//ihm.tumblr.com/post/105778492/word-cloud-for-hci-CS5340 HUMAN-COMPUTER INTERACTION

human-computer-interaction

February 21, 2013

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TODAY'S CLASS

- T4 & T5
- Design practicalities
- Evaluation techniques
- Paper Presentations

T4&T5

Due 6pm Feb 28

T4: CONCEPT SELECTION Functional Requirement Narrowing

- Look @ T3 functional requirements
 - choose the 3 most important (and most feasible to implement) that you will focus on for the remainder of the semester.
 - Describe why you have chosen these to focus on these.

T4: CONCEPT SELECTION

- Choose one of your T3 design concepts
 - This is the concept you will pursue for the remainder of the semester.
 - Most innovative idea
- Revise
 - T3 feedback
 - Course concepts/readings
 - Requirements narrowing
 - Team discussions
 - Classmate feedback
- Don't focus too much on low-level details (font, precise widget placement, etc.)
 - your design concept is still in flux.

T4: CONCEPT SELECTION

- Describe
 - which concept you've chosen to pursue & why
 - what was lacking in your other design concepts, and how the one you've chosen seems to be superior
 - how you've refined your design concept since T3 (how you've improved upon it)
 - Feedback
 - Class readings
 - Etc.

T4: CONCEPT SELECTION STORYBOARD

- Revise T3 storyboard for your chosen concept
- Depict users engaging with functions that support that address your 3 functional requirements
- More detailed than T3
- Show how your design would work well in the more complex situations (where lesser interface designs might fail).

T4: CONCEPT SELECTION STORYBOARD

- Clearly indicate what things about the design are going to make it successful in a social use context.
- A stranger should understand it
 - the problem(s) you are solving
 - How the system would work
- Provide very short (1 sentence) captions for each
 - set the context & describe the scenario

T5: Paper Prototyping Kit

- Develop a paper prototyping kit
- Focus: metaphor + task analysis + requirements:
 - What does the user need to do and how will your tool help them do it.
- Practice w/1+ friends
- Follow the suggestions mentioned in class and in the Rettig paper.

T5: Paper Prototyping Kit

- Support the 3 functional reqs identified in T4
- You are not just handing in screenshots.
 - paper tools that allow you to manipulate the interface as a tester "uses" it
 - Static elements
 - background, menus, other windows
 - Dynamic elements
 - Dialog boxes, menu drill-downs, etc.
- Very neat hand-sketching is preferred.

T5: PAPER PROTOTYPING BRIEFING

- At most a page
 - Your notes for the briefing
 - short, simple and clear
 - Purpose of your application
 - Any background information about the domain that may be needed by your test users to understand it
- You will read this to your test users in T6.
- Should absolutely **not** describe how to use the interface.

T5: PAPER PROTOTYPING TASKS

- Write 3 tasks on separate index cards.
- Concrete goal of the task
 - Not specific steps, since that's for your users to figure out.
 - Do this: "get nutritional advice from an expert"
 - Not this: "click on the 'send message' button"
- Not trivial
 - some of the most complex that someone might have to do with your interface.

T5: PAPER PROTOTYPING TASKS

- You will read these tasks to your test users
- Create a short list of questions that you are hoping to answer through this evaluation
 - What aspects of the interface are you unsure of?

T5: PAPER PROTOTYPING Preparing

- As a team, rehearse
 - briefing, tasks, prototype, questions asked
- Each team member must play a role

 Computer, facilitator, observers
 - All practice playing the computer: get to be competent and confident
- Plan how you will rotate roles
- Start looking for potential users now

T4 & T5: SUBMISSION

• T4: Blackboard PDF

– Report

- T5
 - Blackboard PDF
 - Concise description of how prototype works
 - Brief, tasks, questions
 - Hard copy in class
 - Concise description of how prototype works
 - Brief, tasks, questions
 - Photocopy of (numbered) prototype materials

DESIGN: SOME PRACTICALITIES

UI DESIGN



WHY IS UI DESIGN HARD?

- Infinite possibilities
- Getting out of rut of what exists now
 - While still facilitating a sense of consistency
- Many, many published heuristics, guidelines, rules
- Everything comes together
 - Desired functionality
 - User abilities, knowledge
 - Aesthetics
 - Conventions
 - ...

BEST SOLUTION APPROACH

- Try (& evaluate) lots of ideas
- Parallel design
 - Generate several options at once, by different designers
- Cyclic design
 - Generate, evaluate, repeat

NAVIGATION DESIGN

- Structure 2 foci
 - Local
 - One screen/page
 - Global
 - Site/software structure
 - Transitions between screens

LOCAL STRUCTURE

- Much interaction: goal seeking behavior
 - People meander. Why?
 - Some idea of what they want to do
 - Partial mental model of how system works
 - Exploring a new interface
 - What does this relate to (hint: think about the interaction models we learned about)
 - Norman's model of interaction
 - Gulf of execution
 - Abowd & Beale
 - Articulation issues (user task \rightarrow system input language)

LOCAL STRUCTURE

• Users should be able to answer...

4 orienting questions:

- 1. where you are (what is happening)
- 2. what you can do
- 3. where you are going (what will happen)
- 4. where you've been (what you've done)



GLOBAL STRUCTURE

- Network diagram
 - What other representations of system usage have we discussed?
 - Advantage over scenarios?
 - Full account of paths through system
 - How different from task analysis?
 - Focus here is on screen states & transitions
 - TA: incorporates direct screen interaction + broader context



GLOBAL STRUCTURE

- Network diagram
 - More task-oriented than screen hierarchy
 - What leads to what
 - What happens when
 - Branches and loops



AESTHETICS AND UTILITY

- Pretty ≠ good
- A well-designed UI should be aesthetically pleasing
 - But beauty and utility may be at odds
 - Examples?



AESTHETICS & UTILITY





"Prezi is helping reinvent the art of presentation. Farewell, one-dimensional thinking. Welcome instead the power of inter-connection, flexibility, and the unexpected 'Aha!'"

- Chris Anderson, TED Curator

- http://prezi.com/
- <u>http://prezi.com/yb_rjdx1rgij/social-media-101/</u>

DESIGN RULES

- principles
 - abstract design rules (not very specific)
 - low authority
 - high generality
- standards
 - specific design rules
 - high authority
 - limited application
- guidelines
 - Vs. standards
 - lower authority
 - more general application
 - Vs. principles
 - Less general
 - Often more technology oriented



PRINCIPLES TO SUPPORT USABILITY

Learnability

the ease with which new users can begin effective interaction and achieve maximal performance

Flexibility

the multiplicity of ways the user and system exchange information

Robustness

the level of support provided such that the user can successfully achieve and assess goal-directed behaviour

PRINCIPLES OF LEARNABILITY

Familiarity

- how prior knowledge applies to new system
- Correlation between prior knowledge + knowledge needed to interact with system
- Guess-ability; affordance
 - Intrinsic properties that suggest interactions
- assumes user has a mental model

Start St

Synthesizability

- assessing the effect of past actions
- Honesty
 - immediate vs. eventual

PINTEREST

PRINCIPLES OF FLEXIBILITY

the multiplicity of ways the user and system exchange information

Dialogue initiative

- freedom from system imposed constraints on input dialogue
- system vs. user pre-emptiveness
 - Maximize: user pre-empt the system
 - Minimize: system pre-empt the user

Multithreading

- ability of system to support user interaction for more than one task at a time
- Concurrent vs. interleaving; multimodality

Task migratability

- passing responsibility for task execution between user and system
- E.g. spell check, others?



- Version 1 <u>http://www.youtube.com/watch?v=9c6W4CCU9M4</u>
- Version 2 <u>http://www.google.com/glass/start/how-it-feels/</u>

PRINCIPLES OF FLEXIBILITY (CTD)

Substitutivity

- allowing equivalent values of input and output to be substituted for each other
 - E.g. margin width
- representation multiplicity
 - Flexible rendering of state
- equal opportunity



PRINCIPLES OF ROBUSTNESS

the level of support provided such that the user can successfully **achieve** and **assess** goal-directed behaviour

Observability

- ability of user to evaluate the internal state of the system from its perceivable representation
- persistence (ephemeral vs sticky)
 - Website menus
 - Notifications
- operation visibility

Recoverability

- ability of user to take corrective action once an error has been recognized
- Reachability
- forward/backward recovery

PRINCIPLES OF ROBUSTNESS (CTD)

Responsiveness

 how the user perceives the rate of communication with the system

– Stability

Task conformance

- degree to which system services support all of the user's tasks
- task completeness
 - Supports all tasks of interest
- task adequacy
 - Supports tasks as the user wants