HCI: SELECTING PARTICIPANTS AND QUALITATIVE DATA ANALYSIS

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Neilson's 10 Heuristics

"Heuristics" are simple rules that can be easily applied and are true in most situations. Using the ten heuristics to the right we can detect a large percentage of usability issues.

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility an deficiency of use
8. Aesthetics and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

First, the news

- USS McCain collision
- https://arstechnica.co.uk/information-technology/2017/11/uss-mccain-collision-ultimately-caused-by-ui-confusion/
- https://s3.amazonaws.com/CHINFO/USS+Fitzgerald+and+USS+John+S+McCain+Collision+Reports.pdf (p49)

Selecting Participants

The purpose of user testing is to say something about how an interaction might happen in the real world.

But we do not test in actual real world conditions or with perfectly representative users.

External Validity (Generalizability)

- The extent to which information learned in a study can be generalized to the world at large.
- Example:
  - I have a tool to designed to help web developers, so I test it on a group of UG3 students.
  - How generalizable are my results?
  - Real web developers would be more representative, but expensive and challenging to get.
  - University students are less generalizable but more uniform in knowledge and training. Many of the same skill sets.

Control vs. Generalization

- Most usability methods involved controlling some aspect of the study.
- More control means more certainty that the effects of your study are caused by your intervention and not something else.
- More control also means less generalizability.
- The trick is balancing the two…

Selecting participants

- Find people who represent your target population
  - Similar skills and abilities
  - Group you are most concerned about
  - Similar limitations
  - Close approximation
- Users can be expensive and difficult to find
  - Highly skilled
  - Vulnerable (children, students, ASD, etc.)
  - Rare (twins, CEOs)

Participants and the design process

- Planning, scoping, and definition
  - Very important to talk to people who understand the problems of your user group
  - Users themselves
  - Experts that study your group
- Design iteration
  - Testing with anyone is good
  - Closer to the intended population the better
- Evaluation, refinement, and production
  - Early evaluations on less-expensive group
  - Final evaluations with more representative group

Limitations

- Formal reports always include a “limitations” section which describes how results can and cannot be interpreted

Qualitative data analysis

Several ways to analyze

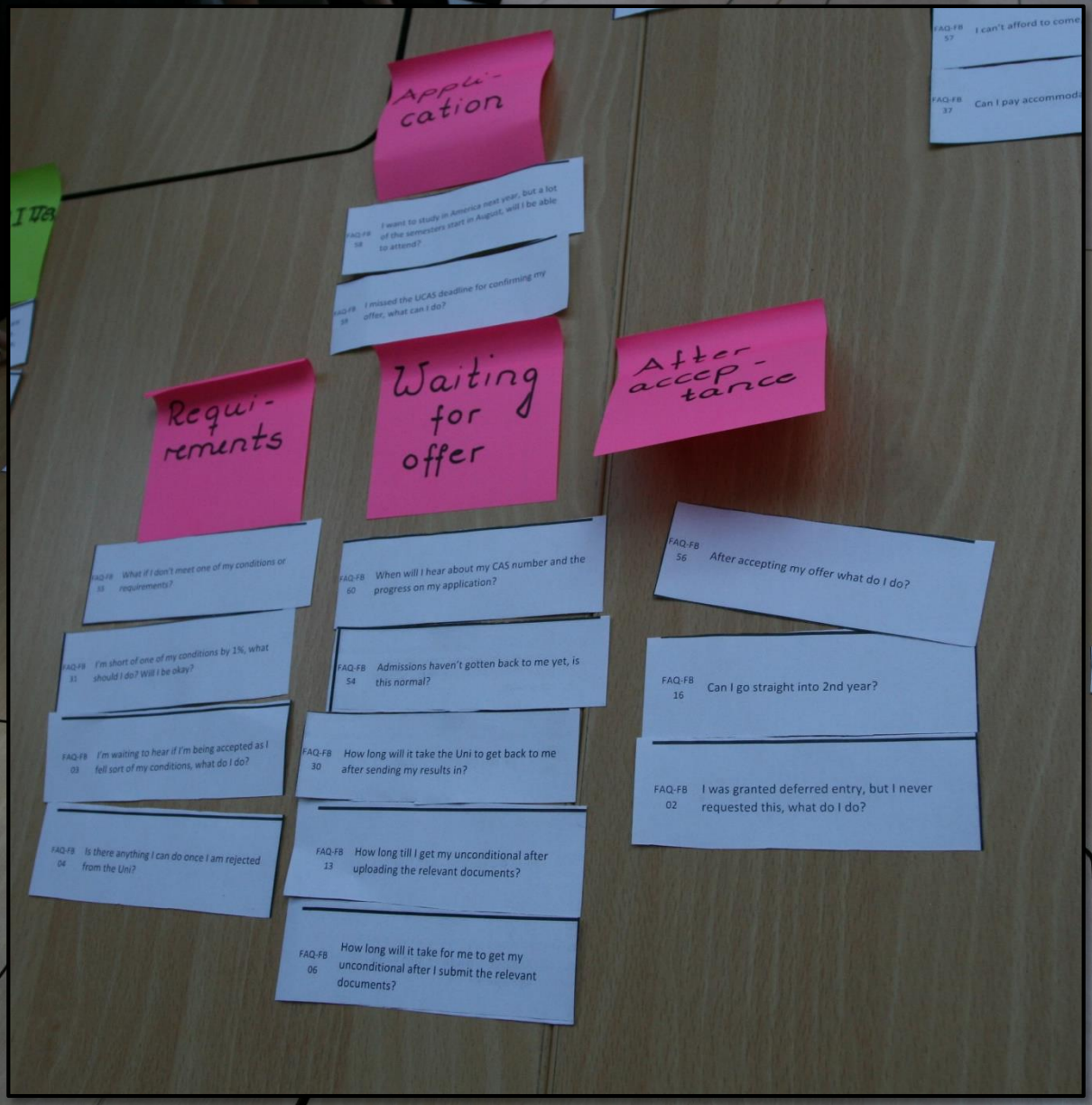
- Thematic analysis
  - Affinity diagram
- Content coding
- Topic modeling

Thematic Analysis

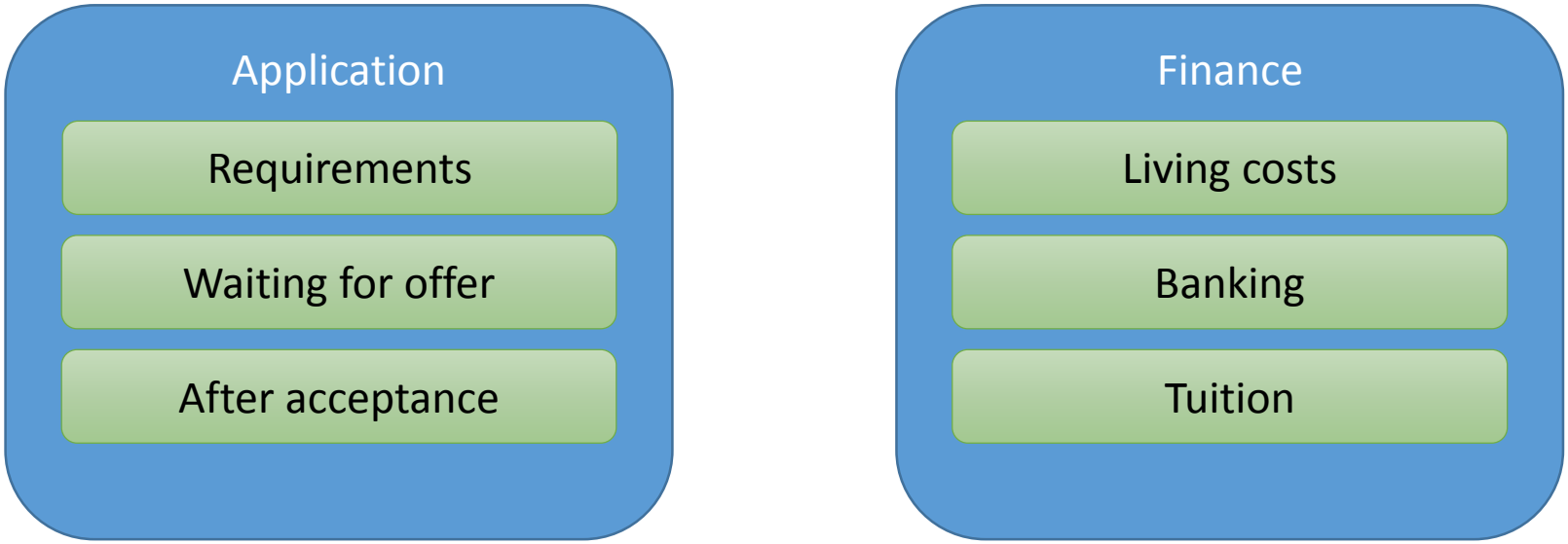
Thematic analysis

- Go through the data and identify “themes”, these themes become your outcomes.
- Affinity diagrams are one of the easiest ways to do thematic analysis with a group or by yourself
- Pros
  - Pulls the main concepts of the data out
  - Easy for someone else to understand
  - Themes are grounded in the data with clear examples
- Cons
  - Only works with a small amount of data
  - May require more than one person to improve validity

FINANCE
LIVING COSTS
Banking
Waiting for offer
IT & Support
DEGREES
ENGLISH LANGUAGE CERTIFICATION

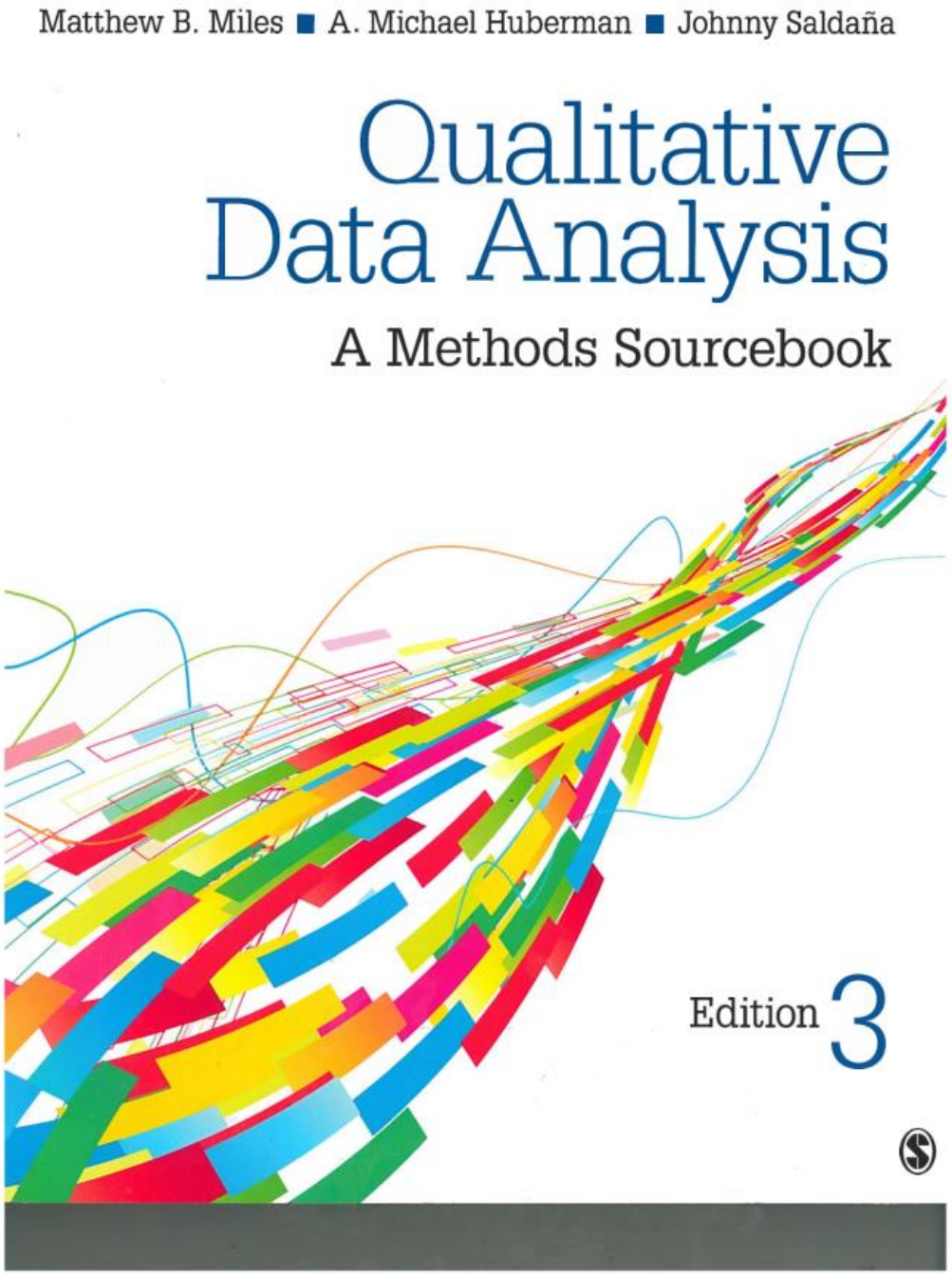

Appli-cation
Requi-rements
Waiting for offer
After accep-tance
FAQ-FB 57 I can't afford to come
FAQ-FB 37 Can I pay accommod
FAQ-FB 58 I want to study in America next year, but a lot of the semesters start in August, will I be able to attend?
FAQ-FB 59 I missed the UCAS deadline for confirming my offer, what can I do?
FAQ-FB 33 What if I don't meet one of my conditions or requirements?
FAQ-FB 31 I'm short of one of my conditions by 1%, what should I do? Will I be okay?
FAQ-FB 03 I'm waiting to hear if I'm being accepted as I fell sort of my conditions, what do I do?
FAQ-FB 04 Is there anything I can do once I am rejected from the Uni?
FAQ-FB 60 When will I hear about my CAS number and the progress on my application?
FAQ-FB 54 Admissions haven't gotten back to me yet, is this normal?
FAQ-FB 30 How long will it take the Uni to get back to me after sending my results in?
FAQ-FB 13 How long till I get my unconditional after uploading the relevant documents?
FAQ-FB 06 How long will it take for me to get my unconditional after I submit the relevant documents?
FAQ-FB 56 After accepting my offer what do I do?
FAQ-FB 16 Can I go straight into 2nd year?
FAQ-FB 02 I was granted deferred entry, but I never requested this, what do I do?
DEGREES

FINANCE
LIVING COSTS
Banking
TUITION
FAQ-FB 34 How much are laundry prices in halls?
FAQ-FB 44 How much should I spend on food a week? (Catered Halls should ignore)
FAQ-FB 57 I can't afford to come, what can I do?
FAQ-FB 37 Can I pay accommodation fees in instalments?
FAQ-M 01 Bank accounts – How do I open one? Where is the nearest branch? Where do I get a letter that will allow me to open a bank account?
FAQ-FB 47 Should I open a UK bank account?
FAQ-FB 41 What bank is best for me to open an account with?
FAQ-FB 08 I want to apply for a Masters Loan, but I'm not sure if I'm able to apply for one if I'm studying in Scotland?
FAQ-FB 46 Do I get a discount for paying my tuition fees all at once?
FAQ-FB 15 Can you pay tuition fees incrementally?
FAQ-FB 40 What happens to tuition fees with EU referendum result to Brexit?
FAQ-FB 18 I submitted a SAAS application after the stated deadline, is this okay?
FAQ-FB 45 When should I pay tuition fees?
FAQ-FB 52 Are their student loans within the UK for international students?
After


Application
Requirements
Waiting for offer
After acceptance
Finance
Living costs
Banking
Tuition

Content coding

Following examples are from this book



Content coding

“I decided that I wasn’t going to install the update because I have heard all the reviews online about how it generally makes your phone slower in every respect.”

Descriptive Coding

- Goal: label the data to understand what is there in a very general flexible way
- Label data to summarize it
- Typically a word or short phrase, often a noun

[1] As I walked toward the school, there was a 7-11 convenience store 1 block away, next to a small professional office building: an optometrist, podiatrist, and other medical/health-related clinics. Directly across the street was an empty lot, but next to that stood a Burger King restaurant.	[1] BUSINESSES

In Vivo Coding

- Goal: Get a sense of how the subject expresses the key ideas in their own words
- Use the participants own words to summarize the text
- Go through and identify key phrases

I[1] hated school last year. Freshman year, it was awful, I hated it. And[2] this year's a lot better actually I, um, don't know why. I guess, over the summer I kind of[3] stopped caring about what other people thought and cared more about, just, I don't know.

[1] "HATED SCHOOL"

[2] "THIS YEAR'S BETTER"

[3] "STOPPED CARING"

Process Coding

- Goal: Understand the process, actions, or steps people engage in
- Code using only "-ing" words.

Well, that's one problem, that [my school is] pretty small, so [1] if you say one thing to one person, and then they decide to tell two people, then those two people tell two people, and in one period everybody else knows. [2] Everybody in the entire school knows that you said whatever it was. So. . . .

[1] SPREADING RUMORS

[2] KNOWING WHAT YOU SAID

Emotion Coding

- Goal: Identify feelings or emotions
- Identify emotion words and phrases

[1] I just hated it when he got awarded with the honor. [2] I mean, we're praising mediocrity now. Never mind that what you've accomplished isn't worth squat, it's all about who you know in the good ol' boys network.

[1] "HATED IT"
[2] BITTERNESS

Dramatical Coding

- Goal: Identify objectives (obj), conflicts (con), tactics (tac), attitudes (att), emotions (emo), and subtexts (sub).

[1] There was a lot of pressure this year to "do more with less." And that always [2] frustrates me, because you don't "do more with less"—you do *less with less*. So [3] if they're expecting me to do more with less money and less resources, they're not going to get it. And it's not because I'm being snotty or passive-aggressive about this; [4] it's simply that you can't squeeze blood out of a turnip. There's only so much you can do with what you have. [5] And yes, I'm spending some of my own money this year on classroom supplies because we don't have enough to last us through the end of the year. [6] That's just the way it is these days.

[1] CON: LESS RESOURCES
[2] EMO: FRUSTRATION
[3] TAC: RESISTANCE
[4] ATT: LIMITATIONS
[5] TAC: SACRIFICING
[6] ATT: ACCEPTING "THE WAY IT IS"

Open coding: each researcher reads through the text and marks passages with “codes” which are similar to tags.

Content coding: Open coding

"I decided that I wasn't going to install the update because I have heard all the reviews online about how it generally makes your phone slower in every respect."

Content coding: Open coding

"I decided that I wasn't going to install the update because I have heard all the reviews online about how it generally makes your phone slower in every respect."

Not updating

Recommendations

Phone speed

Run a thematic analysis on the open codes.

Content coding: Code book

1. Awareness
2. Deciding
3. Preparation
4. Installation
5. Troubleshooting
6. Expected post state
7. Post state

- Installation
  - Time
  - Cost
  - Resources
  - Problems
  - Failure
  - Restart
  - Bundled software

Content coding

I decided that I wasn't going to install the update	Deciding : did not update
because I have heard all the reviews online	Deciding : research
about how it generally makes your phone slower in every respect	Expected post state : performance : worse

Deciding to update or not update

- Updating is important
- The old version had problems
- Reviews
  - Features, performance, resources, bugs
- Wait out the problems
- Worth the bother?
- Updates could contain viruses

Questions