

EDITORIAL

Welcome to the *Journal of Open Hardware*

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Welcome to the *Journal of Open Hardware*! We proudly announce the launch of the *Journal of Open Hardware* (JOH), an Open Access (OA) publication which aims for facilitating and improving Open Hardware-related knowledge exchange in the sciences and humanities.

JOH was created by a group of researchers from the heart of the open science community to address the need for scientific hardware development among academic disciplines, field experts, and community projects which do not usually meet and exchange. Our initiative took root during the first “Gathering for Open Science Hardware” (GOSH) at CERN in 2016. In our discussions, we realised the common need for a dedicated forum for peer-reviewed hardware documentation. At the occasion, we also identified many challenges to increase accessibility, reproducibility, dissemination, and preservation of hardware projects. In the months after the event, we sought consensus online regarding the structure and organisation of the Journal which lead to the current composition of our editorial board.

From a practical perspective, one might ask: *Why would we need yet another journal?* And, in the context of the broader Open Hardware community: *Why would it need an academic journal?* There are several reasons why such an initiative is important for academic as well as non-academic hardware projects. First and foremost, Open Hardware projects have specific requirements for useful documentation, sharing of design files, and quality management that are currently not well catered for. In our journal, we will publish hardware projects in a replicable and extensible form, ensuring preservation, quality peer-reviewing and stable identifiers for indexing purposes. The ability of potential collaborators to build upon existing designs is key, but more challenging to achieve for hardware than for software. By creating a dedicated forum, we will help scientists and designers to translate their projects into tools and protocols that are more reproducible, accessible, and sustainable.

Another unique characteristic of the journal is the merger of different communities and projects. Our transdisciplinary approach accounts for the fact that Open

Hardware often creates value beyond its engineering achievements, therefore having the potential to serve as an interface between domains of social and technical practice, creating new modes of public participation in the sciences. While JOH is primarily an academic forum, it also includes independent engineers and designers with community-based projects, and encourages exchange across a wide range of fields. Our goal is to serve, at once, as an inclusive and rigorous venue for hardware engineers, designers, and users to debate, improve, and disseminate their projects as well as for researchers to publish original empirical research, e.g. on sociocultural, legal, and economic aspects of Open Hardware projects.

We invite contributions from academics and non-academics in three basic categories: Metapapers, Articles, and Reviews. Each of these sections is meant to serve a particular need of the Open Hardware community. “Meta-papers” provide concise hardware project information with extended, stand-alone documentation, which is aimed at ensuring high-replication rates with detailed supporting materials. We define hardware for our purposes in its broadest sense to include e.g. support materials, sensors, and wetware. “Full-length articles” feature original empirical research on socioeconomic, legal, historical and technical matters surrounding Open Hardware projects. And, last but not least, “reviews” are short descriptions of events, books, and publications of interest to the broader Free and Open Source community.

Open Hardware demands empirical research because it is not only an understudied, emergent sociotechnical phenomenon, but also part of broader technical, scientific, and political contexts. The philosopher and historian of science Gilbert Simondon in his 1960s courses on technical inventions describes, for example, basic types of technical objects including “passive machines,” which cannot be disassembled without destruction and “active machines,” which are “open” in the sense that they can be readjusted, transformed, studied, and repurposed. Drawing from this elementary distinction, we welcome contributions addressing open techniques and technologies in various areas of research and development, such as (but not limited to): human/computer interaction and interface design; economic and legal frameworks; collaborative engineering models and practices; software dependencies in hardware; global science and community science, among various others topics of shared interest.

Our editorial board reflects the transdisciplinary global collaboration we want to encourage between the sciences

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and humanities as well as among academics, community members, and hardware professionals. Together we aim to help transform how science is currently conducted with much higher levels of openness and active public participation. By advancing a culture of Open Hardware research and development, we want to actively contribute to increase openness in methods and reproducibility aspects of scientific protocols, instruments, and practices. Higher degrees of participation bear the promise of cross-pollination between academic and community projects in which Open Hardware can have much broader societal,

economic, and technical implications. We see open, extensible, and adaptable technologies as important components of knowledge production, not only as low-cost tools, but as a fundamental platform for knowledge exchange.

Join us and build the *Journal of Open Hardware!*
The editorial team.

Competing Interests

The authors have no competing interests to declare.

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