

Contextual Inquiry


Take Aways

- Overview of Contextual Design
- Contextual inquiry
- Interviewing techniques

Contextual Design

- Contextual design is:
 - An established process for analyzing tasks people do and designing technology to aid them in those tasks
 - An amalgamation of a set of best practices in interactive systems design
 - A tested methodology that has been applied many times
 - A step-by-step process to understand users

Contextual Design: Stages

- Interviews and observations
 - Work modeling
 - Consolidation
 - Work redesign
 - User environment design
 - Prototypes
 - Evaluation
 - Implementation
- 
- Contextual Inquiry

Contextual Inquiry

- Three primary processes
- First, get data
 - Premise: You don't know enough about someone else's tasks to design an application off the top of your head
- Second, organize data
 - The data arrives as a pile of random notes, quotes, observations, and photos. You need to wring coherence from the data.
- Third, generalize across prospective users
 - We rarely have the luxury of designing for one individual. If you watch two or three people do the same job, what generalizes, and what is an idiosyncrasy of the individual?

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Methods

- Scientist-subject
- Interviewer-interviewee
- Master-apprentice

Master-apprentice model

- Master teaches by doing job
 - Want to get people working and talking
 - Goal is observation interspersed with discussion
- Goal is to teach you what they do
 - Want details
 - For example:
 - How do you make up your monthly report?
 - I don't know?
 - Well, let's say you had to create one now. Can you show me how you would go about creating a report for this month?
 - Talking while doing prevents generalizations

Master-apprentice model (2)

- Just like apprentice learns work by watching over and over ...
- You learn more by watching multiple events and multiple users
- Each event can serve as a starting point for discussing past events
 - If past event close in time, story can stay concrete

Master-apprentice model (3)

- Apprenticeship takes years
- However
 - Events that occur when you are there remind users to talk about past events
 - Talk about papers, forms, notes, clipboards
 - How were they used, created, etc.
 - Why were they used in this particular instance

Master-apprentice model (4)

- You have limited time, but adopt the attitude of apprentice
- Recognize customer is an expert
- Be willing to be humble, inquisitive, and attentive
- Imagine that you need to do what the customer is going to do, and try to get necessary details

Selecting Users

- Think about specific participants in your study:
 - Who else is involved in making the task happen?
Who do they collaborate with?
 - Who provides information needed to do the job?
 - Are there tasks that these people perform (besides your target users) that you might want to support?
- You may need to broaden your interview base and include one or two other participants. This is actually a good thing.

Example: Student Newspaper Section Editors

- Two different interactions
 - Editors – Readers (via the paper)
 - Editors – Writers – Photographers (to create the information in the paper)
- As the group identified breakdowns for editors, they noted that there were communication problems between section editors and photographers
 - What do photographers do?
 - How do they feel about communication?
 - Do they perceive the same breakdowns?
 - Interview one or two to find out!

Example: Teachers

- Teacher – Student interaction
- Teacher – Principal – Colleague teacher interaction
- Teacher – Parent interaction
- Group who studied teachers noted breakdown in marking, need for qualitative assessment data to share with parents
 - Would have been good to interview parents.
 - VERY different perspective
 - E.g. old grading scale:
 - Low ----- High

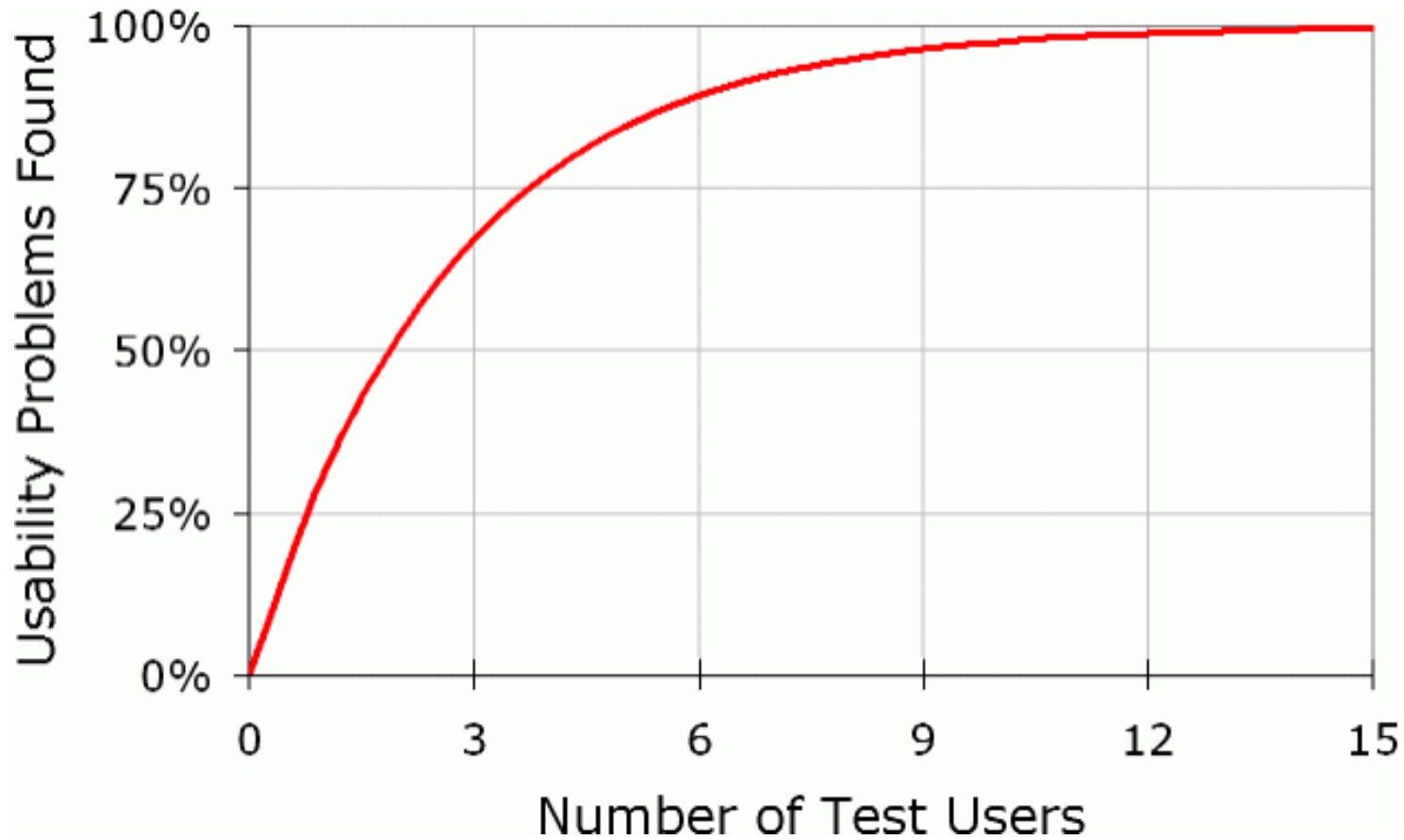
How Many Users Do You Really Need?

- In this course, two or three interviews, maybe one or two more if you interview collaborators
- Is this enough?
- See Jakob Nielsen's Alertbox:
 - Why You Only Need to Test With Five Users

Why 5?

- Did a study and found that one user finds, on average, 31% of usability problems
- Thought that eliminating 85% of usability problems is a laudable goal
- If one user find 31% of the usability problems, how many users do you need to find 85%?
- Used binomial probability:
 - $P = 1 - (1 - p)^n$
 - P = probability of detecting a phenomenon give n users
 - p = frequency of the phenomenon
- For Nielsen's work
 - $0.85 = 1 - (1 - 0.31)^n$
 - Solve for n and get 5

Why 5?



But recall the assumption that any usability problem typically affects 31% of users

Doing Contextual Inquiry

- What you need to get real data:
 - Context
 - Partnership
 - Interpretation
 - Focus

Context

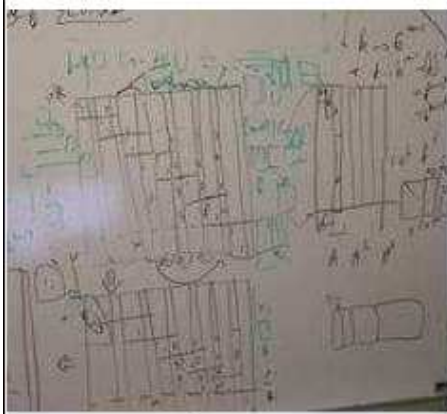
- You must go to user's workplace
 - This is why telephone interviews do not work
 - Need ongoing experience, not summary experience
 - Strong motivation to summarize
 - Need to break that
 - Need minutia of what is done, not general goals of job
 - Need concrete data, not abstract data
 - System you design needs to abstract across users
 - However, if you start from abstraction of behaviour, system is an abstraction of abstractions
 - If a customer says “usually” or “generally”, it's abstract
 - Present tense is usually an abstraction

Context (2)

- If you see an abstraction, as for a concrete example
 - We get reports by email
 - Do you have one? Can I see it?

 - I usually start the day by reading my mail.
 - What did you do this morning?
- When someone describes their work, listen for holes
 - This morning? Let's see. I came in and read my email. Then I went out to get some coffee.
 - How did you read your email?
 - I used my computer
 - ... and then you went for coffee? Do you do that every morning?
 - Well, actually, I had received an email from a client letting me know that she wanted to meet at 9, and I had 15 minutes to kill, so I went to the coffee shop.

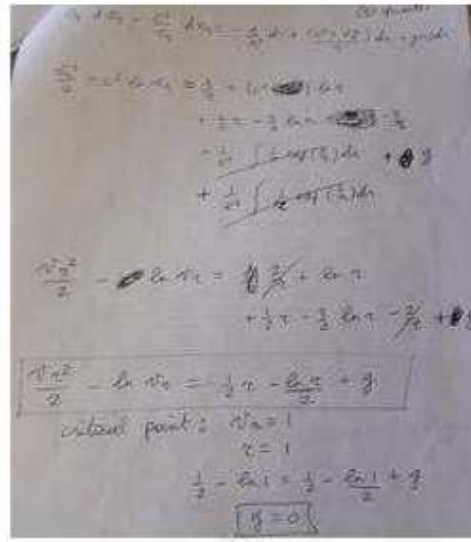
Understanding Mathematicians



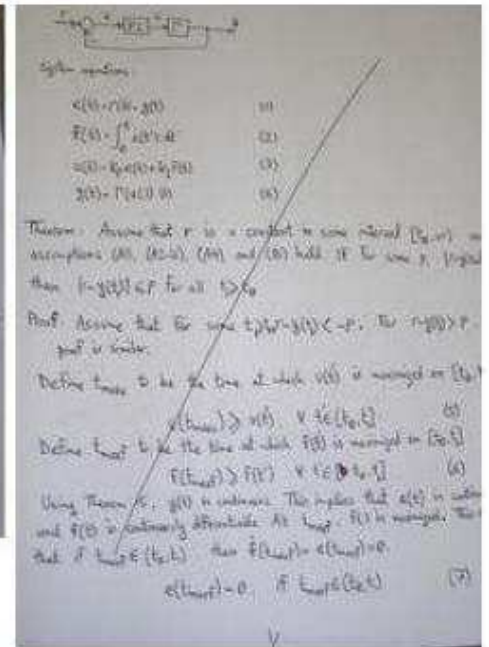
A



B



C



D

Partnership

- You need to collaborate with your subject in understanding work
- In traditional practice, interviewers control what was discussed
 - This doesn't work!
- However, not all the way to an apprentice model
 - What you want to create needs to look more like a partnership
 - Interviewee is expert on their job
 - Interviewer is expert on technology and design

Partnership (2)

- Get people to walk you through their work
 - If possible, you want to actually be there when they do real work
 - May be impossible
 - However, try to get them to re-create what they do
 - Walk you through the last time
 - When you see something you don't understand, or a detail is missing, ask for clarification
 - This causes a break in the work
 - Withdraw from doing, discuss structure of work, return to doing
 - Act interested and stay interested
- Interviewees become sensitized to the work
 - Make suggestions --

Partnership (3)

- You have knowledge about technology
 - You will notice opportunities
 - Feel free to share idea during interview
 - Think of it like prompted interviewing
 - Suggests what can be done, can have a discussion about change
 - However, don't develop blinders to one idea
 - Spend 2 or 3 minutes, and then go back to other work
- Articulate your understanding of work and structure
 - So, most of your communication with clients is through email?
 - Well, no, I usually get phone calls
 - So, checking your mail involves checking email, phone, and lettermail?
 - Yes
 - Do you have examples of a voicemail or lettermail that we could listen to or look at?

Partnership (4)

- You need to avoid other relationships
 - Interviewer/Interviewee
 - If it starts to feel like question and answer, go back to walking through work
 - Expert/novice
 - So often people will say “Well, you’re the expert”
 - Need to get them treating you like a apprentice
 - Set customers expectation
 - Tell them that only they know the problems and have had a lot of experience doing these tasks
 - You are there to learn from them. You want to know what they do and HOW they do it
 - Sometimes they ask for help – try to avoid it
 - Guest/Host
 - If client starts to ‘host’ you, try to step by it.
 - Maybe you have to have coffee first, but then try to move beyond
 - Move closer, ask questions, ask to see and touch what the interviewee sees and uses
 - Stop acting like a guest

Interpretation

- You need to understand why things you see are done that way
 - My admin opens a spreadsheet every time she goes to buy something to find my account number
 - Why does she need this spreadsheet
 - Account numbers are necessary but hard to remember and we could improve referencing
 - Account numbers are a hold-over from paper, and could be eliminated now
 - Account numbers are necessary for paper compatibility, but we could allow names to be used and then substituted in electronic forms to limit the amount of cross-referencing
 - Best design option depends on which interpretation is correct

Interpretation (2)

- From any piece of data, need implication for design
 - Start with:
 - What does it mean, or
 - What is the intent behind the fact
- You **MUST** get interpretation correct
 - Customer wish lists are often an example of this
 - Walk them backward
 - Why do they want these things?
 - What is motivating these wish list items
- Share your interpretation with users you interview
 - If they are in the midst of working, or are walking you through their work, they will usually correct you
- Interpretations are a result of you trying to make sense of work
 - If you are mistaken, you need to understand why

Interpretation (3)

- Sharing interpretations will provide you with more detail
 - Open-ended questions are too vague
 - Interpretations are more concrete
 - Are account numbers just a hold-over from paper accounting?
 - Do you check your email to see if any clients need something done immediately?
 - Let interviewees fine tune interpretations
 - Be committed to hearing what is really being said
 - Huh? = you are way off base
 - Umm ... could be = you are wrong
 - Yes, but; Yes, and = listen to what is after the but or and
 - Smiling, or saying yes, exactly, you got it = yes

Focus

- You will see things through the lens of your training
- You need to expand your focus
 - Surprises and contradictions
 - If they do something you know is wrong or meaningless
 - Nothing is wrong or for no reason
 - Nods (from you)
 - Means you understand and can match it
 - Provide an interpretation instead (so you are doing this because ...)
 - What you don't know
 - Embarrassingly, you don't understand what they're saying
 - Admit ignorance and ask them to explain

Interviewing

Stages of Interviewing

- Stages in your book and stages from slides
 - Using slides for this
- Stages:
 - Explain project, gain consent
 - Get acquainted
 - Move to “grand tour”
 - Move into contextual interview
 - Summarizing and confirming

Gaining consent

- Explain what you are doing
 - In their language
- Explain that you need their permission
- Let them read the consent form. Do something else while they do this.
 - E.g. look like you are writing a list of questions or doing prep
 - Draw a diagram of layout of their workspace
- Answer any questions
- Details:
 - You need consent from anyone you interview
 - Bring many spare consent forms
 - Get each person you interview to sign two copies (one for you and one for them)

Explaining the project

- Read and reread the consent forms
- Think about how to phrase this to your subjects
- Remember to indicate that:
 - It's a class project where you are learning requirements
 - You need to know how people work so you can design
 - We are interviewing you and observing you as your work
 - Later stage prototype evaluation
 - Class runs over 3 months and we'd like to meet with you a total of 3 or 4 times
- Once they finish, turn on your audio recorder

Get acquainted

- Ask:
 - What they do
 - How long they've done it
 - What their job entails
- Do NOT use a check list of items

The Grand Tour

Could you walk me
through ...

Walkthroughs

- These are a reconstruction, not remembering
- Concrete versus general with natural ordering
 - Cause and effect becomes more apparent
- Recent is better
- Details naturally emerge
 - Avoids the tendency to summarize
 - As details emerge, you should continue to look for more details
- Examples
 - Walk me through your day
 - Walk me through arranging your last catering event
 - Walk me through a typical training day
 - Walk me through some recent mathematical problem solving you did

Contextual Interviews

- Walkthroughs transition naturally to contextual interviews
- People will point to or refer to artifacts
 - Bring these in
 - Can ask for a live demo, or a walkthrough of creating and using the artifact
- If they reference a tool, a message, etc., ask to see it
 - Tools, messages, sheets of paper, etc. help them remember details.
- Where possible, shoot photos of the artifacts and ask for samples if they can let you have them

Asking questions

- Don't ask leading questions
 - Any question that suggests an answer is bad
 - Wording, intonation, or syntax
- Avoid closed questions
 - Do you like this interface versus can you walk me through how you use this application, describing what you're doing as you do it?

Asking questions (2)

- Ask
 - When you don't understand something
 - When terms arise
- Avoid interrupting, though
 - Keep a notebook
 - We train our students to develop shorthand
 - Question marks in margins as they take notes, etc.
- Avoid generalizations
 - If they say “Typically you ...”
 - You say: “What was a recent example of this? Can you walk me through what you did?”
- Indicate understanding, not agreement
 - “Mmm-hmm” versus “totally”
 - Monitor your phatic expressions.

Asking questions (3)

- Be attentive
- Be well-dressed (but not formal)
- Enunciate
- Look at the person
- Sit or stand reasonably close, but respect personal space
 - If person moves away you are too close
- Limit what you bring
 - Folio with notebook and consent forms
 - Recording device
 - Camera
- Max of 2 people at interview
 - Don't overwhelm people
 - One is fine, but if one, then must meet as a group immediately afterward!

Summarize and wrap-up

- Summarize with them what you learned
 - Go over your notes
 - A final check to make sure you've covered all aspects
- Thank them and **smile**

After the interview

- Transcribe
 - You get the details externally recorded
 - You begin the process of data analysis

Things to Avoid

- NO checklists of questions
- NO closed or leading questions
- NO questions that encourage generalizations (especially after get acquainted)
- NO focus on a specific system
- DO NOT interrupt
- DO NOT interview away from where they work
- DO NOT correct the person or try to teach them something you know
- DO NOT look away from the person, yawn, etc.