
- Two major uses for CoU analysis
  - As an aid to requirements capture
  - As an aid to usability evaluation

How to promote usability in an organisation
- Assess and list the potential costs and benefits.
- Relate the benefits to the business/organisational objectives.
- Consider what concrete differences UCD could make to the system.
  - Find good and bad examples of similar systems, and show these to the decision-makers.

How to promote usability in an organisation
- Cite big names or similar organisations to yours that already use UCD.
- Get involved at earlier stages of the design.

Evaluate design against requirements
- Usability evaluation
- User-based and expert-based evaluation

System release and management of changes
- Assisting for installation, training
- Technical support
- Provision of documentation and on-line help
- Setting up of user groups

Conclusion
- UCD is a process
- User and usability focus
- Cost-benefit analysis
- Use in context
- Early involving
- Iterative of design solutions
- Multi-disciplinary design teams