FOSS and CC in Design

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1 Introduction

The concept of Open Design was created in 2005 by Ronen Kadushin as a part of MA thesis. The main idea of this concept is that "all technically conforming open designs are continuously available for production, in any number, with no tooling investment, anywhere and by anyone"[1]. Even though the concept is not new, it is still only started expanding in the areas of graphic and UX/UI design.

Currently, the discussions about the role of Open Design in digital design communities get a new life. These discussions are strongly connected with the collective, collaborative, communal culture of the design process, and designers responsibility in the name of the community.

The emphasis is put onto the process, not the final static artefact. It is said that the learning expirience that is gained during the missteps and faults is the essential part of the open design, as it gives the understanding of design thinking elaboration[2].

Even though the role of the Open Design and its usefulness has much potential, the design community is still arguing about it.

The famous case of a considerable discussion was the Open Doodle illustration set launch and the community reaction to it. Pablo Stanley, a well-known designer and illustrator, posted a tweet about the launch of a set of hand-drawn vector illustrations, which any user can use and modify in any way for any personal or commercial use.[3] The author emphasised the open design nature of the product:

> "Open Doodles is a set of free illustrations that embraces the idea of Open Design."

- https://www.producthunt.com/posts/open-doodles

The majority of the reactions towards the product were positive; users referred to open source concepts and praised the trend, for instance:

> "As an engineer/developer I applaud you having the courage to share essentially"free" work and reducing the barriers for others leading this craft. However, it will affect other illustrators/designers who love that hefty paywall that fuels their lifestyle."

- https://twitter.com/bsodmike/status/1185079835074412544

Though there were the opposite opinions, the main counterargument was the possible devaluation of illustrators work and the whole industry:

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[1] https://www.ronen-kadushin.com/open-design/
[2] https://medium.com/lominming/great-design-is-open-235e6df468e7
[3] https://twitter.com/pablostanley/status/1184729642684616704

> "All you are doing is becoming an example I'll have to later dismiss/argue on why I and others shouldn't work on something for free or do free spec work to show value or quirkiness of illustration on a project."

- https://twitter.com/o_fishel/status/1184882624201973760

We found this discussion quite provocative and lacking inside knowledge; we decided to learn details of the Open Design concept and possible sources of value of it.

2 Paradigms of Post Industrialization — Uniqueness as a Value

As Howard et al. [1] and Flew [2] outline, post-industrialisation economies have moved away from being **production-oriented** to being oriented around **information, knowledge and creativity**. Where profit used to be primarily increased by gains of productivity and reduction of cost, it has shifted to being driven by innovation and uniqueness. This shift is invariably linked with the economics of scale: usually, the initial production cost is high, but once schematics developed and production facilities adapted the costs per produced unit are near-zero. A factor that is even more pronounced for digital goods.

With this paradigm shift of industry also came a push of restrictive, global intellectual property laws that allowed classical, product-oriented business models to persist through it. The interests of these large copyright holders (which Flew labelled as "Industry-1", with the specific example of large music labels) are pushed via lobbyists and in further consequence, globally, via the WTO and international treaties, thus establishing a global baseline of intellectual property laws to protect and make significant profit for these companies.

These are contrasted by collectives and organisations of the enthusiasm-driven, playful DIY- and remix cultures [2], [3] in which innovation and originality happen. These are dubbed "Industry-2" by Flew. He further writes that this innovation occurs mainly in the form of "new ideas […] derived from modifications of existing ideas" (i.e. the "second mover principle"). Restrictive intellectual property laws inhibit this kind of innovation and thus these cultures that are driving value-generation in the post-industrial economy. In reverse, an extensive repository of material freed from those restrictions, e.g. by being in the public domain or licensed under a permissive license like the Creative Commons would allow "creatives" to generate the next layer of variation, recombination and innovation [3] Oftentimes, in our perception, endeavours starting in these DIY- and remix cultures turn into startups that are, if successful, bought up by the larger companies that outsource the risk associated with innovation in this way unless they're owned by their investors from the get-go of course.

Additionally, to restrictive IP-laws, the economy of scale and generally increasing complexity of market-ready products make it harder for SMEs to compete, especially in the tech-sector given

the required initial investments and team sizes to reach this product maturity (Howard et al. 2012). Crowdsourcing, Open Innovation, Open Source and Open Design enable reversing this trend.

For the sake of this paper and using the definitions of Howard et al. [1], **crowdsourcing** refers to a company outsourcing stages of product development like funding, ideation, consulting or design out to a more massive crowd of people. The company usually retains any intellectual property rights to the results. **Open innovation** refers to a strategy where a network of companies enters licensing agreements to share intellectual property among each other. In contrast to these two, **Open Design** follows the principles of **Open Source**. It releases any plans, blueprints, procedures and code to the public to allow everyone to modify these and manufacture their instance of the product.

For the rest of this paper, we'll mostly focus on Open Design, Open Source and their love-child Open Source Design (Open Design for Open Source Software).

3 Free Culture and the Creative Class

As already touched upon in the previous section on post-industrialisation, the members of "Industry-2", the "creatives" of the DIY- and remix cultures can reconfigure, recombine and innovate easier if there's already a repository of publicly available material in place to build upon.

This is also what Fitzgerald and Oi [3] bring up, when they reference Free Culture [4] and the Creative Class [5] as "mindsets of the 21st century". They are primarily talking about and focusing on the digital, where the free software movement has blazed the way, with its ideas being transposed to other domains. E.g. the Creative Commons enables an easy negotiation for exchange and repurposing of content (as opposed to by-case sub-licensing), thus, in turn, enabling creativity and innovation.

When talking about the "creative class", Florida points out its importance and that of "creative places" to innovation and economic growth. He also argues to foster both of them via free culture and creative commons (and also stresses the importance of diversity). This line of reasoning for the value of creative activity and openness as its drive is also echoed in a different variation in Lessig's "The Future of Ideas" [6]. In it, he argues: "We as a society should favour the disrupters. They will produce movement towards a more efficient, prosperous economy", as part of an overarching argument for society (and businesses) oriented around free and open culture and disruption of business-models that run counter to society's interests. Along these lines and against overbearing intellectual property law uses Flew [2] argues: "[…] that follow-on creators and innovators [should] remain as free as possible from the control of the past". But he also points out what he calls the "copyright conundrum": the need to balance "the returns for original creation as compared to the social and economic benefits derived from collaboration and sharing". However, we'd like to argue that ideally these should and in fact can be brought into accordance with each other, as we'll lay out in the following sections on the business benefits and models surrounding open design and software. Howard et al. [1] even go further, arguing

that when using open licenses, large businesses can cut on litigation costs and thus invest more into research and development, leading to more innovation.

4 Benefits of Open Design for Businesses

Starting with the non-financial aspects, open design shows several benefits, most of which are also inherent to crowdsourcing.

Howard et al. [1] and Allen et al. [7] argue that using crowdsourcing the results are qualitatively better, come faster and at a lower cost, and are more varied. This stems from the wide range of diverse inputs crowdsourcing endeavours can yield. As Raymond [8] puts it: "Given enough eyeballs all bugs are shallow" This refers to free software development, but we'd like to argue the same holds for design problems. In fact, the Open Source Design movement [9] supports the tackling of wicked problems[4] via collective co-design and the wisdom of the crowd. A great advantage here, is that people can bring their own lived experience and diverse viewpoints into the process, thus introducing knowledge the organisation doing the crowdsourcing would have at least required extensive user research for otherwise. A small caveat regarding this potential volume of input, that Allen et al. (2018) point out, that especially more modest companies in their sample struggled with sorting through the data they got, especially when crowdsourcing in the ideation phase where the effort required for contributions was relatively low.

In contrast, the effort of vetting ideas for potential can be high. However, this seems like a problem one would like to have and also points to one of the inherent difficulties of crowdsourcing as opposed to open design: in crowdsourcing there's a single company coordinating the entire process and thus poses a natural bottleneck. This becomes less of a problem when crowdsourcing later in the process, e.g. to go from idea to prototypical design, where the effort required for submission is higher and determining whether or not it's promising is easier [7]. Open Design, in contrast, can in theory completely side-step this process as the process can run relatively decentrally, with people making their own modifications/designs, sharing them and other people iterating on those in turn, without the need for central filtering. This is made possible by putting the produced materials under an open license.

A different problem with crowdsourcing is the inherent mentality of exploiting the labour of people who're enthusiastic about the product (line). This was also a pain point with all of the papers discussing crowd work we found during our literature research: Only one mentioned compensation for

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[4]Wicked problems are those that are difficult or impossible to "solve", because of they're continually changing, it's impossible to give full problem statements and the solution-space is far too large to explore exhaustively. Solutions are are not right or wrong, true or false but better or worse. These are usually problems arising in everyday, social life and can be contrasted to well-defined, mathematical problems.

the crowd and only indirectly (i.e. by shortly describing crowd work as a subcategory of crowdsourcing). In contrast to this, especially in the field of crowd work a wide range of models to compensate the crowd exist, e.g. hiring a crowd via a gig-economy platform like fiverr[5] or Amazon's Mechanical Turk, or posting a bounty for successful designs (e.g. on Kaggle[6] for data-science problems) or identified problems, compared to how many open source projects offer bug bounties (Hackerone[7] holds a list of bug-bounty programs). This mentality of extracting free labour isn't exclusive to crowdsourcing. In fact, Howard et al [1] argue it to be a benefit of open design as well, where expert users often are a crowd of free developers (with regards to hardware projects), as they make their own modifications to the design and bring in their own ideas and expertise. However, the key difference in our eyes, is that in crowdsourcing the organising company owns the intellectual property, whereas in open design it constitutes a commons, being owned by all. Along these lines, depending on the project open design can be a good venue for donating one's time and giving back to the community and/or as is the case with many of the projects listed on Ushahidi's open-design webpage [9] and Opensourcedesign.net [10] work on an open, charitable project for people without the expertise. The former tends to lead to expert tools with a high learning curve and the latter notions of tech saviourism,[8] especially if done by people with little contact with the intended group of users. However, we think Open Design carries within it the means to address both problems via a diverse range of perspectives that can come together in one project.

Howard et al. [1] mention another benefit that crowdsourcing and especially Open Design exhibit (for a company deciding to use these): Due to the relative rarity of opening up in these ways and the investment of the people interacting with the project, these usually get excellent word-of-mouth publicity. This is further compounded as there's an alignment of interests to spread the word and get more people onto the project, thus improving it for everyone.

5 Open Design Business Models

While it's comparatively easy to maintain old business models when doing crowdsourcing (as the IP stays with the company), one might wonder how to run a business that plans to open up large parts or all of their designs (they recommend CC-BY-SA[9] for this). As Howard et al [1] put it, the old men-

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[5]https://www.fiverr.com/

[6]https://www.kaggle.com/

[7]https://hackerone.com/bug-bounty-programs, accessed 2020-02-08

[8]Tech saviourism: i.e. a colloquial concept describing when engineers, who're members of privileged groups and without much knowledge of a given (frequently marginalised) community go in and try to solve problems they think to perceive, by throwing (more) technology at it. Most often the developed software doesn't solve an existing problem, isn't usable for the group or might even worsen their situation by underscoring existing power-imbalances and marginalisation and enshrining them in algorithmic systems. E.g. the facial recognition intended to diagnose neuro-diversity in children, that Bennet and Keyes' "What is the Point of Fairness?" [11] critique is an excellent example of this phenomenon.

[9]Creative commons with attribution and share-alike

tality of consumerism and IP-holders is that giving product and blueprints away for free and opening them up equals commercial suicide. Contrasting to this mentality, they argue for "Design for Openness", i.e. structuring a companies business model around partial or full openness from the get-go, making sure to lever value from distributing, copying and modifying the blueprints and other designs. To do this successfully, they urge to consider what's the benefit of opening up and for which stakeholders. From this then follows the consideration where else in the value network (as compared to old business models) one might recuperate value. They also recommend considering the full product-service-system — either can be open and/or a source of income.

An example of this would be Thingiverse,[10] that is a free-to-use platform for sharing open, printable 3D-models, but Makerbot, the company behind it sells 3D-printers and supplies if one manages to identify such a model and manages to offer the design for free that trumps any other price. Additionally, as mentioned before, such a company profits from increased word-of-mouth publicity, input from diverse perspectives, and contributions from external agents.

For concrete business models one can look to those involved with free (as in libre) and free (as in beer) software, and those already existing for Open Design and Open Hardware, with the following being a non-exhaustive listing:

- **Paid talks, magazines and books** on the design/product
- **Consultancy**: A good example here would be the Linux-distributions Redhat/Fedora and SUSE (with it's open and enterprise variants) that are free for anyone to use in the no-cost option, but the enterprise version comes with a potentially critical tech-support subscription that helps with problems or configuration. Picking up the idea of reconfiguration and reskinning as a service a model particularly suited for a wide bandwidth of Open Design presents itself.
- **Advertising in the product:** This is more suited for designs and products that are free (as in beer) as an obvious modification would be to remove advertising. Examples for this would be Google and Spotify's free subscription. As such it's more suited for crowdsourcing and less so for Open Design and Open Source software.
- **Sales of the product and variants:** This business model often occurs as **"manufacturing-as-a-service"** (MAAS). For instance, one might create one's Arduino[11] or RepRap[12] using the open blueprints, but people lacking the means (time, technical skills, tools) to do so can also order preassembled products from the respective companies. For graphics design and illustration, this can manifest as selling prints and other types of physical copies of the products.
- **Spin-off products and services:** This can also be seen as a form of partial openness, where either incomplete designs or full designs for a basic product are shared with the public, but a version with advanced features exists that is for-pay. There are many examples in the soft-

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[10]https://www.thingiverse.com/
[11]An open hardware microcontroller board. Homepage: https://www.arduino.cc/.
[12]An open hardware 3D-printer. Homepage: https://reprap.org/.

ware industry, like, e.g. Jetbrains[13] that offer a "Community" and "Ultimate" version of their integrated development environment software, or how Slack[14] has recently shared one of their design-documents[15] on Figma, or how many companies and other organisations share their design systems[16]. Another example from a non-tech-related field would be Wizard of the Coast's famous role-playing game Dungeons and Dragons, where the core parts of the rules for their fifth edition are online[17] as a Systems Reference Document (SRD) under the Open Gaming License (OGL)[18] — definitely, enough to play, but also a lot of content and variety is only available via their for-purchase books.

- **Crowdfunding and other donations:** Examples for more famous crowdfunded, open projects would include: Font Awesome[19], are large, open icon-collection licensed under CC-BY, SIL OFL and the MIT license respectively; the open-source social network and crowdfunding platform "Minds";[20] or the Font-family "Fira", designed by Erik Spiekerman, licensed under the SIL Open Font License and funded by the non-profit Mozilla Foundation that gets varying sized donations (though a significant, singular sponsor is Google).

- **Donated crowdwork:** Not exactly a business model in the strictest sense and more of a complement to one, but many non-profits — especially those with an orientation to the charitable and commons — can (partially) run on donated work. Going back to the already mentioned Mozilla Foundation, a lot of volunteers contribute via bug-tracking, design- and development work, as well as activism.[21]

- **Contributions (B2B and C2B):** Regarding business-to-business, open designs — in particular under share-alike licenses — can lead to other companies contributing to the shared commons as well, by fixing problems, extending or creating variations of the design thus engaging in cooperation instead of (pure) competition. On the consumer-to-business side of things, this draws on the argument of Howard et al. [1], that for open (hardware) design, many expert users are designers and engineers themselves, will make modifications of the design for themselves and share it back to the community. In these aspects, it's essentially similar to the crowdwork-model mentioned above.

The above models are centred around businesses, thus covering designers employed by those. The models are slightly different for freelancing designers as in the case of many the illustrators fearing for their livelihood that was involved with the open doodles flamewar mentioned in the introduction.

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[13] https://www.jetbrains.com/

[14] https://slack.com/intl/en-at/

[15] https://www.figma.com/@slack, accessed 2020-02-09

[16] https://designsystemsrepo.com/design-systems/

[17] https://www.5esrd.com/, accessed 2020-02-09

[18] The Open Gaming License allows modification and commercial use and has share-alike clauses.

[19] crowdfunding at https://www.kickstarter.com/projects/232193852/font-awesome-5, accessed 2020-02-09. License information at:https://fontawesome.com/license/free, accessed 2020-02-09

[20] https://www.minds.com/, accessed 2020-02-09

[21] https://www.mozilla.org/en-US/contribute/, accessed 2020-02-09

Some of the above models can be used by freelancers, i.e.:

- "Paid talks."
- "Consultancy"
- "Sale of a product" and "manufacturing as a service": e.g. put the 3D-model on Thingiverse, but also offer ready-made prints via Shapeways[22]; or put a lower resolution photo under CC and sell a higher-resolution version useful for print design as for-pay)
- "Spin-offs"
- "Crowdfunding and other donations": especially Patreon[23] is a prevalent source of income for many freelancing creatives)
- Paid gig-economy crowd work via platforms like 99designs[24], fiverr[25] and designcrowd[26], though it will depend on (negotiations with) the client whether the results can be put under an open license.
- Long-term contracting with open design oriented companies.

6 Challenges

Open Design has the potential to transcend and should transcend a single company or organisation — and sees input from a more all-inclusive, diverse community — to bestow its benefits. This community will be more cosmopolitan, more fluctuating and geographically disjointed than most given companies. With that come several challenges, namely needing processes and tools for enabling a very dynamic form of distributed and remote collaboration at scale. In particular, as the Open Design Team [9] points out, these processes need to be **replicable**, **manage artefacts** well, allow and encourage **reuse of parts** and partial designs (e.g. widgets and other composite graphical elements), allow **reviews and approvals and** feed into **defined outcomes** that are **communicated** well. We'd like to add, that the processes should include proper **specifications of requirements** as far as possible, as well as **communication of user research or personal experience**(for the cases where the commenters/designers belong to the target audience themselves). All of this is compounded with a need for processes of **peer governance** of the commons (that is a principle of the Open Source Design movement) [9]. The tools all of these processes should be as lightweight as possible while supporting them, as well as be globally networked and available. Some of these tools that have the potential of fulfilling some or most of the criteria are described in the section on "Tools" below.

An additional challenge in Open Design that is more pronounced in these disjointed teams/communi-

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[22]https://www.shapeways.com/
[23]https://www.patreon.com/
[24]https://en.99designs.at/
[25]https://www.fiverr.com/
[26]https://www.designcrowd.com/

ties is how to ensure a **coherent vision** as well as visual- and interaction languages. We assume this can be tackled with **design systems**, that are already widely used by large companies and more disjointed communities such as the developers for the Apple[27] and Android[28] ecosystems. We assume the dynamics there to be similar to a large Open Design community (with the limitation that Apple does centralised quality assurance and gatekeeping to enforce the HIG).

Howard et al. [1] also point out three additional challenges for Open Design (though their elaboration focusses more on Open Hardware):

- **Manufacture:** The availability and accessibility of the means of production. For hardware designs these are the machines required to fabricate the products, like, e.g. laser-cutters, 3D-printers, CNC-machines, etc. For UI- and graphical design this can be the tools needed to open, modify and use the designs, like, e.g. potentially expensive editing software, fonts, icon-sets, illustrations, etc. Each of these sees their own open or at least free (as in beer) pieces of tools and resources. Tools are discussed in the section below, as a collection of open fonts there's, e.g. Google Fonts[29], and for illustrations, e.g. Open Doodles[30] (with the backlash against it being our primary reason to do literature research for and write this paper).
- **Complexity:** This challenge encompasses the need for the (complex) processes and tools/platforms supporting these, as laid out at the beginning of this section.
- **Validating designs:** Same as with the manufacturer itself, especially for hardware, the means to do proper tests can be hard to come by (e.g. material strain tests for mechanical items). For UI/Ux- and graphics-design this can mean access to a usability testing lab for more formal tests, access to the target audience in general, and in particular in the context of use/viewing for field studies. This is somewhat counteracted, that a diverse crowd of contributors may, in many cases, have significant overlap with the target audience and thus self-test and verify the effectiveness of the design via their own lived experience. This strongly depends on the entry barrier to contribute or at least comment on the designs. If it's high, only specific voices (that happen to be designers and/or developers) from the target audience may influence the result. Regarding testing in general, this also opens the topic of quality assurance and liability. In free software, many libraries come with a disclaimer denying any responsibility regarding damages that may arise from the use of the software.

A different challenge that is very specific to Open Source Design (i.e. Open Design for Open Source projects), and the reason for the Open Source Design movement got started in the first place, is that a lot FOSS-software is very developer-centric (as it's been developed by developers for themselves).

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[27] For their Human Interface Guidelines see here: https://developer.apple.com/design/human-interface-guidelines/ios/overview/themes/
[28] For the Material Design system documentation see here: https://material.io/
[29] https://fonts.google.com/
[30] https://www.opendoodles.com/

Additionally, the FOSS-developer communities can be relatively non-inclusive towards designers' involvement and have a relatively high barrier's in that regard. Part of the reason can be that the processes aren't (yet) suited to this involvement (with people being set on them) as well as a difference in taxonomy, views and culture. Open Source Design tries to bridge that gap from the Open Design side and bring a human-centred, multidisciplinary, intersectional and inclusive approach to FOSS-projects, and "design useful, easy to use and ethical products that have a social impact". [9]

7 Tools, organizations and personalities

Design, or any other creative industry, is considered to be a highly competitive and aggressive environment.[31] Most designers prefer independent freelance activities to group projects or extensive corporate enterprises. This implies complications in the gradual development of the industry if we consider a gradual shift towards open design and more transparent approaches to work.

For a long time, the Adobe Suite(Photoshop, Illustrator, InDesign) and Sketch (by Bohemian Coding) were considered the only standard software tools for working with UX / UI artefacts or graphic design.[32] However, the products mentioned above have a high entry threshold for beginner designers or those who have a low budget. For example, many industry representatives began to abandon Adobe eco-system because of their Creative Cloud subscription model. As for Sketch, the main problem was the fact that this design environment was not cross-platform (available only for Mac OS) and had pricing based on an annual subscription.

Many freelancers, small studios and start-ups began to turn to open source alternatives, not only because they needed more affordable software, but also because of a cross-platform solution need[33].

There are more options to Adobe CC alternatives in the market, due to the longer demand. As a replacement for one of the most popular Adobe Photoshop products, there are two common editors, Krita and Gimp. Krita is a tool for drawing raster illustrations, with tools for working with vector images[34]. Gimp is a program for tasks as photo retouching, image composition and image authoring.[35] Both programs are available for Windows, Mac and Linux.

Inkscape editor, vector graphics software which runs on Windows, Mac and Linux, replaced Adobe Illustrator. This program is used to create a wide range of vector images such as illustrations, logos, icon sets, web graphics, maps.[36]

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[31]https://www.abstract.com/blog/end-of-the-celebrity-designer
[32]https://medium.com/truthaboutdesign/the-ultimate-list-of-ui-design-tools-you-actually-need-december-2018-4b58182c1b32
[33]https://uxplanet.org/open-design-freeware-tools-for-designers-f7bdde99f2e0
[34]https://krita.org/en/about/history/
[35]https://www.gimp.org/about/
[36]https://inkscape.org/about/

Scribus became a FOSS substitute for Adobe Indesign. It is a page layout program and supports professional publishing features like CMYK colours, spot colours, ICC colour management and PDF creation (Available for Windows, Mac, and Linux)[37].

To date, there are no fully FOSS solutions for product (UX / UI) design. However, there are free to use professional solutions, with open communities or available resources to start.

Figma is the most popular and open alternative to Sketch. It is a web-based cloud solution that allows users to collaborate on the same document at the same point in time. The user can use it for free on the sign-up base. It evolves with high speed, and indeed, there is a strong tendency for Figma to become the new standard in the industry[38]. The majority of the most famous companies with digital products switched to Figma as the primary design tool and documented the process of the switch from Sketch[39].

The "new way" of design became the main selling point, and it gave full carte blanche to the Figma creators. It gave Figma the possibility to become a centrepiece in the design community and influence it within. Figma representatives state that they believe that design should be more open, cloud-first and on the web. The collaboration became a first step to the sharing[40].

In August 2019 Figma launched Plugins, where every one can upload or install design plugins created by contributors, to enhance the work process. Some of the contributors make their plugins available at Github, so each one can tweak it in order to set up for one's needs. It creates vast possibilities of extensibility, that gives a more open and collaborative feeling in the design process[41].

In October 2019 the Figma Community was released in beta. It is a public space, where each designer can publish live design artefacts, that other users may copy, inspect, remix and learn from[42]. The first license Figma Community offers to its collaborators is Creative Commons Attribution 4.0 International license[43].

Adobe XD — relatively new design tool, created precisely for UX/UI design by Adobe. It is free to use for individuals[44]. The software has native applications for Windows and macOS, and delivers dozens of powerful features to help users design, prototype, share, and collaborate on user experiences. Adobe XD features depend on the input from the community (based in Discord), and new features and enhancements are released every month. XD Community is the powerhouse of the collaborative and shared experience, by managing daily challenges, live streams and forum discussions[45]. Resource-

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[37] https://www.scribus.net/category/about/
[38] https://www.indexventures.com/perspectives/figma-setting-the-new-standard-for-collaborative-design-tools/
[39] https://blog.prototypr.io/from-sketch-to-figma-daeb05eb7a44
[40] https://www.figma.com/blog/how-figmas-multiplayer-technology-works/
[41] https://www.figma.com/blog/introducing-figma-plugins/
[42] https://www.figma.com/blog/introducing-figma-community/
[43] https://creativecommons.org/licenses/by/4.0/
[44] https://www.adobe.com/products/xd.html
[45] https://www.adobe.com/products/xd/community.html?promoid=8JD95GNM&mv=other

wise Adobe XD relies on the famous designers in the industry by contracting with them. Such collaborations end up in free to download UI Kits or Mockups[46].

InVision — is the prototyping tool, that gives the possibility to create interactive and clickable high-fidelity prototypes, with smooth handoffs from design to development. The users can gather feedback in the same space and suggest changes on a virtual whiteboard[47]. Regarding UX/UI design Invision Studio is a free to use software with powerful animation features for Mac and Windows users (similar to Adobe XD)[48].

InVision provides the design community with knowledgebase with free resources like UI kits, mockups, icon sets, books and podcasts. Additionally, there are plenty of explorative threads and blogposts by designers, which are InVision Community Ambassadors[49].

Pablo Stanley is one of the most recognised personalities in the design community, that pushes the idea of Open Design. He holds a position as Design Lead at InVision, but he has got his popularity by creating YouTube lessons on the Design Tools like Sketch, Principle, Framer and Flinto. He created several illustration kits free to use, that embrace the idea of Open Design. The idea is that anyone can copy, edit, share or redraw the images because they have CC0 license. The whole process of creation is available to review and learn on his youtube channel[50].

He mentioned that the resources that he creates may show the value of illustration in design, and may encourage others to contribute to the design community.[51]

Even though the openness in design. Is still a conversation in progress, Stanley states that the knowledge behind any creative craft should not be kept in secret and should be accessible to the world. He notes that the process of sharing skills and practices increases the value of design and allows the community to evolve.

There are several resources with open source illustrations widely used and praised in the community. They are created both by individuals and companies, among them are UnDraw[52], DrawKit,[53] Ouch![54], Lukaz Adam Illustrations,[55] Fresh Folk,[56] Humaaans[57].

One of the most crucial parts of any design activity is typography. Google offers a platform that allows using a vast collection of open source designer web fonts easily. Google Fonts takes care of all

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[46]https://www.behance.net/gallery/75193163/Fashion-Influencer-UI-Kit-for-Adobe-XD
[47]https://www.invisionapp.com/
[48]https://www.invisionapp.com/studio
[49]https://support.invisionapp.com/hc/en-us/community/topics//
[50]https://www.pablostanley.com/
[51]https://www.opendoodles.com/about
[52]https://undraw.co/
[53]https://www.drawkit.io/
[54]https://icons8.com/ouch
[55]https://lukaszadam.com/illustrations
[56]https://fresh-folk.com/
[57]https://www.humaaans.com/

the authorising and hosting, guaranteeing that the newest and most complete version of any font is available to the community[58]. Because of its easiness in use and availability, Google Fonts became an industry-wide standard.

To provide proof of the functioning Open Design strategy, we can refer to the following projects.

- OpenIDEO is a platform which allows people worldwide to come together in order to elaborate on ideas and possible solutions for wicked problems. Project is built on an open innovation model. The collaborators around the world can generate ideas and push them in the community[59].
- Mozilla has an Open Design process in the core of development. Design Process in Mozilla has four phases: Ideation, Concepting, Refinement and Guidance. Everyone can give feedback on Mozilla's team design decisions on early stages that may influence the further development of the product[60].
- There is a misconception that the majority of Open Source projects have poor design aesthetics, but there is a tendency of change. There is a curated library of Open Source projects that have a good design, in terms of aesthetics and usability[61].

8 The Future and Promoting Open Design

Especially for UI/Ux-design and graphic design, it's still an open question and ongoing development whether or not open design and the Creative Commons will reach the same prevalence that free software movement and the associated licenses have in regards to computer programs. However, Fitzgerald and Oi [3] project a future that lies in open access and open content. This is echoed and expanded upon by Howard et al. [1] who argue that a change from closed, intellectual property-based business models to open design business models is happening, which means that more will be done by the crowd and its communities and the industry will organise around it. This is accompanied by a devaluation of patents and the increasing popularity of the Creative Commons, with the accompanying societal benefits outlined in the sections on the paradigms of post-industrialisation and "free culture and the creative class".

To bring about this future we'd like to offer some measures the different actors in the open design ecosystem could take, to support it:

- **Provider of design-tools and -platforms** (like, e.g. Figma) could make their services (entirely) free for open design projects. This is a common practice for software development tools,

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[58] https://fonts.google.com/about
[59] https://www.openideo.com/approach
[60] https://blog.mozilla.org/opendesign/
[61] https://beautifulopen.com/about/

e.g. Github is free for open-source software, and Jetbrains provides the "ultimate" version of their IDE IntelliJ for free to free software project maintainers.

- **Funding agencies** could require directly or even indirectly publicly funded projects to have the design happening in them to be open.
- **Companies** could use the business models mentioned in the respective section above.
- **Designers** could seek to work for such companies (thus also creating another incentive for those businesses to go open), push for open design at their workplace, or if they have extra resources could donate some of their time to open design projects.

9 References

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