

CS 444: advanced methods for
human-computer interaction

field studies - I

Class 2

administrivia

- *Don't forget to bring laptops to Wed's lab!*
 - *small amount of pre-lab setup required in advance*
- Have you all logged in to Vista???
- Bring copies of readings to class (digital or printouts)

2

today

- introduction to project
- brief look at ubiquitous computing
- introduction to field studies & methods
- pragmatics of conducting field work

3

project

- 5 milestones (MS) that culminate in a design competition
- will exercise all 3 advanced methods taught in course (field work, experiments, video)
 - imperfect fit
- MS I is individual, due in *one week*
- teams will be formed around selected project ideas from MS I
- brief look at project overview webpage & MS I description

4

a relevant computing trend...

Ubiquitous computing (UbiComp)



5



Mark Weiser
(1952-1999)

1988: Term "Ubiquitous Computing"

- First envisioned and formulated by Mark Weiser, XeroxParc

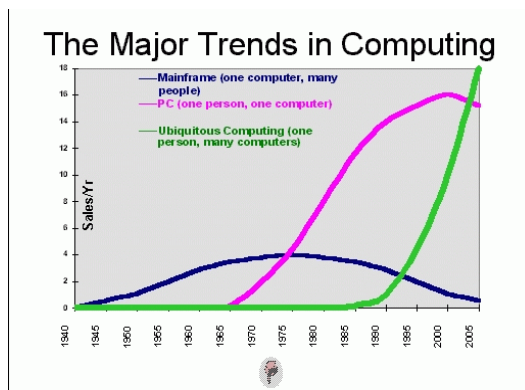
1991 "The Computer for the 21st Century"

- Basic idea first published in Scientific America
- Vision: Computers will be so common that they will be not recognize as such

"Ubiquitous Computing enhances computer use by making computers available throughout the physical environment, while making them effectively invisible to the user" *Mark Weiser*

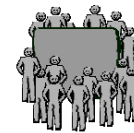
6

Weiser's version:



7

Weiser's version:



Mainframe Computing

- Users share one resource
- Explicit use, defined preparation needed
- User: Expert
- 60's – 70's



Personal Computing

- personal
- direct, explicit use
- Training/knowledge needed
- User: Everybody, often supported by an expert
- 80's – 90's



Ubiquitous Computing

- anytime, anywhere
- often implicit use
- User: Everybody
- 00's – ...?

8

example research



Toolkit for Bar Code Recognition and Resolving

9

Constraint on project: you must use an Android phone

Final note: in terms of project ideas, think about ways that an existing human activity could be better supported, or a new human activity could be enabled, through interactive technology

10

field studies – learning objectives

- explain what field work is
- identify and explain different field study variants
- identify the principles of field work and how they differ from laboratory work
- explain the different methods used in field work
- explain different sampling methods
- know how to prepare and run a field session
- identify a good interview question from a bad one
- know what to do once you've captured the data

11

what is a field study?

field study is a general term that denotes a study that takes place *in context*

value of context? what people say and what they do can vary significantly

12

compare & contrast

studying a cell phone application in the **lab**
compared to in the **field**

identify the pros and cons of each approach

13

principles of field work

natural settings –

holistic –

descriptive –

members' point of view –

14

field study “variants”

ethnography

observational study

(in-depth) interview study

contextual inquiry

diary study

field experiment (upcoming lecture)

} **focus on
specific
methods**

- these are not mutually exclusive
- can differ on the methods used and the “depth” of the field work conducted

15

what is ethnography?

roots in **anthropology** – exploration of the everyday realities of people living in small scale, non-western societies

ethnographers “figuring out” what is going on through participation in social life (by observing, participating, and talking with people)

today, ethnographic approach is much broader: being applied to large industrialized societies (e.g., workplaces, senior centres, schools; and activities like teaching, financial investing)

16

a note on terminology

variation in language:

some refer to all field work as ethnography, which isn't correct

it is common to equate **field study** with *ethnographically-informed study* or a study that takes an *ethnographic approach*

17

getting started: research objectives

formulate **research objectives**:

- states what one wants to achieve
- use objectives to set initial **scope**

- e.g., to understand how doctors manage patient records and the implications this activity has for design

18

identify focal points

2-5 questions that are expected to drive the study (think **focus & scope**):

- driven by research objectives or development goals
- centered on general issues
- answers not anticipated or assumed

- e.g., what are the triggers that result in a doctor updating (or referencing) a patient record?
- others?
- more on focal points in Field I tutorial

19

participants

devise a sampling strategy

- what types of participants?
- how many participants?
- non-probability based sampling method

gaining access to field site and participants

- time consuming
- ethics considerations

20

sampling methods

finding participants:

- **quota**: specify groups of interest and how many /group
- **purposive**: similar but # /group not specified
- **convenience**: sample as you go (e.g., in shopping mall)
- **snowball**: sample as you go, participants refer other participants

need a screener that identifies important parameters in your target population

21

recruiting participants

can be more involved than for lab studies:

- **higher threshold**, participants allowing you into their "space"
- often involves **more time** than a lab study
- consider appropriate **incentive** (lab study norms not necessarily appropriate: e.g., \$10/hr)

usually far fewer participants than in a lab study, 3-12 is common

22

data collection methods

select methods that will address focal points and that will be appropriate for chosen site

observation
interviews
self-report techniques
remote techniques

nearly all field work involves observation & interviews

23

observation

goal to capture **tacit knowledge** and ward against participants trying to please observer

duration can vary dramatically (small # of days to a year or more!)

degree of involvement: **observer-participant** to **participant-observer**

- can you identify the pros & cons?

can be person/event/place/or object focused

- can you think of an example for each?

24

specifics on observation

look for what people do, not what they say

direct observations

- researcher on site, in context
- participate as little as possible
- take notes, audio tape conversational components, collect artifacts, take pictures of artifacts that cannot be taken, sometimes videotape as a backup

video observations

- researcher not present, video camera capturing instead
- can be less intrusive for participant

25

interviews

continuum: unstructured, semi-structured, structured

early stages of research use unstructured – why?

later stage more structured – why?

26

interviewing is an art: guidelines

interview in everyday, familiar settings – take cues from context

look for specific examples & artifacts

do not pre-suppose answer

- How often do you use your cell phone to call family members?
VERSUS What are the ways in which you communicate with your loved ones?

be open-ended - avoid yes/no questions

be flexible to adapt line of questioning

establish and maintain good rapport

casual conversation is not bad

assume respondent is expert

do not interrupt unnecessarily

plan questions that allow triangulation – ask the same question in different ways

27

interview question example

Imagine you are trying to understand how home inhabitants communicate with one another using post-it notes. Which interview question is most appropriate?

1. Can you show me where you leave information for someone else?
2. Can you show me where others leave information for you?
3. Where do you leave information for someone else?
4. Where do people leave information for other people?

28

self-report techniques

diaries

- participant's written record of specific events, or can be what is happening at prompted moments
- free form or structured recordings
- e.g., study on exploratory learning "Eureka" moments (Rieman & Lewis, 1996)

visual stories

- pictorial diaries, use a camera in addition to text
- e.g., study using video to document file retrieval (Blomberg, Suchman, and Trigg, 1996)

29

remote data collection

remote video and audio via the Internet

remote interactions collected through logging

- e.g. MSWord Personal study (McGrenere, Baecker, & Booth, 2002) – *a reading in this course*
- Google does studies ALL THE TIME

30

contextual inquiry

structured method for gathering information in field work

goal: to bring it to the design process

between observation and interview: idea is to intensely interview people while they work

principles:

1. context
2. partnership: share control, participant is expert
3. focus: keep sight on research objectives, do not try and understand full culture

31

preparing for field work

how will data be recorded?

- handwritten notes (free form, coding sheet)
- audio tape
- video capture
- still photos

32

what do you need to bring?

consent forms
 screening forms (if participant selection not done in advance)
 audio/video equipment
 • extra tapes, microphone?, extra batteries, tripod
 note taking equipment
 instruments: interview scripts, questionnaire?

-> just because it is a qualitative method does not mean that detailed preparation is not required!

33

primary and secondary interviewing roles

there is too much for one person to do!

primary

- usually the person who has contacted the participant
- guides the discussion

secondary

- responsible for most data capture (all recording devices, primary notes, artifact collection)

34

pilot testing

is just as important as it is in lab studies!

check for

- duration
- clarity of interview questions, non-repetitive, ability to deliver the script fluidly
- utility of observation sheet
- robustness and ability to operate recording equipment
- bottom line: do you get meaningful data?

35

post session

- **debrief** immediately with partner/team
- type notes right away – **expand** as appropriate (make sure to note clearly what are expansions b/c they are subject to recall)
- check your **recordings** and **label** media
- make a **log** of all the items from the session (artifacts, audio/video tapes, still images, notes...)
- write up **reflection** on session (things that were not clear, surprising, ...)
- plan for **transcripts** of dialog, as appropriate

36

data analysis

circulate notes and transcriptions among team

hold **video analysis sessions**

identify patterns: in behaviour, events, artifacts, within and across individuals

common technique: **affinity diagrams**

triangulate data where possible

37

representations – communicating results

storyboards

scenarios

profiles/personas

experience models

opportunity maps

- details on each of these in the Blomberg paper

finally, team brainstorms implications for design

38

ethics

as with all studies, need ethics approval

describe

- how person will participate
- duration of participation
- how the data will be used
- if **images**, **video** or **audio taping** will be used

39

when to use field methods

most often for pre-design

cost-benefit tradeoff easiest to make

but can be used at any stage

note: interviews & observations are often used throughout the design/evaluation cycle – but there is a difference between using these methods **in** and **out** of context

40

pros & cons of fieldwork

pros ???

cons ???

41

now you can...

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42

next time

Lecture will cover:

class discussion: "How do People Organize Their Desks?" (paper posted, also used in Tut 1)

field experiments (paper posted)

Bring papers with you and be prepared to discuss them.

43