

Open Hardware and the CERN OHL

Javier Serrano

BE-CO Hardware and Timing section
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Outline

- 1 Introduction to Open Hardware
- 2 Legal Aspects
- 3 Economics
- 4 Open questions

Disclaimer 1

The continuous appearance of the word “Open” in the coming slides only reflects current practice in the field and should not be interpreted as if I were speaking about software. FWIW, most of our inspiration at CERN came from free software.

Disclaimer 2

Nothing about TAPR OHL in this presentation. Check <http://www.ohwr.org/projects/ohr-meta/wiki/OHW2013> for a great presentation by John Ackermann.

There is an OSHW definition!

Check out <http://www.oshwa.org/definition/>

- Inspired by the Open Source definition for software.
- Focuses on ensuring freedom to study, modify, distribute, make and sell designs or hardware based on those designs.
- Now we know exactly what we mean when we say OSHW!

Dispelling the commercial vs open myth

| | Commercial | Non-commercial |
|-------------|--|--|
| Open | Winning combination. Best of both worlds. | Whole support burden falls on developers. Not scalable. |
| Proprietary | Vendor lock-in. | Dedicated non-reusable projects. |

Why we use Open Hardware 1/2

Get a design just the way we want it

We specify fully the design.

Peer review

Get your design reviewed by experts all around the world, including companies!

Design re-use

When it's Open, people are more likely to re-use it.

Healthier relationship with companies

No vendor-locked situations. Companies selected solely on the basis of technical excellence, good support and price.

Why we use Open Hardware 2/2

Dissemination of Knowledge

One of CERN's key missions!

Spend money where you or your funding agencies want

- Makes life easier for public institutions
- Opens the door to smaller companies with good local support

CERN Open Hardware License – ohwr.org/cernohl

Provides a solid legal basis

- Developed by Knowledge Transfer Group at CERN.
- Better suited than non-HW licenses (GPL, Creative Commons. . .)
- Defines conditions for using and modifying licensed material.

Provides a clear legal environment

- Written in a clear, concise style.
- Easy for licensors and licensees to evaluate if this is good for them.

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Inspired by FOSS licenses

- Anyone can see the source (design documentation).
- Anyone is free to study, modify, manufacture and share.
- Any modification and distribution must happen under same license.
- Persistence makes everyone profit from improvements.

Takes into account hardware production and distribution

- When producing and distributing licensee is invited to inform the licensor.
- Distributed HW must come with documentation.

CERN OHL is itself an Open project

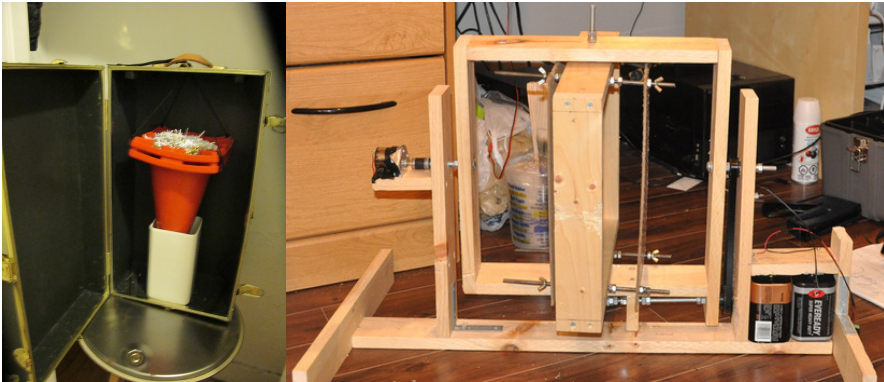
Web-based remote collaboration

- Many experts and enthusiasts from around the world.
- Hosted in ohwr.org/cernohl.
- Most communication done through a mailing list with public archives.

Evolving

- Version 1.2 helps guarantee that recipients of OSHW get access to the design files.
- How to handle Hardware Description Language (HDL) based designs appropriately is a topic of discussion.

Example of mechanics licensed with the CERN OHL



Worm farm and rotocaster

Some key ideas 1/2

It's about Free as in "Freedom"

- People need to make a living!
- Most successful FOSS projects have paid developers.
- Companies help ensure projects are not based on unpaid work (good for scalability).

We live in a world of creative abundance

- Some business models are incompatible with OSHW. So be it.
- Find a good company that suits your needs without compromising openness.
- Buy design, hardware and support. Vote for openness with your wallet.

Some key ideas 2/2

OSHW forces you to design better

- Other people will commercialise what you design.
- Lots of documentation needed.
- Testing gear and (automated) procedure is a must.
- Using standards is very important.

When in doubt, look at FOSS!

- Software people have worked many things out through the years.
- Most of the arguments, business models, etc. apply directly to OSHW.

Some open questions

Use of tools other than copyright

- Contract language?
- Work on marks by the Wikimedia Foundation?

HDL licensing

- Should CERN OHL evolve to cover HDL correctly?
- See presentation on HDL licensing.

Good free design tools needed!

- KiCad for PCB design.
- Icarus for HDL simulation.