

# Working Document of Project

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## 1 Introduction

This is a drafting document created for the purpose of writing any ideas down. This document is only a draft; therefore, it is rough and messy. However, the full report should evolve out of this document.

## 2 Research Questions

Here are the research questions:

RQ1: What is the state-of-the art FOSH and what are the performance of this best FOSH? How does it compare in terms of performance and other aspects with the non-FOSH state-of-the-art?

RQ2: What are the main challenges and drawbacks associated with the development, adoption, and sustainability of FOSH?

RQ3: How does non-FOSH compare with FOSH in terms of design and licensing?

RQ4: To what extent is FOSS more adapted FOSH development, and what are the factors that contribute to any observed differences in their adaptability?

RQ5: What are the potential future developments, opportunities, and challenges that FOSH is facing, and what are the implications of these for the growth and sustainability of the FOSH movement?

## 3 Introduction

We need an introduction to what free and open source is. A history of this in the software realm and how this idea is extending to hardware is needed.

We need to understand what are the values and principles of free and open source, and how they exactly relate to free and open source hardware (FOSH).

An overview of hardware and its difficulties is needed as a good background information.

## 4 Readings and Summaries

### 4.1 Readings done by Ali

## References

- [1] Rafaella Antoniou et al. “Defining success in Open Source Hardware Development Projects: A Survey of Practitioners”. In: *Design Science* 8 (2022). DOI: 10.1017/dsj.2021.30.
- [2] Rafaella Antoniou et al. “Identifying the factors affecting the replicability of open source hardware designs”. In: *Proceedings of the Design Society* 1 (2021), pp. 1817–1826. DOI: 10.1017/pds.2021.443.
- [3] Jérémy Bonvoisin and Robert Mies. “Measuring openness in open source hardware with the open-O-meter”. In: *Procedia CIRP* 78 (2018), pp. 388–393. DOI: 10.1016/j.procir.2018.08.306.
- [4] Jérémy Bonvoisin et al. “How participative is open source hardware? Insights from Online Repository Mining”. In: *Design Science* 4 (2018). DOI: 10.1017/dsj.2018.15.
- [5] Jérémy Bonvoisin et al. “Standardisation of practices in open source hardware”. In: *Journal of Open Hardware* 4.1 (2020). DOI: 10.5334/joh.22.

- [6] Jean-François Boujut et al. “Open source hardware communities: Investigating participation in design activities”. In: *Proceedings of the Design Society: International Conference on Engineering Design* 1.1 (2019), pp. 2307–2316. DOI: 10.1017/dsi.2019.237.
- [7] Jason Xinghang Dai et al. “Issues and challenges of knowledge management in online open source hardware communities”. In: *Design Science* 6 (2020). DOI: 10.1017/dsj.2020.18.
- [8] Zhuoxuan Li and Warren Seering. “Does open source hardware have a sustainable business model? an analysis of value creation and capture mechanisms in open source hardware companies”. In: *Proceedings of the Design Society: International Conference on Engineering Design* 1.1 (2019), pp. 2239–2248. DOI: 10.1017/dsi.2019.230.
- [9] Zhuoxuan Li et al. “Why open source?: Exploring the motivations of using an open model for hardware development”. In: *Volume 1: 37th Computers and Information in Engineering Conference* (2017). DOI: 10.1115/detc2017-68195.
- [10] Joshua M. Pearce. *Quantifying the value of Open Source Hardware Development*. Mar. 2019. URL: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3331131](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3331131).
- [11] Christina Priavolou and Vasilis Niaros. “Assessing the openness and conviviality of open source technology: The case of the WikiHouse”. In: *Sustainability* 11.17 (2019), p. 4746. DOI: 10.3390/su11174746.