

CrowdUI – a tool to remotely source and evaluate website UI adaptations

Jonas Oppenlaender

jo2e14@soton.ac.uk

School of Electronics and Computer Science

Motivation

Gap in collaborative user interface design and personalisation tools:

- Early-stage design process
or
Desktop software
or
- Prototypes, not existing websites
or
- No integrated evaluation of the UI

Explorative Project: Research Questions

- Is it possible to create a tool that allows the users of an existing website to adapt and rate the website's user interface?
- What are the technical and methodical challenges in creating such a tool?
- If given the freedom to modify the UI of the website, will the users create usable interfaces?
- How should UI adaptations be selected for the evaluation by the users?
- Will self-declared experts create UI adaptations that are more usable? Will experts rate UI adaptations differently than beginners?
- How will the users perceive the tool? Will the tool be useful to the users?

Explorative Project: Research Questions

- Creation of a tool that enables website users to adapt and rate the UI of the website
- Technical and methodical challenges?
- Will the users create usable interfaces?
- How should UI adaptations be ranked?
- Confirm audience segmentation:
 - Experts create more usable UI adaptations than beginners?
 - Experts rate UI adaptations differently than beginners?
- Will the tool be useful to the users?

Suppositions

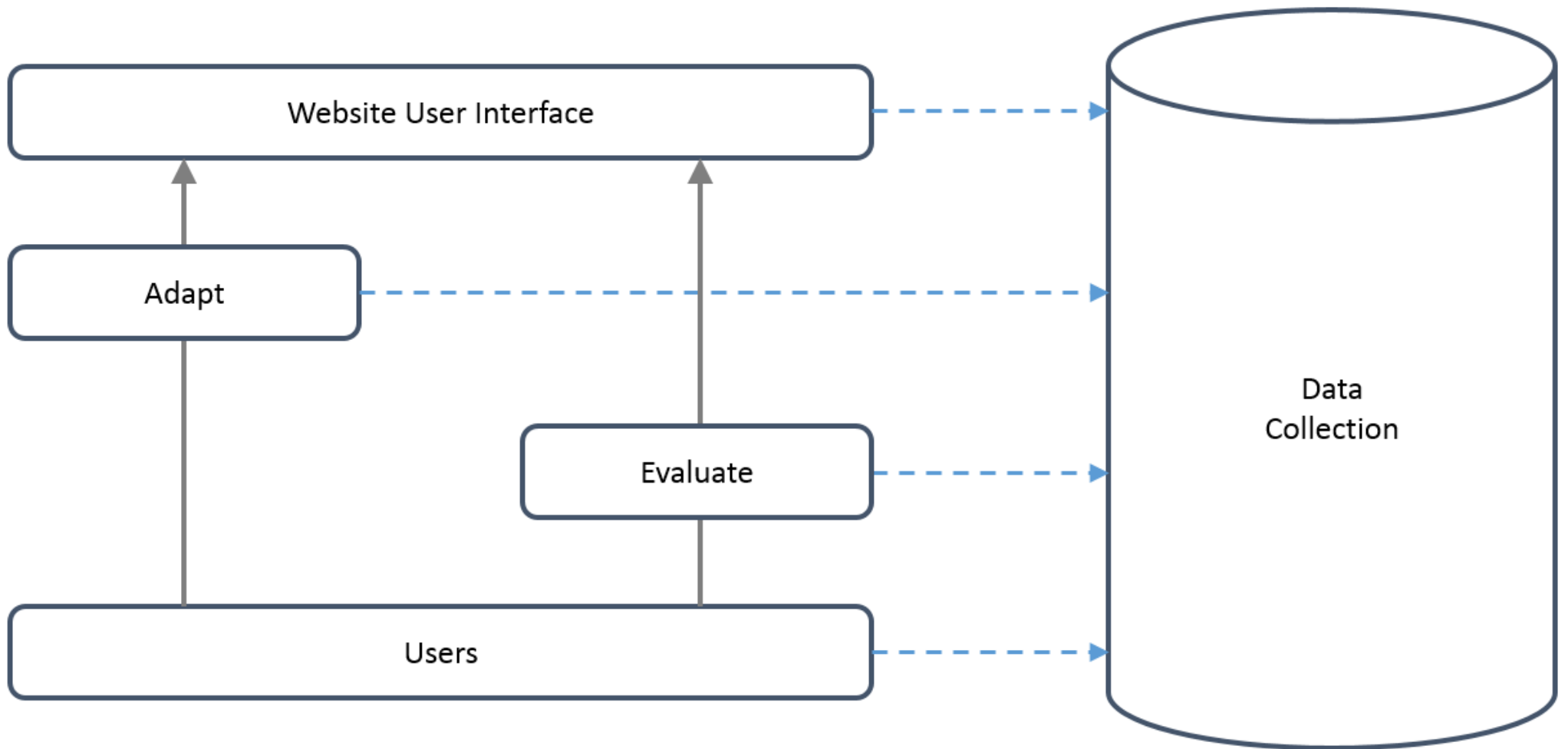
- Restoring of saved user interfaces
- Usable adaptations
- Expert adaptations

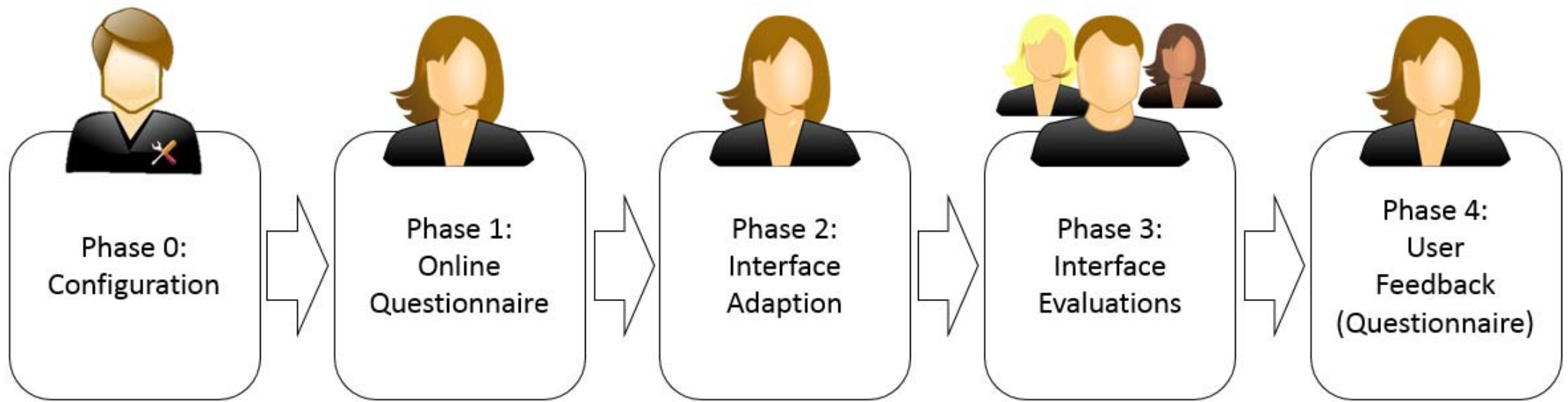
Procedure

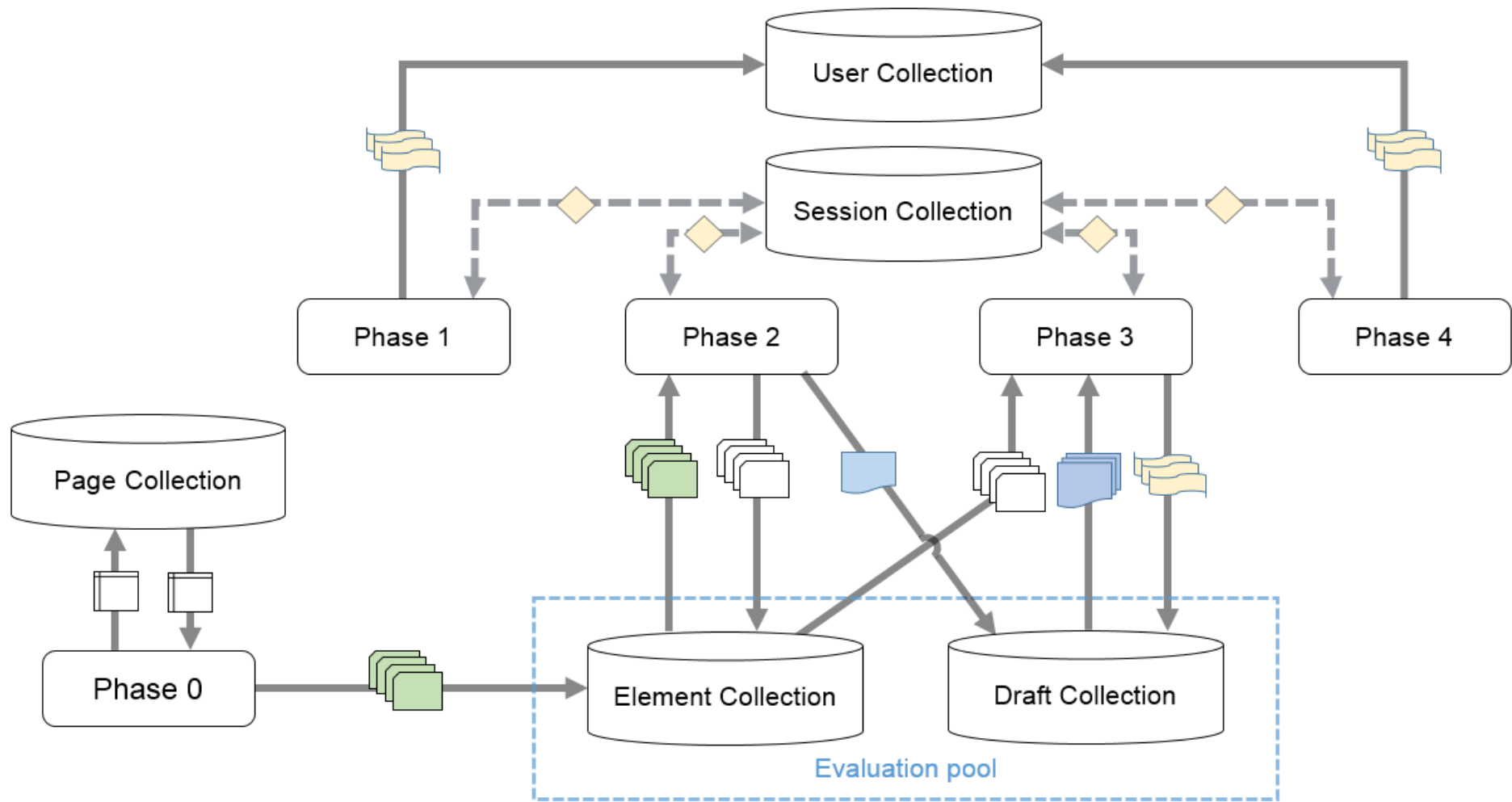
- Feasibility Study
- Select Usability Measurement Instrument
- Design and Implement Prototype Tool
- Field Study
- Evaluation of the Tool

Prototype Summary

- Node.JS/Express and Backbone.js
- 376kB of modular (MVC) JavaScript code
- 55 libraries and development tools
- 555 commits to GitHub
- 123 unit and integration tests (coverage: 81.1%)
- Code conforms to JSLint standards
- Documentation of source code and RESTful API
- Usable on mobile devices







Ranking UI adaptations

System Usability Scale measures usability from 0 to 100

Combining the SUS with Wilson's Confidence Sorting algorithm:

$$Vote(Draft_i) = \begin{cases} up\ vote & \text{if } x_i > 68 \\ no\ vote & \text{if } x_i = 68 \\ down\ vote & \text{if } x_i < 68 \end{cases}$$

x_i = SUS score of $Draft_i$

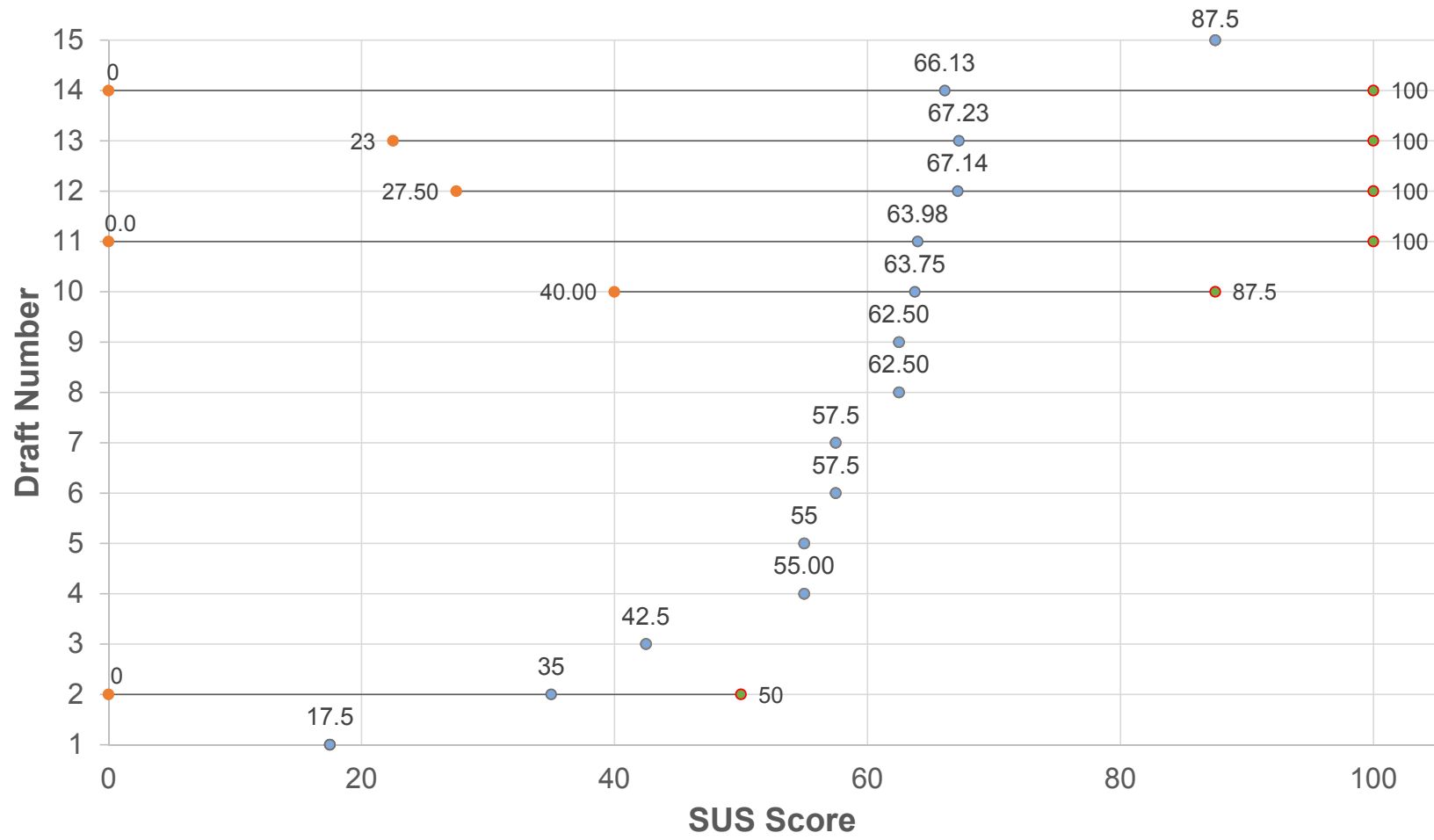
Demonstration

Facebook Field Study Results

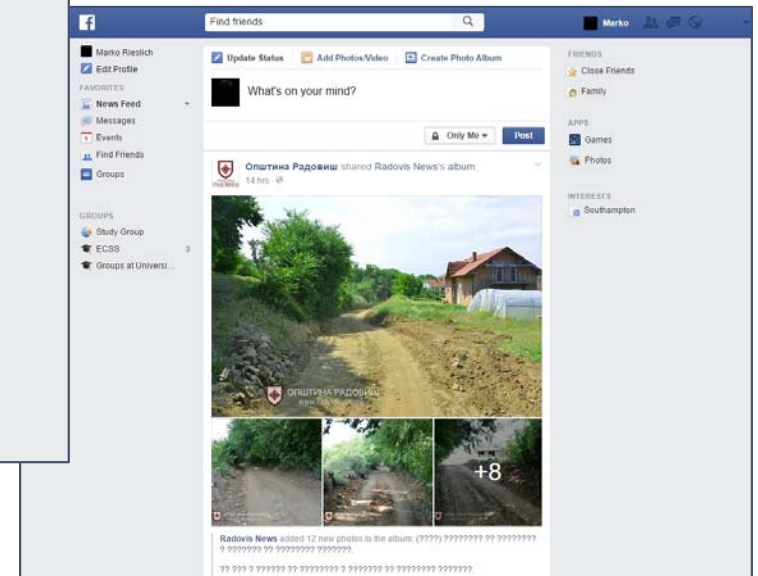
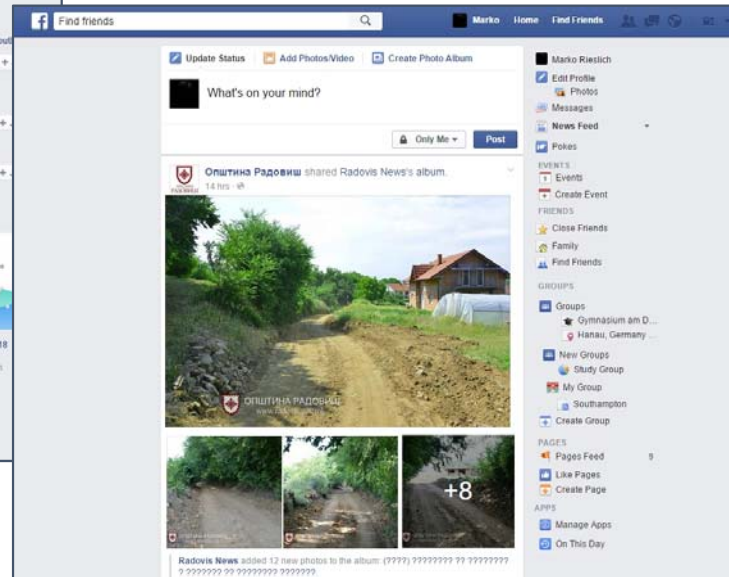
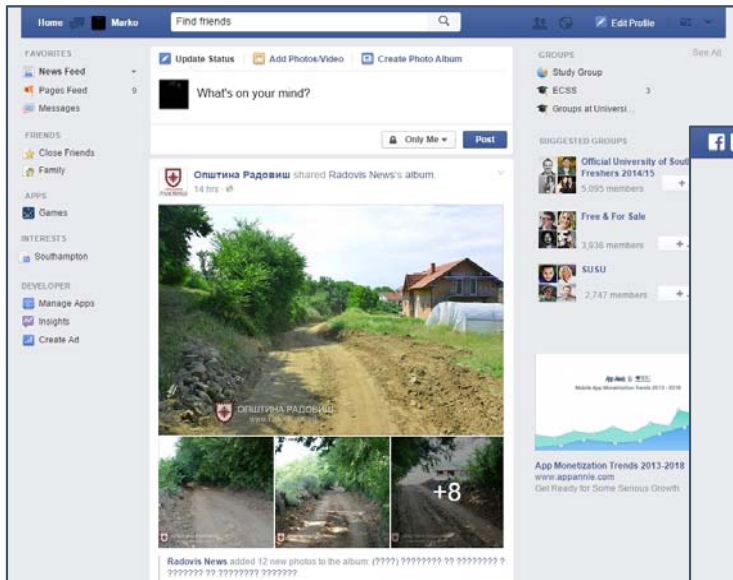
- 504 people visited the landing page
- 186 users started phase 1
- 158 users completed phase 1
- 49 users completed the survey

- 62 UI adaptations; 15 rated adaptations

- SUS scores:
 - $n = 200$, $\mu = 64.6$, $\sigma = 20.78$
 - Highest rated adaptation: $\mu = 87.5$
 - Second highest rated adaptation: $\mu = 73.5$



● min score
 ● avg score
 ● max score

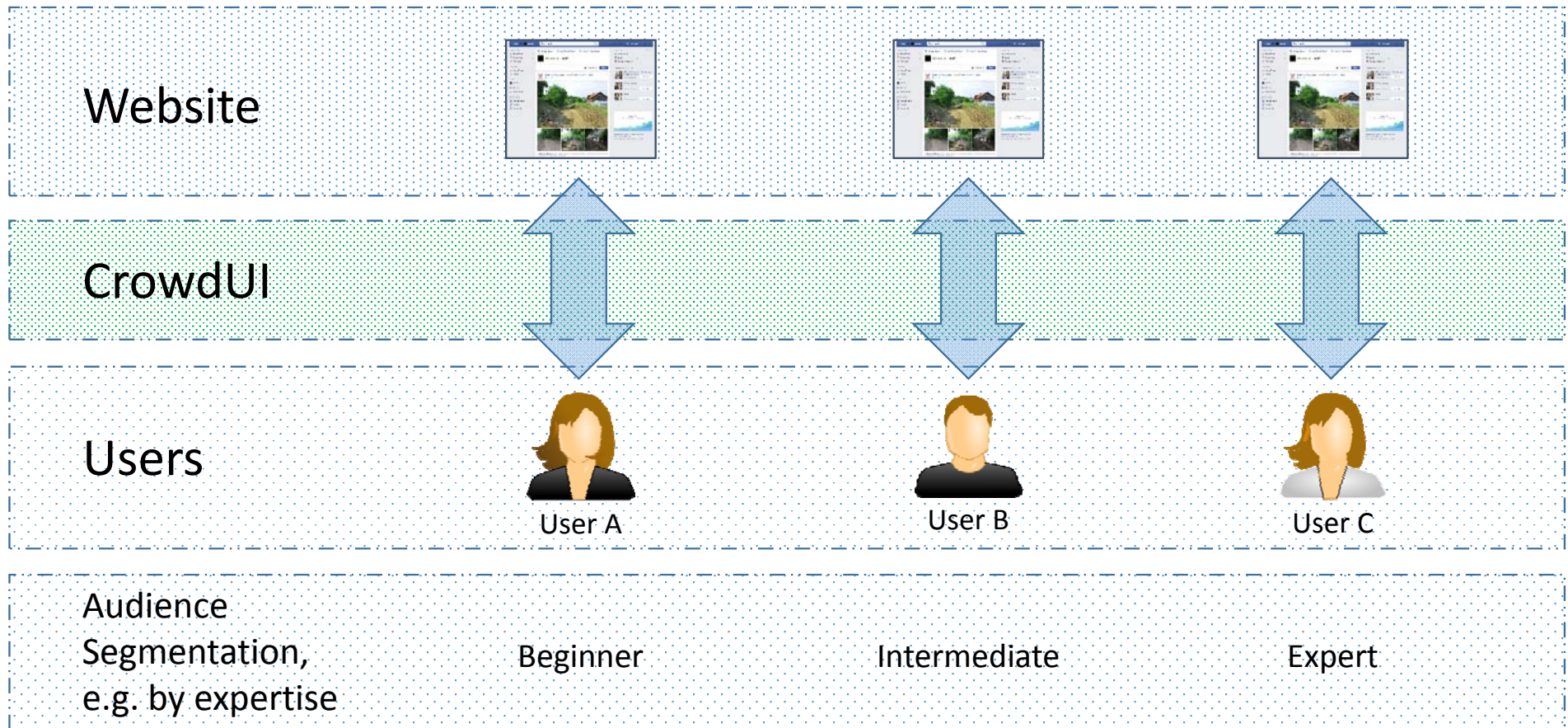


- ✓ 1 of the 15 rated adaptations is above average
- ✓ 8 of the 15 rated adaptations show potential
- ✗ High ratio of down votes to up votes

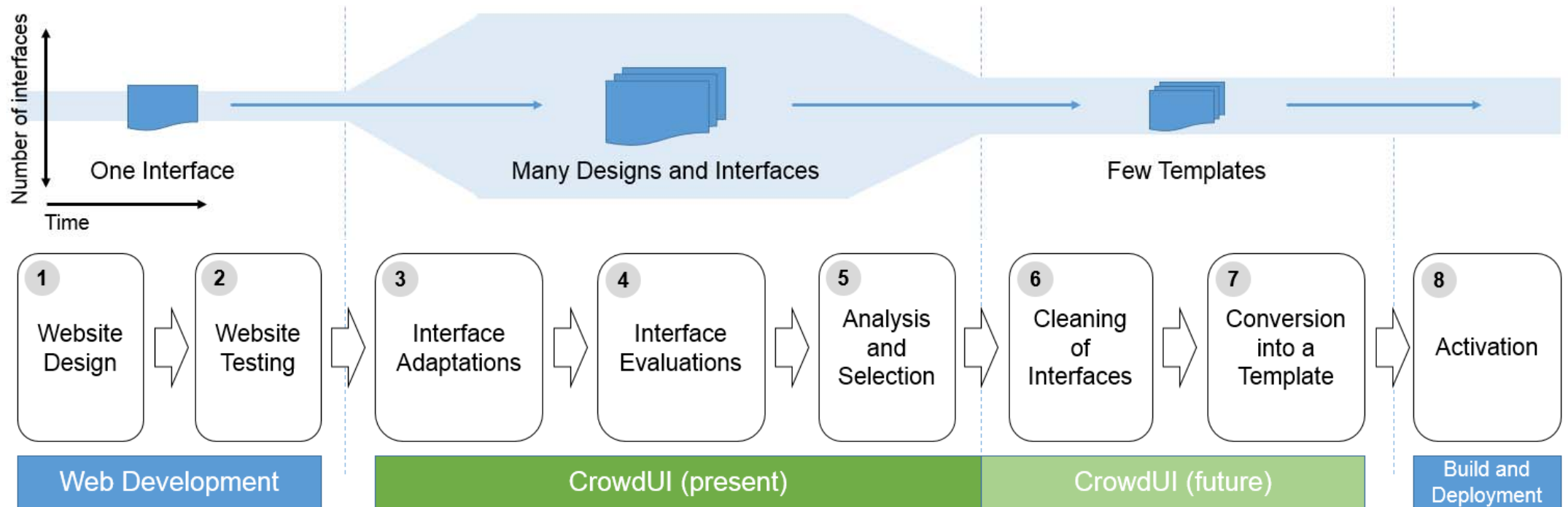
Achievements

- ✓ CrowdUI, a versatile tool
- ✓ Sourcing of UI adaptations
- ✓ Reproduction of UI adaptations
- ✓ Ranking of adaptations in an innovative way
- ✓ Review of technical and methodical challenges
- ✗ Experts did not rate interface differently than beginners
- ✗ Usefulness of UI adaptations (candidates identified)
- ✓ Usefulness of the tool for users

Vision 1: Personalisation of UI



Vision 2: Remote Sourcing of UI Templates



Not competing with A/B tests and usability testing