

Background & Motivation

The user interface (UI) of a website is designed by very few people for many people to use. A corporate web portal may for example be designed based on the requirements of a few people and implemented by a single web developer. The decisions taken and the outcomes of the design process may not be optimal for every user. A user interface will therefore undergo several development iterations. Beta tests of a UI could be biased based on who is selected as beta tester. In some cases, the user interface may not even be validated by the end-users.

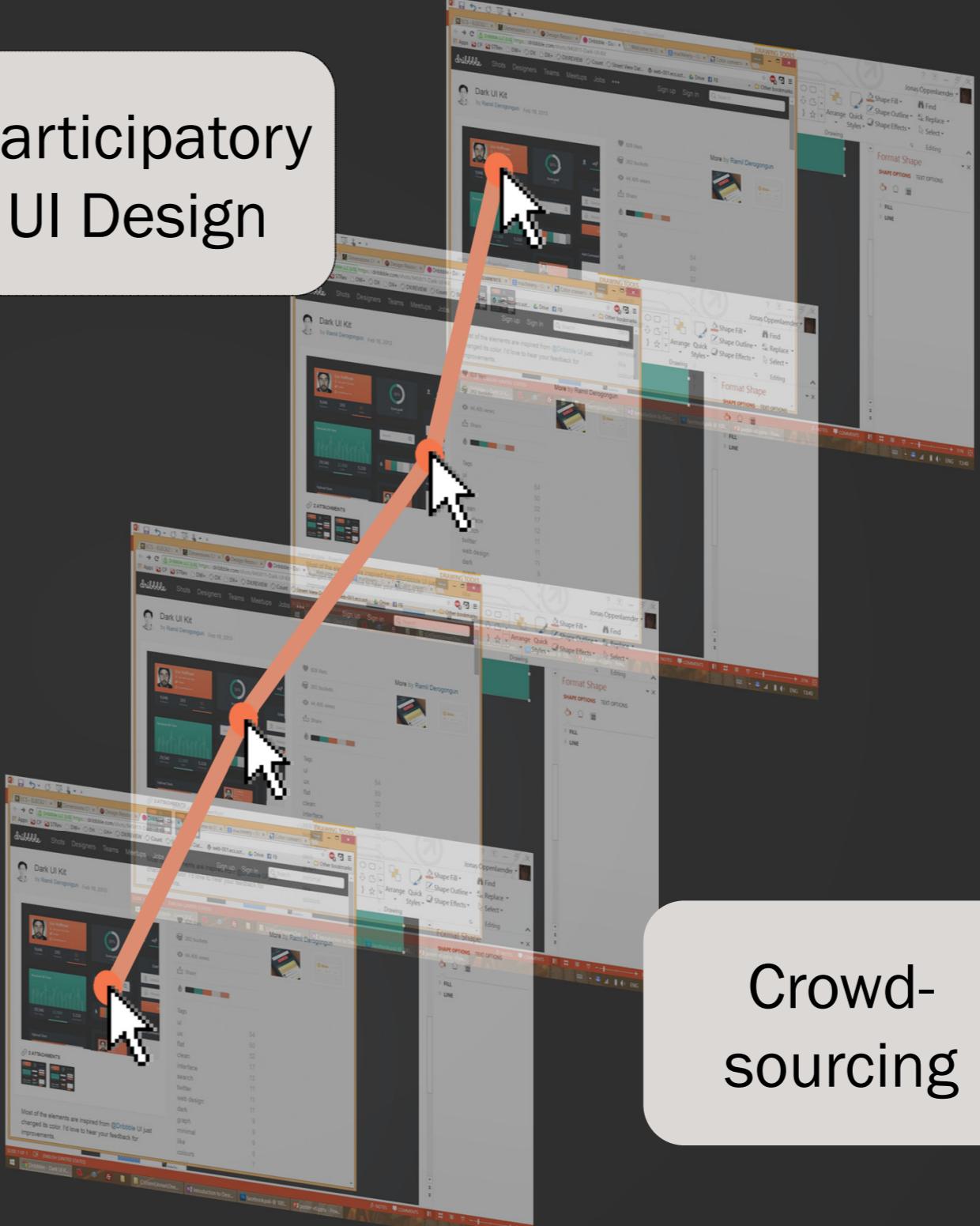
User-centred innovation¹ is a means to allow end-users to develop the product that they want instead of relying on others to do it for them. The group consensus often holds more value to the crowd than the decisions of a single person. At the same time, users have different skill sets and different needs. Fully understanding customer needs is a difficult and costly task². This project will evaluate the usefulness of crowdsourcing for making user interface design decisions.

Project Aims

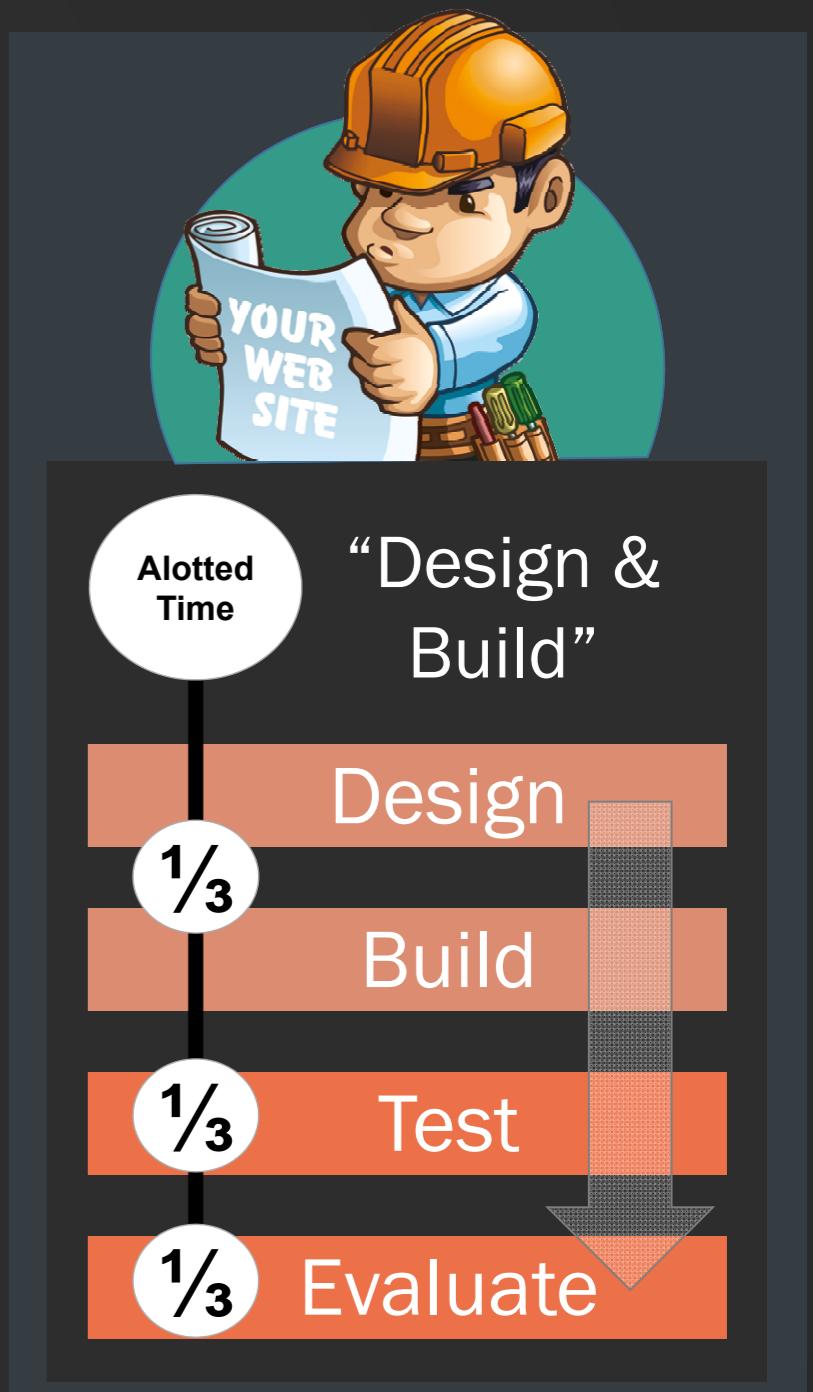
The aim of the project is to build a web-based visual tool implemented as a prototype. The software will provide a tool-supported model-driven mechanism for crowdsourcing UI improvements. The software will be a JavaScript plugin that can be added to any website by the webmaster. The plugin will include all the necessary tools to evaluate the UI adaptions created by the end-users via crowdsourcing. The software will provide a basic model-based verification of UI elements. The UI adaptations will be validated and qualitatively evaluated through integrated end-user surveys.

The output of the tool are user interfaces which provide a personalised user interaction experience to certain user roles. The software is a decision tool for the webmaster. It is envisioned to be a holistic tool for participatory interface personalisation, early-stage UI design, and remote (unmoderated) usability testing. The software could be useful for multi front-end engineering³ of website interfaces. It could provide the end-users with a mechanism that gives them control over the customization of a website's user interface. It would ultimately allow a role-based personalisation and adaption of the UI. Such a tool would allow each end-user to adopt and permanently use UI adaptions of a website. The adaptions could be made available internally to groups of employees of a company or externally to all website users.

Participatory UI Design



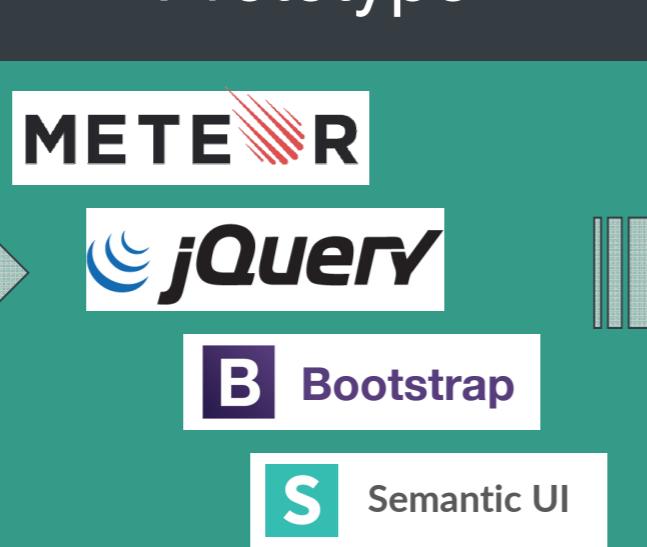
The Project



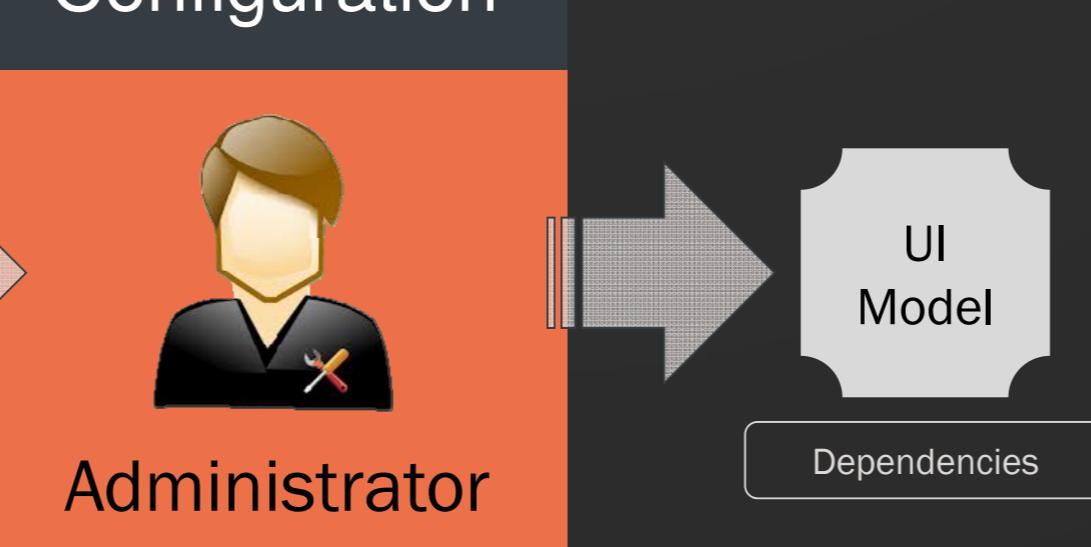
Literature Review



Prototype

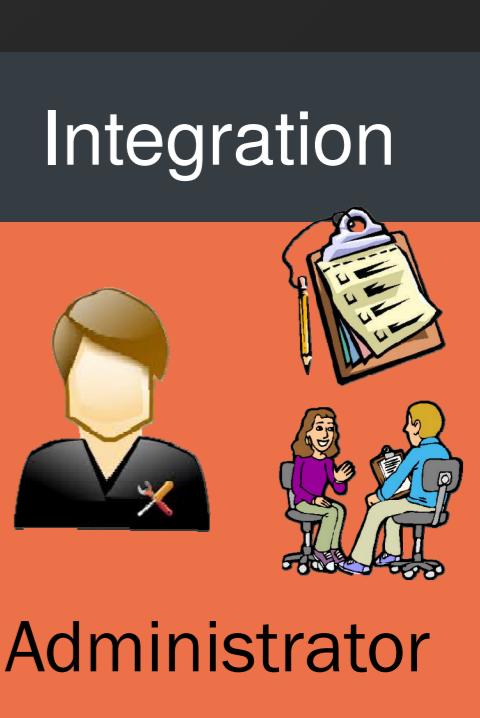
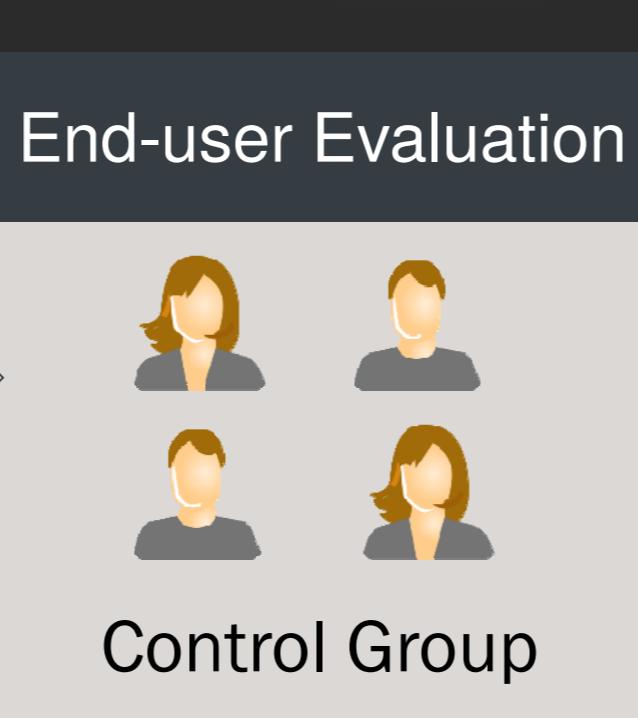
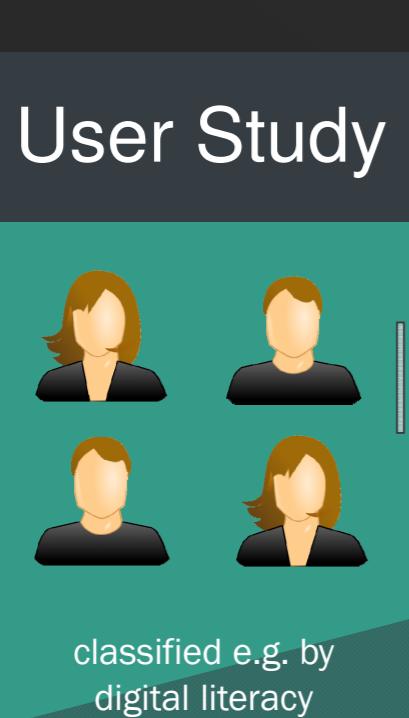


Configuration



The Process

The administrator specifies the dependencies of the website's user interface elements. The prototype is tested in an experimental study with website end-users. Each user may have different IT skills. The tool could integrate Kay's Computer Ability Survey⁴ to determine the user's digital literacy. Each user of the system will be asked to 1) fill out a questionnaire, 2) adapt the user interface of the website, and 3) rate a number of adaptions made by other users. The rating could make use of Davis' technology acceptance model⁵ to determine the perceived usefulness and ease of use (which imply the self-predicted future usage). The results are presented to the administrator as basis for the decision to implement UI adaptions for the different user groups.



References

Academic papers

- [1] von Hippel, E., *Democratizing Innovation: The Evolving Phenomenon of User Innovation*, *Journal for Technology Studies*, Vol. 35, No. 1, p. 63–70, 2005
- [2] von Hippel, E., *Customers as Innovators: A New Way to Create Value*, *Harvard Business Review*, April 2002
- [3] Butterweck, G., *Multi Front-End Engineering*. In: *MDD of Advanced User Interfaces*, Hussmann, H. and Meixner, G. (Eds.), SCI 340, pp. 27–42, 2011.
- [4] Kay, R. H., *A Practical Research Tool for Assessing Ability to Use Computers*: *The Computer Ability Survey*, *Journal of Research on Computing in Education*, Vol. 26, No. 1, pp. 16–21, 1993.
- [5] Davis, F. D., *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology*, *MIS Quarterly*, Vol. 13, No. 3, 1989
- [6] W. S. Lasecki, J. Kim, N. Raffer, O. Sen, J. P. Bigham, M. S. Bernstein, *Apportian: Crowdsourced User Interfaces That Come To Life As You Sketch Them*, CHI 2015, April 2015.

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