



Aalto University
School of Arts, Design
and Architecture

Ethics and data analysis

MUO-E3036 Interaction Design (IxD)

7 February 2022

Antti Salovaara

MyCourses > Interaction design > Split S > Lecture slides >
Week5-Day1-Ethics-and-analysis.pdf

Contents of today's teaching

Some additions to last week

Research ethics

Making the user feel easy

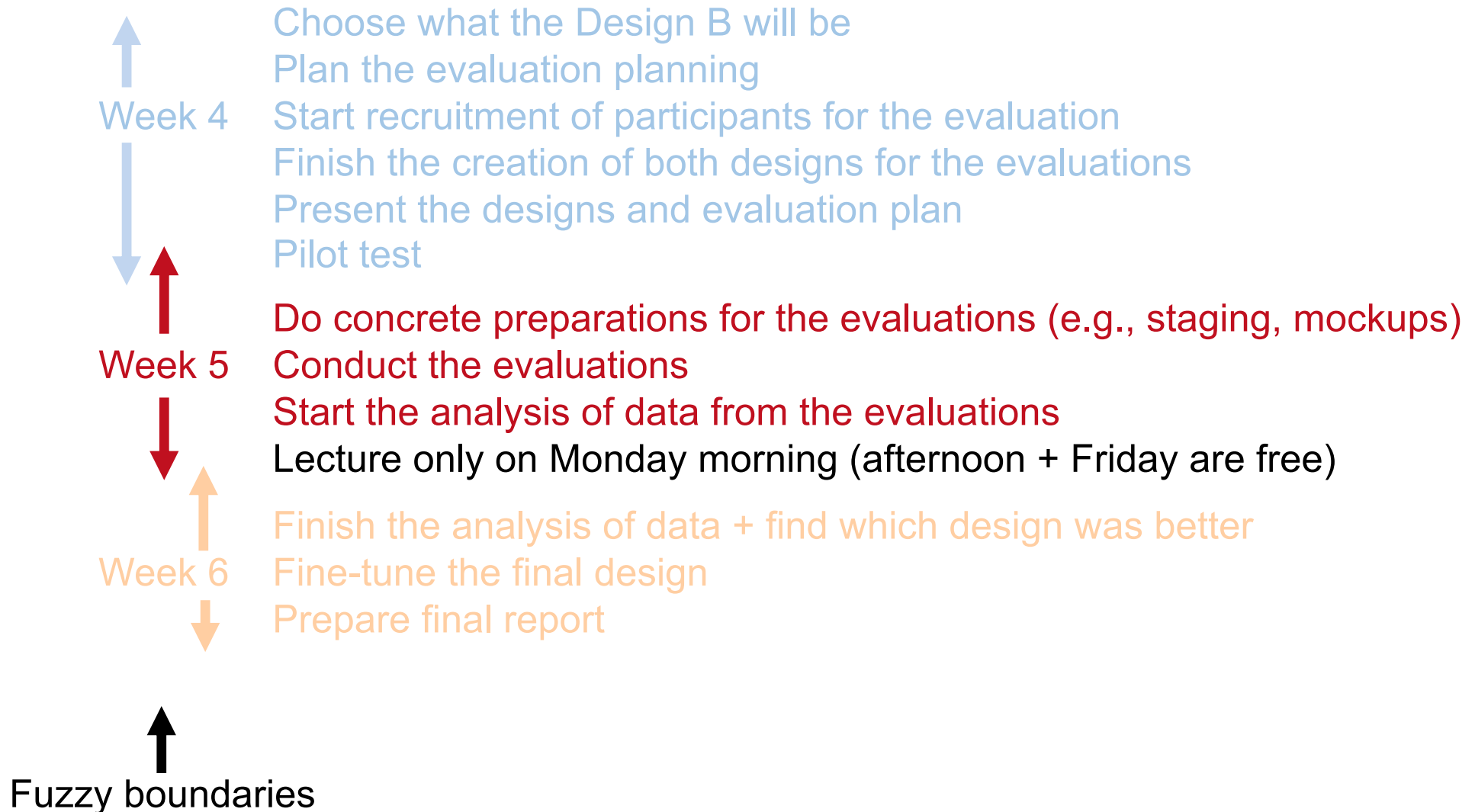
Data analysis

Final report template

Reading materials for Monday (week 6)

Tutor meetings

Contents for all the remaining weeks



Some additions to last week

Paper prototyping

A top-down view of a person's hands interacting with a paper prototype of a user interface. The prototype is drawn on a white sheet of paper and features several rectangular boxes, some with rounded corners, and lines representing text and layout. The person's hands are visible, with one hand pointing at a specific element on the screen. The background is a solid green surface.

<https://www.youtube.com/watch?v=GrV2SZuRPv0>

SIGCHI gender guidelines

<https://www.morgan-klaus.com/gender-guidelines.html>

Pilot test

= “Dry run” of your evaluation

Carry out everything in the way that you plan to do in the actual interview

Recording method, tasks, mockup material, ...

No shortcutting! You also need to test the evaluation's length!

Carry out one pilot test

At least 1 day before the first actual interview

One of team members pretends to be a user

Make adjustment and fix problems

Research ethics

Which of these are ethically problematic actions?

Asking leading questions
("Don't you think that...")

Showing quotes from users to
the project's customer

Using more time in an
interview than was promised

Gathering a lot of background
data about a user for the sake
of completeness

Sharing user study data
through Google Drive

Deceiving users by telling them in the
beginning that the study is about one
topic, but actually measuring
something else

Sighing and yawning during
an interview

Exercise (5 mins)

1. Brainstorm a list of ethical issues that you have to take into account in your evaluations
2. Paste them in the chat when we have a discussion time
3. We can discuss open issues later during this lecture

Principles of polite interaction with the user (part 1)

Discussion:

In order to ensure natural user behaviour:

What should the facilitator ***not*** do?

What should the facilitator do?

Usability Engineering

Before the test:

Have everything ready before the user shows up.

Emphasize that it is the *system* that is being tested, not the user.

Acknowledge that the software is new and untested, and may have problems.

Let users know that they can stop at any time.

Explain any recording, keystroke logging, or other monitoring that is used.

Tell the user that the test results will be kept completely confidential.

Make sure that you have answered all the user's questions before proceeding.

During the test:

Try to give the user an early success experience.

Hand out the test tasks one at a time.

Keep a relaxed atmosphere in the test room, serve coffee and/or have breaks.

Avoid disruptions: Close the door and post a sign on it. Disable telephone.

Never indicate in any way that the user is making mistakes or is too slow.

Minimize the number of observers at the test.

Do not allow the user's management to observe the test.

If necessary, have the experimenter stop the test if it becomes too unpleasant.

After the test:

End by stating that the user has helped you find areas of improvement.

Never report results in such a way that individual users can be identified.

Only show videotapes outside the usability group with the user's permission.

Table 9 *Main ethical considerations for user testing.*

Deceiving users

Sighing and yawning

Showing quotes from users to the project's customer

Nielsen, J. (1993).
Usability Engineering.
Boston, MA:
Academic Press.

Regulations on ethics

Informed consent

(Ethical review by institutional review board)

General rules

GDPR & what can be collected from users

Some warning stories

Stanford prison experiment (1971)

Was a study on perceived power in a simulated prison

Voluntary student participants divided into two groups:

“prisoners”

“prison officers”

Experiment had to be ended after 6 days

“students quickly embraced their assigned roles, with some guards enforcing authoritarian measures and ultimately subjecting some prisoners to psychological torture, while many prisoners passively accepted psychological abuse and, by the officers' requests, actively harassed other prisoners who tried to stop it.”

https://en.wikipedia.org/wiki/Stanford_prison_experiment

Nielsen's guidelines did not cover this issue:

Researchers explored mass-scale modification of users' Facebook feeds' emotional content (fewer vs. more happy content)...

...to find out how this correlates with users' own posts' emotional content

Kramer et al. 2014

PNAS

8788-8790 | PNAS | June 17, 2014 | vol. 111 | no. 24

www.pnas.org/cgi/doi/10.1073/pnas.1320040111

 CrossMark
Click to update

Experimental evidence of massive-scale emotional contagion through social networks

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¹Core Data Science Team, Facebook, Inc., Menlo Park, CA 94025; and Departments of ²Communication and ³Information Science, Cornell University, Ithaca, NY 14853

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved March 25, 2014 (received for review October 23, 2013)

Emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. Emotional contagion is well established in laboratory experiments, with people transferring positive and negative emotions to others. Data from a large real-world social network, collected over a 20-y period suggests that longer-lasting moods (e.g., depression, happiness) can be transferred through networks [Fowler JH, Christakis NA (2008) *BMJ* 337:a2338], although the results are controversial. In an experiment with people who use Facebook, we test whether emotional contagion occurs outside of in-person interaction between individuals by reducing the amount of emotional content in the News Feed. When positive expressions were reduced, people produced fewer positive posts and more negative posts; when negative expressions were reduced, the opposite pattern occurred. These results indicate that emotions expressed by others on Facebook influence our own emotions, constituting experimental evidence for massive-scale contagion via social networks. This work also suggests that, in contrast to prevailing assumptions, in-person interaction and nonverbal cues are not strictly necessary for emotional contagion, and that the observation of others' positive experiences constitutes a positive experience for people.

computer-mediated communication | social media | big data

Emotional states can be transferred to others via emotional contagion, leading them to experience the same emotions as those around them. Emotional contagion is well established in laboratory experiments (1), in which people transfer positive and negative moods and emotions to others. Similarly, data from a large, real-world social network collected over a 20-y period suggests that longer-lasting moods (e.g., depression, happiness) can be transferred through networks as well (2, 3).

The interpretation of this network effect as contagion of mood has come under scrutiny due to the study's correlational nature, including concerns over misspecification of contextual variables or failure to account for shared experiences (4, 5), raising important questions regarding contagion processes in networks. An experimental approach can address this scrutiny directly; however, methods used in controlled experiments have been criticized for examining emotions after social interactions. Interacting with a happy person is pleasant (and an unhappy person, unpleasant). As such, contagion may result from experiencing an interaction rather than exposure to a partner's emotion. Prior studies have also failed to address whether nonverbal cues are necessary for contagion to occur, or if verbal cues alone suffice. Evidence that positive and negative moods are correlated in networks (2, 3) suggests that this is possible, but the causal question of whether contagion processes occur for emotions in massive social networks remains elusive in the absence of experimental evidence. Further, others have suggested that in online social networks, exposure to the happiness of others may actually be depressing to us, producing an "alone together" social comparison effect (6).

Three studies have laid the groundwork for testing these processes via Facebook, the largest online social network. This research demonstrated that (i) emotional contagion occurs via text-based computer-mediated communication (7); (ii) contagion of psychological and physiological qualities has been suggested based on correlational data for social networks generally (7, 8); and (iii) people's emotional expressions on Facebook predict friends' emotional expressions, even days later (7) (although some shared experiences may in fact last several days). To date, however, there is no experimental evidence that emotions or moods are contagious in the absence of direct interaction between experimenter and target.

On Facebook, people frequently express emotions, which are later seen by their friends via Facebook's "News Feed" product (8). Because people's friends frequently produce much more content than one person can view, the News Feed filters posts, stories, and activities undertaken by friends. News Feed is the primary manner by which people see content that friends share. Which content is shown or omitted in the News Feed is determined via a ranking algorithm that Facebook continually develops and tests in the interest of showing viewers the content they will find most relevant and engaging. One such test is reported in this study: A test of whether posts with emotional content are more engaging.

The experiment manipulated the extent to which people ($N = 689,003$) were exposed to emotional expressions in their News Feed. This tested whether exposure to emotions led people to change their own posting behaviors, in particular whether exposure to emotional content led people to post content that was consistent with the exposure—thereby testing whether exposure to verbal affective expressions leads to similar verbal expressions, a form of emotional contagion. People who viewed Facebook in English were qualified for selection into the experiment. Two parallel experiments were conducted for positive and negative emotion: One in which exposure to friends' positive emotional content in their News Feed was reduced, and one in which exposure to negative emotional content in their News Feed was reduced. In these conditions, when a person loaded their News Feed, posts that contained emotional content of the relevant emotional valence, each emotional post had between a 10% and

Significance

We show, via a massive ($N = 689,003$) experiment on Facebook, that emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. We provide experimental evidence that emotional contagion occurs without direct interaction between people (exposure to a friend expressing an emotion is sufficient), and in the complete absence of nonverbal cues.

Author contributions: A.D.I.K., J.E.G., and J.T.H. designed research; A.D.I.K. performed research; A.D.I.K. analyzed data; and A.D.I.K., J.E.G., and J.T.H. wrote the paper.

The authors declare no conflict of interest.

This article is a PNAS Direct Submission.

Freely available online through the PNAS open access option.

To whom correspondence should be addressed. Email: akramer@fb.com.

Present address: Center for Tobacco Control Research and Education, University of California, San Francisco, CA 94143.

ing area of social science research that needs to be approached with sensitivity and with vigilance regarding personal privacy issues.

Questions have been raised about the principles of informed consent and opportunity to opt out in connection with the research in this paper. The authors noted in their paper, “[The work] was consistent with Facebook’s Data Use Policy, to which all users agree prior to creating an account on Facebook, constituting informed consent for this research.” When the authors prepared their paper for publication in PNAS, they stated that: “Because this experiment was conducted by Facebook, Inc. for internal purposes, the Cornell University IRB [Institutional Review Board] determined that the project did not fall under Cornell’s Human Research Protection Program.” This statement has since been [confirmed by Cornell University](#).

Obtaining informed consent and allowing participants to opt out are best practices in most instances under the US Department of Health and Human Services Policy for the Protection of Human Research Subjects (the “[Common Rule](#)”). Adherence to the Common Rule is [PNAS policy](#), but as a private company Facebook was under no obligation to conform to the provisions of the Common Rule when it collected the data used by the authors, and the

What can be done to prevent these kinds of mistakes?

Informed consent

User has to know what they are going to participate in, and give their permission:*

Who are the members of the research team that organize this study

That the purpose is not to evaluate the participant, but to investigate a research question

That the participant may opt out any time during the study

That the **relevant** material created by participants may be used in reports and publications (we'll return to this later)

Confidentiality of the data: who will see it and in what form

These are explained in an **informed consent form** which the user can sign if they agree

* <https://tenk.fi/en/advice-and-materials/guidelines-ethical-review-human-sciences>

Informed consent form, part 1

The consent itself

INSIGHTFUL INTERFACES PROJECT CONSENT FORM

I.....agree to participate in the user interface experiment conducted by the Strategic Usability research group.

I have read and understood the study information sheet given to me. I have understood that the material and research data is gathered for scientific purposes only.

The purpose and nature of the study has been explained to me in writing. I have sufficient information on the process of the study. I understand that my participation in the study is completely voluntary and that I have the right to discontinue my participation at any stage without any consequences.

I give permission for my data to be recorded in the described manner. I understand that I can ask to take a break at any time during the study. It has been explained to me that a designated researcher will, at my request, provide me with additional details of the general principles of the study and its progress or of the results concerning myself.

I understand that anonymity will be ensured by disguising my identity. I have been explained who are the different parties involved in the research that have access to my data. I understand the practices of storing, protecting, and using the data. I know that the collected data will not be presented to a third party without my written consent. I know that the research group may ask for a professional consultation on possible unexpected incidental findings without separate consent provided that the anonymity of the results has been ensured. Any type of commercial exploitation of the results is prohibited.

I understand that a fully anonymized subset of the data may be released to other research groups for the purposes mentioned above, if I give permission to it.

(Please tick one box:)

I agree to releasing anonymized extracts from my data.

I agree to releasing anonymized extracts from my data only if I am informed about the research groups in question. I have been told what that subset will be.

I do not agree to releasing extracts from my data.

I understand that extracts from possible interviews may be quoted in subsequent publications if I give permission below:

(Please tick one box:)

I agree to anonymized quotation/publication of extracts from audiotaped data

I do not agree to quotation/publication of extracts from audiotaped data.

By my signature, I confirm my participation in this study and agree to volunteer as a study subject.

Date.....

RESEARCH PARTICIPANT

PRINCIPAL INVESTIGATOR

Name.....

Name

Signature.....

Signature.....

City.....

City...Espoo.....

Informed consent form, part 2

INFORMATION SHEET FOR RESEARCH PARTICIPANTS

Name and topic of the research project: Insightful interfaces

General description of study method: This is mostly a quantitative system evaluation. The focus is on the times that text editing tasks with the word editor take from the participant in several different tasks.

Purpose of the study. The purpose of the study is to evaluate differences in task completion times between different versions of the system. Each participant will see only one of the system types.

Research group's experience of the method: The principal investigator of the study has experience of over 20 user studies in human-computer interaction. There are no reported incidents of ethical misconduct. The summer trainee who conducts the study has completed the course on usability evaluation methods with a high grade this spring (2019).

Funding and responsible researcher: This work is funded by the Department of Computer Science, Aalto University. Principal investigator is Dr. XXX XXX (tel. XXX-XXXXXX, email xx.xxxxxx@aalto.fi).

Time commitment: Participation in this study will take appr. 40 minutes (max 1 hour).

Suitability for the study: Legally competent adults are allowed as participants. In particular we require good command of English (due to the language of our system) and experience of using word processing software.

Compensation: The compensation is one movie ticket per hour.

Voluntary participation: Participation in the study is voluntary. You have the right to discontinue participation at any time without obligation to disclose any specific reasons.

The rights of the study participant: As a research participant you have the following rights: the right to access stored personal information, to correct inaccurate personal information, to oppose the processing of your personal information and to delete your information. It might be necessary to depart from the participant's rights if the research is conducted for the purpose of public interest and if the participant's rights prevent or greatly hinder achieving this purpose. If, however, it is possible to achieve the aims of the study and the achievement of the purpose is not greatly hindered, Aalto University will actualize your rights as defined in the GDPR. The extent of your rights is related to the legal basis of processing of your personal data and exercising your rights required proof of identity.

Communication with the research staff during testing: You can stop the task and ask the experimenter at any time if you have questions about the study or your participation.

Description of study situation: The study starts with a short paper-based questionnaire about familiarity of symbols in computer software. After this, the experiment with our system will start. There will be one practice task and 10 actual tasks. The system will log the interactions in these tasks.

Collection of data: 1) Questionnaire data: computer literacy scale; 2) Screen recording data: mouse movements, text editing in the tasks; 3) Audio recording data: the conversations with the experimenter and the participant during the tasks; 4) Personal information: name, email address, gender, age. Personal information is collected to enable communication with the subject and for statistical information about the participants.

Transferring data outside the EU: Your data will not be transferred outside the EU, except for the United Kingdom.

Anonymity, secure storage, confidentiality: The data will be used for scientific purposes only and are confidential. All data will be anonymized. No explicit clues of your identity will be left to the rest of the stored data. All data will be stored securely and accessible only to the following members of Aalto University: XXX XXXXXXX and XXX. The questionnaire data, screen recording data, audio recording data, gender and age are accessible also to XXX and XXX, both from XXX. The personal information will be deleted when it is no longer needed.

Insurance coverage: You are covered by Aalto-level insurances for accidents and damages during the study.

Contact details: Aalto University is the data controller in this research.

In questions regarding [research](#) you can contact the responsible researcher: XXX, xxx.xxxxxxx@aalto.fi, You can contact the Aalto University data protection officer if you have questions about data processing and protection: [Xxxx Xxxxxxxx](#), xxx@aalto.fi, tel. XXXXXXXX. If you notice a violation in the data protection legislation, you can contact the Data Protection Ombudsman (<http://www.tietosuoja.fi/en>).

If you agree to take part in the study, please sign the consent form overleaf.

Sometimes ethics need to be reviewed before a study is started



<https://www.tenk.fi/en/ethical-review-in-finland>

Aalto's researchers:

may need to submit their research plans to Research Ethics committee before they start their study

Students:

Mostly do not need approval from Research Ethics committee

Links to Aalto's ethical screening:

<https://www.aalto.fi/en/services/research-ethics-committee>

Also coursework may need a review

Ask for a review if at least one of the following applies to your study

1. Intervention in the **physical integrity** of subject
2. The study deviates from the principle of **informed consent** (excluding archival data)
3. The subjects are **children** under the age of 15
4. **Exceptionally strong stimuli** whose harmfulness needs to be evaluated by an expert
5. Possible long-term **mental harm** (trauma, depression, sleeplessness)
6. Possible **security risk** to subjects

Example:

At Aalto ARTS, we cooperated with lawyers in 2020 in a service design course that addressed online harassment

Anonymity and data protection

Access to raw data vs only findings

Reporting the results to companies

GDPR

Anonymity exists in different levels

1. All (“raw”) data

Including the participant’s name

→ Access to research team only

2. Aggregated data

= Anonymized and not traceable to individuals in other ways either

→ Access to research team only or also to companies (and teacher)

3. Reportable data

= Data that addresses the research questions or is evidence of your emergent findings

→ Can be published and delivered to e.g., involved companies, preferably not as datasets but as reports

If you have third parties in the project

Possible third parties:

The client (also the teacher): one that is interested in the results

The case company: the context where the study is conducted

Instrument provider: a company that provides an instrument (e.g., collaboration platform) that is used in the research

Different access rights to data may be needed for each party

Never promise access to raw data to companies!

You would have to tell this to participants and this would potentially bias your data 😞

→ Provide only reports to 3rd parties

→ Report to each party only the findings that are relevant to them

→ Tell the participants which 3rd party will be reported what

Never promise to participants full confidentiality either

Otherwise you have nothing to show to others about your project

GDPR (General Data Protection Regulation)

General advice:

Be specific in the informed consent

Collect only the data you need

Define when the data will be deleted

Specify where the data is stored securely

Do not reveal the identities of users to each other or outsiders

Keep a record of the consents

⇒ Include these in the informed consent

Special considerations:

Do you plan to gather data from which participant can be indirectly identified?

Does your interview deal with intimate personal experiences?

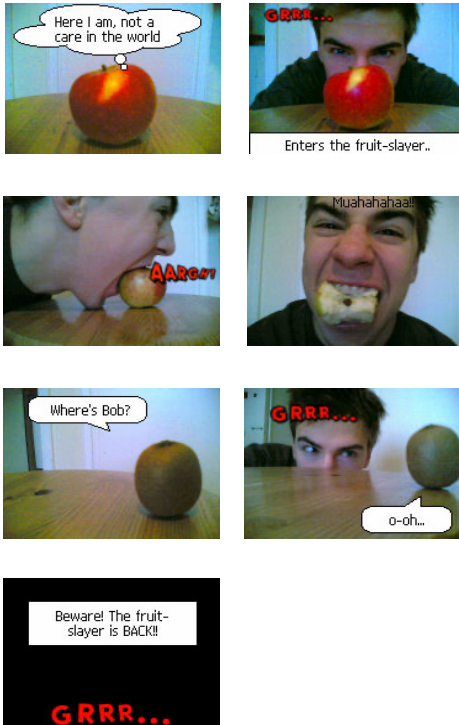
Useful links:

Aalto: <https://www.aalto.fi/en/services/aalto-university-data-protection-policy>

From UK Government: <https://www.gov.uk/service-manual/user-research/managing-user-research-data-participant-privacy>

Intellectual property rights

© Unnamed participant in Salovaara (2007)



Participant-created **works of art** are participants' IPR

E.g., in communication studies

Publication of others' works of art requires participant's permission

Remember to mention the intention to publish participants' works in the **informed consent form**

Usually participants are proud of having their works published!

If in doubt, ask your school's legal team

Principles of polite interaction with the user (part 2)

How to fit all the ethics in a usability session

Before you meet in the interview/observation/test:

- Send the informed consent document(s) to the participant

- This is to ensure that they have enough time to investigate them

When you meet:

- Plan the timings of your meeting carefully

- Reserve 5–10 minutes of the beginning to informed consent, GDPR, confidentiality and anonymity principles & making sure that the participant is assured of good practices

- Decide which parts must be included and which can be dropped

- Run a pilot study

- If you notice that you will run overtime, ask if user can stay longer.

Making the user feel relaxed

Explain the anonymity and confidentiality in the beginning

No names or other identifiable information will be revealed to others in our course
User is free to terminate the evaluation at any time, with no need to explain why
The recording and notes from the evaluation will be destroyed after the course
But those contents that are relevant to the prototype's success will be kept and may also be used in presentations

Express interest in what user does

Good also for gathering detailed data: if you ask for clarifications you both express interest and also don't leave unexplained user behaviours in your data

Don't:

Don't sigh or yawn

Don't express anxiety if user struggles

Don't try to speed up the user if s/he is slow – Instead prepare the tasks so that some elements can be skipped without user noticing it

Do:

First task should be easy

Present the tasks both verbally and visually on text => improves user's comprehension

Exercise (5 mins)

(as it was in the beginning of the lecture)

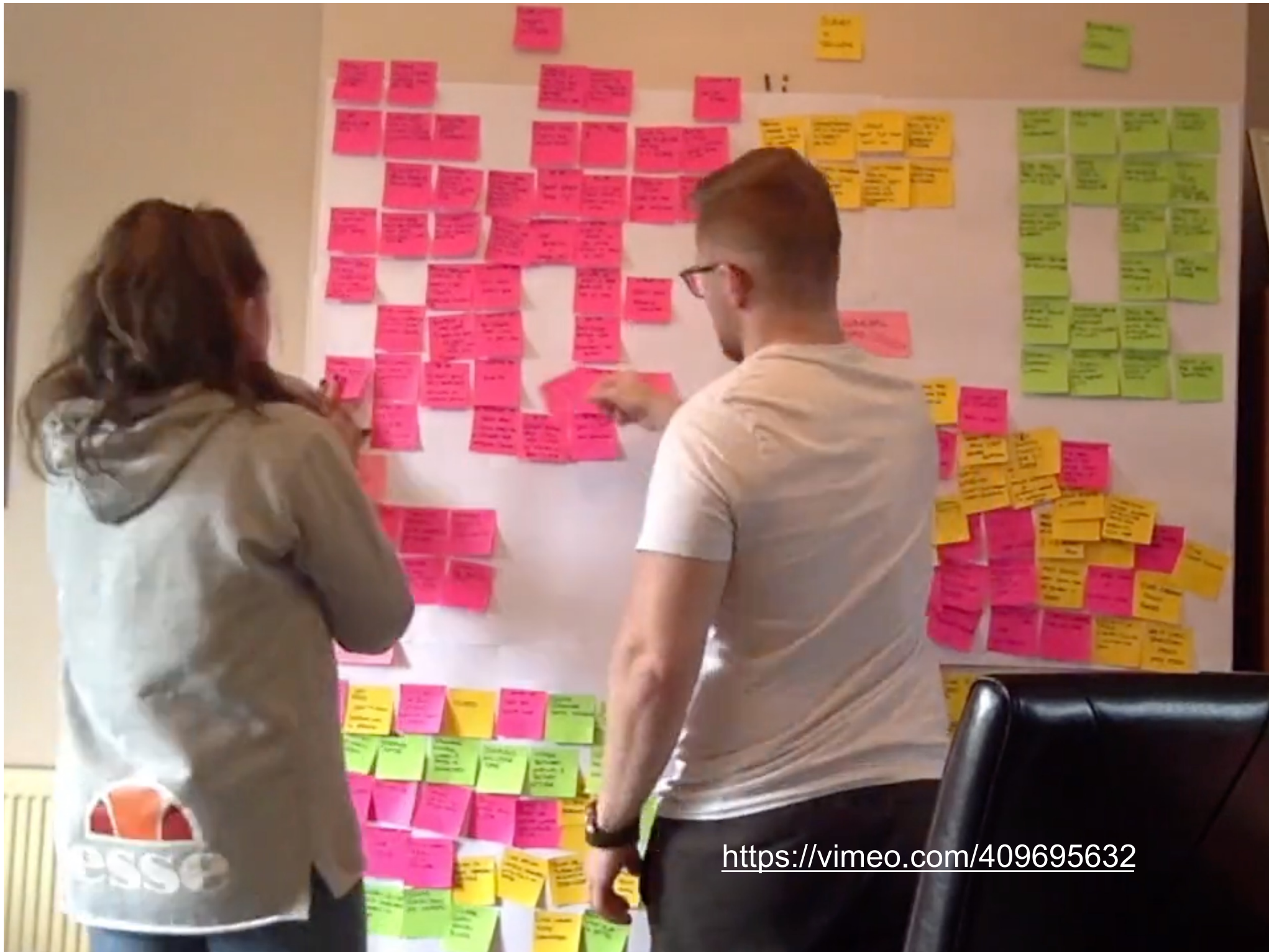
1. Brainstorm a list of ethical issues that you have to take into account in your evaluations
2. Paste them in the chat when we have a discussion time
3. We can discuss open issues later during this lecture

Did you find any new issues?

Are there any questions?

Data analysis

Using affinity diagrams



<https://vimeo.com/409695632>

Affinity diagrams

What can be observed from the previous video:

Creation of affinity diagrams involves creative sense-making of data
Sense-making leads to resolutions and interpretations that may help you understand the data in a new light (e.g., by becoming aware of new important system features)

What is the data that is analysed?

Use all the data from this project! – F-formations observations, UI sketches, evaluations

It can be in many formats (text, pictures)

Requirement: data has to be easy to move around (e.g., Post-It notes on a wall)

Where you will learn more:

This week's reading material (Lucero, Holtzblatt)

Affinity diagrams – tips

Advice:

Use a common work space, e.g., Miro

Prepare ("chop") your data into a compatible format (notes and pictures)

As you go through the data, make more notes to right down your ideas or to sort them

Tips for note creation:

Write only complete sentences (so that your team members are able to understand your idea too and use it)

Only one idea for each note (otherwise they cannot be sorted freely)

Use **different colours to designate** different users

While you sort and structure:

Speak out loud what you are doing

Work in parallel, otherwise you will tire yourself very quickly

Going “behind” the observations

When you analyse, try to develop different interpretations to the data

Use all the information that you have gathered, and that you know

Trust also your intuition

Develop explanations to the interpretations early on

“What might these observations tell us?”

Abductive logic: if we observed Y, what might have been the X that made it happen?

When some interpretation starts to feel strong, try to also verify it

Let the idea grow bigger (gather notes around it)

Then consider the idea critically

Try to find counter-examples from the data. They help you specify it further

More info about this: constant comparative method*

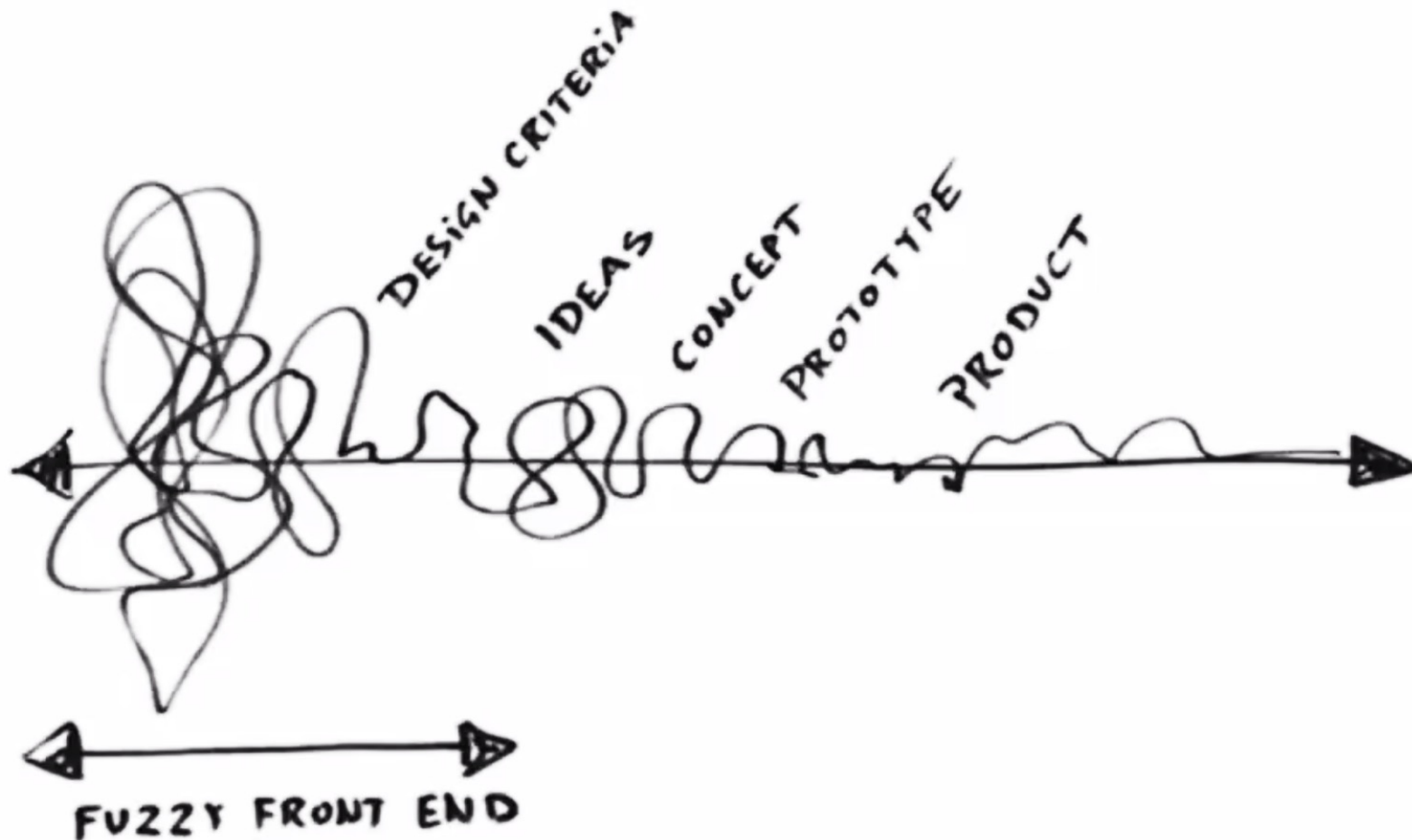
* Part of Grounded Theory method – see e.g. <https://delvetool.com/blog/ccm>

Final report template

What contents to focus on

The template

How did your project straighten this mess?



Sanders & Stappers (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5--18.
<https://doi.org/10.1080/15710880701875068>

Final report template

Max 2 pages / section

Cover page

1. User research
2. Google design sprint
3. The concept and its versions (Design A and Design B)
4. Evaluation process
5. Evaluation findings and your final design

In sections 1–5:

Reveal the important design decisions

Use sketches/pictures/... to describe them

Write for a critical and skeptical reader: try to convince the reader that you did the right decisions

Use external resources (e.g., the texts and websites listed in this course) to back up your decisions

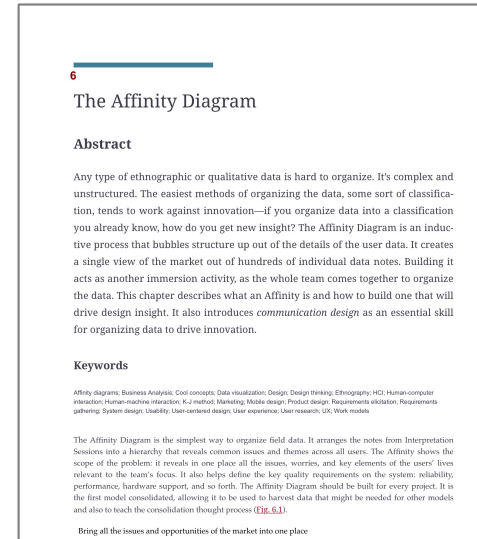
Reading materials

To be discussed on Monday, week 6

Reading materials for week 5



Lucero et al (Interact2015):
Using Affinity Diagrams to Evaluate Interactive Prototypes
[https://link-springer-com.libproxy.aalto.fi/chapter/10.1007/978-3-319-22668-2_19](https://link.springer.com.libproxy.aalto.fi/chapter/10.1007/978-3-319-22668-2_19)



Holtzblatt (2016):
Chapter 6: The affinity diagram
https://primo.aalto.fi/permalink/358AALTO_INST/ha1cg5/alma998386604406526

Tutor meetings

https://doodle.com/poll/93se4wxgvwtt5zat?utm_source=poll&utm_medium=link