IN4MATX 231:
User Interface Design & Evaluation

Class 2:
Contextual Inquiry

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Introductions!

- Name, preferred pronouns
- Program (MS, PhD… Informatics, Software Engineering…)
- Some research or professional interest
- Some personal interest

Announcements

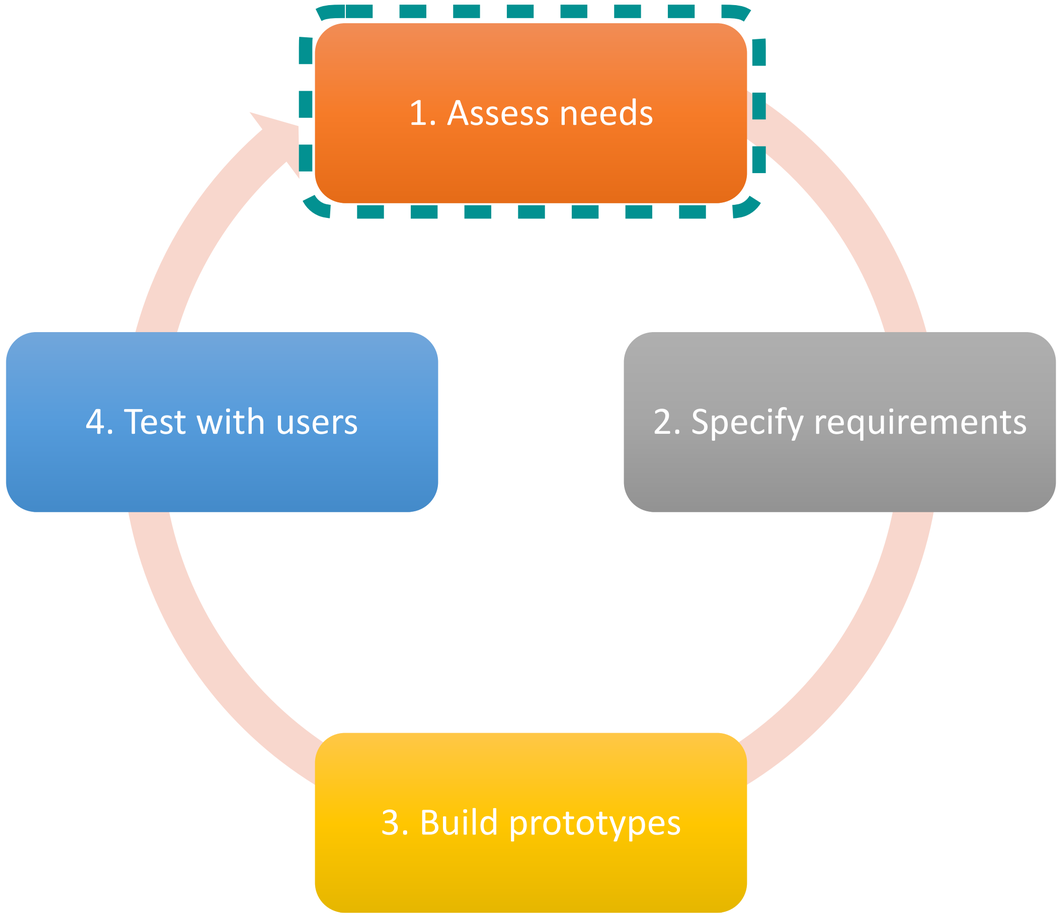
- Discussion tomorrow (5pm, DBH 1423) is a great place to look for project partners
- Imposter syndrome & reading queries

Today’s goals

By the end of today, you should be able to…

- Explain the goal of need finding in human-centered design research and describe some best practices
- Apply contextual inquiry to new design problems
- Apply interviewing to generate formative insights
- Articulate the strengths and weaknesses of observation and interview

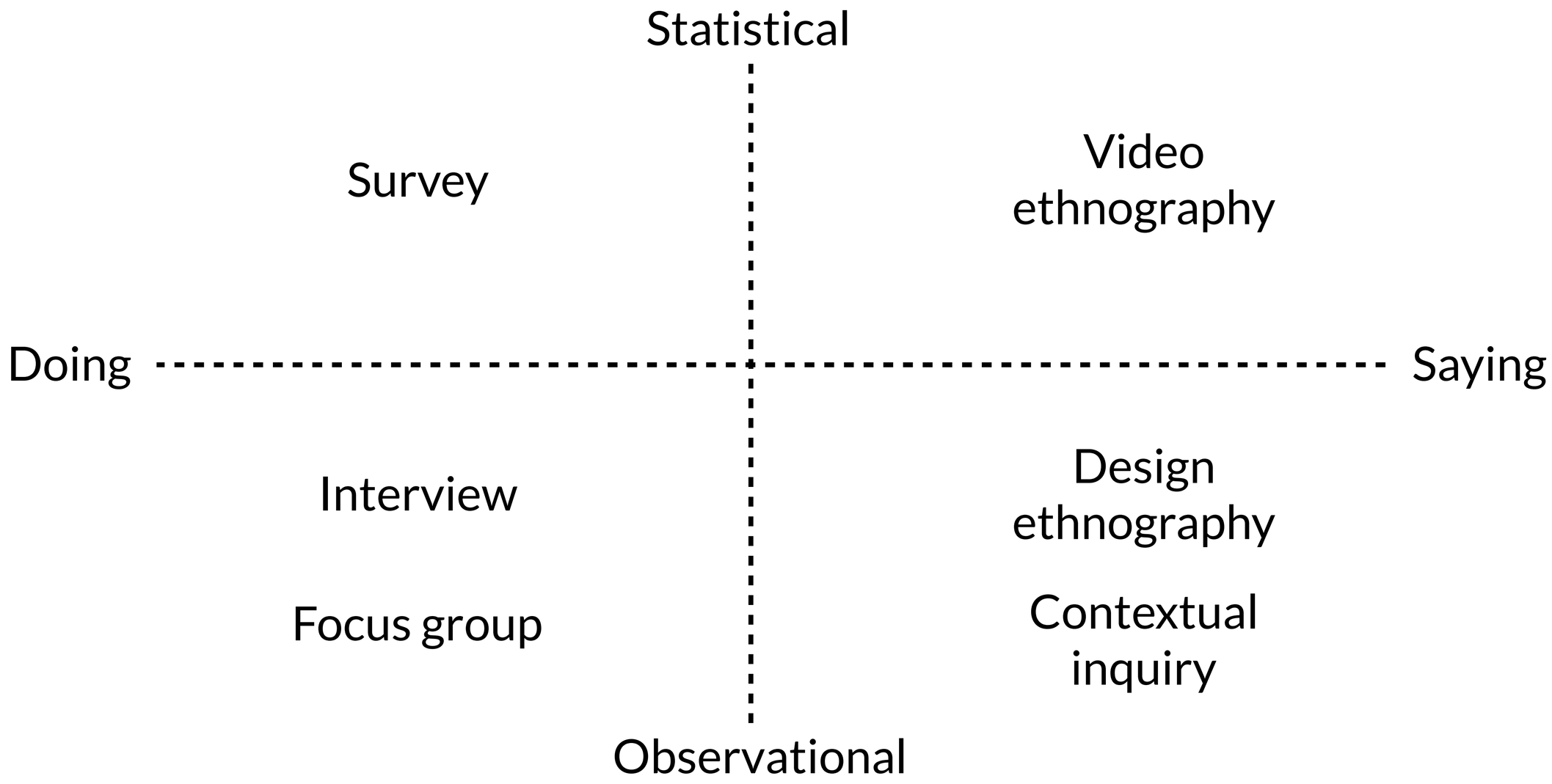
Phases of HCD



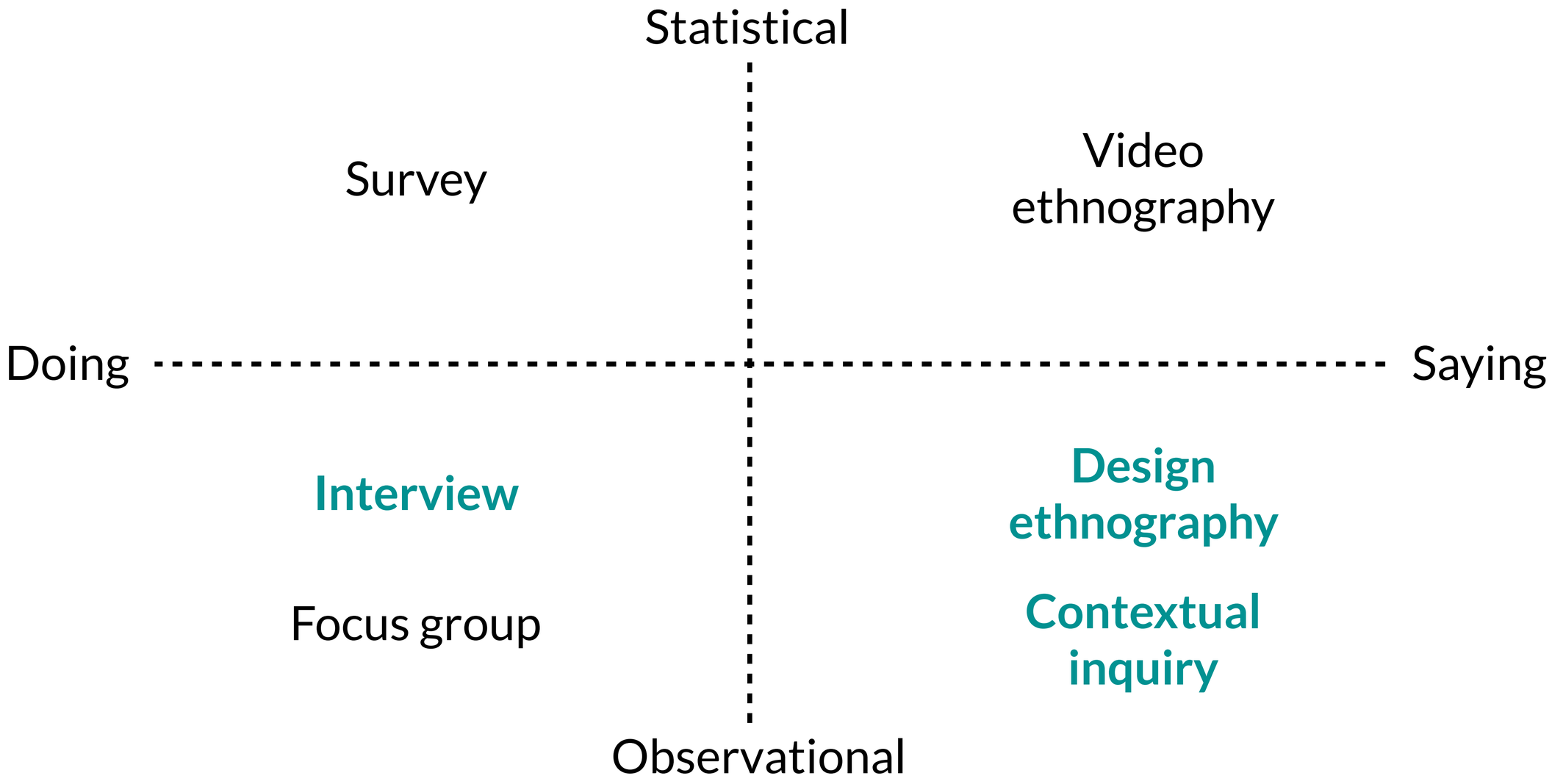
Needfinding

- People are notoriously bad at predicting what they would use, or would prefer when it is only hypothetical
- They can respond much better to actual, concrete things, or make comparisons
- This highlights the importance of observation and prototypes

Needfinding (an incomplete list)



Needfinding (an incomplete list)



What are we looking for?

- Opportunities for new design and experiences
- Breakdowns in current processes
- Workarounds that people are implementing
- Mismatches between what people say and what they do

Qualitative approaches to needfinding

- Helps form an understanding of how and why
- Tends to focus on a combination of behaviors and attitudes
  - Can be observational or self-report
- Often really the only way to get at the context surrounding your design challenge
- The results of qualitative methods DO NOT equal systems requirements
  - Translation is a key gap

Qualitative approaches are flexible

- Methods allow for openness to adapt inquiry when understanding deepens or situations change
- Qualitative questions leverage this flexibility
- But this does not mean the study has no focus
- The researcher must document how the study evolved

Ethnographic research

Ethnographic research

- My definition: Observation and interview in naturalistic environment, focused on building theory and filtered through a researcher

- *Design* ethnography tends to focus the observation in the context of an existing or future design

- Some of you have applied ethnographic methods more than I have; feel free to chime in

Ethnographic research

- Principles from the ISO standard for HCD:
  - *Holistic*: grounded in needs & context to address the whole user experience
  - *Participatory*: users engaged throughout
  - *Formative*: not “solution jumping”
  - *Iterative*: driven and refined in multiple stages
  - *Multidisciplinary*: design team includes multiple perspectives
- Many of these principles align well with ethnography

*ISO 9241-210, “Human-centered design for interactive systems”, 2010

Ethnographic observations

- Plan
  - Define objectives, questions, and data need
  - Determine when, where, and who you will observe
  - Decide how you will record; do not assume you can “get it off the audio”
- Execute
  - Inform people what you are doing (possibly with a formal consent document)
  - Try to be unobtrusive; the longer you are there, the easier this will become
  - Document before, during, and after

Ethnographic observations

Building theory

- Make an observation and document it
  - e.g., “people don’t notice the settings screen”
- Investigate whether it pops up again
  - Maybe with different people, under different circumstances, etc.
- Repeated exposure leads to insights
  - Designer’s intuition, combined with people’s practices, lead to design ideas

Ethnographic observations

Saturation

- When you stop making new observations
  - You've gleaned all of the insights you're going to glean
- The "ideal" stopping point for an ethnography or contextual inquiry
  - In practice, timelines and resource constraints influence this…

Contextual inquiry

- Can be thought of as applied design ethnography
- “The core premise of contextual inquiry is very simple: go where the customer works, observe the customer as he or she works, and talk to the customer about the work. Do that, and you can’t help but gain a better understanding of your customer.”
- Effectively, observation + interview

Contextual inquiry

Four Principles for applying the method

- Context
- Partnership
- Interpretation
- Focus

Contextual inquiry

Four Principles: Context

- Must be “where the work happens”
- Useful for understanding the underlying work structures rather than people’s perceptions of those structures

Contextual inquiry

Four Principles: Partnership

- Aim to follow a master/apprenticeship model
  - You’re the apprentice, watching and asking questions to understand why things are done a certain way
  - The transfer of knowledge happens when people talk about how they work while they’re doing the work

Contextual inquiry

Four Principles: Interpretation

- All data must be interpreted for meaning before developing design implications
  - Merge insights from your observations with insights from your questions
  - Double-check your interpretations with your participants

Contextual inquiry

Four Principles: Focus

- Be open to expanding on your initial focus or assumptions
  - Any time you're surprised by a participant or find their actions odd, it's an opportunity to ask questions
  - Aim to see their perspective rather than your own

Contextual inquiry

Example: Distance Matters, Olson & Olson

- Core tenant: technology has not solved virtual collocation in the workplace
- “We and a number of colleagues have spent much of the past decade trying to understand how groups tackle intellectual tasks when working at the same time, both in collocated and distant situations… To be more specific, in our laboratory work we have studied synchronous collaboration for both face-to-face and distributed work… We have also been involved in several collaboratory projects in which widely distributed groups of scientists have worked together using the Internet. Therefore, we have an extensive personal experience base from our own research.”

Contextual inquiry

Example: Distance Matters, Olson & Olson

Figure 1. **The left frame shows a group divided into two subgroups: one working at the whiteboard, the other at a console. The right frame shows the two groups merged to solve a particularly difficult problem together.**

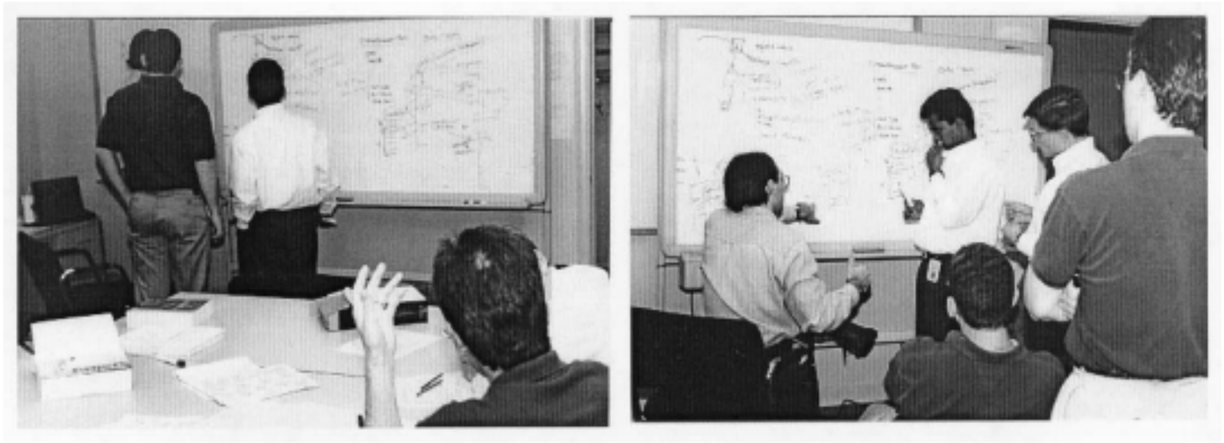


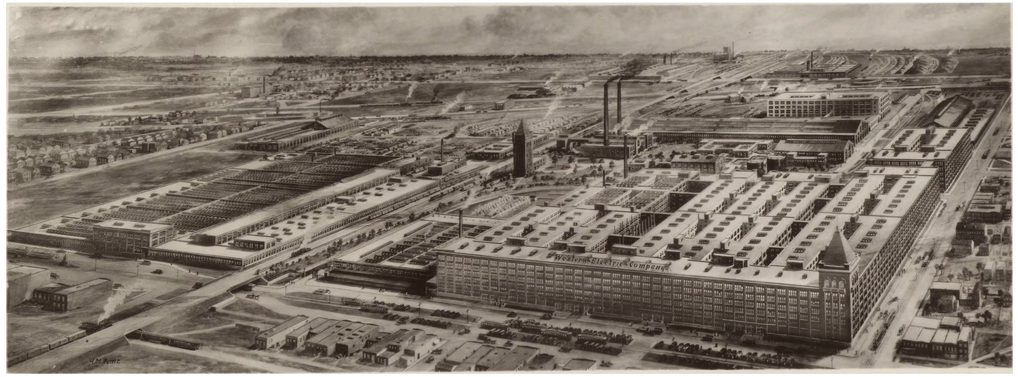
Figure 3. **Key characteristics of collocated synchronous interactions.**

Characteristic	Description	Implications
Rapid feedback	As interactions flow, feedback is as rapid as it can be	Quick corrections possible when there are noticed misunderstandings or disagreements
Multiple channels	Information among participants flows in many channels–voice, facial expressions, gesture, body posture, and so on	There are many ways to convey a subtle or complex message; also provides redundancy
Personal information	The identity of contributors to conversation is usually known	The characteristics of the source can be taken into account
Nuanced information	The kind of information that flows is often analog or continuous, with many subtle dimensions (e.g., gestures)	Very small differences in meaning can be conveyed; information can easily be modulated

What other examples have you seen?

Hawthorne effect (observer effect)

- Individuals modify an aspect of their behavior in response to their awareness of being observed
  - Named for experiments on the Hawthrone Works factories in the 1920s & 1930s
- Can interfere with Contextual Inquiries: how?
- How might you avoid the effect?



Left off here; will resume on Thursday

Interviewing within and outside CI

- Within a contextual inquiry, interview questions should stay subtle
  - Again, you're acting as an apprentice
  - Follow your curiosity, but don't divert participant's workflow too much
- Interviewing can also be a standalone formative method
  - Maybe you're investigating something hypothetical;
    participants have no established workflow
  - Standalone interviews can be more intrusive; follow-up questions are expected
  - But may require triangulating with other sources

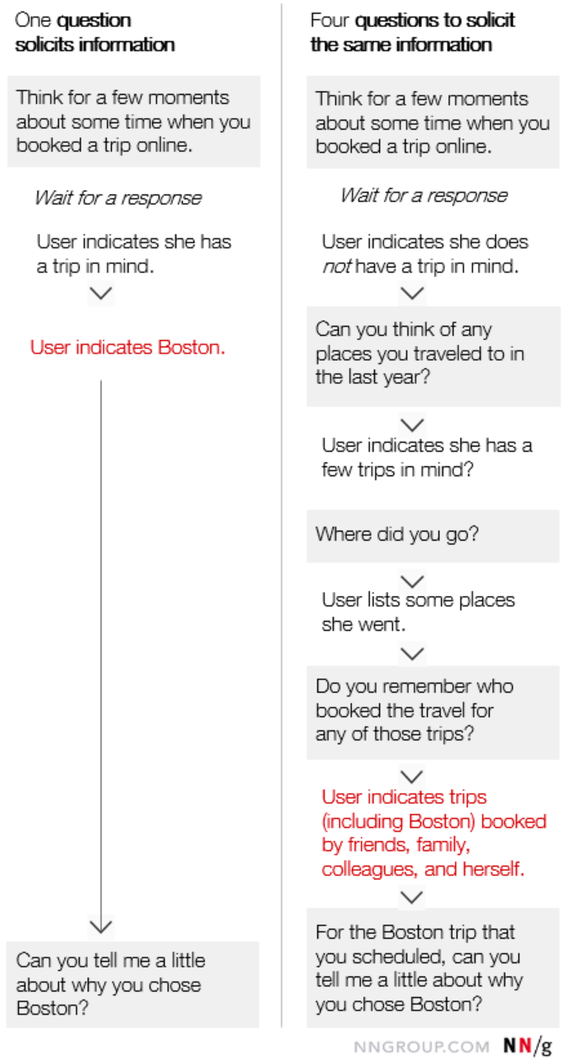
Contextual inquiry: interviewing tips

- Aim for participants to be comfortable
- Let participants finish their thoughts
- Make them feel heard
  - take notes, give eye contact, offer acknowledgments like "*I see*" or repeating them
- Show empathy (but be genuine)
  - "*That must have been frustrating*", "*I'm sorry that happened to you*"

https://www.nngroup.com/articles/user-interviews/

Contextual inquiry: interviewing tips

- Have questions prepared ahead of time (a guide)
  - But allow yourself to go off-script if appropriate
- Anticipate different responses
  - If a participant has or has not experienced something, used a technology, etc.



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Contextual inquiry: interviewing tips

- Avoid leading questions
  - Bad: “*Why do you enjoy using the Acme product so much?*”
  - Better: “*Why do you use the Acme product?*”
- Avoid closed questions
  - Bad: “*So, you use the Acme product every morning?*”
  - Better: “*Can you tell me about how you use Acme?*”

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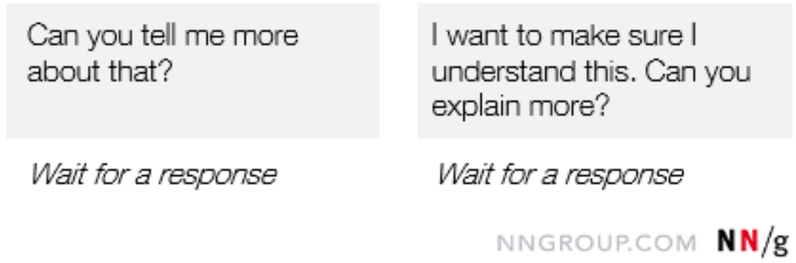
Contextual inquiry: interviewing tips

- Practice follow-up or probing questions



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Activity! Practicing contextual inquiry

Activity

- Pair up (or threes as needed)
- Select one of you to be the *researcher(s)*, the other the *participant*
- For now, the researchers will only observe the participants

Activity

- Some conferences have a culture of making and swapping *researcher trading cards* which highlight your professional and personal interests.
- **Participants:** on your computer, create a 5x7 card which includes at least:
  - Your name, picture, and preferred pronouns
  - A research interest
  - A personal interest
- **Researchers:** you're looking to make researcher trading card creation tool. You may not ask the participant questions, but take note of what questions you would have liked to ask to inform your design choices.

Activity

- Researchers: What questions did you have for the participant?
  - Without being able to interview, what was hard to understand?

Activity

- Flip roles
- But now, the researcher can interview the participant as they are making their trading card

Activity

- Researchers: What felt easier (if anything)?
- Participants: How was being questioned while you performed the task?
- All: What insights might you try to incorporate into your researcher trading card tool?

Contextual inquiry: A few other guidelines

Gaining access & building rapport

- Before you can do anything in an ethnographic project, you must gain access to your site and informants
- Must additionally gain confidence and trust
- Recognize some potential reactions you could have
  - Excitement about the project and site
  - Culture shock
  - Cycle of entering and leaving can have emotional impact

Contextual inquiry: A few other guidelines

Recording your observations

- Video recording
- Note taking and memos
- Interviewing
- Be mindful of your access permissions and participant’s comfort levels

Contextual inquiry: A few other guidelines

What to record

- Begin with your research questions
- Do not overly constrain yourself
- Take notes on
  - What is directly relevant
  - What strikes you as interesting
  - Everything else

Contextual inquiry: A few other guidelines

The process of recording

- Your data are only as good as you are
- Sometimes it is possible to record in the moment
- Other times it must be done after the event
  - Write down the important things first
  - Then replay the day and slot them into order

Contextual inquires and interviews

Strengths

- Extremely rich data
  - You get to watch what people do and talk to them!
- “Real world” and unfiltered, or as close as you can get
- The methods are led by participant’s needs and interests, not your preconceived notions

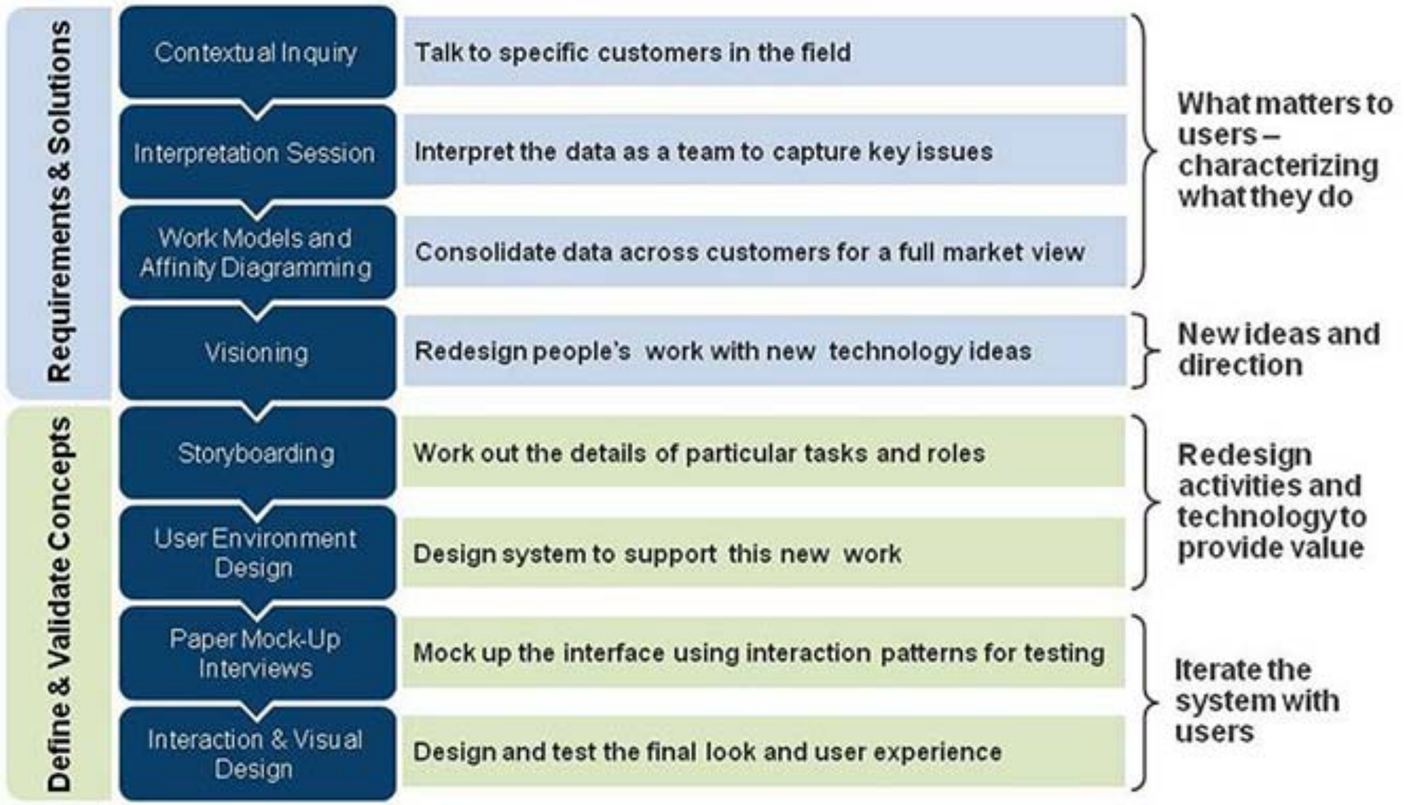
Contextual inquires and interviews

Weaknesses

- Participants do not necessarily know what is important to you
  - Probing questions or observation can help, but they’re not sufficient
- People’s memories are warped and flawed
  - They may say one thing in interviews and do another in practice
- The methods are resource-intensive
  - You can hear from tens of people at best, making generalization challenging
- Participants can find it awkward to be watched or open up

Contextual inquiry

Another process



https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/contextual-design

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