User-centered Design Process: User testing

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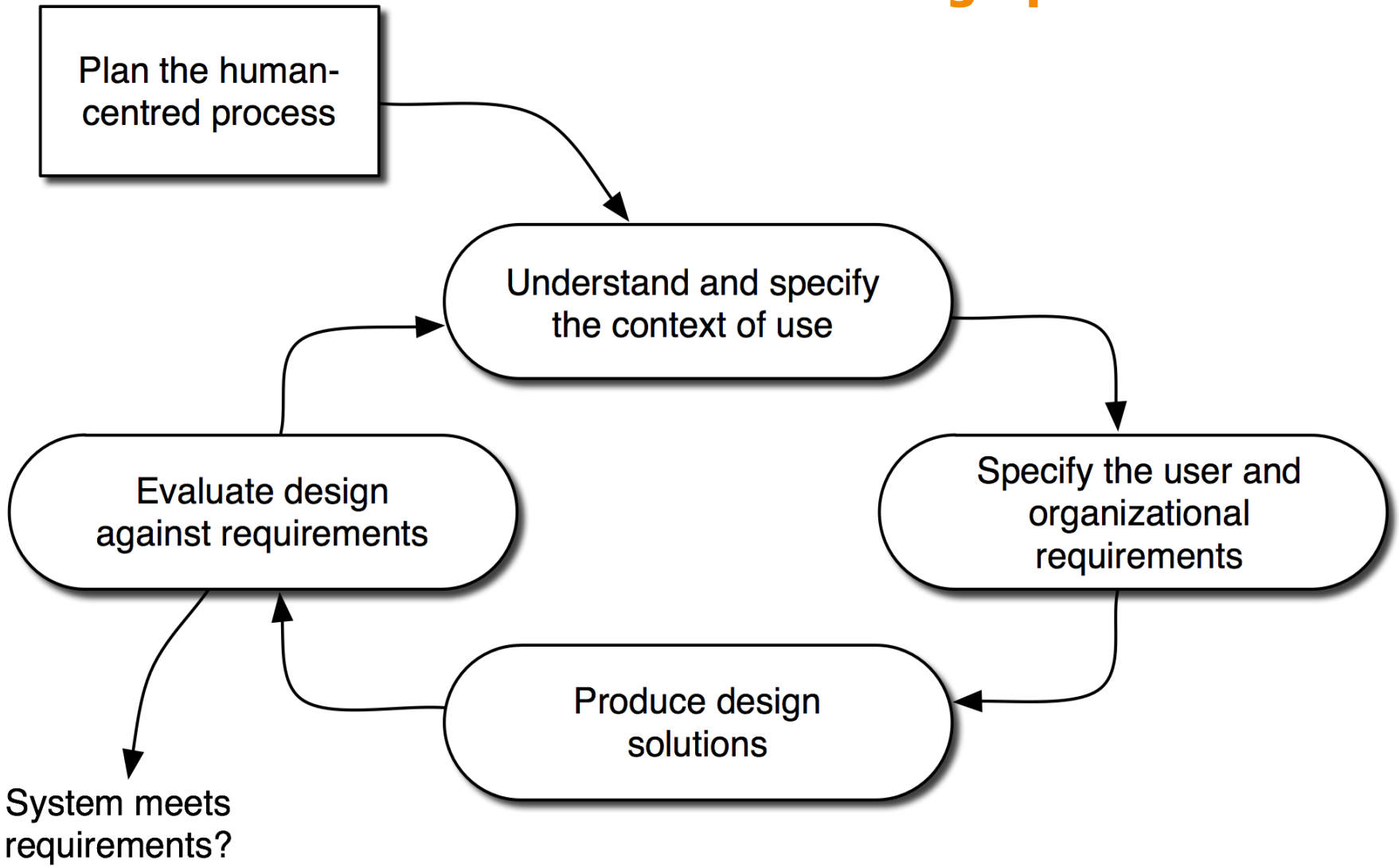
ISO 13407 standard: human centered design process



Evaluating

- In this activity we try to measure the usability and acceptability of the product, based on the established requirements.
- Anything can be evaluated, from single screens to the total aesthetics of the product.
- Evaluation usually happens either in a lab or in a setting similar to where the product will be used.

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Ways to acquire data

- designer experience, knowledge and intuition
  - testing against personas
- heuristic evaluation
- observation
  - contextual inquiry, ethnographic research
- interviews
  - surveys, thematic interviews
- observation of artefacts and environments

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Observation aims

- What are user goals and aims?
- Contexts of use: what kinds of actions are involved before, during and after use?
- Use environments?
- Interactions between users?
- What other technologies or artefacts are involved?
- Problem situations? Dependencies?
- Can you find regularities in behaviour?
- Values, atmosphere, working culture?

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Observation tools

- Cameras, video cameras
- Notebooks
- Question sheets
- Participation or prompting
- and after: analysis tools

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End-user testing

- Test subject belongs to the **target group**
- **Genuine** tasks
- Videotaping of tests (talk-aloud)
- Eye-tracking
- EEG measurements
- Result analysis
  - Classification of errors according to seriousness
- Test report

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Testing procedures and labs

- http://lab.mediacity.fi/
- http://www.noldus.com/

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Classes of design errors

1. Local mistake
2. Systematic error
3. Fixing would need redesign
4. Fixing needs use case analysis

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A Usability problem exists if

- Test person
  - Proposed improvement to the system
  - Got confused
  - Tried to find solution more than three times
  - It took over 3 minutes to reach the goal
  - Gave up!
- System failure

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Strengths and weaknesses

- Strengths
  - Gives understanding of real use situations
  - Finds critical usability problems
  - Genuine user views
  - Credibility of results
- Weaknesses
  - Demanding and expensive:
  - Planning, implementation and analysis
  - Real users needed

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Heuristic methods: Nielsen heuristics

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

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Addition to the Nielsen heuristics

11. Respect for user and user needs
12. Pleasant product use experience
13. Support for quality standards
14. User privacy protection

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Heuristic assessment 1/2

- 3-5 evaluators
  - Experts of the application area and usability
- Independent learning of the application
- Discussion on findings
- 1-2 hours

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Heuristic assessment 2/2

- Note each problem separately
  - problem
  - Use case
  - **What heuristic category is violated**
  - Fixing proposal
  - Classification of seriousness
    - Regularity, effects, permanence
- Also good sides of the design

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Classification of problem seriousness

1. Not a problem
2. Cosmetic problem
3. Minor usability problem
4. Major usability problem
5. Catastrophic usability problem

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Strengths and weaknesses

- Strengths
  - Cheap, fast, intuitive and can be applied in many situations
  - Good for fixing easy problems
  - Are fixes really improvements?
- Weaknesses
  - User interaction observation is not caught
  - Hard to find really fatal problems

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Cognitive Walkthrough Method with end users

Questions:

1. Is the user goal right for the user interface?
2. Can the user find the right function?
3. Can the user connect her goal to the function?
4. When the task is completed, does the feedback indicate that user has proceeded in the right direction?

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Situation: a real use case

- A familiar and genuine work place
- Interviews with users and observations
- A well-defined subject
- The user is the expert – the researcher is an apprentice

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