HCI Evaluation

part one

**Stuart Gray,** Pete Bennett, Simon Lock, Thomas Bale, Harry Field

HCI evaluation

- Why do this?
  - Human-centred design!
  - hypothesis driven, don't just do evaluation for the sake of it (but not always)

- When do this?
  - right now, not just at the end
  - it's iterative

- What to do with the results?
  - making the design better etc
  - client reports etc / reports for project partners / product owner / shareholders

interaction design: beyond human-computer interaction

- This book covers all the forms of HCI evaluations. It's available through the university library (eBook) so please refer to it for more detail on the methods.

- we expect you to pick some suitable methods for your project, some of which you may have already started doing

- remember these techniques can be used to validate your design as well as during requirements finding

INTERACTION DESIGN

SHARP • ROGERS • PREECE

beyond human-computer interaction
5th Edition
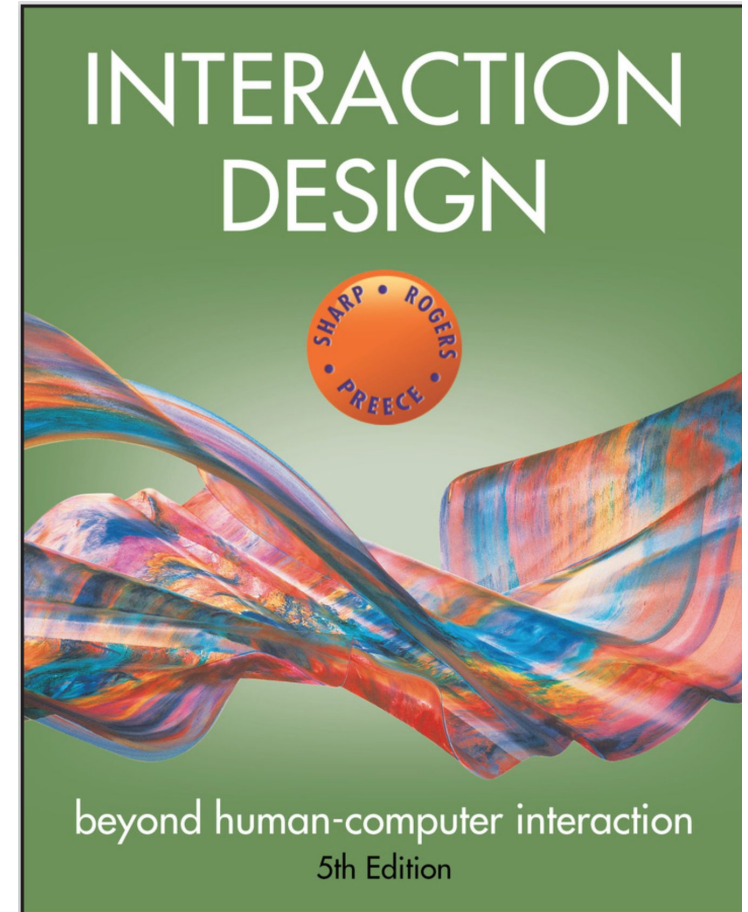
five key issues

- **goal setting**
  - have a reason for gathering your data
- **identifying participants**
  - identify the *study population*
- **the relationship between the data collector and the data provider**
  - informed consent, consideration of ethics and data
- **triangulation**
  - data from different sources at different times / different researchers / use of different theories to interpret data
- **pilot studies**
  - remember to do a trial run, an easy but expensive step to make!
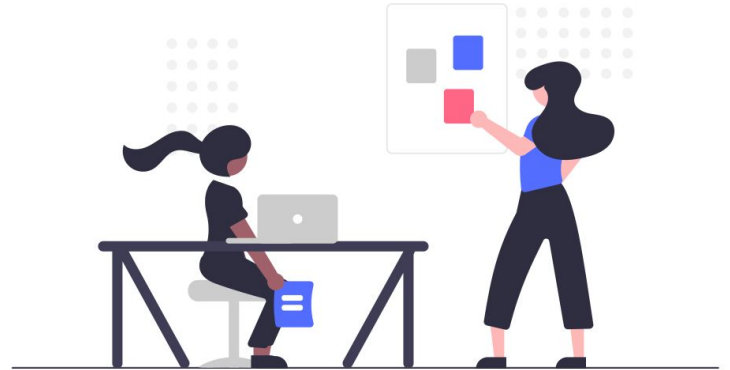
techniques overview

- questionnaires

- observations

- interviews

- focus groups

- ethnography

questionnaires - defined

- used to answer how much / how many questions about your product or the problem space; to evaluate designs / ideas at scale and for demographic generalisability

- generate a collection of demographic data and user opinions

- particularly useful early on for market research and for understanding user requirements finding

questionnaires - tips

- ensure that you are asking a feasible number of questions (question fatigue is a thing), consider the use of Likert scales

- watch out for leading questions e.g. "Why did you have difficulty with the navigation?"

- can be harder to write than structured interview (you're not there to explain)

How many points on the scale?

Use a small number, three, for example, when the possibilities are very limited, as in Yes/No type answers.

☐   ☐   ☐

Yes   Don't know   No

Use a medium-sized range, five, for example, when making judgments that involve like/dislike or agree/disagree statements.

Strongly agree   Agree   OK   Disagree   Strongly disagree

☐   ☐   ☐   ☐   ☐

Use a longer range, seven or nine, for example, when asking respondents to make subtle judgments, such as when asking about a user experience dimension such as "level of appeal" of a character in a video game.

very appealing   ok   repulsive

observation - defined

- used at the beginning of your design process, where you observe you user within their problem space prior to the development of your product in order to identify:
    - what are a users' objectives?
    - what are the prohibitive factors in their current experience?
    - what are the areas of opportunity to make changes?

- also used throughout the development of your product, as you test prototypes with your users
    - do users understand / use your product as intended?
   - where are the sticking points?

observation - tips

- observe rather than interpret – in other words, note what you see not what you think you see unless otherwise stated by the participant

- consider how you will collect data to ensure that you don't miss any important details

- following the test, circle back on your observations to derive meaning from participant. I.e. "I noticed during the game that you paused for several seconds before touching the screen, can you tell me about what you were thinking?"

observation - tips

- refrain from immediately jumping in to assist participant – only step in if they have made several attempts already to solve an issue without success

- if a participant does encounter an issue, instead of helping them immediately, ask them to think aloud – this will give you insight into how they conceptualise any problems

- types of data collected: **written observation notes (possibly time annotated), audio / video recordings**
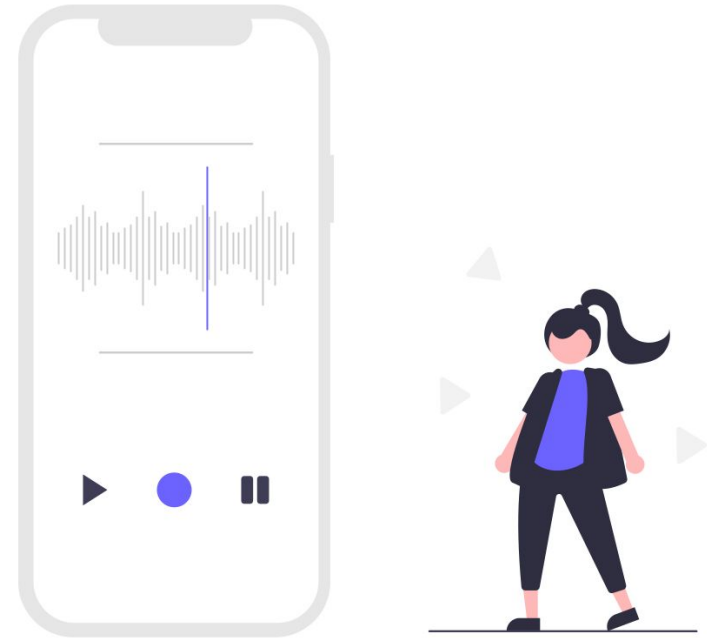
interviews - defined

- interviews are one to one conversations we host with end users and other relevant stakeholders

- note, stakeholders are also significant as they can sometimes hold power over the accessibility of our system, not just the end users

- interviews can be used at any point in our process - to understand the problem space, to scope design requirements, and to evaluate prototypes

interviews - tips

- select an interview strategy - what types of questions will you be asking: structured, semi-structured, unstructured?

- plan your interview sessions to have a beginning, middle, and an end - you want to ensure that your interviewee is comfortable before launching into your questions, and suitably warmed down at the end.

- interview resources - work in pairs in order to ensure that the host is able to concentrate on facilitating the session, while another team member ensures no data is missed.

interviews - tips

- question tips:
  - decide which questions should be closed and which should be open - you will need to phrase questions accordingly
  - funnel questions - start broad then probe depth
  - validate your questions to ensure no bias - beware of leading questions, participant priming

interviews - tips

- prioritise understanding people
  - '5 whys' - get to a route cause
  - Louis Theroux approach - what you say is of least importance
  - body language - 'Power Pause', Objective distance, Mehrabian 7-38-55 rule

- types of data collected: **written observation notes (possibly time annotated), audio / video recordings**

focus groups - defined

- focus groups
  - group interviews used to capture user attitudes, feelings, beliefs, experiences
  - you can do this at greater scale than in one-to-one interviews
  - it allows for collaborative ideation and feedback
  - use with caution, however - groupthink is an issue

- types of data collected: **written observation notes (possibly time annotated), audio / video recordings**

ethnography - defined

- ethnographic approaches
    - to develop a fine-grained understanding of the social, political, and environmental context of your product by embedding yourself within the problem space
    - for instance, you may shadow your end users to see how things are currently done and what the current barriers are (observing "as is" and "in the wild")
    - the 'method-acting' approach when taken to extremes - you may actually train to become your end user in some cases

how much data is enough?

- you must balance data richness with practicality

- the more data you collect, the more you may learn about your product BUT the time taken to analyse this data may delay further development

- they key is to identify:
  - the minimum number of participants required
  - the most crucial questions you must answer
  - the type of data you can collect - logistically and ethically

techniques
quick reference

Technique	Good for	Kind of data	Advantages	Disadvantages
Interviews	Exploring issues	Some quantitative but mostly qualitative	Interviewer can guide interviewee if necessary. Encourages contact between developers and users.	Artificial environment may intimidate interviewee. It also removes them from the environment where work is typically being done.
Focus groups	Collecting multiple viewpoints	Some quantitative but mostly qualitative	Highlights areas of consensus and conflict. Encourages contact between developers and users.	Possibility of dominant characters.
Questionnaires	Answering specific questions	Quantitative and qualitative	Can reach many people with low resource requirements.	The design is key. Response rates may be low. Unless carefully designed, the responses may not provide suitable data.
Direct observation in the field	Understanding context of user activity	Mostly qualitative	Observing gives insights that other techniques don't provide.	Very time-consuming. Huge amounts of data are produced.
Direct observation in a controlled environment	Capturing the detail of what individuals do	Quantitative and qualitative	Can focus on the details of a task without interruption.	Results may have limited use in the normal environment because the conditions were artificial.
Indirect observation	Observing users without disturbing their activity; data captured automatically	Quantitative (logging) and qualitative (diary)	User doesn't get distracted by the data gathering; automatic recording means that it can extend over long periods of time.	A large amount of quantitative data needs tool support to analyze (logging); participants' memories may exaggerate (diary).

Interaction Design p301