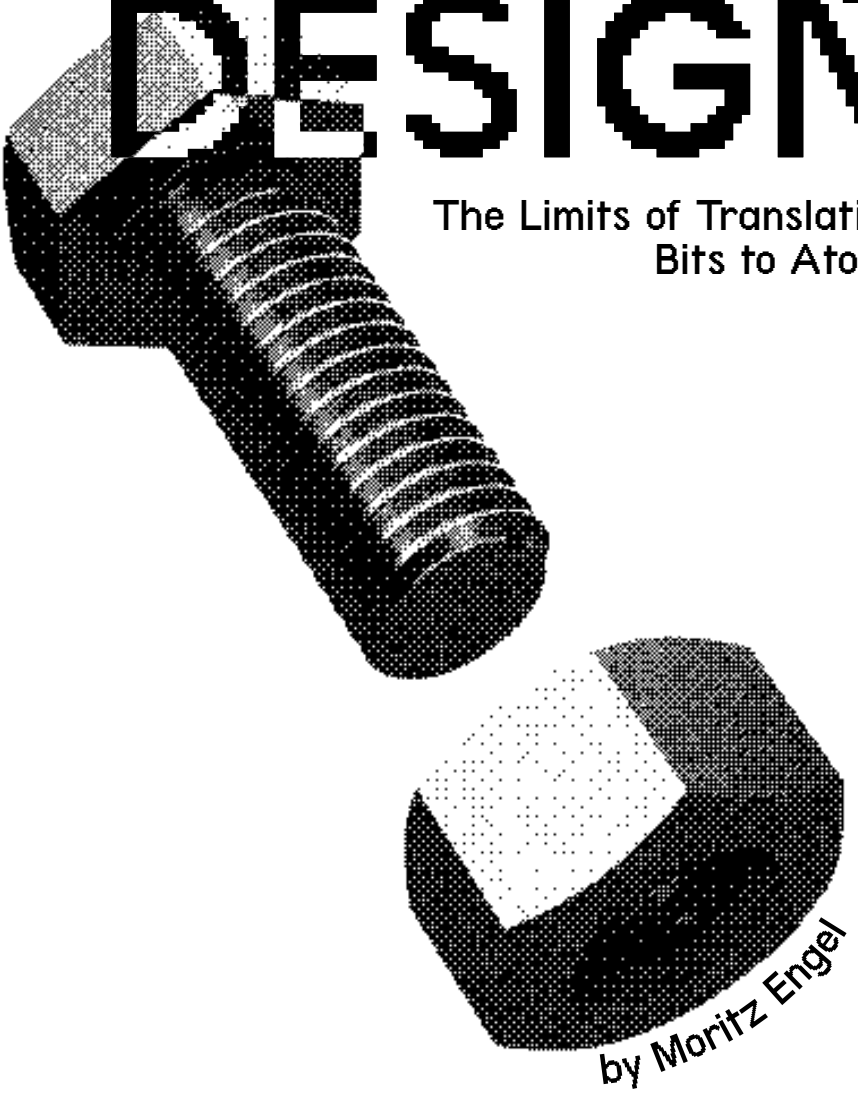
OPEN by DESIGN

The Limits of Translating Bits to Atoms



by Moritz Engel

This scrapbook compiles all of the research for the memoire: „Open by Design, The Limits of Translating Bits to Atoms“. This scrapbook and its cards can also be seen as a way to learn about open source and other open, consumer-empowering approaches. The research is mainly compiled in „research cards“, which briefly explain the source. Sometimes, with short notes, what felt important. This scrapbook is supposed to become an open and editable document, to which everyone can add more interesting and helpful sources and references that might be useful for learning about open source or related approaches in product design and history. It is intended to serve as a research and reference work in the future.

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Content

The „research cards are compiled into seven categories: Open Source Frameworks, Licences, Projects in Design, Projects outside of Product Design, Books, related approaches and other sources.
The goal was to bundle them to make the research more concise and give clear categories to which one can add in the future. The cards are also laid out with a clear structure for the best approachability. At the end of this scrapbook, one can find blank cards for anyone to add projects in the future. Contribution can also be made through the GitHub project page.

Research Cards

This collection of organisations developed Frameworks and definitions for open source projects to create a common set of definitions, guides, how-tos, licence collections, and a quality mark that certifies proper open source projects. Some of these Open frameworks, like OpenStructures, aren't open source in any sense, according to the most established definition from the Open Source Hardware Association (OSHWA). Some platforms, like GitHub, are frameworks in that they provide a common structure and location for publishing.

Open Source Frameworks

1 Open Source Frameworks
Open Source Initiative

01 – The Open Source Initiative (OSI) is a California public benefit corporation, with 501(c)3 tax-exempt status, founded in 1998. We are also actively involved in Open Source community-building, education, and public advocacy to promote awareness and the importance of non-proprietary software. OSI participates in Open Source conferences and events, to meet with open source developers and users, and to discuss with executives from the public and private sectors about how Open Source technologies, licenses, and models of development can provide economic and strategic advantages. (Open Source Initiative, 2025)

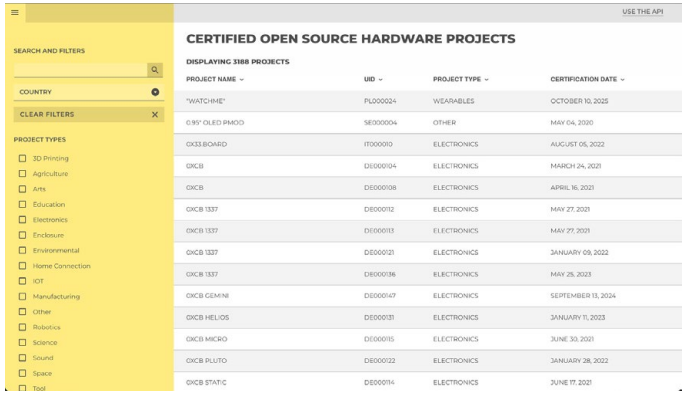
Source: Open Source Initiative. (2025, October 21). About the Open Source Initiative. https://opensource.org/about

2 Open Source Frameworks
Open Source Hardware Association

01 – Open source hardware is hardware whose design is made publicly available so that anyone can study, modify, distribute, make, and sell the design or hardware based on that design. The hardware's source, the design from which it is made, is available in the preferred format for making modifications to it. Ideally, open source hardware uses readily-available components and materials, standard processes, open infrastructure, unrestricted content, and open-source design tools to maximize the ability of individuals to make and use hardware. Open source hardware gives people the freedom to control their technology while sharing knowledge and encouraging commerce through the open exchange of designs.
The open-source hardware statement of principles and definition were developed by members of the OSHWA board and working group along with others. These documents were originally edited on the wiki at freedomdefined.org, which you can visit to see endorsements of the definition and to add your own. (Open Source Hardware Association, n.d.)

Source: Open Source Hardware Association. (n.d.). Open source hardware definition. https://oshwa.org/resources/open-source-hardware-definition/

3 Open Source Frameworks
CERTIFIED OPEN SOURCE HARDWARE PROJECTS – OSHWA



01 – A recipetory of the open hardware accossiation of all the projects they have certified to their standards. But nearly 90% of the certified products and projects are electronics based.

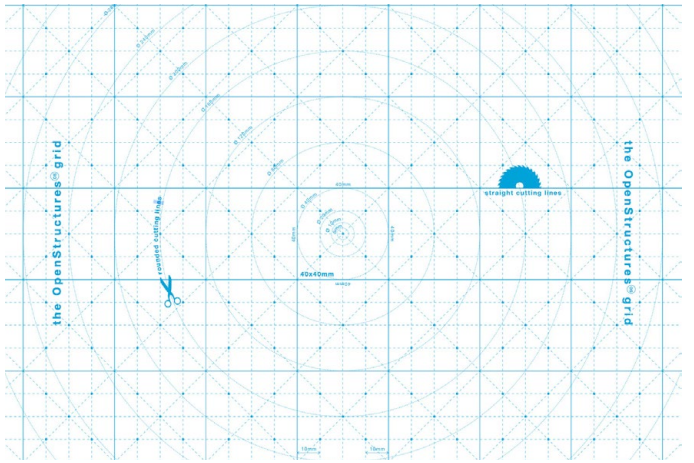
Source: Open Source Hardware Association. (n.d.). Certified projects list [Screenshot]. Retrieved February 9, 2026, from https://certification.oshwa.org/list.html

4 Open Source Frameworks
opensource.guide

01 – opensource.guide is a comprehensive collection of guides for mainly open source software projects. It provides best practices and advice for individuals, communities, and companies. It covers the entire lifecycle of an open-source project, from its initial launch to long-term growth and maintenance.

Source: GitHub. (n.d.). Starting an open source project [Header illustration]. Open Source Guides. https://opensource.guide/starting-a-project/

5 Open Source Frameworks
Open Structures

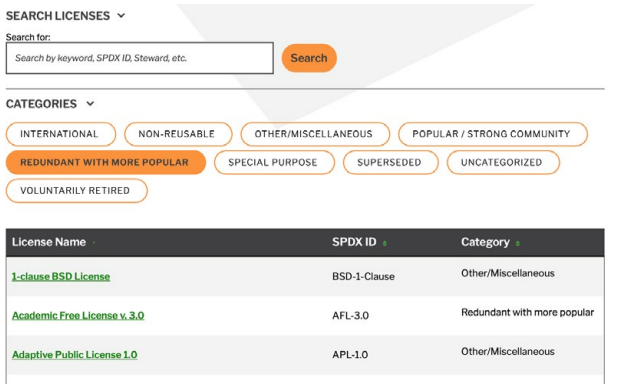


01 – OpenStructures (OS) is an open modular construction system that promotes circular material flows and facilitates re-use and repair.
OS allows to build things together at a moment in time, where anyone is connected to everyone and everything can be produced everywhere.
It links modularity to collaborative innovation and new decentralised production techniques and results in a more sustainably built environment.
OS unfolds through a continuously evolving exploration by a community of authors that test and evaluate its potential within the field of design, art and architecture. (Open Structures, About, n.d.)

02 – OpenStructures is based on an inherent design methodology that incorporates future change by encrypting it directly into the DNA of its building components.
It produces interchangeable parts, flexible objects and a built environment that can adapt and scale over time. OS constructions therefore anticipate a dynamic future.

Sources: OpenStructures. (n.d.). „About“ [Web page]. Retrieved February 9, 2026, from https://www.openstructures.net/about
Picture: OpenStructures. (n.d.). OpenStructures Manual 4.3 [PDF]. Retrieved February 9, 2026, from https://openstructures.net/sites/default/files/2019-08/os_manual_4.3.pdf

6 Open Source Frameworks
Open source software licences – OPEN SOURCE INITIATIVE



01 – „Open source licenses are licenses that comply with the Open Source Definition – in brief, they allow software to be freely used, modified, and shared. To be approved by the Open Source Initiative (also known as the OSI) a license must go through the Open Source Initiative's license review process.“

Source: Open Source Initiative. (n.d.). Licenses. Retrieved February 9, 2026, from https://opensource.org/licenses
Image: Open Source Initiative, OSI Licenses Database Interface, 2026, digital screenshot © Open Source Initiative

7 Open Source Frameworks
GitHub

01 – THE repository to publish Open Source Projects of any kind.

02 –GitHub is a proprietary developer platform that allows developers to create, store, manage, and share their code. It uses Git to provide distributed version control and GitHub itself provides access control, bug tracking, software feature requests, task management, continuous integration, and wikis for every project. (GitHub, 2025)

Source: GitHub. (2025, August 4). In Wikipedia. https://en.wikipedia.org/wiki/GitHub
Picture: GitHub. (n.d.). GitHub logo [Image]. https://brand.github.com/foundations/logo

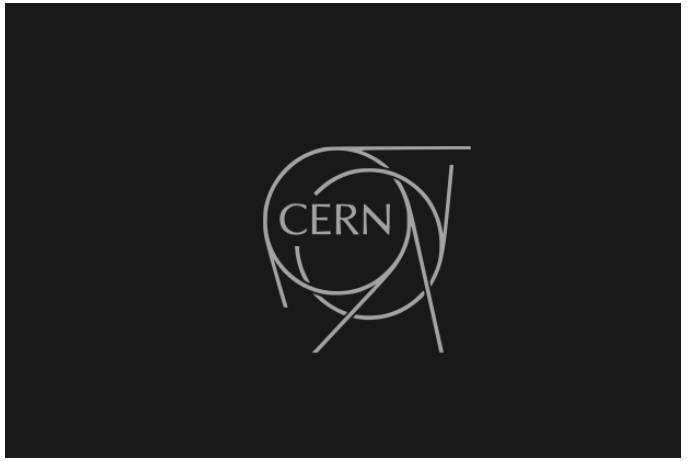
Something missing?

Please contribute.
https://github.com/moritzengel/Open-by-Design

Collection of open-source and ‚open-access' licenses are designed to protect research and development (R&D) legally. By applying these licenses, authors ensure that their work remains available for open-source derivatives while safeguarding it against proprietary exploitation by „closed-source" competitors.

Licences

1 Licences
CERN Open Hardware Licence



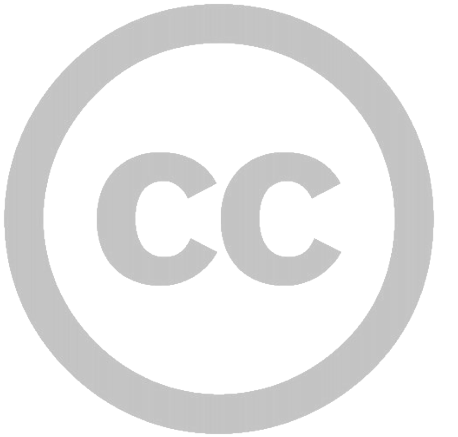
01 – CERN has probably developed the best licence for Open source hardware projects to date, the CERN Open Hardware Licence (CERN OHL).

CERN OHL comes in three variants:

- CERN-OHL-S (strongly reciprocal, txt, pdf)
- CERN-OHL-W (weakly reciprocal, txt, pdf)
- CERN-OHL-P (permissive, txt, pdf)

Sources: CERN. (n.d.). „CERN Open Hardware Licence“ [Website]. Retrieved February 7, 2026, from https://cern-ohl.web.cern.ch
Image: CERN, CERN Logo, n.d., digital graphic © CERN

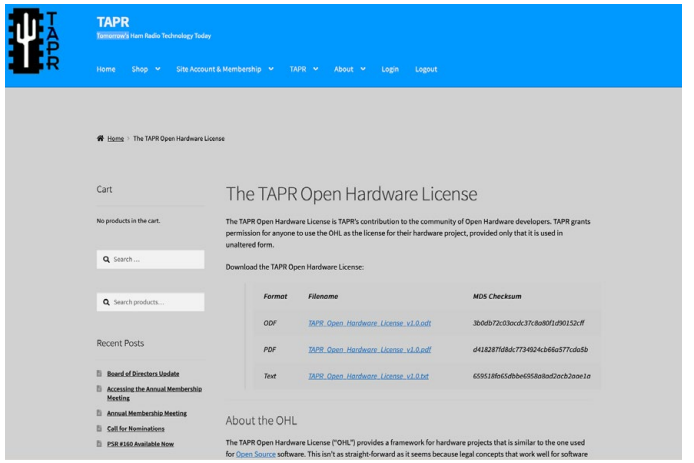
2 Licences
Creative Commons



01 - Creative commons developed six commonly used licenses for open source projects, ranging from most permissive to most restrictive, thus only making only the first two truly open source:
- CC BY (Attribution): The most open, allowing commercial use and adaptation with credit.
- CC BY-SA (Attribution-ShareAlike): Allows commercial use and adaptation, but derivative works must share the same license.
- CC BY-NC (Attribution-NonCommercial): Allows adaptation but only for non-commercial purposes.
- CC BY-ND (Attribution-NoDerivatives): Allows commercial distribution, but no modifications are permitted.
- CC BY-NC-SA (Attribution-NonCommercial-ShareAlike): Allows non-commercial adaptation, but derivative works must share the same license.
- CC BY-NC-ND (Attribution-NonCommercial-NoDerivatives): The most restrictive, allowing only non-commercial, verbatim copies.

Sources: Creative Commons license. (n.d.). In Wikipedia. Retrieved February 7, 2026, from https://en.wikipedia.org/wiki/Creative_Commons_license
Image: Creative Commons. (n.d.). Creative Commons logo [Image]. https://creativecommons.org/about/downloads/

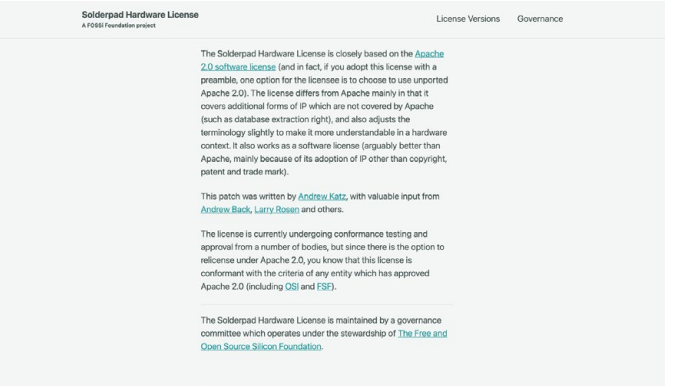
3 Licences
TAPR Open Hardware License



01 – TAPR Open Hardware License is another commonly used license for open source Hardware projects and one of the first ones. It was created by Tucson Amateur Packet Radio (TAPR). The license grants the commonly as open soure defined rights by forbidding anyone who receives rights under the OHL to deny any other licensee those same rights to copy, modify, and distribute documentation, and to make, use and distribute products based on that documentation. Thus making it a true open source license.

Sources: TAPR Open Hardware License. (n.d.). In Wikipedia. Retrieved February 7, 2026, from https://en.wikipedia.org/wiki/TAPR_Open_Hardware_License
Image: TAPR. (n.d.). „The TAPR Open Hardware License“ [Screenshot]. https://tapr.org/the-tapr-open-hardware-license/

4 Licences
Solderpad License



01 - The Solderpad Hardware Licence (SHL) is a permissive open hardware licence designed specifically for hardware designs. It is closely based on the Apache Licence 2.0 (Apache 2.0 Licence) for software, but extends it with specific provisions relevant to the hardware context.

Sources: Hardware License. (n.d.). „Solderpad Hardware License“ [Website]. http://solderpad.org/
Image: Solderpad Hardware License. (n.d.). Solderpad Hardware License homepage [Screenshot]. Retrieved February 9, 2026, from http://solderpad.org/

5 Licences
Open Community Licence (OCL) – Prusa Research

01 – „The Open Community License (OCL) is our answer to the gaps left by traditional software licenses when applied to physical hardware. It is designed to be concise and human-readable (it fits on one page) and it even includes practical examples linked directly in the document so you know exactly what you can and cannot do.“ - Prusa Research

02 – This newly released License on the 19th Decembre 2025, tries to solve the problems, that are common with the commercialation of Open Source projects, for the consumers and the publishers. But until today its been badly received by the community by its bad wording.

Sources: 01 – Průša, Josef (2025, December 19). „Open-sourcing CORE One CAD Files Under the New Open Community License (OCL)“ [Blog post]. Prusa3D. https://blog.prusa3d.com/core-one-cad-files-release-under-the-new-open-community-license-ocl_127290/ Image: Josef Prusa, Open Community License Header, 2025, digital graphic © Prusa Research a.s.

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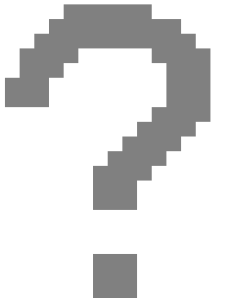


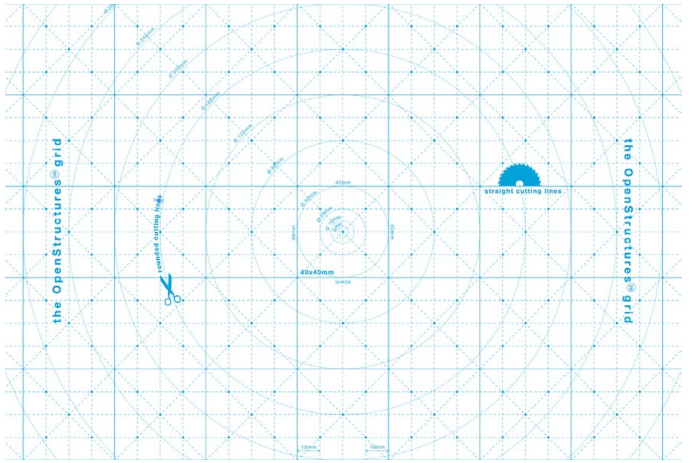
Please contribute.

https://github.com/moritzengel/Open-by-Design

In the Projects in Design category, Projects are compiled not only for strictly product design, but also for other Design fields, like Graphic Design and Architecture. A might also be quite close to engineering. Some cards are also just platforms for sharing Designs. The projects aren't all completely open source; following the Definition of the Open Source Hardware Association (OSH-WA), some only follow parts of the open source spirit, such as „Full Ownership", „Right to Repair", and „DIY". Some show problematic sides of how the „open source lable „is used, by not complying ever or any more with any of the terms of open source.

Projects in Design

01 Project in Design
Open Structures



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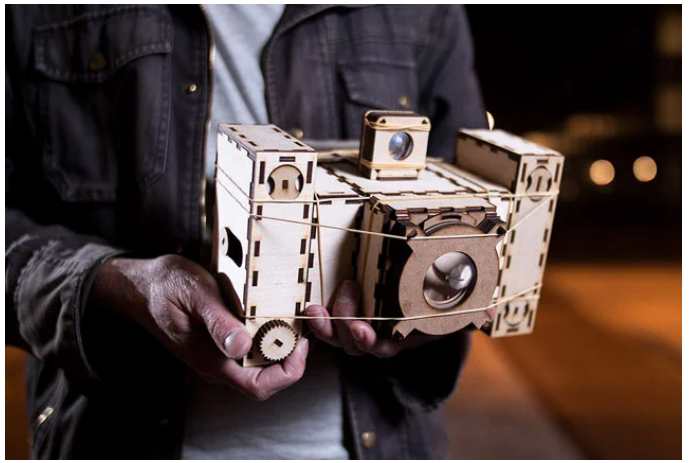
Sources: OpenStructures. (n.d.). „About“ [Web page]. Retrieved February 9, 2026, from https://www.openstructures.net/about
Picture: OpenStructures. (n.d.). OpenStructures Manual 4.3 [PDF]. Retrieved February 9, 2026, from https://openstructures.net/sites/default/files/2019-08/os_manual_4.3.pdf

02 Project in Design
DYIR

01 - DIYR (PRONOUNCED ‘DEAR’)
Celebrates the spirit of creativity, independence and resourcefulness. The acronym DIYR stands for “Do It Yourself Revolution”, promoting reflection and new forms of production. Combining simplicity and longevity with ethics and aesthetics.
At a time when the market is continuously flooded with flashy new products and eye candies, DIYR focuses on the nearest and dearest of basics: simplicity and longevity, ethics and aesthetics. We believe first-hand knowledge of an object’s build promotes a different relation and emotional value, combining emotions with function and purpose.
We actively commit to countering planned obsolescence and curtailing e-waste. We promote a mindful approach to conscious design, repurposing components and inviting users to become Doers.(DIYR, n.d.)

Sources: DIYR. (n.d.). „About“ [Web page]. Retrieved February 9, 2026, from https://diyr.dev/about/
Image: Kellermann, G. (n.d.). [Photograph of DIYR electronics]. DIYR. Retrieved February 9, 2026, from https://diyr.dev/

3 Project in Design
The Focal Camera – Mathijs van Oosterhoudt



01 – „Dutch artist Mathijs van Oosterhoudt has been developing a new camera system. No, it's not a high-tech digital system that's intended to go up against the major camera companies. Instead, it's an open-modular camera system that's intended to teach people how to build complex cameras. Its name is The Focal Camera. Van Oosterhoudt has been using his camera design to teach workshops, but now he has decided to publish all his designs for free on the Web to bring the knowledge and joy of cameras to a much wider audience.
"Even complex cameras can be made in simple ways," the Focal Camera website says."(Zhang, 2015)

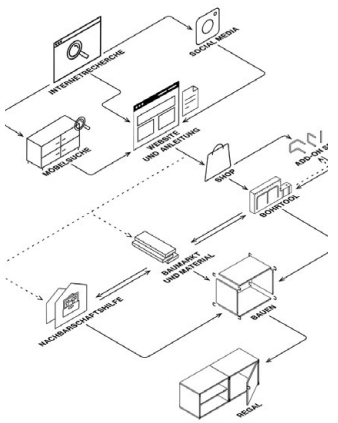
Sources: Zhang, M. (2015, August 17). „The Focal Camera: An Open Source Modular Camera" [Web log post]. PetaPixel. https://petapixel.com/2015/08/17/the-focal-camera-an-open-source-modular-camera/
van Oosterhoudt, M. [Botler]. (n.d.). „The Focal Camera" [Project page]. Wikifactory. Retrieved February 9, 2026, from https://wikifactory.com/@botler/focal-camera
Image: © Mathijs van Oosterhoudt/Focal Camera

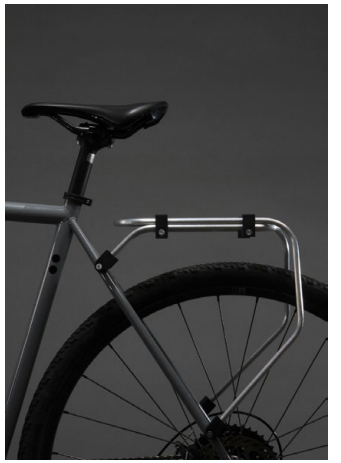
4 Project in Design
"Bag" Radio – Daniel Weil

01 – Radio in a Bag by Daniel Weil. The transparency of the pvc bag makes the normally unseen complexity of modern technical devices visible and more graspable. And speaks about a visual language needed for open design, to communicate the possibility for repair and modification.

Sources:
Image:Design Museum [@DesignMuseum]. (2024, March 4). ** [Post]. X. https://x.com/DesignMuseum/status/1764604220878070126
Text:Victoria and Albert Museum. (n.d.). Radio in a Bag. Retrieved February 9, 2026, from https://collections.vam.ac.uk/item/O85208/radio-in-a-bag-radio-weil-daniel/

05 Project in Design
OPEN +/- Burg Halle Giebichenstein





01 – We design products that are designed, produced and distributed using digitally supported processes. To this end, we will experiment with additive and subtractive manufacturing processes. The aim of the project is to make the designs accessible to users in a decentralized and open source manner outside of conventional production and distribution chains. How do we create individually suitable access points and how can we as designers build and maintain participatory structures?

How can we reach different groups of people and encourage them to implement our designs? (Burg Giebichenstein University of Art and Design Halle, n.d.)

Sources: Burg Giebichenstein University of Art and Design Halle. (n.d.). „Open +/-“ [Project overview]. Designing in Digital Contexts. Retrieved February 9, 2026, from https://www.burg-halle.de/designing-in-digital-contexts/open/
Images: Lipinski, T., & Zimmermann, M. (n.d.). „OFFTrack“ [Project page]. Designing in Digital Contexts. Burg Giebichenstein University of Art and Design Halle. Retrieved February 9, 2026, from https://www.burg-halle.de/designing-in-digital-contexts/offtrack-theo-lipinski-mathilde-zimmermann/

06 Project in Design
re:Mix - open funk

01 - We make home electronics that are good for people and the planet. They are good for people because they bring joy, keep people healthy, and honour the workers that make them. They are good for the planet because they use materials mindfully, are locally sourced, locally made, and designed to be repaired and reused over time.

Our first product, re:Mix is a kitchen mixer that’s made for your own glass jars, is customisable, and built to last. It’s the first step towards our vision of a circular platform for home electronics that are built and repaired locally, and never wasted. It’s based on collaboration through open-source, empowers local communities, and reduces the environmental footprint. (Open Funk, n.d.)

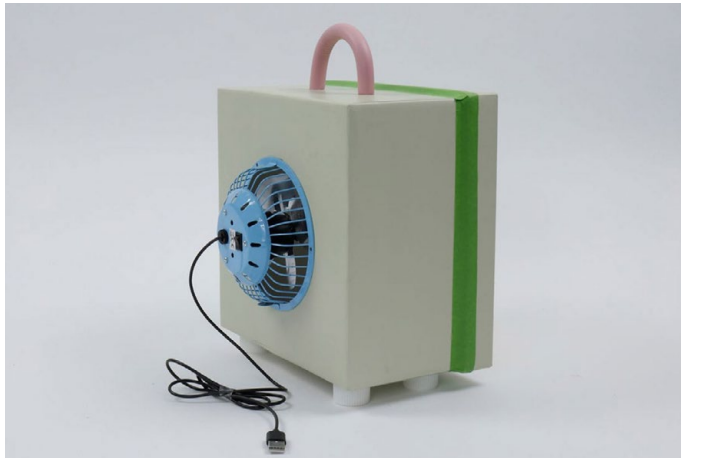
Source: Open Funk. (n.d.). About. Retrieved February 9, 2026, from https://www.open-funk.co/pages/about-us

07 Project in Design
Audioberry - amp

01 – Audio Berry was a niche audio brand active around 2016, known for the Juna Amplifier, designed by Paul Crofts Studio. The Juna Amp featured Bluetooth and AirPlay connectivity. While it gained recognition for its design, including a mention in Dezeen, Audio Berry no longer appears to operate as a company, and the Juna Amplifier seems to have disappeared from the market.

Source: Aouf, R. S. (2016, May 5). Paul Crofts designs minimal white amp for Audioberry. Dezeen. https://www.dezeen.com/2016/05/05/paul-crofts-minimal-audioberry-junior-amp/

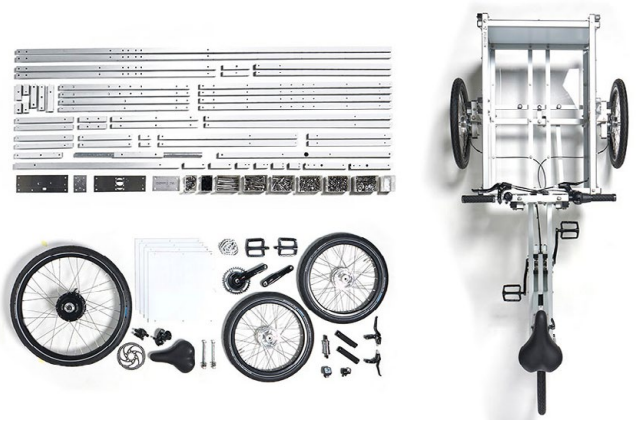
08 Project in Design
Air-It-Yourself – Newtab-22



01 - Jihee Moon of South Korean design studio Newtab-22 has developed an open-source IKEA-style manual with instructions on how to build the Air-It-Yourself air purifier in under an hour using everyday items. The Air-It-Yourself system uses household waste from shoe boxes to plastic plant pots for parts and combines them with a small USB fan and a HEPA filter sheet, which can be bought cheaply and easily on the internet.a circular platform for home electronics that are built and repaired locally, and never wasted. It's based on collaboration through open-source, empowers local communities, and reduces the environmental footprint.(Hahn, J. 2022)

Source: Hahn, J. (2022, November 11). Jihee Moon creates Air It Yourself purifier to be made at home. https://www.dezeen.com/2022/11/11/air-it-yourself-purifier-jihee-moon-newtab-22/

09 Project in Design
XYZ CARGO



01 – XYZ CARGO takes a completely new approach to building functional cargo bikes, emphasising fair, local design, production and distribution in a socially just and environmentally sustainable way.
By combining bolted, modular, and simple orthogonal construction methods with advanced 3D design tools, XYZ CARGO offers a system that is both highly adaptable and easy to customise. Designed to encourage DIY ingenuity and participation, it moves away from rigid, predefined solutions.
XYZ CARGO bikes are easy to modify, repair, and rebuild, ensuring longevity. With proper maintenance of mechanical parts, they can last a lifetime. For effective recycling, all components can be easily separated into reusable modular parts or raw materials. (N55, n.d.)

Source: N55 & Wolfer, T. (n.d.). XYZ CARGO / SPACEFRAME VEHICLES [Manual]. N55. Retrieved February 9, 2026, from https://n55.dk/MANUALS/SPACEFRAMEVEHICLES/XYZCARGO.html

10 Project in Design
N55

01 - N55 works with art as a part of everyday life. See ART AND REALITY.

For more than 25 years, we have been publishing manuals for things that are part of our everyday life – and we continue to do so. They reflect different ways of living and thinking across various social constellations and situations. Some of the things described are still in use, while others are no longer in use. In any case, we hope these manuals will continue to serve as inspiration for others.

N55 is a platform for persons who wants to work together, share places to live, economy, and means of production. N55 is based in Copenhagen, Denmark, supplemented with studios in other places. (N55 & Wolfer, n.d.)

Source: N55. (n.d.). N55 [Manual]. Retrieved February 9, 2026, from https://www.n55.dk/MANUALS/N55/n55.html

11 Project in Design
Bee Home - SPACE10

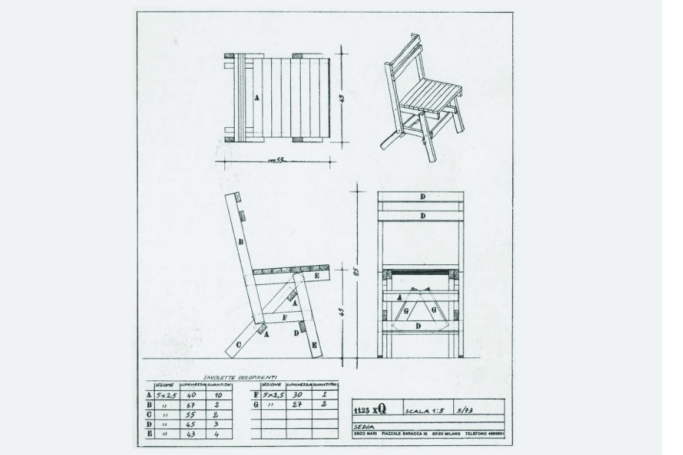
01 – Our lives — and planet Earth as a whole — would be very different if solitary bees didn't exist. They're vital for flowers, trees, animals and people. In fact, a third of what we eat depends on these busy, buzzing insects and other pollinators.

But, because of human impact, bees are in danger of going extinct. We've unwittingly destroyed their homes and natural habitats when building our own homes, gardens and cities. And we've turned to pesticides, chemicals and monoculture in farming, causing wildflower meadows to rapidly vanish across the planet.

That's why we at SPACE10 want to make it easy for anyone anywhere to design a beautiful home for these vital species. Bee Home is an open invitation for everyone to give bees the home they deserve — and to make sure that planet Earth thrives. (SPACE10, n.d.)

Source: SPACE10. (n.d.). Bee Home [Project page]. Retrieved February 9, 2026, from https://space10.com/projects/bee-home

12 Project in Design
Autoprogettazione - Enzo Mari



01 - In 1974, in reaction to the mass production of furniture, Enzo Mari created a book entitled, Autoprogettazione, which deals with the DIY construction of furniture and provides plans and instructions on how to create 19 items of furniture from ubiquitous materials. („Enzo Mari," 2025)

Source: Enzo Mari. (2025, December 5). In Wikipedia. https://en.wikipedia.org/wiki/Enzo_Mari

13 Project in Design
Prusa Research

01 – Prusa Research grew from Josef Prusa's work in the RepRap project. Our mission is clear: make enjoyable machines for everyone to use. Open-source is our heart, sharing how we do things so others can learn and create. Check the timeline of our entire history.
Our goal is for our printers to remain moddable, easily repairable, and produce amazing prints even decades after their initial release. Reprint the plastic parts, flash custom firmware, or completely modify our printers to meet your specific needs.

Our approach to sharing is careful and planned. Right away, we share things like our firmware and printable parts. Other details, like electronic schematics, come out a bit later. And hardware manufacturing info? That might be shared closer to the end of product's life. This helps us stay true to open-source while navigating today's market challenges.(Prusa Research, n.d.)

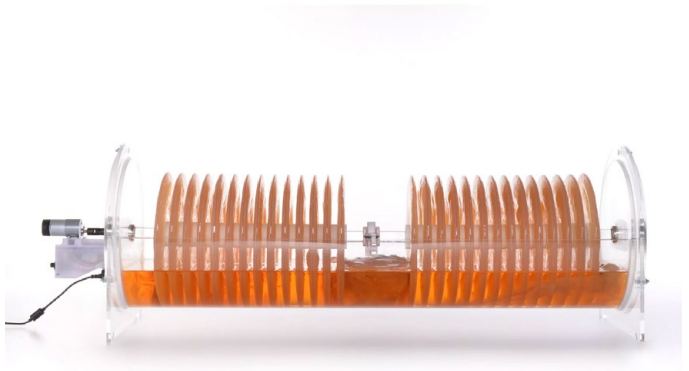
Source: Prusa Research. (n.d.). Open-source at Prusa Research. Retrieved February 9, 2026, from https://www.prusa3d.com/page/open-source-at-prusa-research_236812

14 Project in Design
Ecal Digital Market

01 – In partnership with the 3D printing company Formlabs, ECAL Master Product Design students present a range of innovative everyday life objects, produced through a print farm within the exhibition and sold directly on site. Projects from ECAL faculty and alumni are also available. The concept was imagined by Camille Blin, head of the Master Product Design, and Christophe Guberan, ECAL tutor. (ECAL, 2018)

Source: ECAL. (2018). ECAL Digital Market [Project page]. Retrieved February 9, 2026, from https://ecal.ch/en/feed/projects/5552/ecal-digital-market/

15 Project in Design
InnoCell Bioreactor



01 – The ‘InnoCell Bioreactor’ (IB) is an open-source unit enabling enhanced SCOBY production and yield. The IB is an outcome of the interdisciplinary project InnoCell exploring the (g)local potential of SCOBY’s bacterial cellulose production and applications. The InnoCell Bioreactor is designed as a DIY module that could be scaled up or down according to needs and technological availability. As an innovative module, it fosters accelerated development of production models related to glocal production and interconnected systems. (Design Friction Lab, n.d.)

Source: Design Friction Lab. (n.d.). InnoCell Bioreactor [Project page]. Retrieved February 9, 2026, from https://designfrictionlab.com/project/bioreactor/

16 Project in Design
Precious Plastic

01 – „Precious Plastic is a global open-hardware project that provides the tools, knowledge, and platform for anyone to start a small-scale plastic recycling operation locally. Founded in 2013 by Dutch designer Dave Hakkens, it relies on a series of open-source machines that communities can build themselves to transform plastic waste into new, valuable products.
The project‘s goal is to empower a decentralized network of individuals and small businesses to tackle plastic pollution.“ – Google AI

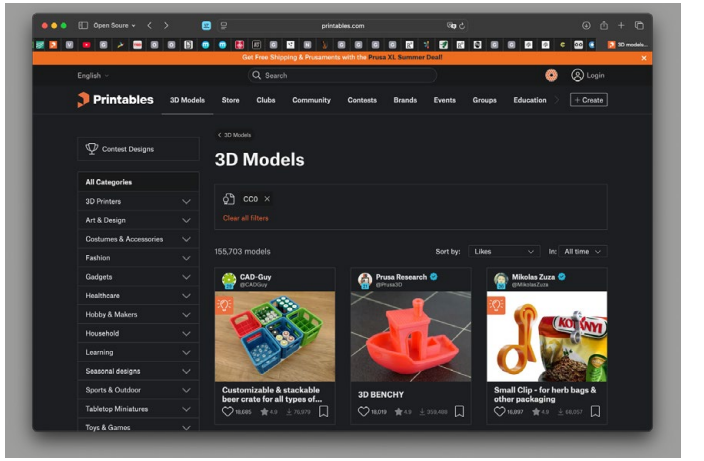
Sources: Precious Plastic Community. (n.d.). Library [Web page]. Retrieved February 9, 2026, from https://community.preciousplastic.com/library?sort=Newest

17 Project in Design
Space 10 – Open Fabrication

01 – Open Fabrication utilises digital fabrication and open-source design principles to transform paper waste into affordable customised furniture. (SPACE10 & Ransmeier Inc, 2019)

Sources: SPACE10 & Ransmeier Inc. (2019). Open Fabrication: Democratising Custom-Made Design [Project page]. SPACE10. Retrieved February 9, 2026, from https://space10.com/projects/open-fabrication

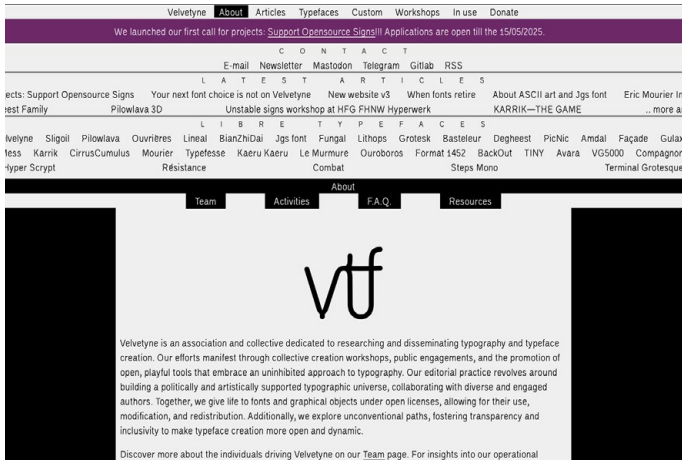
18 Project in Design
Printables



01 – Printables is a sharing platform for 3D-printable designs developed by Prusa Research. It´s kind of a social media for design sharing. Designers can gain non-monetary rewards by publishing designs. These rewards are granted for every successful make. Designs can be published under different licences. Licences that comply with the Open Source definition of OSHWA are also available. This then allows for a vivid remix and adaptation culture.

Source: Prusa Research. (n.d.). Printables [3D model repository]. Retrieved February 9, 2026, from https://www.printables.com/

19 Project in Design
Velvetyne



01 – Velvetyne is an association and collective dedicated to researching and disseminating typography and typeface creation. Our efforts manifest through collective creation workshops, public engagements, and the promotion of open, playful tools that embrace an uninhibited approach to typography. Our editorial practice revolves around building a politically and artistically supported typographic universe, collaborating with diverse and engaged authors. Together, we give life to fonts and graphical objects under open licenses, allowing for their use, modification, and redistribution. Additionally, we explore unconventional paths, fostering transparency and inclusivity to make typeface creation more open and dynamic. (Velvetyne Type Foundry, n.d.)

Source: Velvetyne Type Foundry. (n.d.). About. Retrieved February 9, 2026, from https://www.velvetyne.fr/about/

20 Project in Design
Open Desk

01 – Opendesk is a global platform for local making. We host digital furniture designs that can be made anywhere in the world through a global network of local makers. (Opendesk, n.d.)

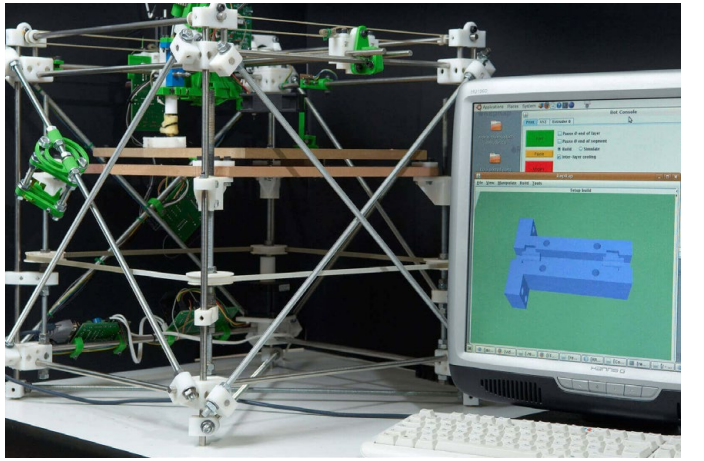
Source: Opendesk. (n.d.). About Opendesk. Retrieved February 9, 2026, from https://www.opendesk.cc/about

21 Project in Design
Open Dot

01 – OpenDot (IT) OpenDot is a research and open innovation hub, a space dedicated to rapid prototyping and digital manufacturing, open and accessible to all. OpenDot, founded in Milan in 2014 by the design studio Dotdotdot, OpenDot generates changes that find in open source and technological know-how opportunities for growth in educational, design and production level. (Distributed Design, n.d.)

Source: Distributed Design. (n.d.). OpenDot [Member profile]. Retrieved February 9, 2026, from https://distributeddesign.eu/member/opendot/

22 Project in Design
RepRap Project



01 – The RepRap project started as a university initiative to develop a 3D printer that can print many of its own components and be low-cost.
RepRap (replicating rapid prototyper) uses an additive manufacturing technique called fused filament deposition (FDM) This process was invented and patented by Stratasys; the patent expired in 2009. Allowing these impactful open source developments. Which had a huge part in the domestication of 3D printers as we know them today.

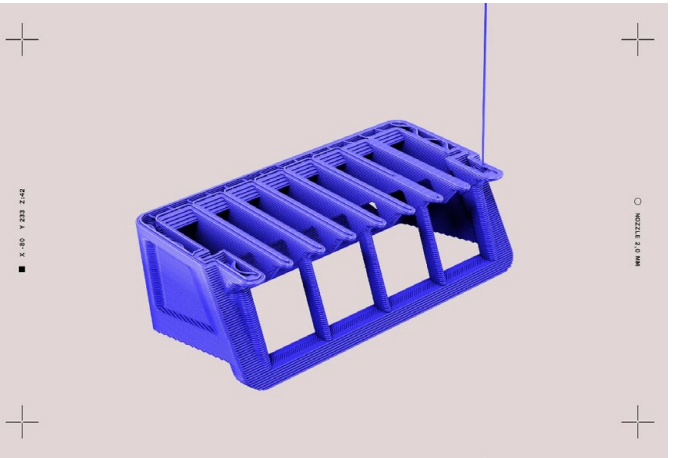
Source: Image: All3DP. (2016, April 8). The Official History of the RepRap Project.

23 Project in Design
Voron Design

01 – Voron Design develops a series of high-speed 3D printers.
The printers are developed collaboratively as open-source designs. The printers are known for high speed and precise print quality. Leading to copying and profiting from the open source R&D by big manufacturers like Bambulab.

Source: Voron Design. (n.d.). VORON Design. Retrieved February 9, 2026, from https://vorondesign.com/
Picture: Voron.at. (n.d.). [Photograph of Voron 2.4 R2 3D printer] [Image]. https://voron.at/produkt/voron-2-4/

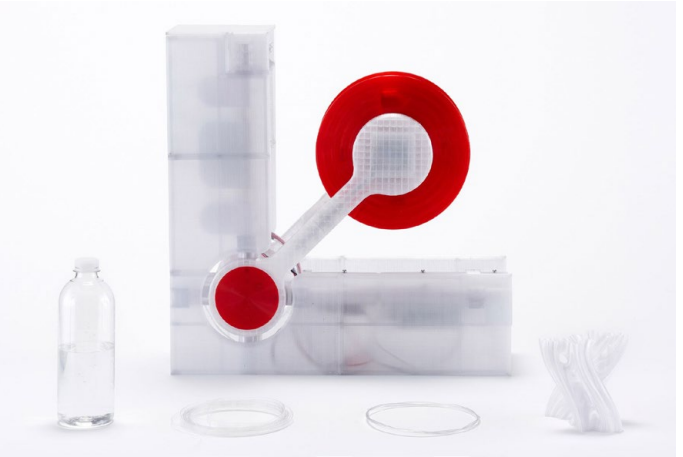
24 Project in Design
FIXABLES – Phillips Prusa Research



01 – 3D printable parts for fresh starts. Welcome to Philips Fixables — a collaboration with Prusa Research to help Philips products last longer in your home. Here you'll find 3D-printable spare parts, clever fixes, and creative upgrades, designed with sustainability and longevity in mind. Some are made by us. Many are inspired by you. Download, print, and share. Let's make fixing part of everyday life. (Philips, n.d.)

Source: Philips. (n.d.). Philips [Printables profile]. Printables. Retrieved February 9, 2026, from https://www.printables.com/@Philips

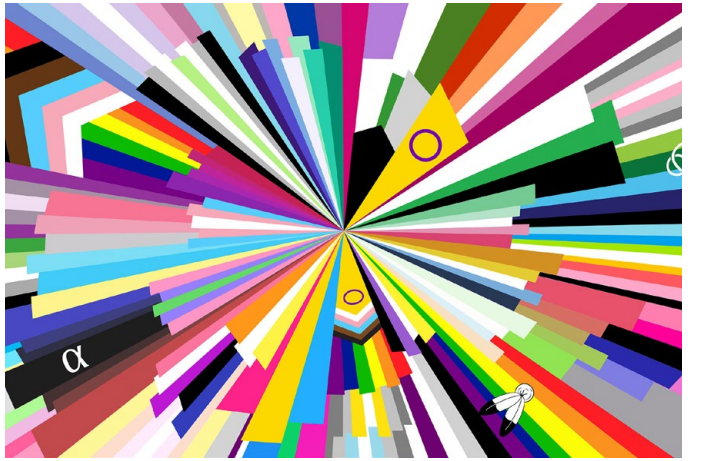
25 Project in Design
Polyformer



01 – California-based industrial designer Reiten Cheng has developed a recycling machine that can be 3D printed using open-source instructions and used to turn PET bottles into filament for additive manufacturing. Polyformer was designed to make it cheaper and easier for independent makers to create products from repurposed waste materials instead of relying on virgin plasti. (Morris, 2022)

Sources: Morris, A. (2022, May 26). Open-source machine Polyformer turns bottles into 3D printing filament. Dezeen. https://www.dezeen.com/2022/05/26/polyformer-reiten-cheng-recycling-machine-design/

22 Project in Design
Microsoft's open-source design for Pride flag



01 – Microsoft has created a kaleidoscopic new version of the Pride flag that represents 40 different LGBTQIA+ communities and can evolve to include even more.
Microsoft, which says the project was created by its LGBTQIA+ staff, released an earlier version of the flag during Pride month in June and has now updated the design and made it open source.
Images of the flag and its related assets are available for download through GitHub and Figma under Creative Commons licenses. This means people can not only access and use the finished file but edit and add to it to create their own version. (Aouf, 2022)

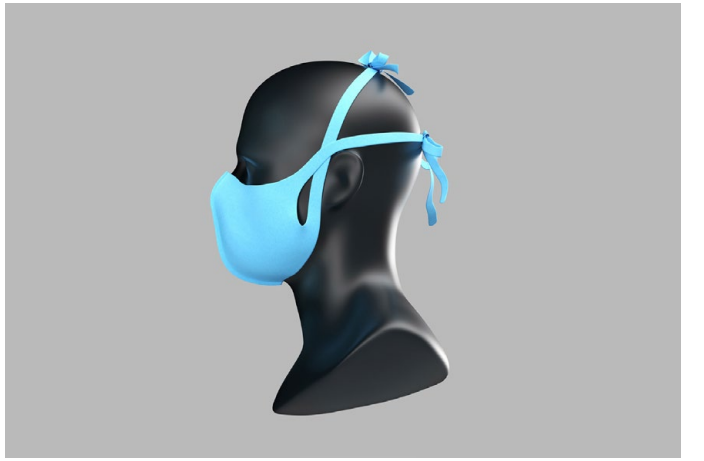
Source: Aouf, R. S. (2022, October 28). Microsoft releases „most inclusive" pride flag as open-source design. Dezeen. https://www.dezeen.com/2022/10/28/microsoft-pride-flag-open-source-design/

27 Project in Design
face shieldsfrom BIG, KPF and Handel Architects

01 – Architects across America including BIG, KPF and Handel Architects have teamed up as part of an open-source project to manufacture face shields to protect hospital workers treating coronavirus patients.
Firms across the country are using their own 3D printers and laser cutters to make the visors, which are being delivered to hospitals for distribution to front-line medical staff amid shortages of the safety devices.
Many of the architects are basing their visors on open-source files created by Erik Cederberg of Swedish 3D-printing company 3DVerkstan. The simple design consists of a laser-cut clear plastic shield that covers the face and a printed visor band that fits across the user's forehead. (Fairs, 2020)

Sources: Fairs, M. (2020, March 29). American architects and schools use 3D printers to make face shields for hospital workers. Dezeen. https://www.dezeen.com/2020/03/29/american-architects-coronavirus-face-shields-hospital-workers/

28 Project in Design
Standard Issue – open-source design for CNC-cut face mask



01 – Brooklyn design agency Standard Issue has created an open-source design for a face mask that can be CNC-cut and produced on a large scale.
Standard Issue's product, called One Mask, is designed so it can be produced by companies that have access to automated cutting and seaming technologies, such as manufacturers for furniture, fashion and sportswear brands. The face mask is not intended to be medical grade but instead aims to help ramp up the production of masks for use by the public.
The Centers for Disease Control and Prevention (CDC) has urged everyone living in the US to wear a face cover whenever they are outside of their homes to help slow the spread of Covid-19. (Cogley, 2020)

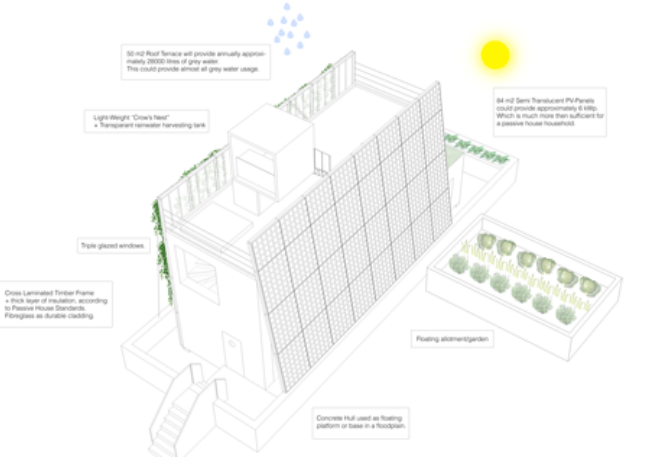
Sources: Cogley, B. (2020, April 14). Standard Issue creates open-source design for CNC-cut face mask. Dezeen. https://www.dezeen.com/2020/04/14/open-source-face-mask-standard-issue/

29 Project in Design
Space10 and Opendesk – „hack“ for Tom Dixon‘s modular bed for IKEA

01 – The Space10 innovation lab has teamed with open-source manufacturing platform Opendesk to create workspace attachments for IKEA‘s Delaktig system by Tom Dixon. Created by a team of seven designers, the attachments turn the sofa bed into work furniture, potentially extending its product cycle. (Morris, 2017)

Source: Morris, A. (2017, June 16). Tom Dixon‘s modular bed for IKEA hacked by Space10 and Opendesk. Dezeen. https://www.dezeen.com/2017/06/16/tom-dixon-de-laktig-modular-bed-ikea-hacked-by-space10-opendesk-design/

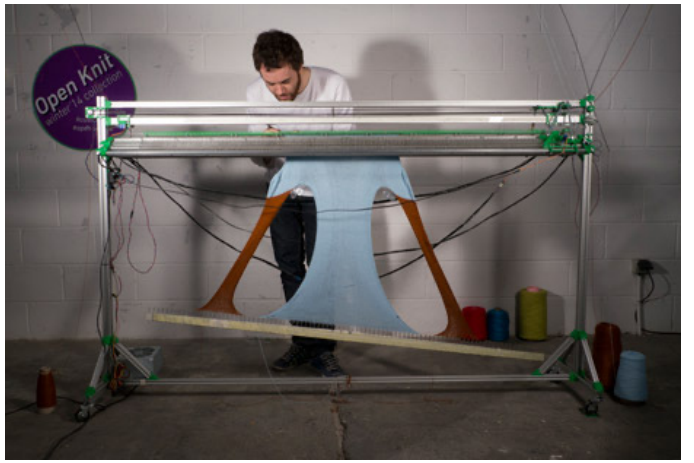
30 Project in Design
Carl Turner – open-source house that floats on floodwater



01 – London architect Carl Turner has developed a design for a prefabricated floating house and has made the plans available to download via an open-source architecture website. Described as „part-house and part-boat“, the buoyant residence isn't designed for any particular site – Carl Turner Architects sees the design as a solution to the problem of flooding that affects many parts of the UK. (Frearson, 2015)

Source: Frearson, A. (2015, January 23). Carl Turner designs open-source house that floats on floodwater. Dezeen. https://www.dezeen.com/2015/01/23/carl-turner-prefabricated-open-source-floating-house-floodwater/

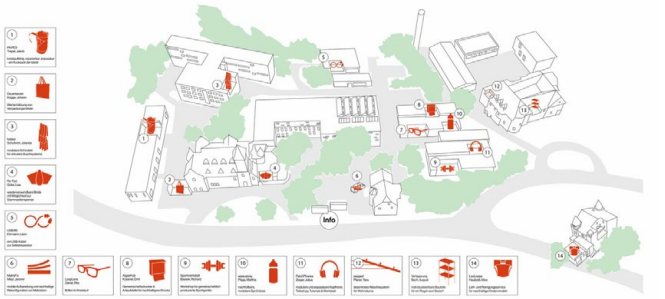
31 Project in Design
Open Knit



01 – Designer Gerard Rubio has created an open source robotic loom that is able to knit entire seamless garments in less than one hour. Springing from Rubio's own studies with 3D printing at Escolar Superior de Disseny in Barcelona, OpenKnit allows users to design and print their own garments seamlessly on one machine. The designer built OpenKnit completely from scratch, drawing up plans and putting it together as he went, following a trial and error process that took more than a year. (Magee, 2014)

Source: Magee, T. (2014, September 17). OpenKnit is an open source 3D-knitting machine that creates garments in just one hour. Dezeen. https://www.dezeen.com/2014/09/17/openknit-clothes-3d-knitting-machine-loom-gerard-rubio/

32 Project in Design
Sorry, we are open! – Burg Halle



01 – The demand for sustainable consumption is increasing. The supply is lacking. More and more people are willing to change their habits in order to live more sustainably. In addition to living, working and mobility, this also applies in particular to the consumption of consumer goods and commodities. More and more people would like to buy products made from recycled materials, have products repaired, buy regional products and even spend more money on them. More and more people would prefer to borrow products rather than own them, lend their possessions or even make their expertise available. More and more people would like to understand what? how? where? where from? why? they consume and what effect this has. (Burg Giebichenstein Kunsthochschule Halle, n.d.)

Source: Burg Giebichenstein Kunsthochschule Halle. (n.d.). Designing in digital contexts: Open. https://www.burg-halle.de/designing-in-digital-contexts/open/

33 Project in Design
Box Furniture - Louise Birgham

01 – The innovative book explores sustainable design and do-it-yourself endeavours. The book details the origins of her idea and includes a section on the basic tools and techniques required to build furniture, along with twelve chapters on the construction of box furniture for domestic use. The book contains illustrations of every piece of design, as well as 15 illustrations which show the placement of box furniture in different rooms of a house. Next to the latter illustrations, minute instructions describe the chosen materials, colour schemes, motifs and techniques used to create Brigham's interiors. The book was illustrated by the interior designer Edward H. Ascherman, an American designer born to German parents, whom Brigham met while studying in Vienna under the tutelage of Hoffmann at the Kunstgewerbeschule. (Victoria and Albert Museum, n.d.)

Source: Victoria and Albert Museum. (n.d.). Box furniture: How to make a hundred useful articles for the home [Museum object]. https://collections.vam.ac.uk/item/O1547733/box-furniture-how-to-make-book-brigham-louise/

34 Project in Design
The Wanderlust incense burner – Modem Works and Uniform

01 – The Wanderlust incense burner by Modem Works and Uniform is a open source incense burner, that was released silmutaniusly with the Wanderlust Incense by Uniform.

Picture source: Unifrom. (n.d.). Wanderlust incense [Product page]. https://unifrom.com/products/wanderlust-incense

35 Project in Design
MONTAJE SILLA K2- Marc Morro

01 – Guía rápida para hacerte fácilmente esta silla por menos de 20€, con listones de abeto batallero en secciones standard, utilizando clavos y un martillo. (Morro, 2025)

Translated by Deepl:
„Quick guide to easily make this chair for less than €20, using standard sections of spruce slats, nails and a hammer.“

This DIY Chair design was published by Marc Morro on his Instagram on the 8th December 2025.

Source: Morro, M. [@marcmorro]. (2025, December 8). MONTAJE SILLA K2 [Post]. Instagram. https://www.instagram.com/p/DSAuKFyDLqO/

36 Project in Design
Self feeding open source filament pelletizer – Teaching Tech

01 – This is a filament pelletizer which converts old or unwanted filament into short pellets. It aims to be safe, tidy and easy to use. My favourite feature is the self feeding mechanism that is geared from the power drill input. (TeachingTech, 2024)

02 – For my memoire I also tried out this design, but had to do a lot of troubleshooting to get this design to work properly.

Source: TeachingTech. (2024, January 2). Self feeding open source filament pelletizer [3D model]. Printables. https://www.printables.com/model/672486-self-feeding-open-source-filament-pelletizer/remixes

37 Project in Design
Made in Local – Ishinomaki Lab

01 – „Collaborating with international makers to share the essence of our craft, born out of our own local experience in Ishinomaki, Japan. The Made in Local initiative started as a simple desire to somehow bring Ishinomaki Lab's designs and story to a local context, and has since grown to encompass a more thorough relationship with people (local makers and market), place (locally-available materials), and product. Made in Local projects are currently located in London, Manila, Berlin, Detroit, Busan (South Korea), Singapore, Munich, Mexico, and Scandinavia. Additionally, inspired by Made in Local, Ishinomaki Lab is also working on domestic collaborations in Japan. Ishinomaki Lab aims to further develop Made in Local projects with the hope that more communities can be invigorated by good design.(Ishinomaki Laboratory, 2021)

02 – IL published several of there designs in the past, as 3D-files on their website, to be made by oneself for non-commercial purpuses only. But the newest additions to their catalog are missing. There are no build instructions for any of their designs, publicaly available.

Source: Text and Image: Ishinomaki Laboratory. (2021, June 7). Made in local. https://ishinomaki-lab.org/news/news/made-in-local/

38 Project in Design
Openprinter – Open Tools

01 – Openprinter is a repairable, compact, and robust printer designed to last. Fully repairable and equipped with a refillable ink system, it adapts to your needs while reducing your printing costs. Easy to maintain, it offers a sustainable, economical, and eco-friendly alternative to traditional printers.(Open Tools, n.d.)

02 – The design files and prices have not yet been published.

Source image and text: Open Tools. (n.d.). Open Tools / OpenPrinter. Retrieved February 9, 2026, from https://www.opentools.studio/

39 Project in Design
Etsy

Etsy

01 – The marketplace for selling craft objects as an independent Maker or Designer.

Source: Etsy, Etsy Logo, 2010, digital graphic © Etsy Inc. / Wikimedia Commons

40 Project in Design
Thingiverse

01 – One of the firts repositories for sharing 3D printable files, aiding the forming of the culture of „Open Source Hardware“.

Source: Thingiverse, Thingiverse Website Banner, n.d., digital image © Thingiverse

41 Project in Design
Makerworld

01 – Makerworld is a repository for 3d printable designs. Everyone can upload, share, and remix 3D models. There is also an option to sell design files and earn boost points by publishing designs. These points can then be exchanged for credits at the Bambulab store or, for selected designers, for money.
Designers can also make money by using MakerSupply parts sold by Bambulab and earn a sales commission.
A crowdfunding option for 3D-printable Projects was added relatively recently, allowing backers to support the development of an idea.

Source: Bambu Lab, Maker's Supply Logo, n.d., digital graphic © MakerWorld

42 Project in Design
Framework - computer

01 – The framework produces modular, upgradable, and easily repairable laptops and computers. Bringing Desktop Computer upgradability to notebooks. The design also allows for the easy replacement of the display and keyboard, as well as many other components. Eventhough not open-source the computer offers some of the repairability advantages of open source in an closed system.

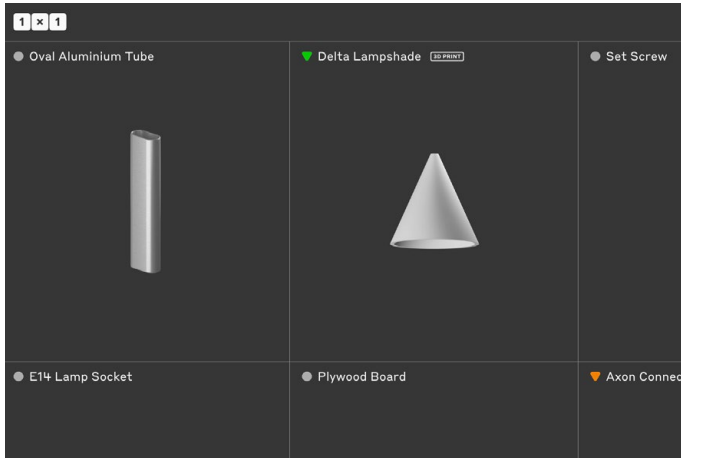
Sources: Patel, N. (2021, February 25). Introducing the Framework Laptop. Framework. https://frame.work/blog/introducing-the-framework-laptop
Image: Framework Laptop Exploded View, 2021, digital image © Framework Computer Inc.

43 Project in Design
Fairphone

01 – Fairphone aims to fairly produce a modular, upgradable smartphone. Although it hasn't completely succeeded with the fairness parameter because standard components have to be sourced from common suppliers, the modularity and upgradability have been successful. Phones can be upgraded for at least 2 generations, and spare parts and easy repair instructions can be found on their website. Fairphone is another example of a product that's not open source, but still offers some of the repairability advantages of open source in a closed system.

Source Image: Fairphone, Fairphone 6, n.d., digital product image © Fairphone B.V.

44 Project in Design
1x1 systems



01 – Although not open source, 1x1 systems offers a wide range of home furniture products for self-production through 3D-printable connectors. One can buy the file and instructions and then build themselfs. This allows for customisation and a deeper connection to the product, which we know normally only form open source.

Sources: 1×1 Systems. (n.d.). 1×1 Systems. Retrieved February 9, 2026, from https://1x1.systems/
Image: 1×1 Systems. (n.d.). 1×1 Systems homepage [Screenshot]. Retrieved February 9, 2026, from https://1x1.systems/

45 Project in Design
LOW TECH MAGAZINE

01 – Low-Tech Magazine (LTM) is a collection of DIY guides for building low-tech solutions to everyday problems. These guides are hosted on a solar powered website. Most of the projects focus on builds involving solar energy, energy harvesting, or electronics. These projects range from a solar coffee maker to bicycle generators. LTM has also published a few books covering their designs and general topics like the circular economy, and so on.

Sources: De Decker, K. (n.d.). Low-tech Magazine. https://solar.lowtechmagazine.com/ De Decker, K. (n.d.). Low-tech Magazine. https://solar.lowtechmagazine.com/
Image: De Decker, K. (2026). [Screenshot of the Low-tech Magazine homepage]. Low-tech Magazine. Retrieved February 22, 2026, from https://solar.lowtechmagazine.com/

Something missing?

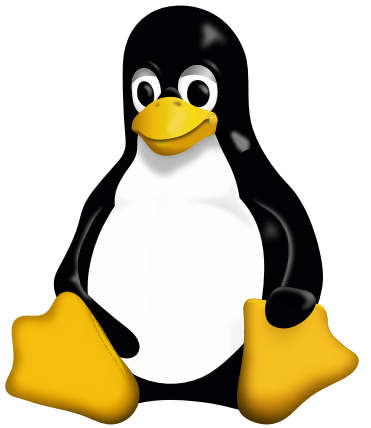
?

Please contribute.
https://github.com/moritzengel/Open-by-Design

This is a collection of the most famous and influential open source and free Software projects. The selection is expanded to include projects that have had a huge influence on product design and the creative field, such as Blender, WordPress, Arduino, and many more.

Projects outside of Product Design

1 Projects outside of product design
Linux



01 – Linux is an open-source operating system created by Linus Torvalds in 1991. It's one of the pioneers of free and open-source software. In a large, ongoing collaboration involving many developers and major players in the technology field, it has been adapted for numerous platforms and devices.

Source: Torvalds, L. (1991). Linux kernel [Computer software]. The Linux Kernel Archives. https://www.kernel.org
Image: Ewing, L. (1996). Tux [Image]. Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Tux.svg

2 Projects outside of product design
Blender

01 – Blender is a free and open-source 3D software. It supports the entire 3D pipeline, from modelling, shading, and animation to rendering and cutting. It runs on Windows, macOS, and Linux, among others.

Source: Blender Foundation. (n.d.). Blender (Version 4.3) [Computer software]. https://www.blender.org
Image: Blender Foundation. (n.d.). Blender logo [Image]. https://www.blender.org/about/logo/

3 Projects outside of product design
Firefox

01 – Firefox is a free, open-source web browser developed by the Mozilla Foundation. It focuses on user privacy and security. The browser runs on a wide range of devices and operating systems, including Windows, macOS, Linux, Android, and iOS.

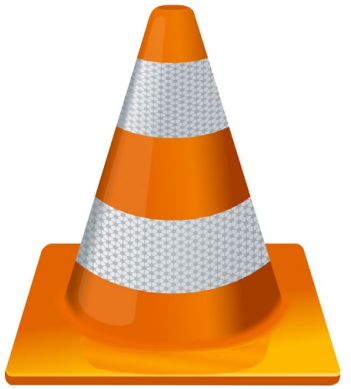
Source: Mozilla. (n.d.). Firefox [Computer software]. https://www.mozilla.org/en-US/firefox/
Image: Mozilla. (2019). Firefox browser logo [Image]. https://blog.mozilla.org/opendesign/firefox-the-evolution-of-a-brand/

4 Projects outside of product design
Wikipedia

01 – Wikipedia is a free, open, collaborative online encyclopedia. It is t edited and maintained by a community of volunteer editors.
Wikipedia illustrates the power of community and knowledge sharing in a powerful way.

Source: Wikipedia. (2025, February 8). In Wikipedia. https://en.wikipedia.org/wiki/Wikipedia
Image: Wikimedia Foundation. (2010). Wikipedia puzzle globe logo [Image]. https://wikimediafoundation.org/wiki/Wikipedia_trademarks

5 Projects outside of product design
VLC Media Player



01 – VLC Media Player is a free, open-source media player developed by the VideoLAN project. It can play most multi-media files, discs, and streaming proto-cols.

Source: VideoLAN. (n.d.). VLC media player [Computer software]. https://www.video-lan.org/vlc/
Image: VideoLAN. (n.d.). VLC cone logo [Image]. https://images.videolan.org/vlc/

6 Projects outside of product design
Wordpress

01 – WordPress is the open source con-tent management system powering over 43% of all websites.

Source: WordPress Foundation. (n.d.). WordPress [Computer software]. https://word-press.org
Image: WordPress. (n.d.). WordPress logo [Image]. https://wordpress.com

7 Projects outside of product design
Open Street Map

01 – OpenStreetMap (OSM) is a free, open-source, and collaboratively built map of the world. It was created and is maintained by a global community of volunteer mappers.

Source: OpenStreetMap contributors. (2026). OpenStreetMap [Map]. Retrieved February 9, 2026, from https://www.openstreetmap.org
Image: OpenStreetMap Foundation. (2011). OpenStreetMap logo [Image]. https://wiki.openstreetmap.org/wiki/Logos

8 Projects outside of product design
Libre Office

01 – LibreOffice is a free and open-source office productivity software suite. It offers programs similar to the closed-source Microsoft Office Suite. It was created in 2010 as a fork of OpenOffice.org, itself a successor to StarOffice.

Sources: The Document Foundation. (n.d.). LibreOffice [Computer software]. https://www.libreoffice.org
Image: The Document Foundation. (n.d.). LibreOffice logo [Image]. https://www.libreoffice.org

9 Projects outside of product design
Arduino

01 – Arduino is an open-source ecosystem for prototyping programmable electronic circuits. It exemplifies approachability made possible by open source and design. Before 2005, microcontrollers were the exclusive domain of engineers. Arduino did not just open the source code; it designed a physical language, the friendly blue boards with intuitive connectors, a comprehensive reciprocity that allowed designers to prototype without an engineering degree.

Source: Arduino SA. (n.d.). Arduino [Open-source hardware and software platform]. https://www.arduino.cc
Image: Arduino SA. (n.d.). Arduino community logo [Image]. https://www.arduino.cc/en/trademark/community-logo

10 Projects outside of product design
Open Source Ecology

01 – Open Source Ecology (OSE) is a project to design a self-sufficient modern civilisation. It's made up of a network of farmers, engineers, and supporters dedicated to creating and freely sharing blueprints for the Global Village Construction Set (GVCS). At this stage, the GVCS comprises 50 production and farming machines.

Source: Open Source Ecology. (n.d.). About. https://www.opensourceecology.org/about-overview/
Image: Marcin Jakubowski, Open Source Ecology Logo, n.d., digital graphic © Open Source Ecology / CC BY-SA 4.0

11 Projects outside of product design
Slic3r

01 – Slic3r is a free, open-source 3D slicing engine that converts digital 3D models into G-code instructions for 3D printers. Launched in 2011 by Alessandro Ranellucci, it became the foundation of domestic 3D-printing. It is the basis of PrusaSlicer and many more.

Source: Slic3r. (n.d.). About. https://slic3r.org/about/
Image: Slic3r. (n.d.). Slic3r logo [Image]. https://slic3r.org/

12 Projects outside of product design
Prusa Slicer

01 – PrusaSlicer is a popular free, open-source 3D slicing software developed by Prusa Research. It is a derivative of the Slic3r software.

Source: PrusaSlicer. (2026, January 14). In Wikipedia. https://en.wikipedia.org/wiki/PrusaSlicer (Retrieved February 9, 2026)
Image: Prusa Research. (2019). PrusaSlicer logo [Image]. https://www.prusa3d.com/page/prusaslicer_424/

13 Projects outside of product design
Bambu Studio

01 – Bambu Studio is a free, open-source 3D slicing software developed by Bambu Lab, based on PrusaSlicer and Slic3r. It mainly differentiates itself from PrusaSlicer by its user-friendly interface and multi-colour printing with the proprietary Automatic Material System by Bambulab.

Source: Bambu Lab. (2026, February 3). In Wikipedia. https://en.wikipedia.org/wiki/Bambu_Lab (Retrieved February 9, 2026)
Image: Bambu Lab. (2022). Bambu Studio logo [Image]. https://bambulab.com/en/download/studio

14 Projects outside of product design
Orca Slicer

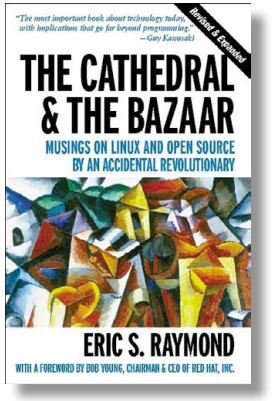
01 – Orca Slicer is a free, open-source slicer developed by SoftFever and is a direct fork of Bambu Studio, which is based on PrusaSlicer. Orca slicer and all the other slicers are based on, showing the power of open source and the power of shared R&D and shared knowledge.

Source: SoftFever. (2025). OrcaSlicer. https://www.orcaslicer.com
Image: SoftFever. (n.d.). OrcaSlicer logo [Image]. Orca slicer. https://www.orcaslicer.com/

Books and Papers about Open Source are quite sparse. In this collection, the relevant and connected Papers and Books are brought together. These books give insights into the history, philosophy and frameworks of open source, as well as recent and historic developments in products, like described in the book „Verkrempelung der Welt“ by Gabriel Yoran or the Whole Earth Catalogue, which was democratising knowledge of independence before open source.

Books

1 Books
The Cathedral and the Bazaar – ERIC S. RAYMOND



01 – This book became an important text for the open-source movement, explaining its collaborative processes and business implications. Eric S. Raymond compares in this book the two common development methodologies: the traditional „cathedral“ model and the newer „bazaar“ model of open-source development.

Sources: The Cathedral and the Bazaar. (2025, November 1). In Wikipedia. https://en.wikipedia.org/wiki/The_Cathedral_and_the_Bazaar
Image: O'Reilly Media. (1999). Cover of The Cathedral and the Bazaar [Book cover]. Wikipedia. https://en.wikipedia.org/w/index.php?curid=755487

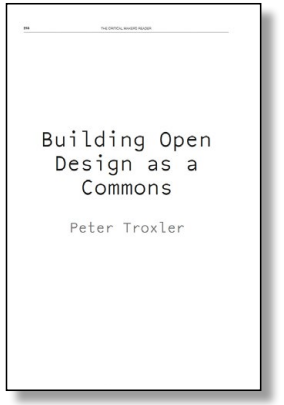
2 Books
Open Design Now

01 – Open Design Now is published as a book, and available for sale since June 2 2011. Since then content was gradually made available for free until 12-12-2012. Now all content is available here, usable for free under a creative commons license. (Creative Commons Netherlands et al., 2011)

02 – Open Design Now is a collection of projects, essays and other examples. The book argued for a shift to open design enabled by the internet. Looking at today, that revolution hasn't happened.

Sources: Creative Commons Netherlands, Premsela, & Waag Society. (2011). Open Design Now. https://opendesignnow.org/

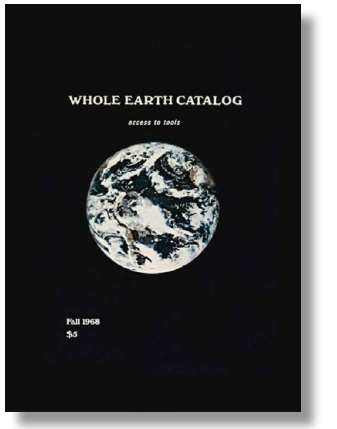
3 Books
Building Open Design as a Commons – Peter Troxler



01 – In „Building Open Design as a Commons," Peter Troxler argues that open design shouldn't be treated as private property or a lawless public domain, but as a commons a shared resource governed by its community.
Troxler warns that without social rules, open design risks exploitation. He calls for governance structures where users manage resources collectively.

Sources: Troxler, P. (2019). Building open design as a commons. In L. Bogers & L. Chiappini (Eds.), The critical makers reader: (Un)learning technology (pp. 218–229). Institute of Network Cultures.

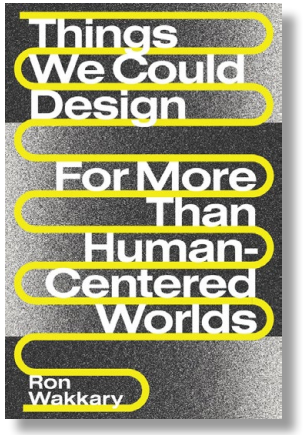
4 Books
WHOLE EARTH CATALOG



01 – „The Whole Earth Catalogue was an American counterculture magazine founded by Stewart Brand in 1968. It included mainly product reviews, with a focus on self-sufficiency, ecology, and technology. The Whole Earth Catalogue was about access to tools and the self-sufficiency they enabled. It democratised access to knowledge, a key goal of open source.

Source image and text: Brand, S. (Ed.). (1968). Whole Earth catalog: Access to tools (Fall 1968). Portola Institute. https://monoskop.org/images/0/09/Brand_Stewart_Whole_Earth_Catalog_Fall_1968.pdf

5 Books
Things We Could Design – Ron Wakkary



01 – Over the past forty years, designers have privileged human values such that human-centered design is seen as progressive. Yet because all that is not human has been depleted, made extinct, or put to human use, today's design contributes to the existential threat of climate change and the ongoing extinctions of other species. In Things We Could Design, Ron Wakkary argues that human-centered design is not the answer to our problems but is itself part of the problem. Drawing on philosophy, design theory, and numerous design works, he shows the way to a relational and expansive design based on humility and cohabitation. (Wakkary, 2021)

Source: Wakkary, R. (2021). Things we could design: For more than human-centered worlds. MIT Press.
Image: Orell Füssli. (2021). Cover image of Things We Could Design by Ron Wakkary [Image]. https://www.orellfuessli.ch/shop/home/artikeldetails/A1059775728

6 Books
Die Verkrempelung der Welt – Gabriel Yoran

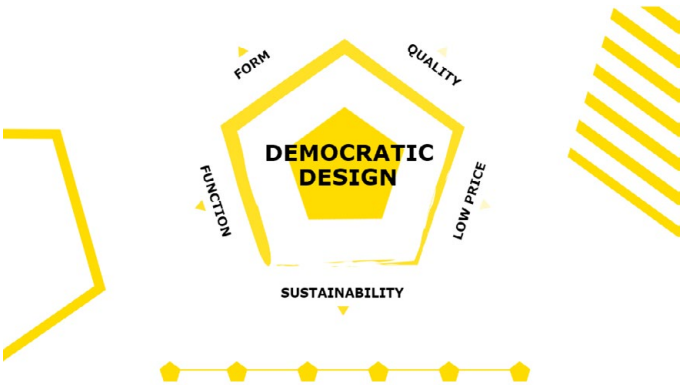
01 – The author Gabriel Yoran critically examines the phenomenon in which technological developments, driven by capitalism, are used to make products cheaper. As well as marketing, where features are just invented to have something new, which are unnecessary. These developments make the products worse in terms of use and longevity. Yoran is annoyed by the fact that products seem to get worse and is afraid of the »Verkrempelung der Welt«, the cluttering of the world(translation from German).

Sources: Yoran, G. (2025). Die Verkrempelung der Welt: Zum Stand der Dinge (des Alltags). Suhrkamp.
Image: Willy Fleckhaus (Series Design) & Suhrkamp Verlag, Cover of Die Verkrempelung der Welt, 2025, digital book cover © Suhrkamp Verlag

In this category, approaches, laws, and concepts that share similar philosophies and goals to open source, like open sharing, full ownership, access to knowledge, the right to repair, and independence, are collected.

Related Approaches

1 related approaches
Democratic Design



01 – Democratic Design is an approach used by IKEA, to create products that are mainly accessible to as many people by their democratic pricing. But also by balancing five key elements: good form, function, quality, sustainability, and the low price. It's a process that aims to make good design accessible to many people.

Source: IKEA. (n.d.). „What's democratic design?" [Web page]. https://www.ikea.com/ch/en/customer-service/knowledge/articles/g361g444-91f9-4fe8-9dd0-35b8bbe7g637.html

2 related approaches
Bush craft

01 – Bushcraft is a outdoor philosophy focused on developing skills and knowledge to live self-sufficiently in a natural environment. The term literally means „craft of the bush" and emphasizes a deep connection with nature, rather than just surviving an emergency. This knowledge is often shared openly in books and forums in the internet.

Source: Bushcrafting. (2026, January 13). In Wikipedia. https://de.wikipedia.org/wiki/Bushcrafting
Image: Kiki63. (2021). Bushcraft-Camp with seating [Image]. Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Bushcraft-camp-mit-sitzgelegenheiten.jpg

3 related approaches
The Maker Movement

01 – The Maker Movement is a contemporary, technology-enabled extension of DIY culture that encourages individuals to design, prototype. It promotes hands-on learning, open-source sharing, and innovation, merging traditional crafts with digital technology to foster creativity, entrepreneurship, and community-driven, sustainable problem-solving.
The movement gained significant momentum with the launch of Make: magazine in 2005 and the first Maker Faire in 2006. And recent technological developments and democratisation of rapid prototyping tools, like 3D-printers, CNC-machines and lasercutters.

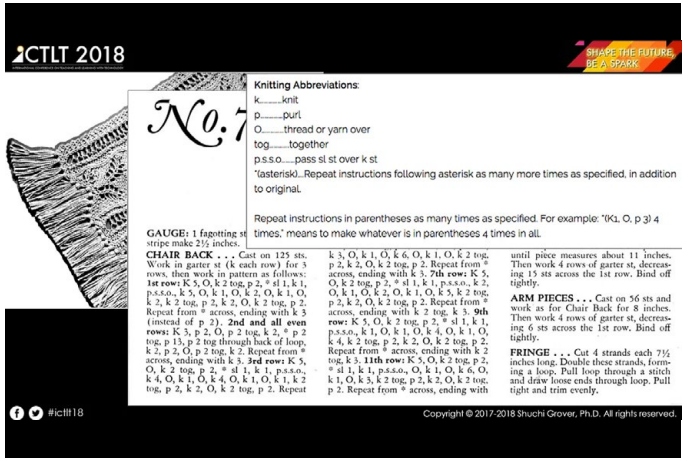
Source: Maker culture. (n.d.). In Wikipedia. Retrieved February 7, 2026, from https://en.wikipedia.org/wiki/Maker_culture
Image: Jenson, D. (n.d.). We're working on it! [Image]. Wikimedia Commons. https://commons.wikimedia.org/w/index.php?curid=24132259

4 related approaches
DIY

01 – „Do it yourself" (DIY) is the method of building, modifying, or repairing things without the direct aid of professionals. It involves individuals using raw materials to produce or reconstruct possessions, often driven by economic benefits, customization needs, or a desire for craftsmanship.

Sources: Do it yourself. (2026, February 3). In *Wikipedia*. https://en.wikipedia.org/wiki/Do_it_yourself
Picture by Guy Kawasaki - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=49868552

5 related approaches
Knitting and crochet sharing culture



01 – Knitting and crochet foster a vibrant social culture where enthusiasts design and customize items. This community thrives on exchanging ideas, techniques, and finished projects. Creators connect to share methods and inspirations, interacting both in person and through digital platforms. Knitting and crochet function as a tangible form of open-source culture, utilizing a standardized syntax of loops and branches that mirrors computer algorithms. Patterns act as „source code“ (k1p1, rep from *), which is freely shared, debugged, and iterated upon by a global community. Much like open-source developers, crafters distribute these algorithmic designs via platforms like YouTube and guilds, enabling others to execute, modify, and democratize the creation of textile artifacts.

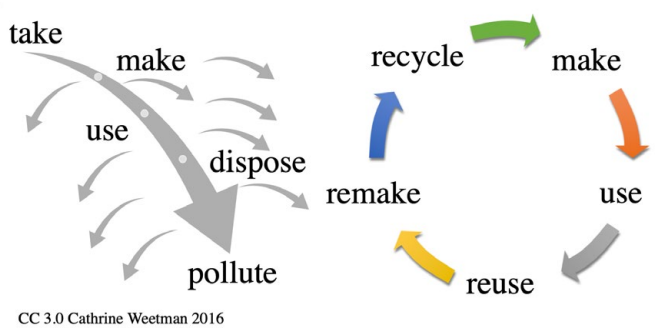
Source: Grover, S. (2021, April 17). „Craft, Culture, and Code: k1p1, p2tog; *dc 2, sl st, dc in next st; rep from * to end“ [Blog post]. Medium. https://shuchig.medium.com/craft-culture-and-code-k1p1-p2tog-dc-2-sl-st-dc-in-next-st-rep-from-to-end-cd5bc93d94a8

6 related approaches
EU Right to Repair Directive (2024)

01 – Adopted in 2024, Directive (EU) 2024/1799 establishes a common framework to promote the repair of goods, aiming to reduce e-waste and support the circular economy. It mandates that manufacturers prioritize repair over replacement and makes repair services more accessible and affordable for consumers.

Source: European Parliament & Council of the European Union. (2024). Directive (EU) 2024/1799 of 13 June 2024 on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394 and Directives (EU) 2019/771 and (EU) 2020/1828. Official Journal of the European Union, L 2024/1799. https://eur-lex.europa.eu/eli/dir/2024/1799/oj

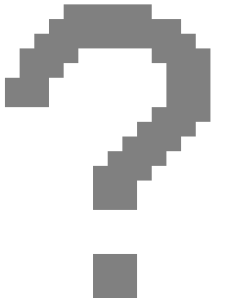
7 related approaches
Circular Economy



01 – The circular economy is a production and consumption model designed to minimize waste and pollution by keeping products and materials in use for as long as possible and making them recyclable by useing regenerative and recyclable materials. Unlike the common linear economy („take-make-dispose“) in capitalism, which relies on cheap, accessible materials and planned obsolescence, the circular model decouples economic activity from the consumption of finite resources.

Source: Circular economy. (n.d.). In Wikipedia. Retrieved February 7, 2026, from https://en.wikipedia.org/wiki/Circular_economy Sources: Circular economy. (n.d.). In Wikipedia. Retrieved February 7, 2026, from https://en.wikipedia.org/wiki/Circular_economy

Something missing?



Please contribute.

https://github.com/moritzengel/Open-by-Design

This is a collection of sources and stories that didn't fit into any of the other categories, such as websites, videos, events, essays, and stories.

Other Sources

1 other sources
IBM Open Source Explained

01 – In this video, the basic principles and the impact of open source on software are explained. It dives into the fundamental structures of open source software projects, how Contributions to repositories are organised through pull requests and the roles of established members like committers versus general contributors. It also explains how bigger projects become foundations and how the licensing is structured.

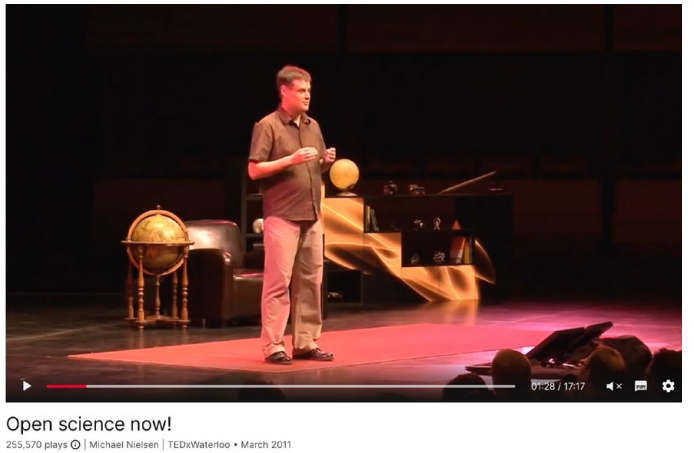
Source: IBM Technology. (2022, September 13). „Open Source Explained“ [Video]. YouTube. https://www.youtube.com/watch?v=PVD1LNDxOnc

2 other sources
Frauenhofer: Was ist Open Source Software? Definition, Vor- und Nachteile, Lizenzen, Strategien

01 – This article from the Fraunhofer Institute explains the basics, advantages, and disadvantages of open-source software.

Source: Vollmer, A. M., & Theobald, A. (2025, April 8). „Was ist Open Source Software? Definition, Vor- und Nachteile, Lizenzen, Strategien“ [Blog post]. Fraunhofer IESE-Blog. https://www.iese.fraunhofer.de/blog/open-source-software/

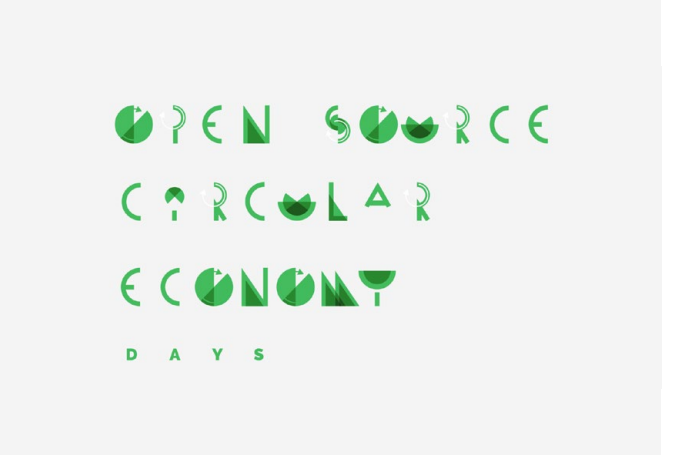
3 other sources
Ted–Talk Open science now!



01 – What if every scientist could share their data as easily as they tweet about their lunch? Michael Nielsen calls for scientists to embrace new tools for collaboration that will enable discoveries to happen at the speed of Twitter.

Source: Nielsen, M. (2011, March). „Open science now!“ [Video]. TED Conferences. https://www.ted.com/talks/michael_nielsen_open_science_now

4 other sources
Open Source Circular Economy Days



01 – The ‘Open Source Circular Economy Days’ was a global campaign and collaboration to kickstart a global discourse and movement that uses Open Source to enable a sustainable Circular Economy. The core of the project have been 4 global events (2015-2018). Groups from more than 100 cities across the globe participated with local hands on events to discuss, invent and build open source circular solutions. (Open Source Circular Economy Days, n.d.)

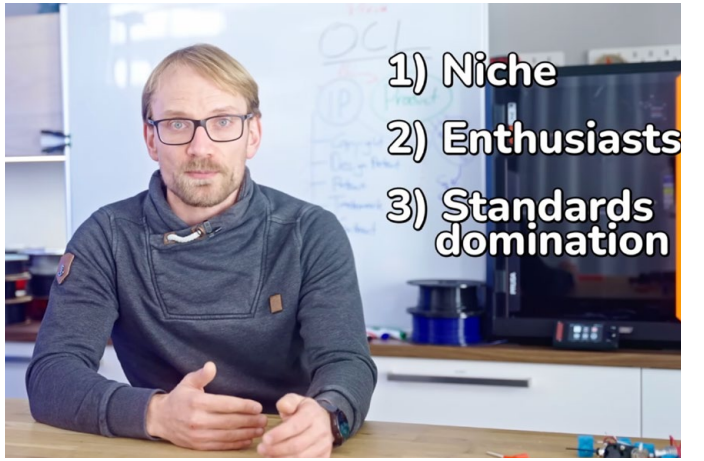
Source: Open Source Circular Economy Days. (n.d.). „Open Source Circular Economy Days“ [Website]. https://oscedays.org

5 other sources
About Rep-rap and open-source with Adrian Bowyer

01 – „In this video, you'll visit Dr. Adrian Bowyer, founder of the RepRap Project, at his home in south-west England. You'll see historic RepRap machines and early electronics from around 2006. Adrian explains why RepRap had to be open-source, reflects on its impact, and shares his view on patents vs open hardware. He also shows what he is working on today, including open-source robotics, a painting robot concept, and even a solid-fuel rocket engine idea. (Prusa 3D, 2025)

Source: Prusa 3D. (2025, December 22). About Rep-rap and open-source with Adrian Bowyer [Video]. YouTube. https://www.youtube.com/watch?v=tKq33qlHenM

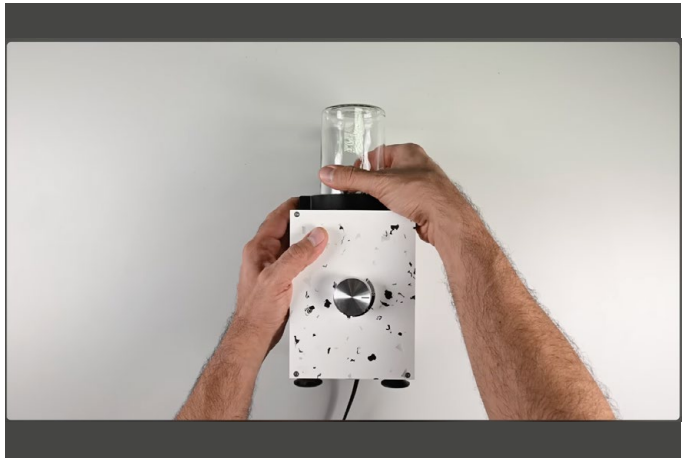
6 other sources
„Open Community License"– Video
by Made with Layers (Thomas Sanladerer)



01 – In this video, Thomas Sanladerer, a well-known YouTuber in the 3D-printing community, is featured. Highlights the Problems of the Open Community License by Prusa Research. It also explains the financial challenges that big Open Source Projects and Companies face. In the end, he explains his understanding of how Open Source will continue, what works, and what doesn't.

Sources: Made with Layers (Thomas Sanladerer). (2025, December 31). „Open Community License" [Video]. YouTube. https://www.youtube.com/watch?v=IOvW3UBAPgo

7 other sources
I FIX IT - Video: Open Funk re:Mix: The Open-Source Blender Big Brands Don’t Want



01 – How long do you expect your kitchen blender to last? 10 years? 5 years? 1 year? And what happens when it inevitably blends its last smoothy. How difficult is it going to be to fix? Today we’re going to tear down a cheap blender made by Walmart’s whitelabel brand, Mainstay; an entry level blender by popular household appliance maker SharkNinja; and an open source challenger seeking the blender repairability crown: the Open Funk reMix. (I FIX IT, 2026)

Notes: I FIX IT concludes that the 350 US Dollar re:mix by Open Funk is by far the best repairable mixer on the market, even though they missed the incomplete BOM and missing 3D-files, which hinder reproducibility and repairability. Thus making the mixer not truly open source.

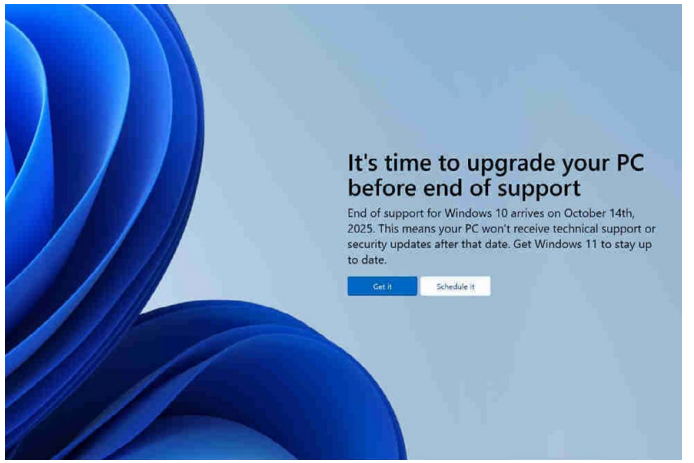
Source: iFixit. (2026, January 16). „Open Funk re:Mix: The Open-Source Blender Big Brands Don’t Want“ [Video]. YouTube. https://www.youtube.com/watch?v=wgcqzU-azXdw

8 other sources
(No) ethical design under capitalism

01 – This article discusses how, in capitalism, where design is mainly driven by monetary profit, many valuable needs, especially those of groups that don‘t constitute an economically significant share, are forgotten. Leading to the loss of accessibility and setting problematic project goals because capital growth is the only metric that counts, not the well-being and improvement of our lives. Also, the non-human entities in our lives, like nature, animals, climate and resources, are only exploited.

Source: Jansen, F. (1.12.2023). „Capitalism and Design“ [Blog post]. Retrieved February 9, 2026, from https://fmjansen.com/posts/capitalism-and-design/

9 other sources
Windows 10 the end of the security updates

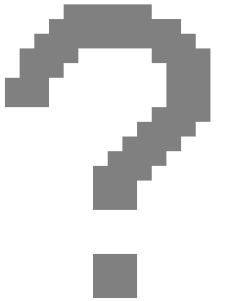


01 – Windows 10 has reached the end of support on October 14, 2025. At this point technical assistance, feature updates and security updates is no longer provided. [...] If devices do not meet the technical requirements to run on Windows 11, we recommend that you enroll in the Windows 10 Consumer Extended Security Updates (ESU) program or replace the device with one that supports Windows 11.(Microsoft, n.d.)

02 – The ESU-Program ends one year later on the 14th October 2026. So it's only a temporary solution.
The End of Windows security updates means, that hundreds of millions of computers worldwide are now running a potentially unsafe operating system, as they no longer receive free, routine security patches for newly discovered vulnerabilities. This shows one doesnt fully own its products once again.(Bott, 2025)

Sources: Microsoft. (n.d.). Windows 10 support has ended on October 14, 2025. Microsoft Support. Retrieved February 9, 2026, from https://support.microsoft.com/en-us/windows/windows-10-support-has-ended-on-october-14-2025; Bott, E. (2025, October 14). Windows 10 support officially ends today and millions of PCs fall off the security cliff. ZDNET. https://www.zdnet.com/article/windows-10-support-officially-ends-today-and-millions-of-pcs-fall-off-the-security-cliff/

Something missing?



Please contribute.
https://github.com/moritzengel/Open-by-Design

In this interview, I discussed with Nitzan Cohen (founder of DIYR) the potential, struggles and transformative potential of open source in product design. Cohen challenges the industry's reliance on planned obsolescence, expressing that a shift is needed from passive consumption to active „PROducing" to combat e-waste.
Cohen is concluding that the reality of Open Source is difficult, where it exists only as a parallel to the capitalist „jungle", in which balancing knowledge sharing with protection against corporate theft is hurting open projects, and finally proposing how DIY can serve as a mechanism to demand greater industrial responsibility.

Interview with Nitzan Cohen from DIYR.dev

Original. Trancript (German)

Interview conducted on the 29th of December, 2025

Transcribed with premiere pro and Gemini 3 (9.2.2026).

Moritz Engel:
Hallo, vielen Dank, das du dir die Zeit nimmst. Vielleicht erzähle ich dir erst mal, was ich in meiner Thesis vorhabe. Ich bin mit der Motivation gestartet, eine Art „How-to“ zu entwickeln: Wie kann man ein Open-Source-Produkt als Projekt aufsetzen? Welche kleinen Schritte gibt es zu beachten? Was hat in der Vergangenheit funktioniert, was nicht? Ich wollte tiefer in Open Source reinschauen, um zu verstehen, wie man damit vielleicht auch seinen Lebensunterhalt verdienen kann. In meiner Recherche habe ich aber festgestellt, dass das auf dem offenen Markt eher schlecht funktioniert. Man braucht eigentlich immer Institutionen oder Unternehmen, und wenn es um Produktdesign geht, ist es oft nicht 100 % Open Source. Deswegen ist mein Thema jetzt geswitcht: Was sind die positiven Aspekte dieses Open-Source-Ansatzes, die man allgemein ins Produktdesign übertragen kann? Das Projekt DIYR war schon länger auf meinem Schirm, deswegen dachte ich, ich rede mal mit dir.

Nitzan Cohen:
Okay, danke fürs Teilen. Dazu direkt eine Reflektion: Manchmal werden Sachen sehr schwarz-weiß gesehen – entweder „all or nothing“. Einen Lebensunterhalt mit Open Source zu verdienen, ist eine Frage der Definition. Was ist Open Source genau? Und inwieweit geht das auf wessen Aufwand? Da gibt es unterschiedliche Modelle und Perspektiven, die vielleicht nicht auf den ersten Blick so scheinen, aber relevant sind. Momentan brauchen wir mehr [betont] DIY und Open Source, haben aber sehr wenig davon. Die Industrie freut sich natürlich, wenn du am Ende resigniert sagst: „Ich wollte Open Source, aber es geht eigentlich nicht.“ Generell ist der Industrie das natürlich egal, aber gleichzeitig ist das Prinzip, das dahintersteht, schon irgendwie ein „Kicking back“ [gemeint: Widerstand leisten]. Denn das ignoriert die Industrie – beziehungsweise nutzt genau das, was die Nutzerinnen laut diesem Dogma von DIYR brauchen. Ich weiß nicht genau, was deine Ziele sind, aber ich glaube schon, dass da unterschiedliche Formate möglich sind. Um etwas, das noch nicht da ist, zu kreieren, das Sinn, Zweck und eventuell auch finanzielle Wahrscheinlichkeit darstellt... Ich weiß nicht, was das ist. Wenn es da wäre, wäre es einfacher. Aber die Tatsache, dass es nicht deutlich ist, heißt nicht, dass es nicht möglich ist.

Moritz Engel:
Wer kommt bei euch auf solche Ideen, wie zum Beispiel DIYR als Projekt anzufangen? Was war da die Motivation dahinter?

Nitzan Cohen:
DIYR ist mein Projekt, mein Konzept, meine Vision – das ist ein großes Wort [lacht kurz], aber im Ursprung ist es das. Das Projekt hat seinen Ursprung, als ich noch mein Studio in München hatte, das ist wirklich einige Jahre her. Irgendwann kam das SZ Magazin auf mich zu. Sie haben mehrere Designer nach einem Objekt gefragt, das die Leserinnen selbst machen können. Das war für mich der Beginn, mich mit dem Thema zu beschäftigen. Ich habe damals mit meinen kleinen Kindern begonnen zu recherchieren: Was gibt es im DIY, was gibt es nicht? Was ist gut, was ist schlecht? Was ist spannend oder unerwartet?
Damals habe ich eine lustige Wanduhr entworfen. Die Leute konnten einen Standard-Uhrwerk-Mechanismus online kaufen und dazu den speziellen Zeiger, den wir entworfen haben. Der Gedanke war: Überall werden gewollt oder ungewollt Uhren mit Sekundenpräzision verbaut. Unsere Uhr hatte nur einen Stundenzeiger, der wie eine Lupe ist. Man kann seine Stunden-Aktivitäten quasi selbst gestalten. [Gestikuliert] Da war zum Beispiel ein Kaffeeautomat, eine Brezel um elf, und dann ist es irgendwann 17:00 Uhr. Diese Uhr hinterfragt ein bisschen: Was ist eigentlich 1:00 Uhr und wofür brauchen wir diese Präzision?
Lustigerweise habe ich von diesem Zeiger, der über eine damals noch recht neue Plattform verkauft wurde, ein paar hundert Euro eingenommen. Das war für mich ein „Aha-Moment“. Es war nicht nur lustig, sondern die Leute wollten das, sie haben Zeit investiert, mussten Teile bestellen. Da war viel Wille und Eigeninitiative. Das Interessanteste war für mich aber, dass das herkömmliche DIY – also diese „Obi-Baumarkt-Welt“ – tendenziell immer dieselbe Ästhetik hat. Schön oder nicht, das kann man selbst entscheiden, aber oft ist es völlig platt und meines Erachtens langweilig [verzieht das Gesicht]. Da wollte ich nicht hin. Mich hat interessiert: Wo sind die anderen Welten?

Moritz Engel:
Ist das auch ein bisschen das, wo sich die Objekte hin orientieren? Also immer relativ technisch, oft mit Elektronik? Siehst du da das meiste Potenzial?

Nitzan Cohen:
Ja, weil ich sehe, dass es da eine enorme Lücke gibt. Die Lebenserwartung von diesem Gerät [hebt sein Handy hoch] ist absurderweise zweieinhalb Jahre. Bei einem Geschäftshandy ist es sogar weniger als zwei Jahre. Das ist Statistik, das sind nicht meine Daten. Gleichzeitig ist E-Was-

te der am schnellsten wachsende Müllstrom in der westlichen Welt in den letzten 20 Jahren. Man sieht das an den vielen E-Autos und E-Scootern um uns herum. Wenn eine Batteriezelle von so einem riesigen Batterie-Pack kaputt geht, wird oft alles weggeschmissen. Niemand versucht es zu reparieren oder die einzelne Zelle auszutauschen, obwohl es möglich wäre. Aber die Industrie gibt das nicht her, denn ihr geht es um Erfolg und Geld, am besten mit einer direkten Verbindung zu deiner Bank. Das sind die Elemente, die in DIYR stark sind. Wir nutzen zum Beispiel viele Batterien, aber wir empfehlen und geben Anleitungen, dass die Nutzerinnen „Second Life"-Batterien nutzen. Selbst wenn eine Batterie nicht mehr für einen Tesla gut ist, ist sie für eine Lampe noch für die nächsten 20 Jahre fantastisch. Aber die Industrie versucht, diese Möglichkeiten immer kleiner zu schneiden. Warum einfach nur die Batterie wechseln, wenn man das Ganze wegschmeißen kann? [Schüttelt den Kopf]

Moritz Engel:
Denkst du, dass sich elektronische oder komplexere Produkte besser für solche Anleitungen eignen? Wenn ich eine Anleitung für einen Stuhl online stelle, muss die Person ja schon handwerklich begabt sein und könnte den Stuhl vielleicht sogar selbst designen. Bei technischen Produkten ist der Research-Aufwand höher – ist da der Mehrwert für die „PROducer", wie ihr sie nennt, auch höher?

Nitzan Cohen:
„PROducer", genau! Ich bin da nicht so der Typ [winkt ab], der vergleicht, was besser ist. Ich sehe das generell als einen Bereich, von dem es insgesamt mehr geben sollte. Wenn man sich mit dem Thema beschäftigt, dann muss der positive Wert und das Empowerment im Fokus stehen. Dieses Gefühl: „Hey, schau mal, das habe ich selbst gemacht!" Es gibt natürlich auch Negatives, wenn es nicht funktioniert, dann denkt man „Scheißdreck" [lacht]. Unsere Verantwortung ist es, die Leute nicht zu etwas zu verführen, das nicht geht oder nicht ehrlich ist. Ob ein Stuhl besser ist als Elektronik? Alles gut. Aber wir brauchen mehr Verantwortung bei den Personen und den Wunsch, Dinge länger zu behalten. Wir haben übrigens eine kleine Produktfamilie ohne Elektronik, das ist eine sehr bewusste Entscheidung. Ich sage nicht, dass es nicht gut ist, aber für mich ist es weniger interessant.

Moritz Engel:
Das heißt, es ist eine bewusste Entscheidung, etwas gegen das E-Waste-Problem zu tun?

Nitzan Cohen:
Ja, absolut. Es ist ein ernstes, riesiges Thema. Die Probleme fangen schon bei der Anschaffung an – Seltene Erden in Südamerika, Sklavenarbeit, Kinderarbeit... bis hin zum Wegschmeißen, anstatt zu reparieren. Ich habe nicht die Illusion, dass wir mit diesem kleinen Projekt die Welt retten. Aber manchmal haben viele kleine Steine einen großen Effekt. Sicher, Möbel können auch umweltunverträglich sein – wo kommt das Holz her? Aber ich mag diese Vergleiche nicht, weil alles irgendwie problematisch ist und man da nie rauskommt. Aber ja, es ist eine bewusste Entscheidung. Und Möbel gab und gibt es im DIY schon viel. Dieser technische Bereich ist absolutes Neuland. Da ist niemand anderes. Ich bin gerne der Idiot, der naiv genug ist, das mit der Investition an Zeit und Ressourcen zu machen. [Lacht selbstironisch]

Moritz Engel:
I*ch habe gefragt, weil ich das Gefühl habe, dass Open Source bei Themen wie 3D-Druck oder Eigenbau besser funktioniert, obwohl es komplexe Objekte sind. Ich versuche zu verstehen, warum das aktuell besser funktioniert. Liegt es vielleicht daran, dass die Menschen, die das machen, schon ein technisches Know-how haben?*

Nitzan Cohen:
Das ist eine Frage der Definition. Woran misst man ein tolles Konzept? Haben wir im Studio viel Geld gespart, weil wir den 3D-Drucker selbst gebaut haben? Ja. Wenn man das Ding von der Industrie kauft, kostet es 15.000 €, selbst gebaut vielleicht 800 €. Das ist eine super Ersparnis – wenn man das Know-how hat, es zusammenzubauen. Aber bei solchen Projekten wie dem RepRap oder Prusa: Es ist nicht so, dass die, die das erfunden haben, die Kits verkaufen. Da gibt es Firmen, die das machen. Interessant ist aber: Dieses Know-how nutzen nachher auch die Industrien. Sie „klauen" oder nehmen das Wissen. Somit geht unser gemeinsames Wissen durch solche Open-Source-Maschinen nach vorne. Das ist ein ganz anderer Benefit, den wir alle haben.

Moritz Engel:
Ich glaube, generell muss man den Fokus ändern, was „Erfolg" bei solchen Projekten bedeutet. Man sollte sich eher darauf fokussieren, wie viele Menschen sich beteiligen, nicht auf das Finanzielle. Könnt ihr ungefähr sagen, wie viele Menschen schon Produkte von euch gebaut haben? Auf Instagram wirkt das Projekt ja ziemlich erfolgreich.

Nitzan Cohen:
Das ist sicherlich ein Indikator. Ich kann dir mit aller Ehrlichkeit sagen: Wir haben nicht mal 0,01 € in Werbung investiert. Die über 80.000 Follower auf Instagram sind echte Menschen, die keine Werbung gesehen haben.

Manche Videos haben Millionen von Views. Das heißt, die Leute sind interessiert. Aber da gibt es natürlich eine enorme Hemmschwelle [gestikuliert eine Barriere] zwischen „Boah, sieht geil aus“ und „Ich mache das selbst“.

Moritz Engel:
Wie viele haben denn einen Account auf der Webseite? Man braucht ja einen Account, um auf die Daten zuzugreifen.

Nitzan Cohen:
Das Ganze wächst organisch und das Team ist super klein. Am Anfang konnte jeder einfach alles downloaden. Erst seit ein paar Monaten haben wir diese kleinen „Gates“ eingebaut, wo man sich mit einer verifizierten E-Mail anmelden muss. Das ist weniger zur Kontrolle, sondern um mehr Kontakt zu haben. Wenn wir etwas posten, zum Beispiel Ventilatoren, die Leute gebaut haben, sieht man: Das passiert in Mexiko, in Australien, in den USA, in Japan. Wie viele es genau sind? Weiß ich nicht. Es ist schön, wenn es viele sind. Aber mein Ziel ist auch, dass die Leute einfach sehen und reflektieren, anstatt nur blind zu konsumieren. Dass wir Signale an die Industrie senden. Wenn wir Erfolg nur über Zahlen definieren, dann können wir gleich aufhören [winkt ab].

Moritz Engel:
Die Produkte und Anleitungen sind ja unter einer Creative Commons Lizenz veröffentlicht, die nicht-kommerziell ist. Warum keine komplett offene Lizenz, die auch kommerzielle Nutzung erlaubt?

Nitzan Cohen:
Weil die großen Firmen gnadenlos klauen. Ich sehe nicht ein, warum ich es denen erleichtern soll. Wenn du das machen willst und 20 Stück davon verkaufst – okay. Aber wenn große Firmen, die Designer sowieso schlecht bezahlen und behandeln, das einfach so nehmen können? Nein. [Schüttelt energisch den Kopf]

Moritz Engel:
Es gibt ja inzwischen Open-Source-Lizenzen, wie die von Prusa, die das klarstellen: Man darf den Drucker kommerziell nutzen, um Dinge zu produzieren, aber nicht den Drucker selbst nachbauen und verkaufen.

Nitzan Cohen:
Ja, das ist ein guter Punkt. Aber wir arbeiten mit dem, was im Moment da ist. Wenn eine bessere Form auf den Markt kommt, werden wir uns das ansehen.

Moritz Engel:
In einem Disegno-Interview hast du angedeutet, dass es Pläne gibt, das Projekt in Zukunft eventuell zu kommerzialisieren. Gibt es da schon Konkretes?

Nitzan Cohen:
Das kann ich nicht wirklich sagen, weil es noch nichts Wirkliches ist. Es gibt Gedanken an andere Formate, die das Ganze vielleicht leichter machen – dass mehr Leute das wirklich bauen und nutzen können.

Moritz Engel:
Das wären dann eher Bausätze?

Nitzan Cohen:
Alles ist möglich. Wir schauen: Wo sind die Brücken, die dieses Konzept hat? Welche Brücken macht es Sinn einzureißen oder zu einer Straße auszubauen?

Moritz Engel:
Vielleicht eine Frage, die da gut anschließt: Wo siehst du die größten Hürden? Was hält Menschen davon ab, tatsächlich etwas zu bauen?

Nitzan Cohen:
Ich glaube, ein Punkt ist die Definition von DIY. Das wird oft viel zu unterschätzt und zu klein gesehen. Viele definieren DIY nur als das Basteln an sich. Aber nimm zum Beispiel Sauerteigbrote backen während der Covid-Zeiten. [Lacht] Wie viel Zeit und Komplexität steckt dahinter? Das ist nichts anderes als DIY. Wie haben wir das gemacht? Wir haben von Freunden gehört, online gelesen, Videos geschaut. Wie viele Leute gibt es, die richtig gut kochen oder backen? Das ist eigentlich die größte DIY-Kategorie überhaupt: Anleitungen zum Essen. Kochbücher! Niemand wundert sich darüber. Die Hürde ist nur im Kopf. Solange die Zutaten im Supermarkt da sind, ist die Hürde eigentlich nicht hoch. Es ist eine Frage der Mentalität: Wie weit traust du dich?

Moritz Engel:
Ich frage mich immer, inwiefern DIY-Projekte mit möglichst simplem Werkzeug herstellbar sein müssen. Braucht man am Anfang sehr simple Objekte, um die Menschen zu „hooken“? Wie bei Lego – einfache und komplizierte Bausätze?

Nitzan Cohen:
Genau. Da muss man sehr spezifisch sein, eine allgemeine Antwort gibt es nicht. Du kannst etwas haben, das super simpel ist, aber für die

„Macher“ ist es zu langweilig und für die „Normalos“ immer noch zu viel Aufwand – dann macht es am Ende niemand. Es ist ein Zwiespalt. Aber ich glaube, jeder mit ein bisschen menschlichem Verstand und einer guten Anleitung kann das machen. Man braucht einfach ein sehr klares Konzept, was man erreichen will.

Moritz Engel:
Wahrscheinlich macht es von der Kommunikation her Sinn, dass es am Anfang verständlich ist, damit die Komplexität nicht abschreckt. Bei IKEA schaffen es ja auch die meisten, das Billy-Regal aufzubauen.

Nitzan Cohen:
Wobei IKEA auch einen Aufbauservice anbietet, weil viele Leute sagen: „Okay, ich zahle lieber 200 € drauf, damit es gebaut wird.“

Moritz Engel:
DIY wird wahrscheinlich nie die Lösung für alle sein. Aber es hilft sicher, zu reflektieren, was hinter Produkten steckt. Siehst du das so, dass es eher ein Nischending bleibt, oder könnte es so groß werden wie IKEA?

Nitzan Cohen:
IKEA ist halbwegs DIY, aber mit einem anderen Konzept. IKEA ist die einzige Firma der Welt, die keinen direkten Konkurrenten hat. Denk mal drüber nach [hebt den Finger]. NASA hat Konkurrenten, aber IKEA in seiner Art ist einzigartig. Ich glaube, es gibt ein enormes Potenzial an Open Source und DIY, das auch in der Breite Markt werden kann. Wenn Firmen verstehen, dass das ein Weg ist, Geld zu sparen oder bessere Produkte zu geben, dann wird das sehr weit verbreitet sein. Dass DIY die Industrie ersetzt, ist unrealistisch. Aber dass die Industrie mehr Verantwortung übernimmt und DIY als Instrument für bessere Produkte nutzt, das sehe ich schon.

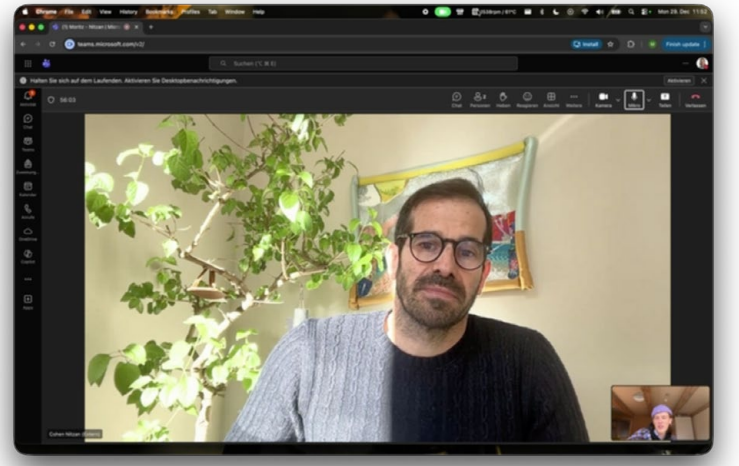
Moritz Engel:
Siehst du das Problem des „Ideenklaus“ durch große Firmen als kritisch an, oder ist das einfach eine Bereicherung für die Welt durch Wissensteilung?

Nitzan Cohen:
Ethisch gesehen ist jede Form von Wissensteilung super. Aber unsere Welt funktioniert nicht so. Open Source wird oft sehr romantisch gesehen, ist es aber gar nicht. Open Source ist ein Dschungel. In einem Dschungel gibt es Ökosysteme – der Große frisst den Kleinen. Deswegen ist es bei Open Source wichtig, sich auch zu schützen, damit diese Art überhaupt

weiter existieren kann. Man darf da nicht zu naiv sein. Wir haben selbst schon erlebt, dass irgendwelche Leute schamlos Ableger unserer Produkte gemacht haben. Wenn das junge Leute machen, ist es vielleicht noch lustig. Aber wenn IKEA oder große Firmen das machen würden, dann musst du dich schützen. Denn die kommen mit einer Rechtsabteilung. [Lacht trocken]

Moritz Engel:
Ja, Urheberrechtsschutz durchzusetzen ist oft ein Problem der Mittel. Meistens ist so eine Lizenz eher symbolisch. Vielen Dank für das Gespräch und dass du dir die Zeit genommen hast.

Nitzan Cohen:
Gerne, gerne. Bin gespannt, was du am Ende damit machst.



Trancript (English)

translated with gemini 4, 11th of February 2026

Moritz Engel:
Hello, thank you very much for taking the time Perhaps I'll start by telling you what I'm planning for my thesis. I started with the motivation to develop a sort of „how-to": How can one set up an open-source product as a project? What small steps need to be considered? What has worked in the past, and what hasn't? I wanted to look deeper into open source to understand how one might perhaps earn a living with it. However, in my research, I realised that this works rather poorly on the open market. You essentially always need institutions or companies, and when it comes to product design, it's often not 100% open source. That's why my topic has switched: What are the positive aspects of this open-source approach that can be transferred generally into product design? The DIYR project had been on my radar for a while, so I thought I'd have a chat with you.

Nitzan Cohen:
Okay, thanks for sharing. A reflection on that straight away: Sometimes things are viewed very much in black and white—either „all or nothing". Earning a living with open source is a matter of definition. What exactly is open source? And to what extent is it at whose expense? There are different models and perspectives that might not appear so at first glance but are relevant. At the moment, we need more [emphasises] DIY and open source, but we have very little of it. The industry is naturally happy if you end up saying resignedly: „I wanted open source, but it doesn‘t really work." Generally, the industry doesn‘t care, of course, but at the same time, the principle behind it is somewhat of a „kicking back" [meaning: resisting]. Because the industry ignores—or rather, uses exactly what users need according to this dogma of DIYR. I don‘t know exactly what your goals are, but I do believe that different formats are possible. To create something that isn't there yet, that represents sense, purpose, and potentially financial viability... I don‘t know what that is. If it were there, it would be easier. But the fact that it isn‘t clear doesn‘t mean it isn‘t possible.

Moritz Engel:
Who comes up with ideas like that at your place, for example, starting DIYR as a project? What was the motivation behind it?

Nitzan Cohen:
DIYR is my project, my concept, my vision—that is a big word [laughs briefly], but in its origin, that's what it is. The project originated when I still had my studio in Munich; that really is some years ago now. At some point, the SZ Magazin approached me. They asked several designers for an object that the readers could make themselves. That was the start for me to engage with the topic. Back then, I started researching with my small children: What exists in DIY, and what doesn't? What is good, what is bad? What is exciting or unexpected? At the time, I designed a funny wall clock. People could buy a standard clockwork mechanism online and, along with it, the special hand we designed. The thought was: everywhere, clocks with second-precision are installed, whether we want them or not. Our clock only had an hour hand, which acts like a magnifying glass. You can essentially design your hourly activities yourself. [Gestures] For example, there was a coffee machine, a pretzel at eleven, and then at some point, it's 17:00. This clock questions things a bit: What actually is 1:00 o‘clock, and what do we need this precision for? Funnily enough, I made a few hundred euros from this hand, which was sold via a platform that was still quite new at the time. That was an „aha moment" for me. It wasn't just funny; people wanted it, they invested time, had to order parts. There was a lot of will and personal initiative. But the most interesting thing for me was that conventional DIY—this „generic DIY store world"—tends to always have the same aesthetic. Beautiful or not, one can decide for oneself, but often it is completely flat and, in my opinion, boring [pulls a face]. I didn‘t want to go there. I was interested in: Where are the other worlds?

Moritz Engel:
Is that also a bit where the objects are heading? So, always relatively technical, often with electronics? Do you see the most potential there?

Nitzan Cohen:
Yes, because I see that there is an enormous gap there. The life expectancy of this device [holds up his mobile phone] is absurdly two and a half years. For a business mobile, it's even less than two years. That is statistics; that's not my data. At the same time, e-waste has been the fastest-growing waste stream in the Western world over the last 20 years. You can see it with the many e-cars and e-scooters around us. If a battery cell from such a huge battery pack breaks, often everything is thrown away. No one tries to repair it or replace the single cell, even though it would be possible. But the industry doesn't allow for that, because they are about success and money, preferably with a direct link to your bank account. These are the elements that are strong in DIYR. We use a lot of batteries, for example, but we recommend and provide instructions for users to use „Second Life" batteries. Even if a battery is no longer good for a Tesla, it is

still fantastic for a lamp for the next 20 years. But the industry tries to slice these possibilities smaller and smaller. Why simply change the battery if you can throw the whole thing away? [Shakes head]

Moritz Engel:
Do you think that electronic or more complex products lend themselves better to such instructions? If I put instructions for a chair online, the person needs to be manually skilled and could perhaps even design the chair themselves. With technical products, the research effort is higher—is the value for the „PROducers“, as you call them, also higher there?

Nitzan Cohen:
„PROducers“, exactly! I'm not really the type [waves hand] to compare what is better. I see it generally as an area of which there should be more overall. If one engages with the topic, then the positive value and empowerment must be the focus. This feeling: „Hey, look, I made this myself!“ There are naturally negatives too; if it doesn't work, then you think „Load of rubbish“ [laughs]. Our responsibility is not to seduce people into something that doesn't work or isn't honest. Is a chair better than electronics? It's all good. But we need more responsibility from individuals and the desire to keep things longer. We actually have a small product family without electronics; that is a very conscious decision. I'm not saying it isn't good, but for me, it is less interesting.

Moritz Engel:
That means it is a conscious decision to do something about the e-waste problem?

Nitzan Cohen:
Yes, absolutely. It is a serious, huge topic. The problems start right at acquisition—rare earths in South America, slave labour, child labour... right through to throwing away instead of repairing. I don't labour under the illusion that we are saving the world with this little project. But sometimes many small stones have a large effect. Sure, furniture can also be environmentally unfriendly—where does the wood come from? But I don't like these comparisons because everything is problematic somehow and you never get out of it. But yes, it is a conscious decision. And furniture has existed in DIY a lot already. This technical area is absolute uncharted territory. No one else is there. I am happy to be the idiot who is naive enough to do this with the investment of time and resources. [Laughs self-deprecatingly]

Moritz Engel:
I asked because I have the feeling that open source works better with topics like 3D printing or self-building, even though they are complex objects. I'm trying to understand why that works better currently. Is it perhaps because the people who do it already have technical know-how?

Nitzan Cohen:
That is a question of definition. How do you measure a great concept? Did we save a lot of money in the studio because we built the 3D printer ourselves? Yes. If you buy the thing from the industry, it costs €15,000; built yourself, maybe €800. That is a super saving—if you have the know-how to assemble it. But with projects like the RepRap or Prusa: It's not as if those who invented it are selling the kits. There are companies that do that. But what is interesting is: Industries also use this know-how subsequently. They „steal“ or take the knowledge. Thus, our collective knowledge moves forward through such open-source machines. That is a completely different benefit that we all have.

Moritz Engel:
I think, generally, one has to change the focus of what „success“ means in such projects. One should rather focus on how many people participate, not on the financials. Can you say roughly how many people have already built products of yours? On Instagram, the project seems quite successful.

Nitzan Cohen:
That is certainly an indicator. I can tell you with all honesty: We haven't invested even €0.01 in advertising. The over 80,000 followers on Instagram are real people who haven't seen an advertisement. Some videos have millions of views. That means people are interested. But there is, of course, an enormous barrier [gestures a barrier] between „Wow, looks cool“ and „I'll do that myself“.

Moritz Engel:
How many have an account on the website? You need an account to access the data.

Nitzan Cohen:
The whole thing is growing organically, and the team is super small. In the beginning, anyone could simply download everything. Only for a few months have we built in these small „gates“ where you have to sign in with a verified email. That is less for control, but rather to have more contact. If we post something, for example, fans that people have built, you see: This is happening in Mexico, in Australia, in the USA, in Japan. How many exactly? I don't know. It's nice if there are many. But my goal is also that people simply see and reflect, instead of just consuming blindly. That we send signals to the industry. If we define success only via numbers, then we might as well stop right now [waves hand].

Moritz Engel:
The products and instructions are published under a Creative Commons licence that is non-commercial. Why no completely open licence that also allows commercial use?

Nitzan Cohen:
Because the big companies steal mercilessly. I don't see why I should make it easier for them. If you want to do that and sell 20 of them—okay. But if big companies, who treat and pay designers badly anyway, can simply take it like that? No. [Shakes head energetically]

Moritz Engel:
There are open-source licences now, like the one from Prusa, which clarify this: One is allowed to use the printer commercially to produce things, but not to replicate and sell the printer itself.

Nitzan Cohen:
Yes, that is a good point. But we work with what is there at the moment. If a better form comes onto the market, we will look at it.

Moritz Engel:
In a Disegno interview, you hinted that there are plans to potentially commercialise the project in the future. Is there anything concrete yet?

Nitzan Cohen:
I can't really say, because there is nothing real yet. There are thoughts on other formats that perhaps make the whole thing easier—so that more people can really build and use it.

Moritz Engel:
That would be kits then, essentially?

Nitzan Cohen:
Everything is possible. We are looking: Where are the bridges that this concept has? Which bridges does it make sense to tear down or expand into a road?

Moritz Engel:
Perhaps a question that follows on well from that: Where do you see the biggest hurdles? What stops people from actually building something?

Nitzan Cohen:
believe one point is the definition of DIY. It is often far too underestimated

and viewed too small. Many define DIY only as the crafting itself. But take baking sourdough bread during the Covid times, for example. [Laughs] How much time and complexity lies behind that? That is nothing other than DIY. How did we do that? We heard from friends, read online, watched videos. How many people are there who cook or bake really well? That is actually the biggest DIY category of all: Instructions for eating. Cookbooks! No one wonders about that. The hurdle is only in the head. As long as the ingredients are there in the supermarket, the hurdle isn't actually high. It is a question of mentality: How far do you dare to go?

Moritz Engel:
I always wonder to what extent DIY projects must be manufacturable with the simplest possible tools. Does one need very simple objects at the beginning to „hook" people? Like with Lego—simple and complicated kits?

Nitzan Cohen:
Exactly. You have to be very specific there; there is no general answer. You can have something that is super simple, but for the „makers" it is too boring and for the „normies" still too much effort—then in the end, no one does it. It is a dilemma. But I believe anyone with a bit of common sense and a good manual can do it. You simply need a very clear concept of what you want to achieve.

Moritz Engel:
It probably makes sense from a communication perspective that it is understandable at the beginning so that the complexity doesn't scare people off. With IKEA, most people manage to assemble the Billy bookshelf, after all.

Nitzan Cohen:
Although IKEA also offers an assembly service because many people say: „Okay, I'd rather pay €200 extra to have it built."

Moritz Engel:
DIY will probably never be the solution for everyone. But it certainly helps to reflect on what lies behind products. Do you see it staying more of a niche thing, or could it become as big as IKEA?

Nitzan Cohen:
IKEA is semi-DIY, but with a different concept. IKEA is the only company in the world that has no direct competitor. Think about it [raises finger]. NASA has competitors, but IKEA in its nature is unique. I believe there is an enormous potential in open source and DIY that can also become a market in the broad sense. If companies understand that this is a way to

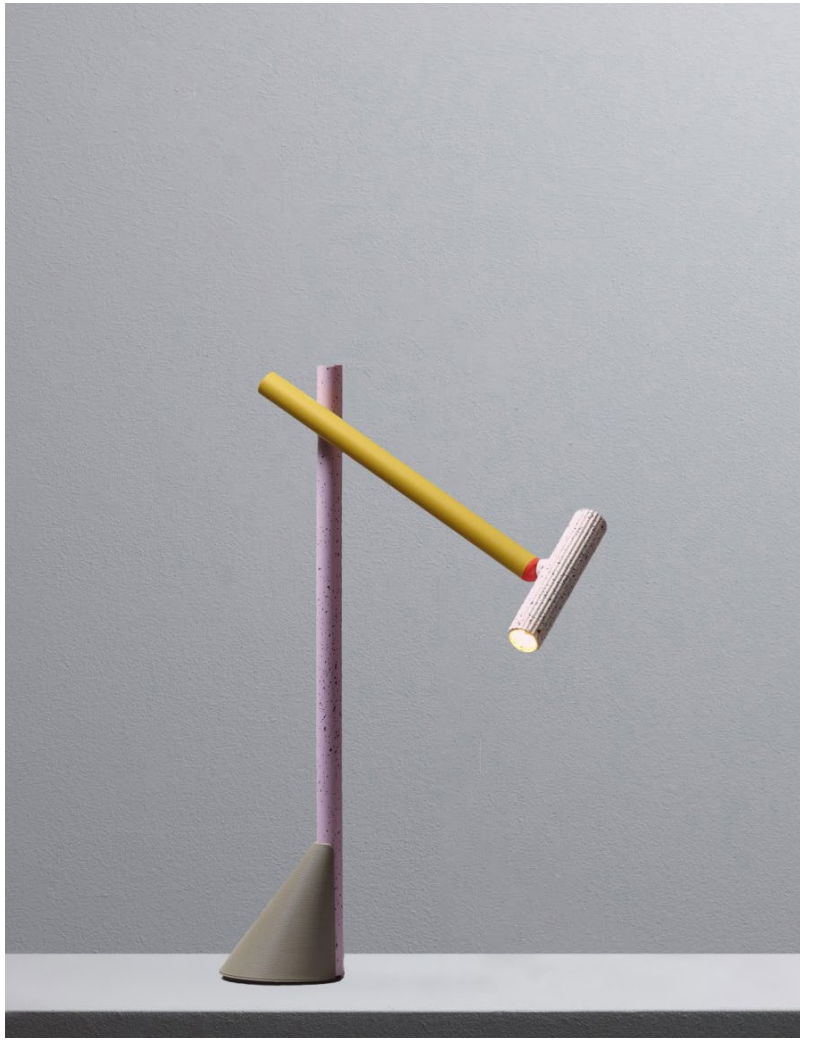
save money or provide better products, then it will be very widespread. That DIY replaces the industry is unrealistic. But that the industry takes more responsibility and uses DIY as an instrument for better products, I do see that happening.

Moritz Engel:
Do you view the problem of „idea theft“ by large companies as critical, or is that simply an enrichment for the world through knowledge sharing?

Nitzan Cohen:
Ethically speaking, any form of knowledge sharing is super. But our world doesn’t work like that. Open source is often viewed very romantically, but it isn’t at all. Open source is a jungle. In a jungle, there are ecosystems—the big one eats the small one. That is why it is important in open source to also protect oneself so that this form can continue to exist at all. One mustn’t be too naive there. We have experienced it ourselves, where random people have shamelessly made spin-offs of our products. If young people do it, it might still be funny. But if IKEA or big companies were to do that, then you have to protect yourself. Because they come with a legal department. [Laughs dryly]

Moritz Engel:
Yes, enforcing copyright protection is often a problem of means. Usually, such a licence is rather symbolic. Thank you very much for the conversation and for taking the time.

Nitzan Cohen:
My pleasure, my pleasure. Curious to see what you do with it in the end.



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The research for this research is being open-sourced on GitHub. The GitHub project page is also meant to be contributed to through the research card format. One can also contribute to this printed publication by filling out the blank research cards in the folder. The goal is that this research is expanded, transparent, more diverse and stays up to date longer.

Contribution

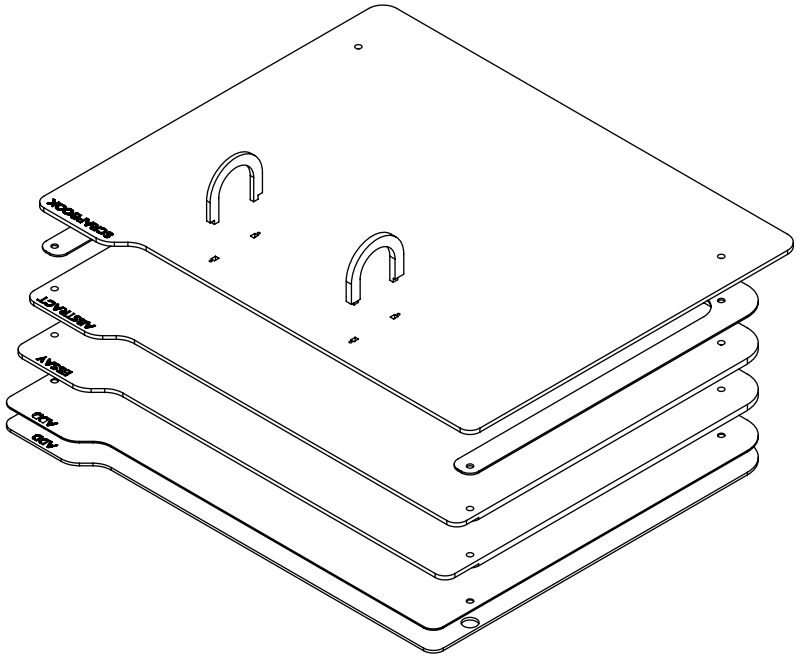
https://github.com/moritzengel/Open-by-Design/tree/main

This research has shown me the possibilities, how-to and power of the open-source philosophy, as well as the struggles. There were phases where I was really disappointed by open source projects and lost hope in this approach. But then I regained motivation for open source through my interview with Nitzan Cohen, which made me look at open source differently, not think in black-and-white about the approach, and consider the core values and the different ways of sharing them. Ultimately, it's still my personal goal to do an „open" project in the future.

Conclusion

Thanks

I want to thank my professors Anniina Koivu and Brynjar Sigurðarson, and the assistant Paula Mühlena, for their continued support and consultations. I also want to thank Nitzan Cohen for the interview. And for proofreading, I want to thank Lisa and Tom.



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P.S.

https://github.com/moritzengel/Open-by-Design/tree/main

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Academic Year 2025-2026

Master Product Design
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Mémoire Scrapbook 2026

Supervisors: Anniina Koivu & Brynjar Sigurðarson.
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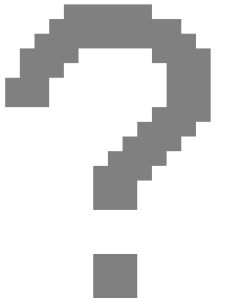

Please contribute.

https://github.com/moritzengel/Open-by-Design

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