

cs465

principles of user interface design, implementation and evaluation

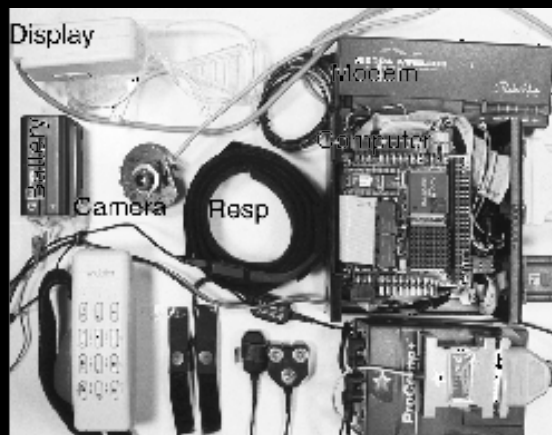
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1. Design Assignment
2. Affective Computing
3. User and Task Analysis
4. Contextual Inquiry
5. Discuss problem 2



Send your thoughts to
somo@ideo.com

Affective Computing is **computing** that relates to, arises from, or deliberately influences emotions.



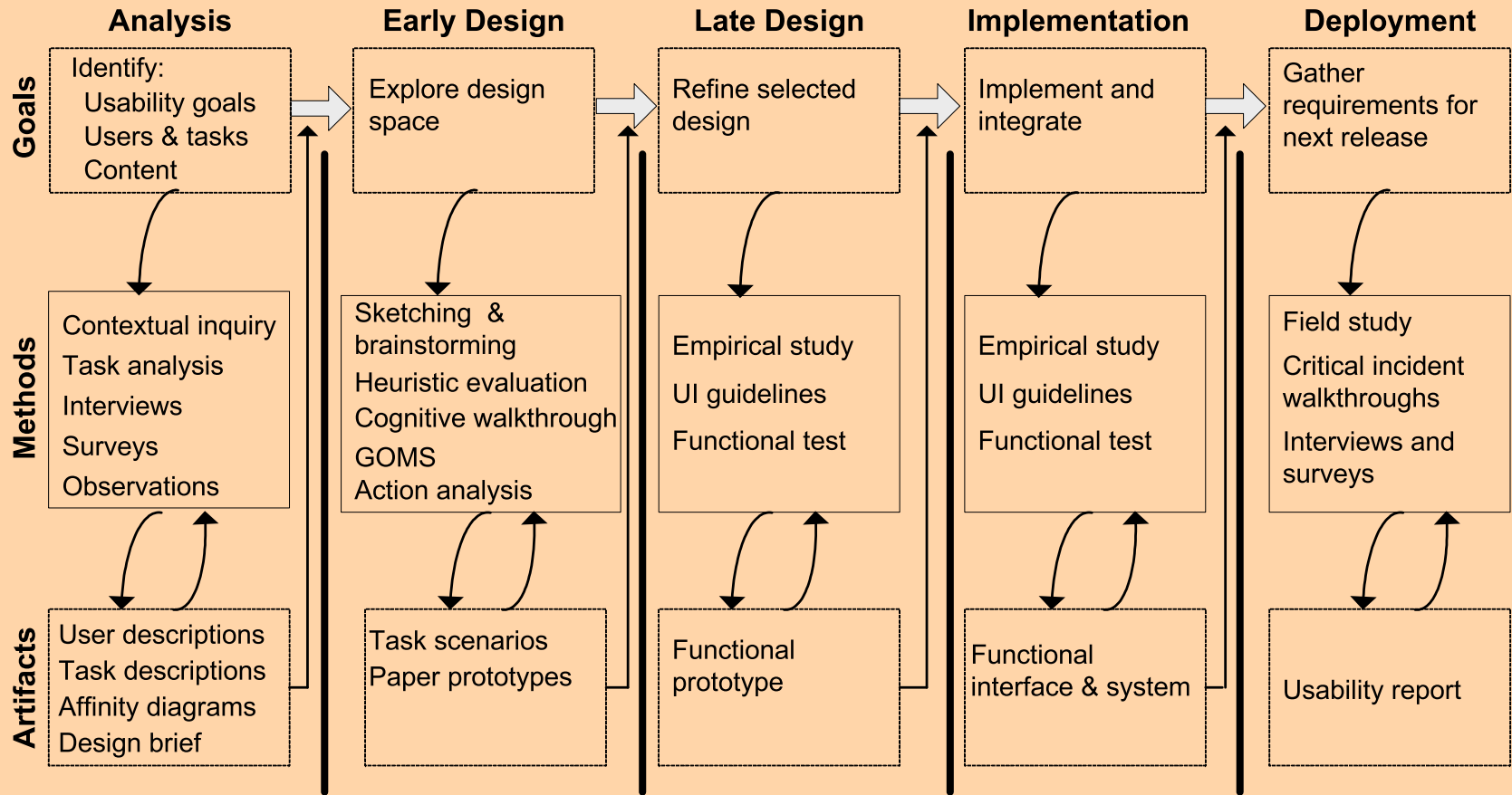
Startlecum 1998



HealthGear

- o Automotive Systems
- o Computer “teachers”

Context of TCUID - Task Centered User Interface Design



User Analysis

Users' needs, requirements, aspirations, and expectations have to be discussed, refined, clarified, and probably rescoped.

- Preece et al

Study Users

who is your audience ? What is their goal with this task?

User-Centered Approach

listen to users experience, needs, ideas

Requirements

functional requirements – what system should do

non-functional requirements – constraints on system and development

user requirements: environment, collaboration, sharing

Data Gathering

Surveys, Interviews, Focus Groups, Observation

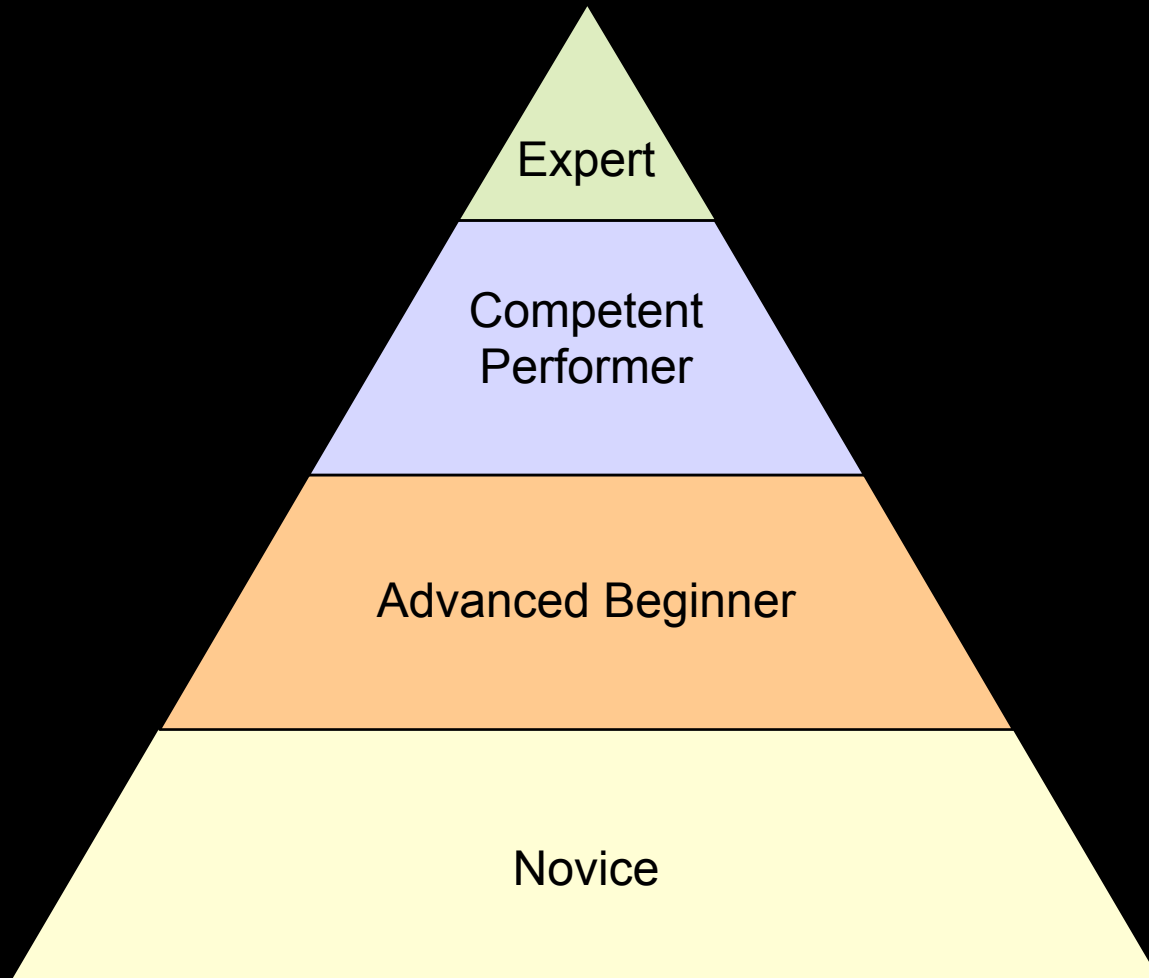
User Scenarios

What will they do step-by-step and why? Storyboard.

- Identify the user – by name!
- For each user, learn about his or her:
 - background, education, experience, skills
 - physical dimensions (for mobile/ubicomp)
 - nationality (proficient in English?)
 - any other data relevant to the project
- You need to mount a large display as part of an awareness UI. How high should you mount it?

- The person who will be using your system
- If you cannot find a user you are in trouble
 - “everyone” is not the user
 - “the designer” is not the user
 - “the VP” is not the user
 - “purchasing” is not the user
 - “marketing” is not the user
 - You are not the user
- Identify each user by name

Stages of Use Model



About 80% of users never get beyond the advanced beginner stage

Task Analysis is used mainly to investigate an existing situation. It is used to analyze the underlying rationale and purpose of what people are doing: what they are trying to achieve, why are they trying to achieve it, and how are they going to do it.

- Preece et al

Task Analysis covers techniques for investigating cognitive processes and physical actions, at a high level of abstraction and in minute detail.

ex. Hierarchical Task Analysis (HTA), GOMS

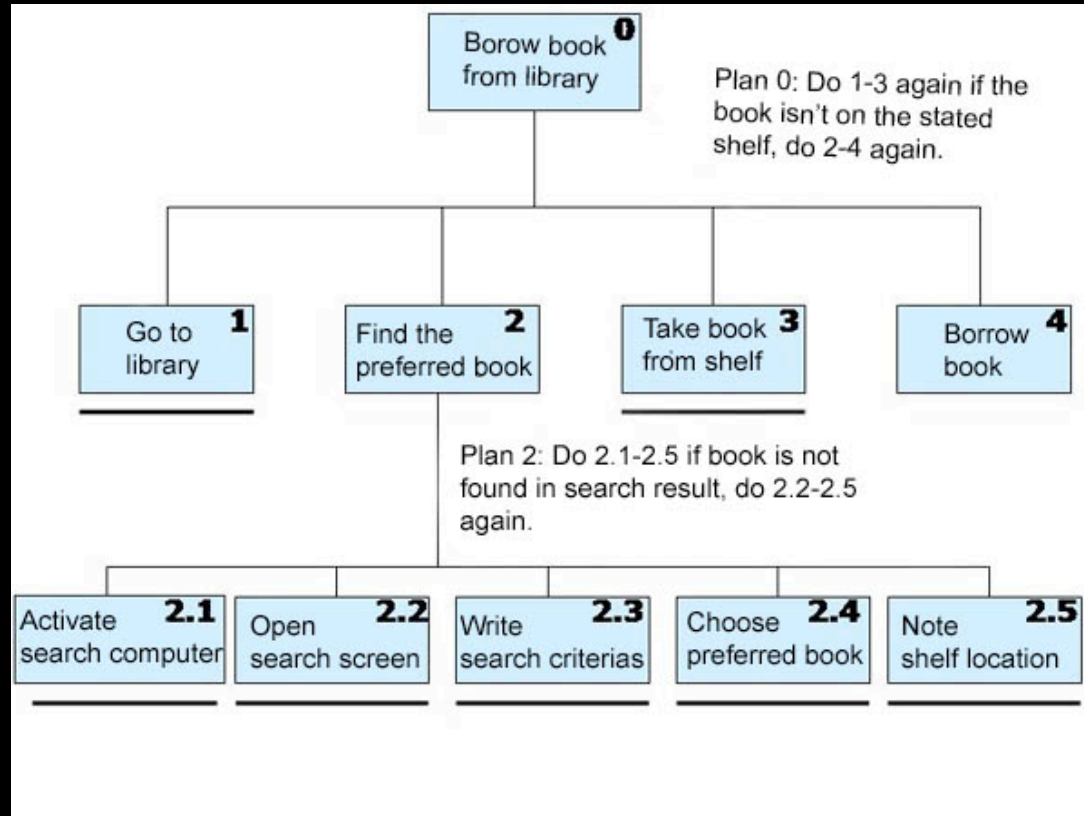
- Preece et al

Task Characteristics

- Frequency
- Criticality
- Time to complete
- Difficulty
- Division of responsibility

An example of HTA (from Preece, Rogers & Sharp, 2002, Interaction Design):

Imagine that you want to borrow a book in the library, this is your goal. To fulfill this goal, you have to perform a number of tasks, in example, go to the library, find the book, borrow the book, etc. The task of finding a book can then be divided into subtasks such as finding and open the library catalog, search the book in the catalog, and so on.



The figure shows how the tasks can be structured hierarchical according to HTA. The plan controls the order and conditions of the tasks. Tasks that can't be divided further are underlined (a line under the box). Subtask 4, Borrow a book, on the other hand, can be divided further, such as use the library card in the card reader, get the receipt, and so on.

Talk with Real Users

- Meet users and have them describe their tasks
 - may have a narrow view of their tasks and may not be aware of new work practices or new technology
 - may leave out important details
 - how they *say* that they perform tasks may be different from how they *actually* perform them
- Users are not the designers
 - learn about the tasks from the users
 - use your design skills to create a design
 - get feedback from users on the design

Some Problems with Task Analysis

- Tasks can become extremely complex and large – do not scale well
- Hard to describe tasks that run in parallel
- Hard to describe pauses and unexpected flows
- Limits the type of tasks that can be modeled



Goal Directed Design – Cooper

Argues the goal is the final state. The task is an intermediary process. Focus on goals, not the task.

Contextual Inquiry (or Contextual Design Method)

moving from requirements to first design

Conduct a contextual inquiry to:

- observe real users performing real tasks in context of work practice and social environment
- learn about task domain, work culture and physical and social constraints of the work place
- help build trust among users who may help evaluate the interface later

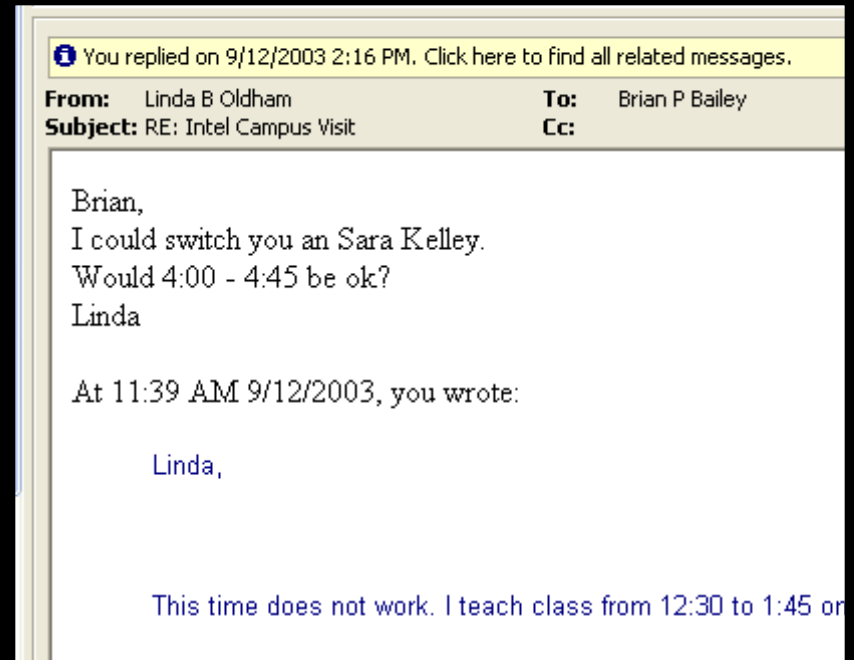
Why Contextual Inquiry – Example 1

Most ATMs have deposit slips available at the front of the machine. A contextual inquiry might show that this interface requires users to stand in line twice during high usage, once to get the slip, and then again after having filled it out.



Why Contextual Inquiry – Example 2

A contextual inquiry into how users manage e-mail and calendars may reveal that the user often sends/receives e-mail concerning meetings. This may lead to an agent that parses the text and adds a button to the e-mail to automatically schedule the meeting.



Why Contextual Inquiry – Example 3

A contextual inquiry into how a user utilizes a PDA when not in use may reveal that the user often places the PDA beside a desktop monitor to provide peripheral awareness. This may lead to a system that allows the user to interact with the PDA using the local keyboard and mouse



Methods of Inquiry

- Active observer
 - shadow the user for short time
 - encourage user to talk aloud as they perform tasks
 - ask questions to clarify what they are doing and why
 - collect copies of artifacts as they are generated
 - jot down tasks in detail and in real-time
- Passive observer
 - passively observe (or video tape) the user
 - ask for clarification or to see artifacts at end of day
 - jot down tasks as the user performs her work or by later reviewing the video tape with or without the user
- Immersed observer
- Surveys, interviews, critical incident scenarios

Contextual Inquiry is NOT

- An interrogation
- A formal interview
- A forum to tell users they are doing it “all wrong” and how to do it right
- A forum to tell users how to do their work or how technology could make it easier
- A fishing expedition

Contextual Inquiry is Difficult Because

- Users may be shy, or even suspicious
- Users may not want you to see them make errors or other mistakes
- Users do things differently when people are observing them work
- You are not exactly sure what to look for
- You collect an enormous amount of data