Professors IDI

IDI – Usability Testing

Outline

- **Concepts**
- Usability testing
- Formal usability tests
- Simplified usability tests
- Use cases
- Exercises

Concepts

- Usability:
  - **Ease of use** and **acceptability** of a system or product for a particular class of users carrying out specific tasks in a specific environment.
    - Where "Ease of use" affects user performance (efficacy, efficiency), satisfaction (comfort).
    - And "Acceptability" affects whether or not the product is used.

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Concepts

- Usability:
  - The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.
  - To be useful, usability has to be specific. It must refer to particular tasks, particular environments and particular users.
    - **So has to be its testing!**

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Concepts

- How to test?
  - Ease of use is inversely proportional to the number and severity of difficulties people have in using software.
  - Let's examine the difficulties!!!

Outline

- *Concepts*
- **Usability testing**
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Usability testing

- Two major families by goals:
  - Determine usability problems (*i.e.text editor*):
    - Discovery, prioritization, and resolution of usability problems
    - Iterative testing
  - Measure task performance (*i.e. 3D selection*).

  Include two fundamental tasks:
    - The development of the usability objectives
    - Iterative testing to determine if the product under test has met the objectives

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Usability testing

- Great variety of usability tests:
  - Can be very informal or very formal
  - Often use think-aloud (TA)
    - more reliable than posterior interviews
    - doesn't affect efficiency
    - better for problem discovery than measurement
  - Remote or local
  - Evaluated software can be varied:
    - Prototypes, under development, competitive products…

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Usability testing

- Testing techniques:
  - "Formal" usability tests
  - Remote testing
  - Guerrilla usability testing
  - Steve Krug's "usability testing on 10 cents a day"
  - Heuristic/expert evaluation

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Outline

- *Concepts*
- *Usability testing*
- **Formal usability tests**
  - Environment
  - Tasks & roles
  - Development
  - Reporting
- Simplified usability tests
- Use cases
- Exercises

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Formal usability tests. Environment

- "Formal" usability tests require a controlled environment
  - Inside a room, outside…
    - Illumination conditions (useful for perception studies)
  - Devices used (e.g. computer with Internet connection and a browser, or a mobile…)
  - Other conditions (e.g. connection quality…)

  Usability lab ☺

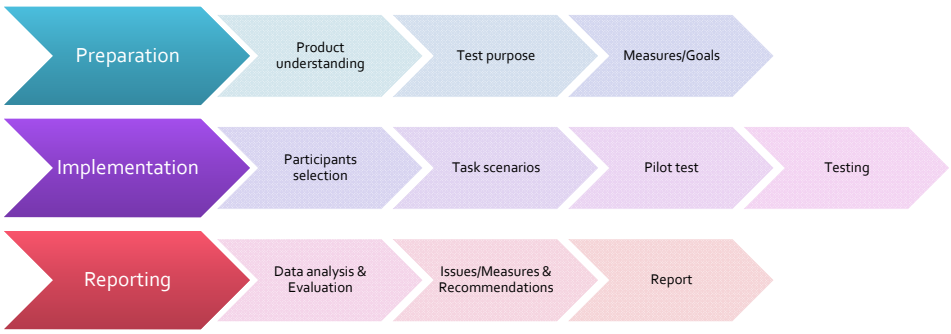
Formal usability tests. Environment

Formal usability tests. Environment

- Set of soundproofed rooms
  - Proper recording and avoiding distractions to participants
- Different areas and equipment
  - Participant area (where the experiment is carried out)
  - Observer area with one-way glass
  - Executive viewing area behind the primary observer area
  - Video cameras and microphones, telephone…

Formal usability tests. Tasks and roles

- Usability test workflow:



Formal usability tests. Tasks and roles

- Usability test roles:
  - **A**: Test administrator
  - **B**: Briefer
  - **CO**: Camera Operator
  - **DR**: Data Recorder
  - **HD**: Help Desk Operator
  - **PE**: Product Expert
  - **S**: Statistician

Formal usability tests. Preparation

- **Preparation (A):**
  - Product understanding: Purpose of the product, parts ready to test, type of users…: A, PE
  - Test purpose: Product comparison, within/between subjects…: A, S
  - Measures/Goals: Number of iterations, counting mistakes/errors, timings…: A, S

Formal usability tests. Preparation (1/3)

- **Product understanding** (**A + PE**):
  1. Understand the purpose of the product
  2. Parts of the product are ready for testing
  3. Types of people who will use the product
  4. Determine the use given to the product
  5. Conditions of usage of the product

Formal usability tests. Preparation (2/3)

- Preparation:
  - Product understanding: Purpose of the product, parts ready to test, type of users…: A, PE
  - **Test purpose**: Product comparison, within/between subjects…: **A, S**
  - Measures/Goals: Number of iterations, counting mistakes/errors, timings…: **A, S**

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Formal usability tests. Preparation (3/3)

- Preparation:
  - Product understanding: Purpose of the product, parts ready to test, type of users…: A, PE
  - Test purpose: Product comparison, within/between subjects…: A, S
  - **Measures/Goals:** Number of iterations, counting mistakes/errors, timings…: **A, S**

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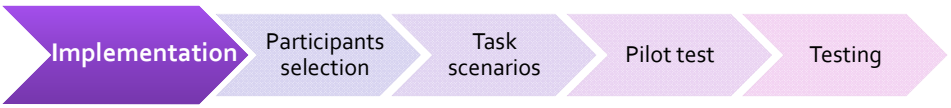
Formal usability tests. Implementation

- **Implementation:**
  - Participants' selection: **A**
  - Task scenarios: initial conditions, steps: **A**
  - Pilot test: Members of the team: **A, B, CO, DR, HD**
  - Testing, **A, B, CO, DR, HD**



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Formal usability tests. Implementation (1)

- **Participants' selection**
  - It's complicated.
  - Should be representative
    - People that could be real users
      - E.g. no other managers!!!
    - Specialized recruiting agencies are a possibility
  - No-show rates above 10%

Implementation | **Participants' selection** | Task scenarios | Pilot test | Testing

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Formal usability tests. Implementation (1)

- **Participants' selection**
  - Should be payed. Factors to consider:
    - Time needed, qualification of the participant, would be the person be payed for her time?
    - Non-monetary for internal participants that are already being payed for their time
    - Always offer food and beverages!!!

Implementation | **Participants' selection** | Task scenarios | Pilot test | Testing

Formal usability tests. Implementation (1)

- **Participants' selection**
  - For statistical significance: 10-12 participants
  - Less formal: 4-5 participants per user group
  - Ensure recruiting criteria reflects user characteristics
    - E.g. for a website, ensure participants have prior experience browsing

Implementation | **Participants' selection** | Task scenarios | Pilot test | Testing

Formal usability tests. Implementation (2)

- **Test task & scenarios:**
  - Tasks must be representative
    - Core tasks: Features that everybody uses (write a text)
    - Peripheral tasks: Features used less often (table insertion)
  - Scenarios must be determined
    - Define initial conditions
    - Description of the scenario: what to do and why
      - Should not provide step-by-step instructions but should include details
      - Some action must be taken on finish
      - Not all users must be provided with the same scenarios (may depend on the user profile)

Implementation | Participants selection | **Task scenarios** | Pilot test | Testing

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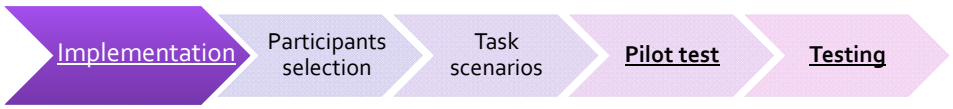
Formal usability tests. Implementation (3)

- **Testing** (**A, B, CO, DR, [HD]**):
  - Brief participants: **B**
  - Initial questionnaire: **B**
  - Develop tasks: **B, CO, DR, [HD], A**
  - Debrief: **B**
  - Final questionnaires: **B**



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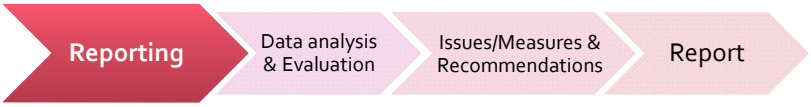
Formal usability tests. Reporting

- **Reporting** (whole team):
  - Data Analysis & Evaluation: **A, S**
  - Issues/Measures & Recommendations: **A, S,** team
  - Report: **A, S,** team
    - Describe & prioritize the usability problems
    - Present quantitative measurements



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Formal usability tests. Reporting (1)

Data analysis & evaluation:

- Frequency: Number of users that find a problem divided by the number of users testing the app or web
  - Easy (objective) to evaluate
- Severity: Importance of the problem
  - Might be completely catastrophic or simply cosmetic
  - Difficult (more subjective) to evaluate

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Formal usability tests. Reporting (1)

- Usability problems:
  - Should indicate the importance: severity
  - Can be classified:
    - Mistakes: Errors due to incorrect intention
    - Slips: Errors due to appropriate intention but incorrect action
  - Expertise does not affect on the number of errors
    - But affects how fast they are handled

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Formal usability tests. Reporting (1)

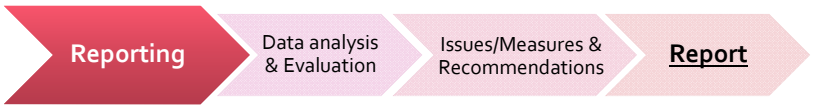
- Problem evaluation**. Dumas and Redish:**
  - **Level 1**: Prevents Task Completion
  - **Level 2**: Creates significant delay and frustration
  - **Level 3**: Problems have a minor effect on usability
  - **Level 4**: Subtle and possible enhancements/suggestions

Formal usability tests. Reporting (2)

- **Recommendations:**
  - Create a problem grid: frequency/impact
  - Global changes (prevent task completion) first
    - A *missing help* may be a global problem or something related with a concrete UI
  - Try to give at least one recommendation for each problem
    - Present the different trade-offs clearly

Formal usability tests. Reporting (3)

- **Problem evaluation. Conclusions**
  - Do not use a large number of categories
    - Do not get obsessed by the number of categories either
  - Different evaluators may disagree on some problems' severity
  - Treat frequency separately from severity
  - Do not forget to point out positive findings



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- *Concepts*
- *Usability testing*
- *Formal usability tests*
- **Simplified usability tests**
  - Guerrilla usability testing
  - Steve Krug's "usability testing on 10 cents a day"
  - Remote testing
  - Heuristic/expert evaluation
- Use cases
- Exercises

Simplified tests

- Testing just a single person early is much better than 50 near the end
- The point of testing is to inform your judgment

Simplified tests

- **Guerrilla usability testing**
  - Take someone in a coffee or public space and ask her to use a website for a couple of minutes
  - Observe users
    - Ask open-ended questions such as "What would you do here?"
  - Get to know them a bit
    - Offer coffee or bagels
  - Analyse captured data
    - Considering your audience

Simplified tests

- **"Usability testing on 10 cents a day"**
  - Prepare some tasks to evaluate
  - Grab somebody from the company as user
  - Gather stakeholders in an observing room
  - Let the user do a set of tasks
  - Capture gestures, mouse, record…
  - Discuss over lunch (order pizza for everybody)
  - Report

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Simplified tests

- **Remote testing**
  - Like traditional tests but participant and facilitator are in different physical locations
    - Participants can do the test at home
    - Facilitator watches remotely

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Simplified tests.

- **Remote testing**
  - Advantages
    - Cheaper and easier test setup
    - Usually faster (in terms of allocating/securing facilities travel…)
    - Can get geographically dispersed users
  - Disadvantages
    - Cannot read body language.
    - Difficult to decide when to talk/interact
    - Variability in participants' motivation
    - No-show rates higher than in-person studies

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Simplified tests

- **Remote testing.** Two types:
  - Unmoderated:
    - Users do the task completely alone
  - Moderated:
    - Users have access to a facilitator

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Simplified tests

- Unmoderated **Remote testing**
  - Users don't have real-time support
  - Don't get any clue on how the session went
  - No opportunity to ask detailed questions
    - Sometimes the software allows to have some of them predefined
  - Preferable to work only on a few specific elements than a broad view of a product
  - Good for tight timeframes

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Simplified tests

- Moderated **Remote testing**
  - Facilitator can change or reorder tasks as needed
  - Facilitator can ask follow-up questions or clarifications
  - Participant is less likely to spend time on tasks not related to the test
  - Test sessions can be longer (usually about an hour)
  - Can perform more in-depth tests
  - The team can watch the test and discuss afterwards

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Simplified tests

- **Heuristic evaluation:**
  - 3-5 usability experts evaluate an app or UI
  - Use pre-defined principles (heuristics)
  - Can highlight usability issues before user testing

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Simplified tests

- **Heuristic evaluation**. Advantages
  - Can be quick and cost effective
    - If we have internal resources
  - Can be used early in the design process
  - Can give a comprehensive usability status of a product's UI
  - Is compatible with other usability testing methods

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Simplified tests

- **Heuristic evaluation.** Process:
  - Collect the UI
  - Understand the business and users' needs
  - Understand user motivations and tasks to accomplish
  - Define the heuristics
  - Use a minimum of 3 experts
  - Set up a consistent evaluation system
  - Highlight problem(s) and its rating
  - Compare and analyse the results of multiple experts

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- **Use cases** *(Read & Study the document uploaded to the "racó")*
  - Guerrilla testing: WhatsApp web app
  - Measure test: Depth perception in VR
- Exercises

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