Usability Engineering
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Usability Assessment Methods beyond Testing

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Content

Even though usability testing forms the cornerstone of most recommended usability engineering practices, there are several other usability methods that can and should be used to gather supplementary data.

1. Observation
2. Questionnaires and Interviews
3. Focus Groups
4. Logging Actual Use
5. User Feedback
6. Thinking Aloud

1. Observation

Visiting the users to observe them work

- Important for:
  - task analysis
  - field study of installed systems
- Observation is the simplest usability method
- Involves visiting one or more users
  - Doing as little as possible in order not to interfere with their work
  - The observer can take notes, possible to use videotaping (depends on the business)
- **The goal is to become virtually invisible to the users so that they will perform their work and use the system in the same way they normally do**
- Advantages
  - Observing users doing their own tasks - finds that users use the software in unexpected ways (not test in a testing environment)
    - eg: Word processor templates.

2. Questionnaires and interviews

- Many aspects of usability can best be studied by simply asking the users
  - Issues relating to the users' subjective satisfaction and possible anxieties, which are hard to measure objectively.
- Usability perspective - questionnaires and interviews are indirect methods
  - Because they do not study the user interface itself but only use options about the user interface
- **Interviews** can be more free-form than questionnaires, with the interviewer opportunistically asking follow-up questions that were not in the script
- Extensive coverage feasibility of the **questionnaire**
  - Possible to distribute a questionnaire to the entire user population
  - Possible to discover differences between various user categories as well as the specific needs of various small groups of users.

3. Focus Group

- Somewhat informal technique - can use to assess user needs and feelings both before the interface has been designed and after it has been in use for some time
- In a focus group,
  - About 6 to 9 users are brought together to discuss the new concept and identify issues over a period of about 2 hours.
  - Each group is run by a moderator - responsible for maintaining the focus of the group on whatever issues are of interest
  - To prepare for a focus group, the moderator needs to prepare a list of the issues to be discussed and set goals for the kinds of information that are to be gathered.

Focus groups often bring out users' spontaneous reactions and ideas through the interaction between the participants

4. Logging Actual Use

Having the computer automatically collect statistics about the detailed use of the system. Normally, logging is used as a way to collect information about the field use of a system after release.

- It shows how users perform their actual work
- It automatically collects data from a large number of users working and different circumstances
- An interface log containing statistics that shows the frequency of use of commands and other system features can be used to optimize frequently used features.
- Features that are not used or that are used very rarely should be investigated to see whether it is possible to improve them or make them more accessible to the users
- Possible to completely remove such features from the system
- Statistics showing the frequency of various error situations can be used to improve the usability of future releases of the system

4. Logging actual use ctd.

- If certain errors occur very frequently - consider a possible redesign of the system
- Frequent error messages are certainly candidates for concentrated usability efforts to make them more understandable and constructive.
- **Advantage**: compared with practically all other usability methods of not interfering with the users in any way. Basically, users can ignore the log and use the system exactly the way they would anyway.
- **Disadvantages**:
  - Privacy concerns - users should be informed when interaction logging is going on and that they should be able to disable the log if they so desire.
  - Logging data only shows what the users did but not why they did it.

Combining Logging with Follow-Up Interviews

- To overcome the limitation, it is possible to combine logging with other methods such as interviews, where users are shown data about their own use of the system and asked to elaborate on whatever interesting phenomena may be evident in the data.

5. User feedback

- For installed systems
- Advantages,
  - It is initiated by the users, so it shows they are immediate and pressing concerns
  - It is an ongoing process, so feedback will be received without any special efforts to collect it
  - Quickly show any changes in the users' needs, circumstances, or opinions since new feedback will be received whenever such changes occur

6. Thinking Aloud

Simple usability tests where users think out loud are cheap, robust, flexible, and easy to learn. Thinking aloud should be the first tool in your UX toolbox, even though it entails some risks and doesn't solve all problems.

~Jakob Nielsen~

- Involves having a test subject use the system while continuously thinking out loud
- Used as a psychological research

In the thinking aloud test,
you ask test participants to use the system while continuously thinking out loud — that is, simply verbalizing their thoughts as they move through the user interface.

6. Thinking Aloud ctd.

To run basic thinking aloud usability study, you need to do only 3 things:

1. Recruit representative users.
2. Give them representative tasks to perform.
3. Shut up and let the users do the talking.

Types of Thinking Aloud methods,

- **Concurrent Think Aloud (CTA)** - moderator request the participant to verbalize their thoughts as they perform the tasks
- **Retrospective Think Aloud (RTA)** - participants are asked to retrace their steps after they complete the tasks
    - Example: In eye-tracking protocols where CTA is disruptive to a participant's natural eye movements.

6. Thinking Aloud ctd.

Benefits

- ***Easy to learn***
- ***Cheap*** - No special equipment is needed
- ***Flexible*** - You can use the method at any stage in the development lifecycle
- ***Robust*** - You'll get reasonably good findings, even from a poorly run study
- ***Convincing*** - The most hard-boiled developers, arrogant designers, and tight-fisted executives usually soften up when they get direct exposure to how customers think about their work.

6. Thinking Aloud ctd.

Downsides

- ***Unnatural situation*** - Most people don't sit and talk to themselves all day. This makes it hard for test participants to keep up the required monologue.
- ***Filtered statements (vs. brain dump)*** - Most people want to appear smart, and thus there's a risk that they won't speak until they've thought through the situation in detail. Therefore, typically, you have to prompt users to keep them talking.
- ***Biasing user behavior*** - Prompts and clarifying questions are usually necessary, but from an untrained facilitator, such interruptions can very easily change user behavior.

https://www.nngroup.com/articles/thinking-aloud-the-1-usability-tool/

Summary of Usability Methods

Method Name	*Lifecycle Stage*	*Users Needed*	*Main Advantage*	*Main Disadvantage*
Heuristic evaluation	Early design, "inner cycle" of iterative design	None	Finds individual usability problems. Can address expert user issues.	Does not involve real users, so does not find "surprises" relating to their needs.
Performance measures	Competitive analysis, final testing	At least 10	Hard numbers. Results easy to compare.	Does not find individual usability problems.
Thinking aloud	Iterative design, formative evaluation	3–5	Pinpoints user misconceptions. Cheap test.	Unnatural for users. Hard for expert users to verbalize.
Observation	Task analysis, follow-up studies	3 or more	Ecological validity; reveals users' real tasks. Suggests functions and features.	Appointments hard to set up. No experimenter control.
Questionnaires	Task analysis, follow-up studies	At least 30	Finds subjective user preferences. Easy to repeat.	Pilot work needed (to prevent misunderstandings).
Interviews	Task analysis	5	Flexible, in-depth attitude and experience probing.	Time consuming. Hard to analyze and compare.
Focus groups	Task analysis, user involvement	6–9 per group	Spontaneous reactions and group dynamics.	Hard to analyze. Low validity
Logging actual use	Final testing, follow-up studies	At least 20	Finds highly used (or unused) features. Can run continuously.	Analysis programs needed for huge mass of data. Violation of users' privacy.
User feedback	Follow-up studies	Hundreds	Tracks changes in user requirements and views.	Special organization needed to handle replies.

Q & A