AALBORG UNIVERSITY

# Instant Data Analysis (IDA): Evaluating Usability in a Day

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# Overview

- Experiences with conventional evaluations
- Instant data analysis (IDA): basic idea
- Participants and materials, procedure and roles
- The IDA session
- IDA facilitator – during and after the IDA session
- Experiment
- Findings: usability problems
- Compared to ad-hoc analysis
- Conclusion
- Trade-Off: approach and resources

# Experiences with Conventional Evaluations

- **The value of usability evaluations has become widely acknowledged in the software industry**
- **However, time and other resources available for evaluating usability are often highly constrained**
- **Typical required effort: 100-140 manhours, with 40-60 spent on data analysis**
- **Aim: allow usability evaluations to be conducted, analyzed and documented in a day: Instant Data Analysis**

  **… but without sacrificing a systematic and user-oriented approach**

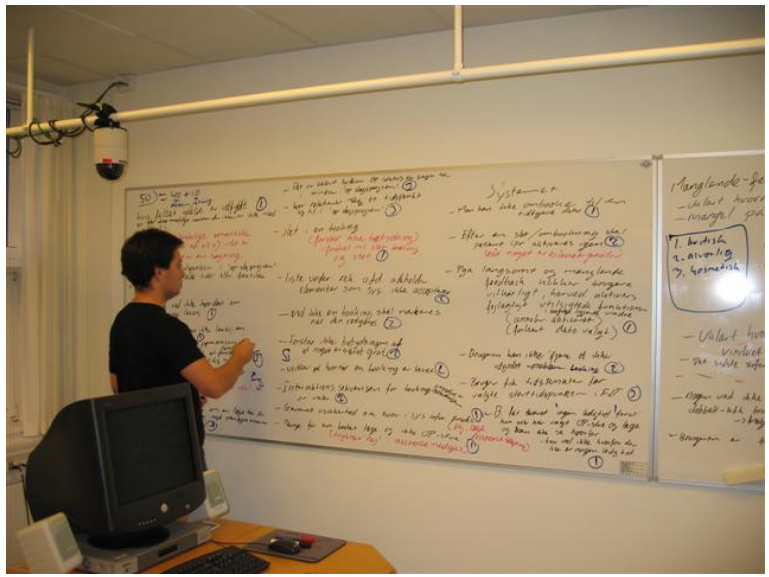
# IDA: Basic Idea

- **Designed to be combined with user-based think-aloud testing**
- **Exploits that a typical think-aloud test already involves a test monitor and a data logger**
  - High level of usability expertise
  - Often gain insight into key usability problems quickly
- **Systematically capture a valuable moment of insight into the usability of a system that otherwise needs to be reconstructed during later video analysis (and is sometimes lost…)**
- **This approach replaces video analysis and transcription of log files**
- **Makes it possible to complete a usability evaluation in a day (using 4-6 test subjects)**

# Participants and Materials

- 4-6 test subjects
- 1 test monitor
- 1 data logger
- 1 IDA facilitator
  (not present during the tests)

- 1 software system
- 1 whiteboard or flip-over
- Printed screenshots of the system
  (optionally)



# Procedure

## Tests (4-6 hours)

- **Conduct 4-6 think-aloud sessions with the test monitor and data logger (makes notes) present**

## Analysis (2-2½ hours)

- **Conduct 1 hour brainstorming and data analysis session**
  - Articulate and discuss the most critical problems of the system
  - Rate the severity of the problems (e.g. as critical, serious or cosmetic) and categorize them in themes (as they emerge)
  - The discussion is managed by the IDA facilitator who asks questions for clarification and writes the problems on a whiteboard or flip-over
  - Use printed screenshots and written notes for supporting overview
- **Spend 1-1½ hours on writing up the content of the whiteboard into a ranked list of problems with clear references to the system**
- **Review the problem list together for final consensus**

# Roles in IDA

**There are three roles to be filled in IDA:**

- **Test Monitor, 1 person**
- **Data Logger, at least one person**
- **IDA session facilitator, 1 person**

# Test Monitor and Data Logger

- **The test monitor's responsibility during the evaluation session is the ”traditional test monitor responsibilities ”, eg.**
  - Ensures that the participants understand what will happen and are put at their ease as much as possible
  - Administers the test
  - Make sure data is gathered
  - Debriefs the participants
- **The Data loggers responsibility:**
  - Records incidents and problems
  - Possibly accoding to a standard agreed upon upfront
  - The logged data will be used in the following in IDA session

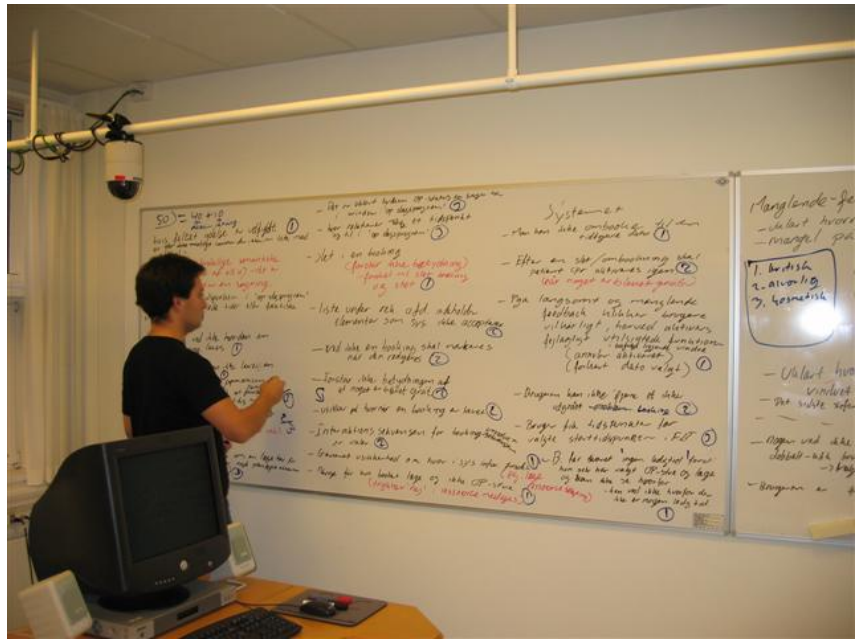
# The IDA session

- **The IDA session is a one-hour brainstorm and analysis session.**
- **The test monitor and data logger articulate and discuss the most critical usability problems identified in the evaluation sessions.**
  - Screenshots of the system is a good tool to spark the memory
- **Usability problems should also be rated according to their severity.**
- **Goal: To identify the most critical usability problems (not to find as many problems as possible)**

# IDA facilitator – during the IDA session.

- **The IDA facilitators responsibility is to support the brainstorming and analysis session by**
  - Asking for clarifications
  - Writing down identified usability problems on a white board
  - Categorize problems in themes

**The hard part is keeping track of all the information!**



# IDA facilitator – after the IDA session

- **After the IDA session it is the IDA facilitator's responsibility to go through the identified usability problems and write down a ranked list of usability problems (1-1½ hour)**
- **The list should include short descriptions of the problems, and clear references to the system such as references to specific parts of the GUI**
  **Like an ordinary problem list**

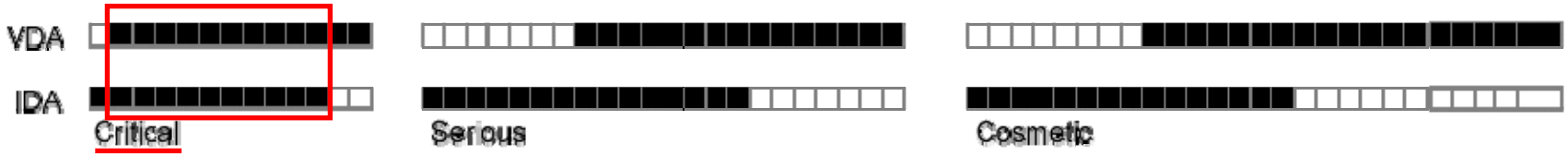
- **The last step of the IDA method is that the test monitor, the data logger and the IDA facilitator runs through the list of ranked usability problems to ensure consensus.**

# Experiment

- **We studied the use of Instant Data Analysis through an exploratory experiment**
- **Purpose**
  - Gaining practical experience with the use of the technique
  - Comparing results produced "instantly" with results from traditional video data analysis
  - Identifying opportunities and challenges for improving IDA
- **The system: resource booking at a large hospital**
- **Participants**
  - 5 test subjects
  - 1 test monitor
  - 1 data logger
  - 1 IDA facilitator
  - 2 observers (developers from the software company)

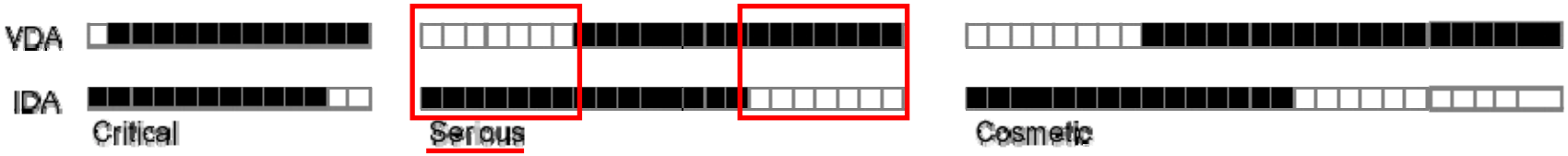
# Findings: Usability Problems

| | Instant Data Analysis | Video Data Analysis | Total |
|---|---|---|---|
| Critical | 11 | 12 | 13 |
| Serious | 15 | 15 | 22 |
| Cosmetic | 15 | 19 | 27 |
| Total | 41 | 46 | 62 |




*A black square represents a usability problem identified by the corresponding technique*

- **Critical problems**
  - Both approaches assisted in identifying nearly all 13 identified critical problems (85% and 92% respectively)
  - The two critical problems *not* identified by IDA were related to
    - User frustration due to slow system responses
    - A software bug

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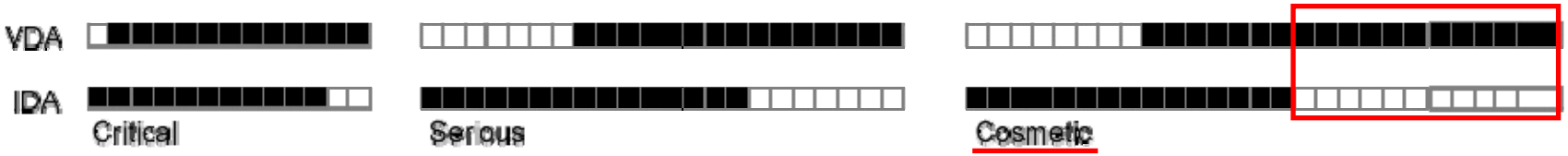
- **Serious problems**
  - IDA and VDA both identified 68% of all experienced problems
  - 8 problems were identified by both approaches

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    1. User frustration due to slow system responses
    2. A software bug
- **Serious problems**
  - IDA and VDA both identified 68% of all experienced problems
  - 8 problems were identified by both approaches
- **Cosmetic problems**
  - IDA identified 56% of all experienced problems
  - 7 problems were identified by both approaches
  - 11 out of 12 cosmetic problems only identified by VDA were experienced by only *one* of the five test subjects (unique)

# Compared to Ad-Hoc Analysis

- The two developers that observed the tests made a list of their own the day after the tests
- They employed an ad-hoc approach (using no structured method)
- They identified 8 usability problems
- When they read the report, they discovered several usability problems that they had forgotten or could not even remember

# Conclusion

- **Instant Data Analysis can…**
  - Assist usability researchers in quickly identifying most the critical and serious usability problems experienced by users in a think-aloud evaluation
  - Be conducted in 10% of the time required to do a traditional video data analysis (analysis: 4 manhours compared to 40 manhours)
  - Reduce the noise of unique (false?) usability problems
  - Provide closure for the evaluators by capturing an immediate response to long a day of evaluation
- **Qualitatively, the serious problems identified only by Instant Data Analysis were on a higher level of abstraction**
  - Often related to more *general* usability issues than the problems identified through video data analysis
  - May be attributed to the test monitor and data logger not having "direct" access to the data during analysis – thus forcing them to analyze on a higher level of abstraction

# Trade-Off: Approach and Resources

- **Effort: The time spent on the evaluation**
- **Structuration: The amount of explicit and systematic method elements that are used to guide the evaluation**