

User-Centered Design of a Lamp Customization Tool

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Introduction

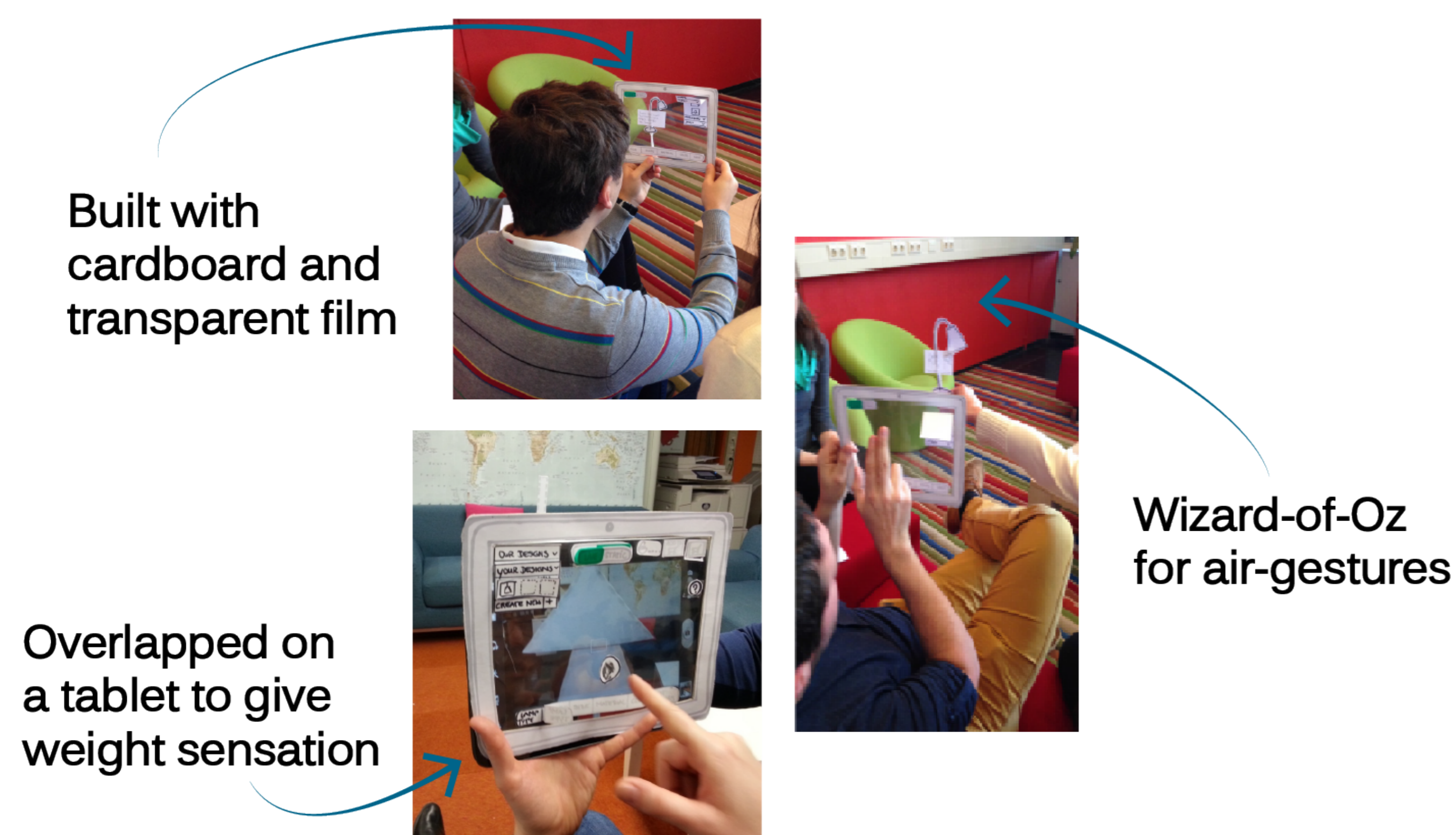
Unique, self-designed products are currently in great demand [1, 2]. The customization process of these products requires a good understanding of the customer's needs as well as tools that allow them to make the right choices. We provide a solution that enables users to design lamps that fit their needs and the interior design of their home. Our proposal is an Augmented Reality (AR) tablet application that allows customization in context.

Iterative User-Centered Design

Prototypes of different fidelities were used to test a fixed scenario.

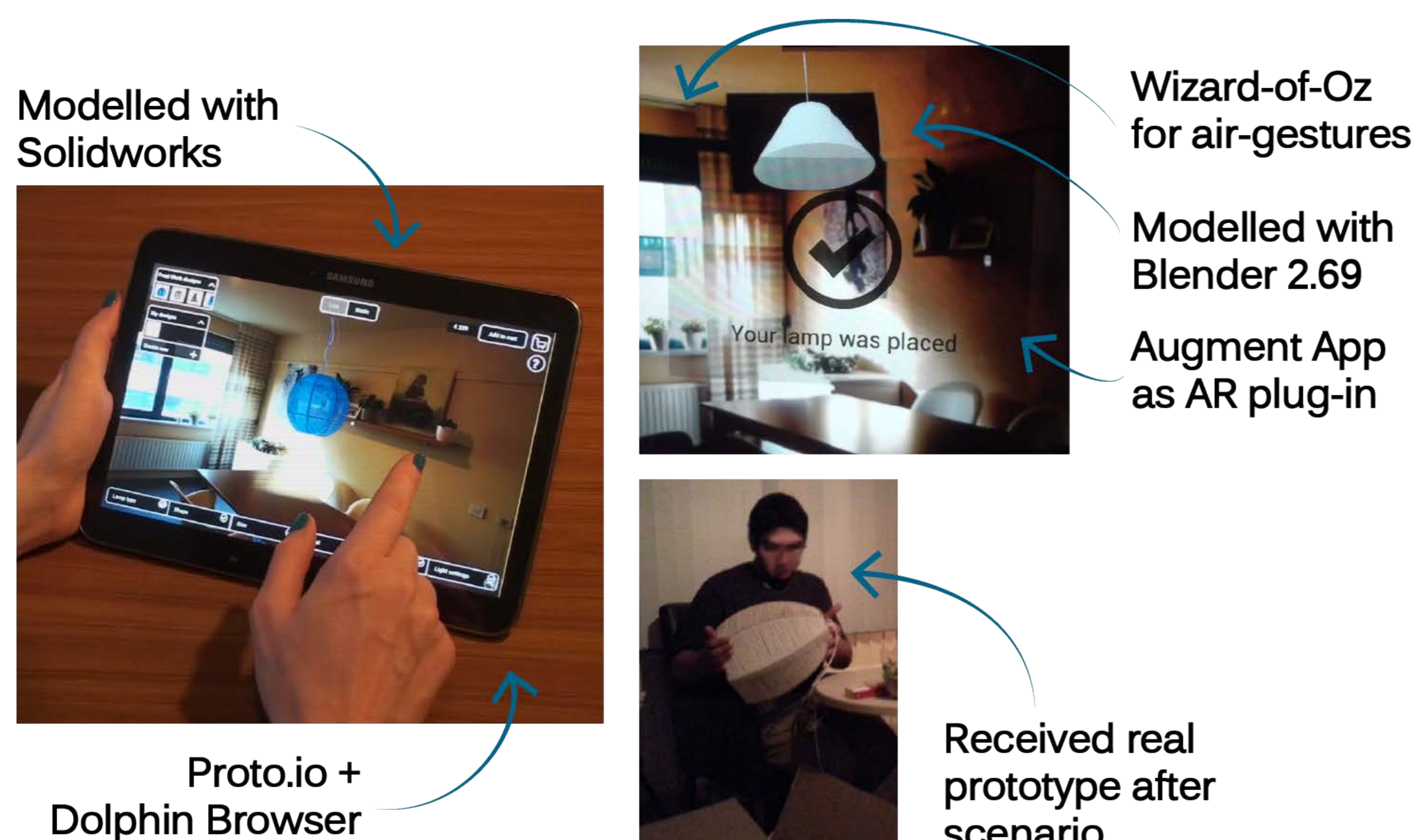
Low-fidelity evaluation

4 iterations, 10 participants, 2 of them were designers



Hi-fidelity evaluation

6 non-designer participants



Results

None of the participants used air gestures to position the lamp. Four of them used tablet gestures instead. Two participants tried to draw the lamp shape. Average SUS score: $M=83.75$ ($SD=8.91$). Customization Enjoyment ($M=4.67$, $SD=0.52$)¹. Participants believed that this system would help them create lamps that fit their home ($M=4.67$, $SD=0.52$)¹ and their needs ($M=4.5$, $SD=0.52$)¹.

"Oh, [the lamp] it's exactly the same" (participant 1)

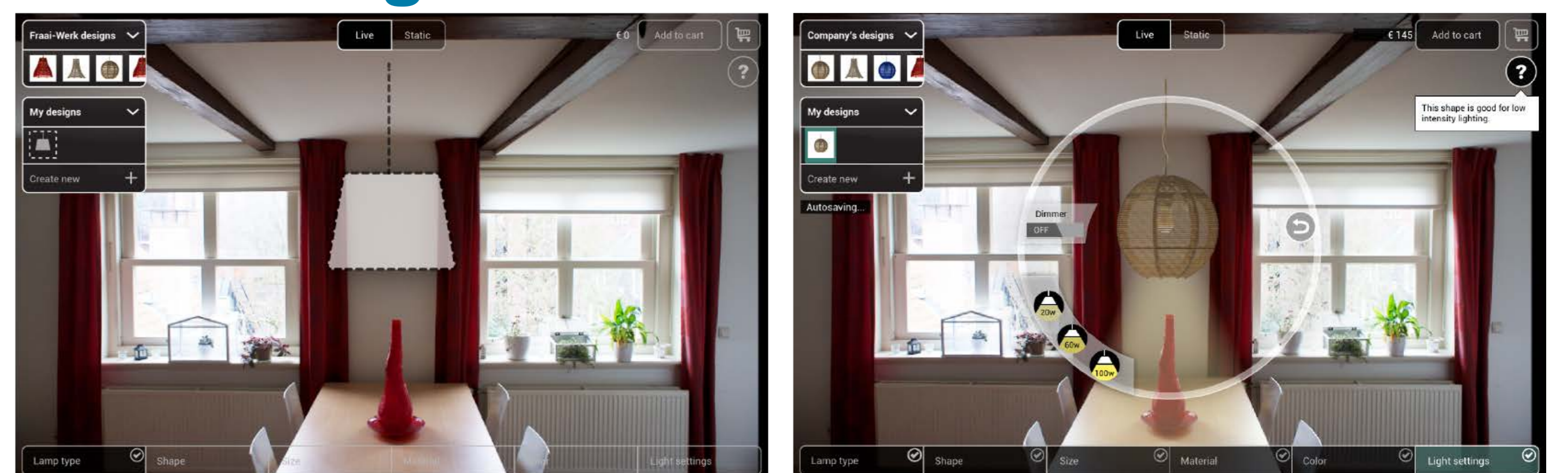
"I think the system would enable me to create the lamp I like" (participant 2)

"It is nice that all the choices are arranged around the lamp"

"It is very good that the light effect is shown, but the visualization should be more realistic" (participant 5)

(participant 4)

Final Design



Conclusions

Successfully guided users through the customization process. Provided inspiration and facilitated the decision making. A method to test preference fit indirectly was devised. A quick AR prototyping tool was developed using the Wizard-of-Oz technique.

Future work

Influence of timely feedback on air gesture learning. Influence of different light representations on preference fit.

References

- [1] Lau, M., Mitani, J., Igarashi, T. (2012) Digital Fabrication, IEEE Computer 45(12), pp.76-79.
 - [2] Franke, N. & Schreier, M. (2010). Why Customers Value Self-Designed Products: The Importance of Process Effort and Enjoyment. Journal of Product Development & Management, 27, 1020-1031.
1. The maximum value of the scale is 5.