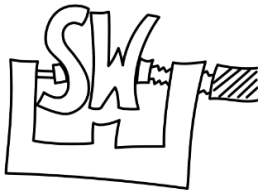
Team Practical Course on AR and VR Research

04 – User-oriented Usability Engineering



Patrick Harms

Tel: 0551-39-172036

patrick.harms@informatik.uni-goettingen.de

Final Presentation

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Usability

- Matching of users, tasks, context, and tools
- Consider putting a picture on the wall (task)
  - Screwdriver (tool) and nail (tool) → mismatch of tools
  - Nail (tool) and stone wall (context) → mismatch of tool and context
  - Hammer (tool) and me (user) → mismatch of tool and user
  - Screwdriver (tool), screw (tool), wooden wall (context), me (user) → match of user, task, context, and tools

User Experience

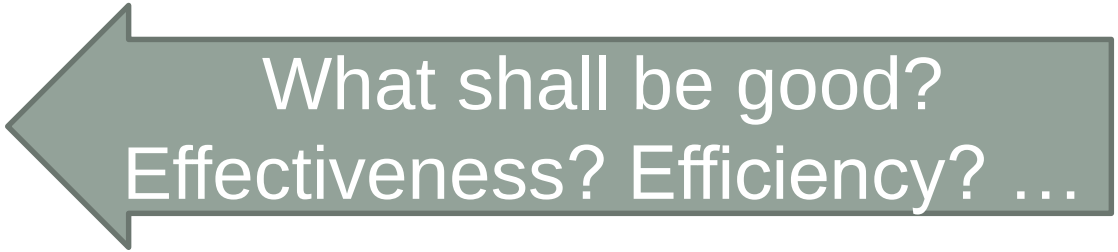
- Broader context
- Not only technical aspects
  - Buying product, unboxing, first use, hotline, warranty, support, …
- Aims at positive emotions
- Exceed user expectations

Usability-Engineering

- Develop Systems with pre-defined usability
- Usability cannot be measured
  - Instead measure characteristics: effectiveness, efficiency, satisfaction, learnability, …
- Measure throughout the whole process
  - Concepts, prototypes, final versions, changes, …

Basic approach

- Define goals
- Select methods
- Apply methods
  - Potentially recruit users
- Analyze results
- Feed results back into development



Methods of Usability-Engineering

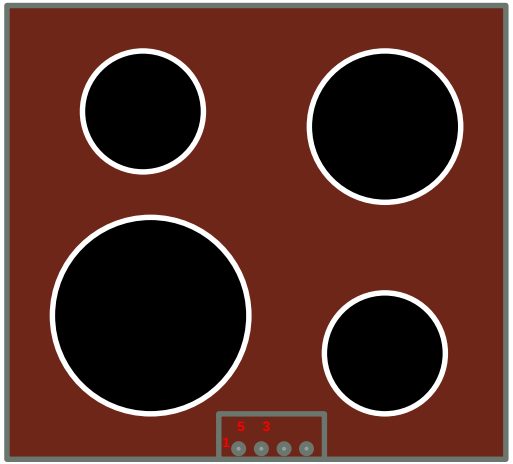
Expert-oriented ⟷ User-oriented

Analytical ⟷ Empirical

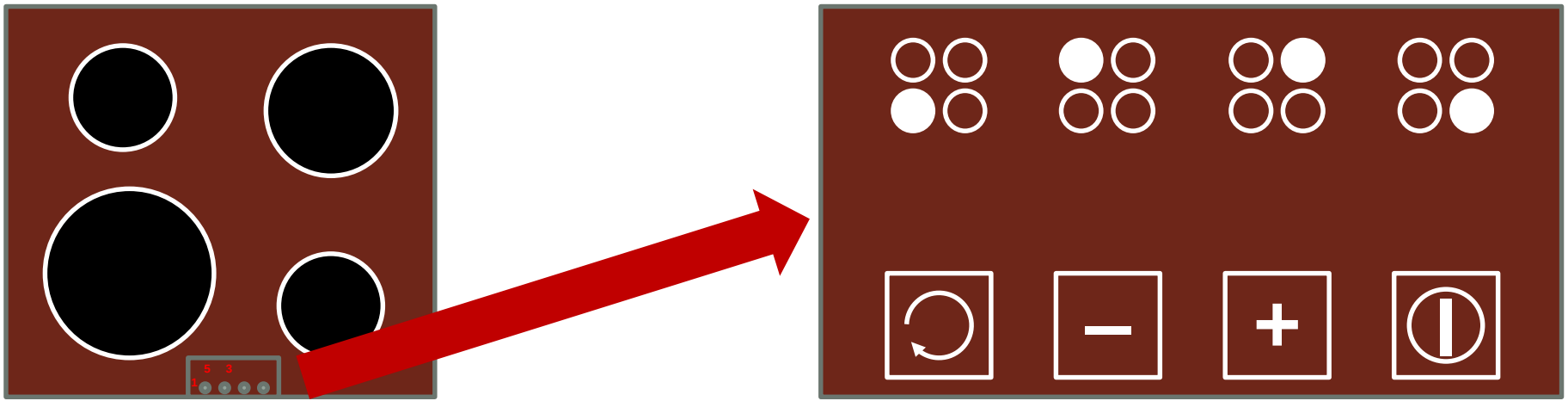
Manual ⟷ Automated

I need a volunteer!

My Stove

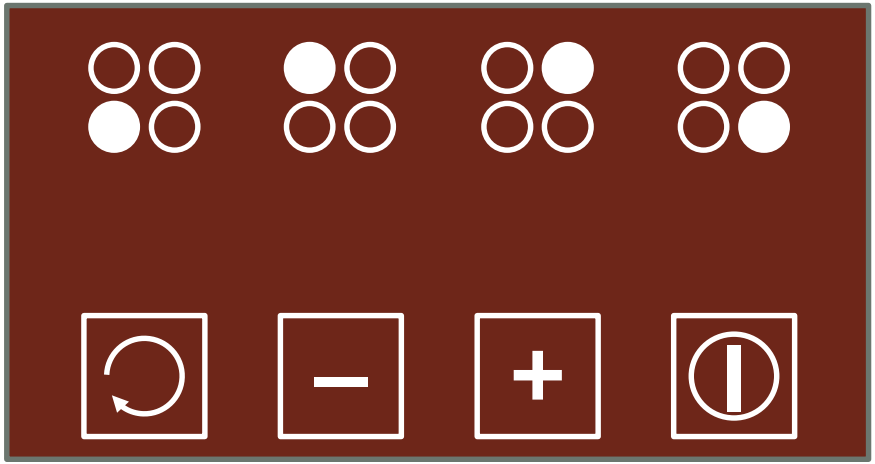


My Stove



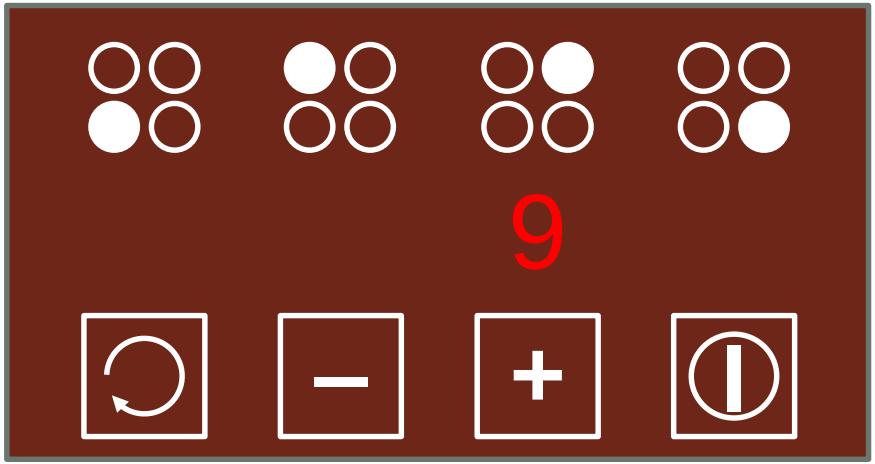
My Stove

1. **Top right, full power**



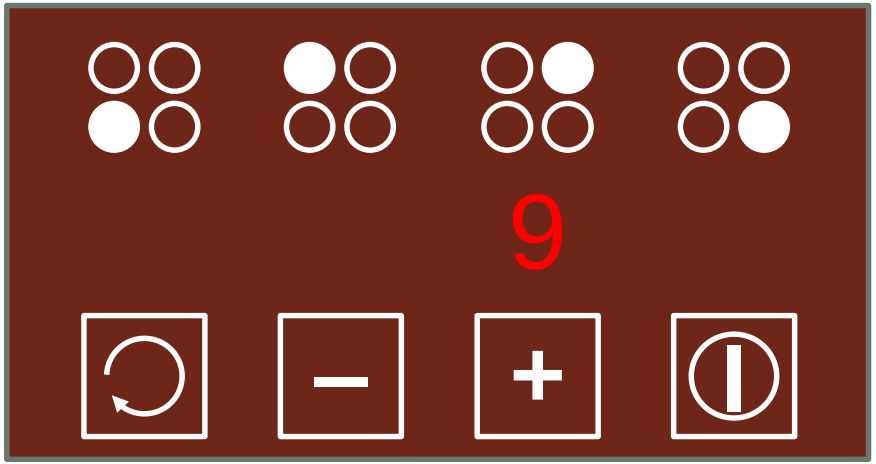
My Stove

1. **Top right, full power**



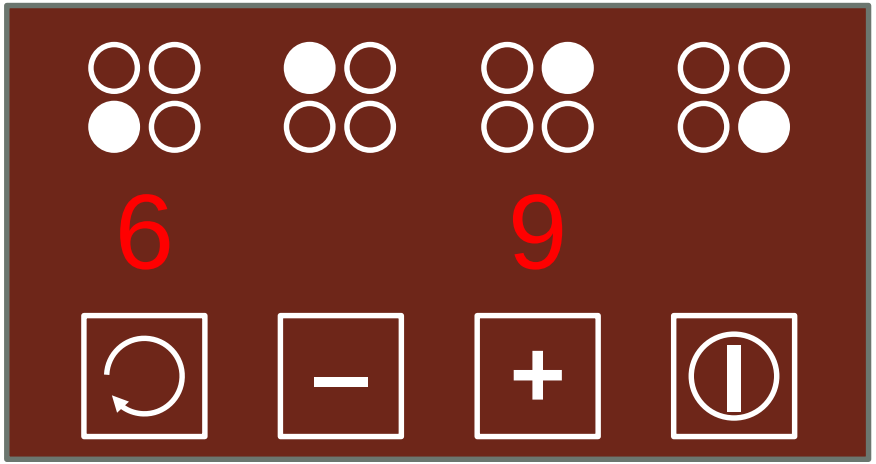
My Stove

1. Top right, full power
2. **Bottom left, level 6**



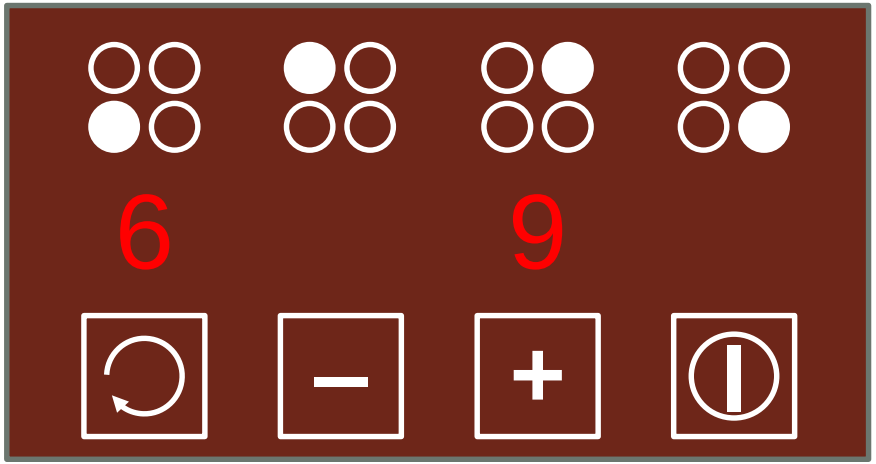
My Stove

1. Top right, full power
2. **Bottom left, level 6**



My Stove

1. Top right, full power
2. Bottom left, level 6
3. **Switch off top right**



My Stove

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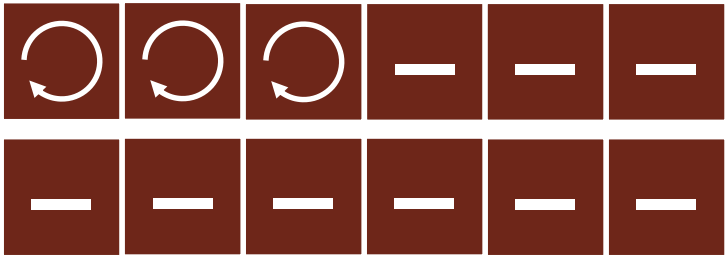

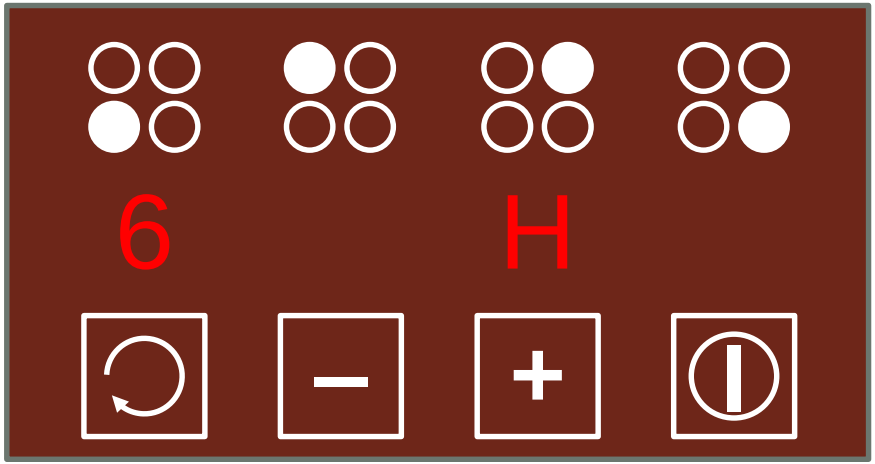

User-oriented Usability Engineering

- aka Usability Testing
- Characteristics
  - User-oriented
  - Focus on tasks
  - Applicable already early on, but work best later on
- Approach
  - Users perform tasks (usage scenarios / user stories) with prototypes
  - In the meantime, expert observes them
  - If users have any problem → issue detected

User-oriented Usability Engineering

- Users
  - Have to belong to user group (personas)
  - Could be asked to do „Thinking Aloud“
  - Should be at least 5 per evaluated task
  - Should volunteer
  - Should be handled friendly and carefully
  - Must not be tested
  - Must not be overstrained
  - Can break up at any time
  - Should be thanked for support

User-oriented Usability Engineering

- Tasks
  - Need to match user group (personas → user stories / usage scenarios)
  - Need to be in the users language
  - Need to be realistic
  - Must not include hints for correct execution
  - Must not be too large (at most 1 hour per test)

User-oriented Usability Engineering

- Experts
  - Have to introduce users to the approach
  - Must not interfere during the test
  - Must not guide the user
  - Must not support the task execution
  - Have to support users, if they cannot continue
  - Have to thank users

User-oriented Usability Engineering

- Typical session
  - Welcome and introduction
  - For any task (e.g., user story, usage scenario) to evaluate
    - Formulate task to user
    - Let user execute task
    - Observe user while executing the task
    - Optionally, record interaction (e.g., video, log file)
  - Thank user for support
- After all sessions, analyze data

Task for upcoming week

- Self dependent learning
  - Usability Testing
- Practical Part
  - Integrate usability testing into your plans for the case study
- Presentation
  - Details for case study execution

Questions???