

User Wants & Needs Leads to System Requirements



What are people trying to accomplish?

Connections to YOUR project?



Agenda

- Wants and Needs **defines the problem**
 - ❖ What are the users trying to do?
 - ❖ In what context? To what end?

- Requirements Definition **defines the solution space**
 - ❖ Overview, purpose, functionality, utility
 - ❖ Metrics forevaluation



Data You Are Gathering

- Information about users
 - ❖ what about universal design?
- Description of environment
 - ❖ where the current tasks are performed
- Major goals of the job
 - ❖ what results in a successful end state?
- User preferences & needs
 - ❖ before they even start: coffee, pen, notebook, log sheets...



Data Gathered, cont' d...

- Tasks & Subtasks:

- ❖ Physical
- ❖ Cognitive
- ❖ Communication

- Conditions under which these tasks are done

- Results/outcomes of tasks

- Requirements to perform task:

- ❖ Information
- ❖ Communication with others
- ❖ Equipment

Must include
Should include
Could include
Exclude



Some Techniques, reminder

1. Observation of Current Tasks
2. Interviews & Contextual Inquiry
3. Ethnography
4. Surveys & Questionnaires
5. Focus Groups & Expert Debriefing
6. Competitive Product Review
7. Documentation mining
8. Data logging
9. ...etc...



1. Observation

- Watch users do what they do
 - ❖ Typically from a distance
- Record with videotape
 - ❖ May require coding video later
- Take lots of notes, sketches
- Focus on *specific* task-relevant behaviors in notes, but later convert to abstract subtasks



Observation, cont' d

- How will you use these methods in your project(s)?
- Pros?
- Cons?



2. Interviews

- Engage the user more than by just watching
- Structured interviews
 - ❖ Efficient, but requires training
- Unstructured
 - ❖ Inefficient, but requires no training
- Semi-structured
 - ❖ Good balance
 - ❖ Often appropriate
- How could you use these methods in your project(s)?
 - ❖ Pros? / Cons?



3. Ethnography

- Deeply contextual inquiry
 - ❖ “Wallow in the data”
- “Live among” the users
- Understanding the full complexity of behavior, in its complete social context

- *Note: Techniques based in sociology and anthropology -the study of humans*

- How could you use these methods in your project(s)?
 - ❖ Pros? / Cons?



Comment

- Techniques 1-3 are similar, but differ in how “plugged in” or engaged the observer gets
- There are Pros and Cons of all these techniques
- Have you planned to use these?



4. Surveys & Questionnaires

- Collect *opinions*
- Mix of qualitative and quantitative formats
- Subjective data in a quantitative format
 - ❖ What does this mean?
- Questions:
 - ❖ Exploratory vs. confirmatory
 - ❖ Open-ended vs. categorical (exhaustive)
 - ❖ *If you ask it, use it. If you won't/can't use it, don't ask it.*



Survey Issues

- NB: Survey Design is like UCD!
 - ❖ When/why to do survey?
 - ❖ How?
 - Electronic? Paper?
 - Manually administered? Self administered?
 - People's capabilities to "use" the survey
 - Previews and Progress indicators
 - Consistency, clarity, look and feel...
 - ❖ Iterative Design (with test and fix cycles)
 - ❖ Response Bias
 - ❖ Response Rate
 - ❖ Data entry/analysis issues



Representing Data (=Output)

- A. Task Outlines
- B. Narratives
- C. Hierarchies & Network Diagrams
 - ❖ Hierarchical Task Analysis (HTA)
 - ❖ Entity-Relationship Diagrams
- D. Flow Charts



5. Focus Groups

- Structured Interview with groups of individuals
- Focus on preferences and views, not performance
- Relatively low cost, quick way to learn a lot
- Audio or video record, with permission

- Have questions in advance
 - ❖ Can be needs, wants, critiques, anything
- Moderator's role is critical
- Manage conversation
- Audio, video, scribe(s)
- Digest and summarize



5B. Wants/Needs Analysis

- Focus groups, followed by prioritization
 - ❖ 5-12 participants
 - ❖ Moderator
 - ❖ Scribe
 - ❖ Large writing surfaces
 - ❖ Booklets (one per participant)



W&N Analysis: Procedure

- Warmup
- “Moderated group brainstorming”
 - ❖ Ideas from participants
 - ❖ Moderator rephrases wants and needs
 - ❖ Scribe only documents moderator’s words
 - ❖ Number each idea
- Prioritization
 - ❖ Each participant lists top 5 wants/needs, rewriting the need, and adding comments and/or suggestions (one per page, in booklet)
- Collate, count, document ideas



6. Competitive Products

- Looking for both good and bad ideas
- Why are they successful or unsuccessful?
- What does successful really mean?
 - ❖ (Note: Successful does not equal usable)

Opinion: Don't search for patents in brainstorming or design phase



7. Document Mining

➤ Documentation

- ❖ Often contains description of how the (current) tasks *should* be done
- ❖ Standards docs
- ❖ Manuals
- ❖ Histories
- ❖ Best Practices



8. Data Logging

- Automatically tracking how the task is being done:
 - ❖ Keystroke/mouse clicks
 - ❖ Timers
 - ❖ Logs of transactions
 - ❖ Physical location/movement trackers
 - Eye trackers
 - Physiological sensors
 - Cell phones
 - Aware Home



Data Gathering Techniques

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Implications for Design!!??

- Once you understand the context, users, and task, use that to trim down the design space
- Constraints are your friend, and...
- Data lead to constraints



Upcoming

- Implications for Design
- Brainstorming