User-Centred Design

Interaction Design Studio (DECO1200)
Outline

What is user-centred design?
How is it different from user evaluated design?

Why is user-centred design important?
What are the potential benefits of user-centred design?

Applying ethnography in design.
How can users be studied in their working environment?

Involving users in the design process.
How can users become co-designers?
What is a User-Centred Approach to Design?

Previously, we have looked at ways to gather data from users about their requirements. Last week we also looked at how to get users to evaluate design ideas using prototypes.

User-centred design emphasises the importance of including users throughout the design process. Users are included in the initial design phase all the way through the process of design and evaluation.
What are the Benefits of User-Centred Design?

Understanding user needs and goals
Producing better designs through an understanding of user needs and goals as discussed previously

Managing user expectations
Involving users in the design process can help manage expectations of what the product can achieve

Involving users with a sense of ownership
Involving users in the design process can give them a greater sense of ownership of the project and product
Involving Users in the Design Process

Users as full-time members of a design team
Involving users on a full-time basis potentially provides the maximum amount of useful information to a design team but in long-term projects can lead to the users getting out of touch with practice over time.

Users as part-time members of a design team
Involving users on a part-time basis can allow regular input from the users while still allowing them to stay current in the core activities of their work practices.

Users as occasional members of a design team
Involving users on an occasional basis may work best for projects that have very large (or very varied) user groups, e.g. a boxed software product or a web site.
Applying Ethnography in Design

Ethnography aims to discover order within an activity without imposing a framework of interpretation on it.

Ethnographers immerse themselves in the users’ environment and participate in day-to-day work.

Making the implicit explicit

Users often don’t see the importance of familiar actions and hence don’t comment on them in interviews or other data gathering exercises, ethnographic studies can capture information about requirements etc. that may be missed using other methods.
Collecting Ethnographic Data

Ethnographic studies collect data about what is “ordinary” in an environment
What do people say? How do they work?

Ethnographic studies collect data in many different forms
Collected documents, memos, written notes, pictures, photos, audio recordings, records of room layouts, etc.

Ethnographic studies do not begin with a firm plan of what data to collect
Data collection is a consequence of whatever becomes available during the study
Three Viewpoints of Coherence

Coherence is an approach to ethnographic studies developed for use in design

Distributed Co-ordination
Focuses on the distributed nature of tasks and activities and the ways that they are co-ordinated.

Plans and Procedures
Focuses on the organisational support for task and activities, e.g. organisational charts.

Awareness of Work
Focuses on how people maintain an awareness of what other people are doing, e.g. sharing information.
Four Concerns in Coherence

Paperwork and Computer Work
Systems that implement plans and procedures and the mechanisms of developing a sharing awareness of work

Skill and the Use of Local Knowledge
These are the “workarounds” that are developed in organisations and are how the real work gets done

Spatial and Temporal Organisation
What is the physical layout of the work environment and what areas are important at different times

Organisation Memory
Individuals keep their own records of how things should happen and who to talk to get things done
Contextual Design

Contextual Inquiry
Designers work as an apprentice to the user

Work Modelling
Designers develop a model of how work is done

Interpretation Session
Designers compare their findings and work models

Consolidation of Models
Designers consolidate their models and identify themes

The Design Room
Designers determine ways to redesign the working environment/practice and produce prototypes/systems
Work Modelling

Work Flow Model
Communication and collaboration between people

Sequence Model
Detailed description of the steps to achieve a task

Artefact Model
Physical things created to do work, e.g. Post-It Notes

Cultural Model
Cultural constraints, e.g. values, beliefs, expectations, etc.

Physical Model
Physical aspects of the environment, e.g. office, LAN, etc.
Corporation
- Keep lots of records.
  - Use your req. or lose it.

Backup Problem Handlers
- NetOps
- Internal TelCo handler
- Telephone Co.'s
- We are slow and in your way.
- We don't report progress.

Tag
- Train me and I'm gone.

System Manager
- Cover for me during your daytime.
- Cover for me when I forget.

Users
- I control your computer usage and disk space.
- You should care what the system is doing even if you don't want to.
- Take responsibility for your actions.
- Our services cost you.

Vendor
- I won't give timely reports on ongoing problems.

Group Culture
- Raise problems through escalation chain.
- Can't take time to train people.

Operator
- I control your computer usage and disk space.
- You should care what the system is doing even if you don't want to.
- Take responsibility for your actions.
- Our services cost you.
- Lose my data and lose your job.
- I'll find a way around your restrictions.
Local Building

- TAGs
- Vendors
- Managers
  
  **dumb user**
  
  Installs app that breaks system

All can touch, alter, or destroy

**Hallway**

- Printer
- Copier

- System manager's office
  
  WS Screen:
  - See watcher results
  - Problems in orange
  - No distinction between status and problem
  - Common tools to set up cluster

- **Phone for problems**

- **Buzz for problems**

  Has to log into individual machines

  No paper

  All on-line

  Too much noise info

**"Lights out" data center**

- Node
- Node
- Node

  Network configuration

  Watcher

  Each cluster is unique

  Watcher

  Node
  Node
  Node

  Network configuration

  Cluster

  Watcher

  HSC

  200 backups a night

  Tape library

- **Watchers**
- Circuits up
- Security
- Passwords in files
- Changes to UAF
- Inactive accounts

- DCM
- Disk space
- Overloaded HSC
- Overloaded system

- **Multiple inconsistent tracking databases**

- Redundant circuits for critical connections

- Keeps different working hours

- Florida

  Network configuration

- Japan

  Tracking DB

- Brazil

  Tracking DB

- Other side of world
  - Takes over at night

  Network configuration

  Can't keep configuration databases in sync if net failures
Participatory Design

In contrast to contextual design, where the designer becomes part of the user group, in participatory design the users become part of the design team.

Users become equal partners in the design team and are actively involved in the design process.

Advantages of participatory design is that it can highlight potential communication problems early in the design process.

Users often find it difficult to understand a design idea and resolving this communication issue can lead to breakthroughs in the design process.
Using low-fidelity prototyping items users can investigate interface design issues

Low-fidelity prototyping items include sticky notes, marker pens, labels, icon stickers

Users manipulate the prototyping items in a shared design surface to communicate ideas

Sessions are videotaped to record the design ideas as they are generated on the shared design surface

Motivations for using PICTIVE include:

Empowering users to act as full participants in design
Improving knowledge acquisition from users in design
Shared Design Surface

Post-it™ Notes

Plastic "Icons"

Interactive, "Equal Opportunity" Design Surface

Pop-up Events

Labels (data fields)

Colored Pens

Colored Highlighters

Video Record
CARD

Using playing cards with pictures of the steps involved in activities, e.g. screenshots, users explore different workflow options

CARD is a form of storyboarding where users are asked to create the storyboard using the playing cards

CARD can be used with PICTIVE to better define different aspects of the design

CARD focusses on a macroscopic level of design, i.e. the workflow, whereas PICTIVE focusses on the details
Customer Mental Operation

Decide what you need

Customer Mental Operation

Decide to order only those two items (no browsing)

Select Individual Item

Name: milk (1 liter)

Select Individual Item

Name: 12 eggs

Negotiate Delivery

Where:
my house (use actual address)

When:
by 4:00pm

Negotiate Billing

☐ My usual billing

☐ Credit card:

☐ C.O.D.
## Comparison of Approaches

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<td><strong>User Involvement</strong></td>
<td>Low</td>
<td>Low</td>
<td>Low to Medium</td>
<td>High</td>
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<td><strong>Role of Designer</strong></td>
<td>Researcher of work practice</td>
<td>Interpreter of collected data</td>
<td>Apprentice and mediator</td>
<td>Partner with users in design</td>
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<tr>
<td><strong>Length of Study</strong></td>
<td>Extensive</td>
<td></td>
<td>A series of 2 hour sessions</td>
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<td><strong>Benefits</strong></td>
<td>Detailed study of working</td>
<td>Represents data for designers</td>
<td>Systematic design study</td>
<td>User ownership</td>
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<td><strong>Drawbacks</strong></td>
<td>Expertise and time required</td>
<td>Coverage and support limited</td>
<td>Complicated for users</td>
<td>Constrained user thinking</td>
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<tr>
<td><strong>When to Use?</strong></td>
<td>When time and resources allow</td>
<td>Ethnographic design studies</td>
<td>User-centred focus required</td>
<td>Users are willing and available</td>
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Summary

User-Centred Design
Involving users at all stages of the design process.

Benefits of User-Centred Design
Better products, expectation management, participation

Ethnography in Design
Immersive study of users in their environment

Participatory Design
Involving users as co-designers in a project