I Talk the Talk, Do I Walk the Walk?

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Summary

- Who are my users and what do they need?
  - **Personas and motivations**
- When, where and how will my system be used?
  - **Scenarios**
- What functionalities does my system need to support?
  - **Requirements**
- How is interaction provided?
  - **Low-fidelity prototype**
- Are users able to use it?
  - **Evaluation**


Usability Evaluation

Usability Evaluation

- “Put simply, usability evaluation assesses the extent to which an interactive system is easy and pleasant to use.
- …usability evaluation methods also determine the extent of its usability, through the use of robust, objective and reliable metrics

http://www.interaction-design.org/encyclopedia/usability_evaluation.html

Usability Evaluation

- **Analytical Methods**
  - Methods that are applied by experts without user participation
  - Try to understand if the system complies with a certain set of guidelines deemed relevant to ensure good usability
  - Are very cost effective
- **Examples**:
  - Heuristic Evaluation
  - Cognitive Walkthrough

Analytical Methods

- **Heuristic Evaluation**
  - A set of experts inspects a system based on a set of criteria (the heuristics)
  - The heuristics are principles that have been proven to ensure a system is usable
  - The most known set of heuristics has been proposed by **Jackob Nielsen** (see class on usability…)
    - #1 Visibility of System Status
    - #2 … see last class

Heuristic Evaluation
How to?

- A Heuristic Evaluation is performed by a set of evaluators
  - More than one evaluator to find more problems...
- Each evaluator works independently:
  - Starts by getting a general idea of the UI
- For each problem found, the evaluator assigns a severity:
  - 1: Cosmetic problema
  - 2: Minor usability problema
  - 3: Major usability problema
  - 4: Usability catastrophe
- All problems found are gathered in a single list

Analytical Methods
Limitations

- **Advantages**
  - Easy and cheap to apply
  - Provide informative input to improve the overall usability
- **Limitations**
  - Subjective
  - Involve several usability experts
  - Cannot find all usability problems

Usability Evaluation

- **Empirical Methods**
  - Involves users using the system to perform certain tasks and provide feedback
- **Examples:**
  - Usability Tests (query and observation)
  - Controlled Experiments

Participants

- When perfoming and reporting (!) an evaluation you should completely characterized who were your users
  - Number of users
  - Demographics (age, gender)
  - Their profile relevant for the contexto of the system
    - E.g., experience with smartphones, similar systems
  - Are they representative of the target users?
    - If not, why is their participation useful, anyway?

Consent and Ethical Concerns

- **Informed Consent** is a mandatory step in performing ANY evaluation that involves users
- **Confidentiality**
- **Safety**
- **Freedom** (leave the evaluation at any time)

Always inform the user that it is the system that is being evaluated! If the user is not able to do something it is the system's fault!

Tasks

- Choose a set of tasks that are representative of the main features provided by your system
- Your **scenarios** can provide clues for which tasks you need to consider
- Completion or performance criteria, e.g.;
  - Number os steps to complete < N
  - Time limit
- Other measures
  - Errors
  - Need for help

Experimental Design

- How will the evaluation proceed?
- What instructions will be provided to the user?
- What measures will be used for assess usability
  - Effectiveness (completion rate, errors, requests for help?)
  - Efficiency (time taken)
  - Satisfaction

Observation

- While the participant is using the system an observer is registering information:
  - Problems detected by participants
  - Errors commited while performing the tasks
  - Does the participant seem to have had a hard time understanding how to do the task?

Think Aloud

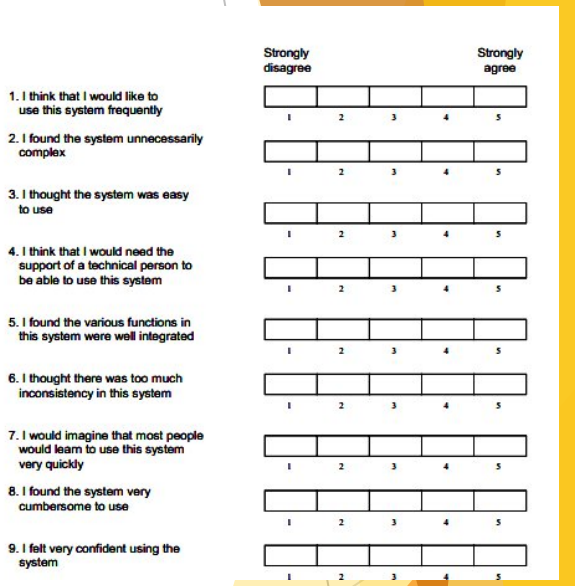
- Instruct the participant to think aloud, i.e., describe what he/she is thinking to complete the tasks
  - Why is he clicking a button?
  - Why is she not able to decide what to do next?
  - What are they looking for?

https://www.middleweb.com/

Usability Questionnaires

System Usability Scale (SUS)

- Well know usability and satisfaction questionnaire
- 10 questions with 5 response alternatives
- Has become an industry standard
- Very easy to use
- Provides a final score for how the user found the system



	Strongly disagree				Strongly agree
1. I think that I would like to use this system frequently	1	2	3	4	5
2. I found the system unnecessarily complex	1	2	3	4	5
3. I thought the system was easy to use	1	2	3	4	5
4. I think that I would need the support of a technical person to be able to use this system	1	2	3	4	5
5. I found the various functions in this system were well integrated	1	2	3	4	5
6. I thought there was too much inconsistency in this system	1	2	3	4	5
7. I would imagine that most people would learn to use this system very quickly	1	2	3	4	5
8. I found the system very cumbersome to use	1	2	3	4	5
9. I felt very confident using the system	1	2	3	4	5

https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

SUS Questions

- I think that I would like to use this system frequently.
- I found the system unnecessarily complex.
- I thought the system was easy to use.
- I think that I would need the support of a technical person to be able to use this system.
- I found the various functions in this system were well integrated.
- I thought there was too much inconsistency in this system.
- I would imagine that most people would learn to use this system very quickly.
- I found the system very cumbersome to use.
- I felt very confident using the system.
- I needed to learn a lot of things before I could get going with this system.

Usability Test Steps I

1. Choose a set of up to **five tasks** that you identify as the most important for your work
    1. Schedule a study table at DETI for Wednesday at 14h
    2. Add a card you just bought to your collection and mark it as favourite
    3. Check which meals are possible to cook for dinner. What is missing to have a Spaghetti Bolognese?
2. Check if your prototype allows to perform all of them and, if not, update it accordingly
3. Go into eLearning and adapt the provided support documents for the evaluation

Materials to use during the test

Informed Consent

"Usability Evaluation of a Web-based Application"

Coordinator: Prof. Beatriz Sousa Santos

Procedure

The participants will perform a set of predefined tasks using a web application to explore and visualize data. During the experiment, data will be collected regarding their demographic profile and their comments and difficulties on performing the tasks and using the application, overall.

Duration

The experiment will last between 40 and 60 minutes.

Risks for the participant

There are no risks to the participant.

Benefits for the participant

The participants will have the opportunity to learn how a
performed.

1- Informed consent form

2- List of tasks to the u

Task 1	Find the last edition of the book entitled "Interaction design beyond human-computer interaction" What is the exact price in US dollars? --- Very difficult 1 2 3 4 5 Very easy

User Code : _____

Observer Script

Tasks	Did the user complete the task?	Correctly?	Max Time Observed time (mm:ss)	Number of errors?	Was lost?	Asked for help	Observed Easiness/difficulty 1 – very difficult 5 – very easy
1	no _| yes _|		2min :		no _| slightly _| a lot _|	no _| yes _| which?	1 2 3 4 5
2	no _| yes _|		2min :		no _| slightly _| a lot _|	no _| yes _| which?	1 2 3 4 5
3	no _| yes _|		2min :		no _| slightly _| a lot _|	no _| yes _| which?	1 2 3 4 5
4	no _| yes _|		2min :		no _| slightly _| a lot _|	no _| yes _| which?	1 2 3 4 5
5	no _| yes _|		2min :		no _| slightly _| a lot _|	no _| yes _| which?	1 2 3 4 5

Observations_____

_____

Post Task Questio

Instructions: Thank you for your cooperation with this study, v
the application/system and, try to improve it following the Usab
Your collaboration is important for the success of this eva
questionnaire, the data of which will be used in total anonymity

1. Demographic data

User number:_____

(check the correct options)

Gender: ☐ Female ☐ Male **Age:**____

Previous experience with this type of application/system: ☐ None ☐ Some ☐ A lot

Observations (fill in any relevant facts for this test, e.g. vision, handiness):

2. Overall opinion on the application/system (SUS)

After using the application/system and taking into account your final assessment, check the circle that best reflects your opinion regarding its usage. If you believe that these quantifications are not applicable, choose NA.

I think that I would like to use this system frequently. Totally agree ○○○○○ Totally disagree NA

I found the system unnecessarily complex. Totally agree ○○○○○ Totally disagree NA

2a- Observer's scr

3- Post-task questionnaire to the us

Usability Test Steps II

1. Welcome the participant and explain the overall idea about your system and the evaluation
2. Obtain **informed consent((*)**
3. Provide the **user** with the **instructions (*)** (e.g., the tasks to perform)
4. **Observe (*)** the user using the system
5. With the paper prototype, it is advisable to have one person just manipulating the prototype
6. Encourage the user to talk aloud about the use of the application
7. For each task take note of completion, feedback, errors, difficulties, …
8. After the last task, **apply the SUS (*)**

Evaluation Outcomes

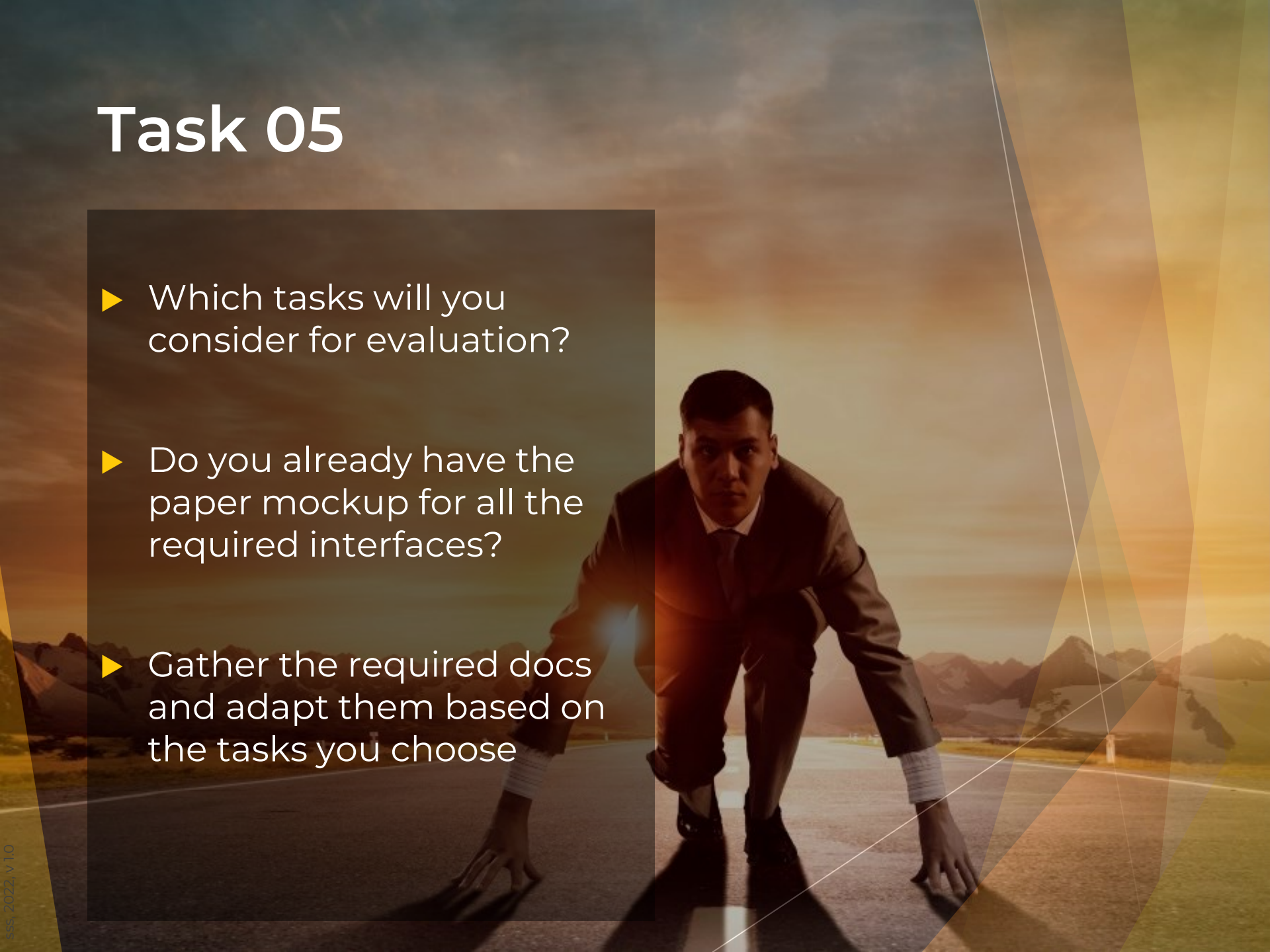
- Where are the problems and interesting features of my system?
- What can I do to improve it?
- Did I improve since last testing?

On eLearning

- **I provide simple templates** for the documents required for the usability test:
  - Informed consent
  - Observer table
  - User table
  - System Usability Scale

Task 05

- Which tasks will you consider for evaluation?
- Do you already have the paper mockup for all the required interfaces?
- Gather the required docs and adapt them based on the tasks you choose



Further Reading

- Heuristic Evaluation
  - https://www.nngroup.com/articles/how-to-conduct-a-heuristic-evaluation/
- Nielsen's Heuristics
  - https://www.nngroup.com/articles/ten-usability-heuristics/
- Cognitive Walkthrough
  - https://www.nngroup.com/articles/cognitive-walkthroughs/
- **Usability Testing**
  - https://www.nngroup.com/articles/usability-testing-101/