Annex B: Existing bottom-up funding mechanisms

Development of a Funding Mechanism for Sustaining Open Source Software for European Public Services

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Study Authors

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B   Annex: Bottom-up monetisation and self-organisation mechanisms and models

In this annex we present more than a dozen bottom-up community-funding, micro-monetisation and self-organisation mechanisms for FOSS. It covers:

- micro-monetisation platforms,
- crowdfunding platforms,
- platforms offering legal and financial services,
- platforms offering project and community services,
- FOSS (business) consortia and companies, and
- initiatives from the public sector and civil society.

More than half of these mechanisms have been expanded into longer case studies. For most of the cases we interviewed users, founders and managers of these platforms and organisations, or asked them for additional input.

We have presented our over-all findings, in terms of aggregated commonalities and peculiarities, in Chapter 3 of the report.

B.1 Micro-monetisation

B.1.1   PayPal Donate button

PayPal is a worldwide, online payment/wallet platform based in the USA. It allows anyone with an e-mail address to open an account and receive, send and hold funds online. PayPal provides a web tool to generate a Donate button[1] that FOSS developers – and anyone else – can place on their websites.

As an alternative to PayPal's own button, you can use your own image to create a customized Donate button, e.g. 'Buy me a beer'. In addition to one-time donations, you can also give visitors the option to make monthly recurring donations. Along with the button, PayPal also creates a direct link and a QR code that can be used on social media and at events.

Paypal

- **vision/aims:** business: payment processor;
- **model:** online payment/wallet platform;
- **transaction cost:** PayPal has an opaque fee structure that combines a fixed fee with a percentage of each transaction. Both elements depend on the type of transaction, the type of parties involved, and the countries involved, plus an additional fee for currency conversions;
  here, for example, you can find the latest fees (December 2020) for Germany: https://www.paypalobjects.com/marketing/web/de/de/paypal-fees/PayPal_DE_Consumer_ Fees.pdf

- geographical area: worldwide;
- **base:** publicly-traded US company;
- **website:** https://www.paypal.com/
- **Wikipedia:** https://en.wikipedia.org/wiki/PayPal

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[1] https://www.paypal.com/donate/buttons
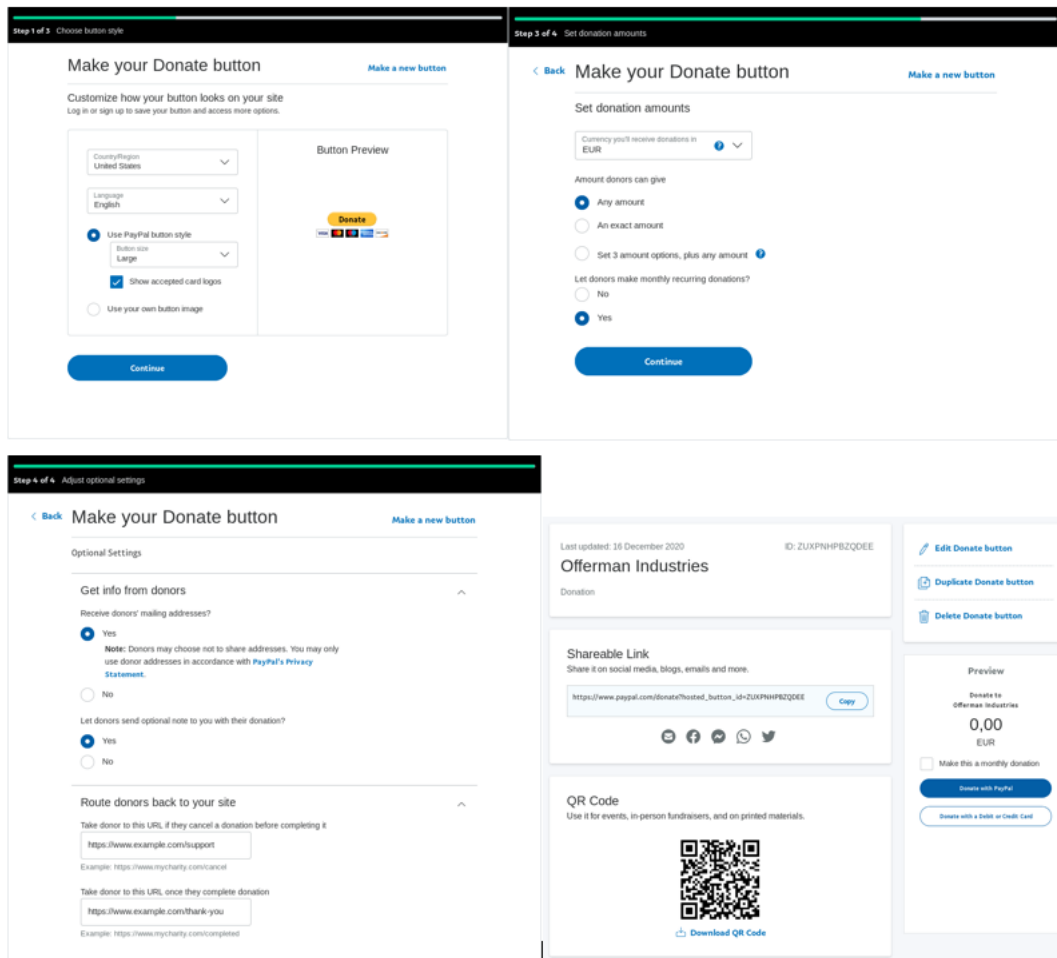
Figure 1 - Paypal "Donate" button

B.1.2   Bitcoin wallet address

Bitcoin is by far the largest cryptocurrency (by market capitalisation)[2] and can be used by anyone through a local wallet (a software application or a mobile app) or via a cryptocurrency exchange (an online portal, wallet and marketplace).

The Bitcoin software (i.e. for the nodes constituting the decentralised network, and for the wallets) is perforce open source.

A FOSS developer willing to receive donations to his/her Bitcoin wallet only has to publish the wallet address online. This can be done as a string, or as a QR code.

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[2] https://coinmarketcap.com/
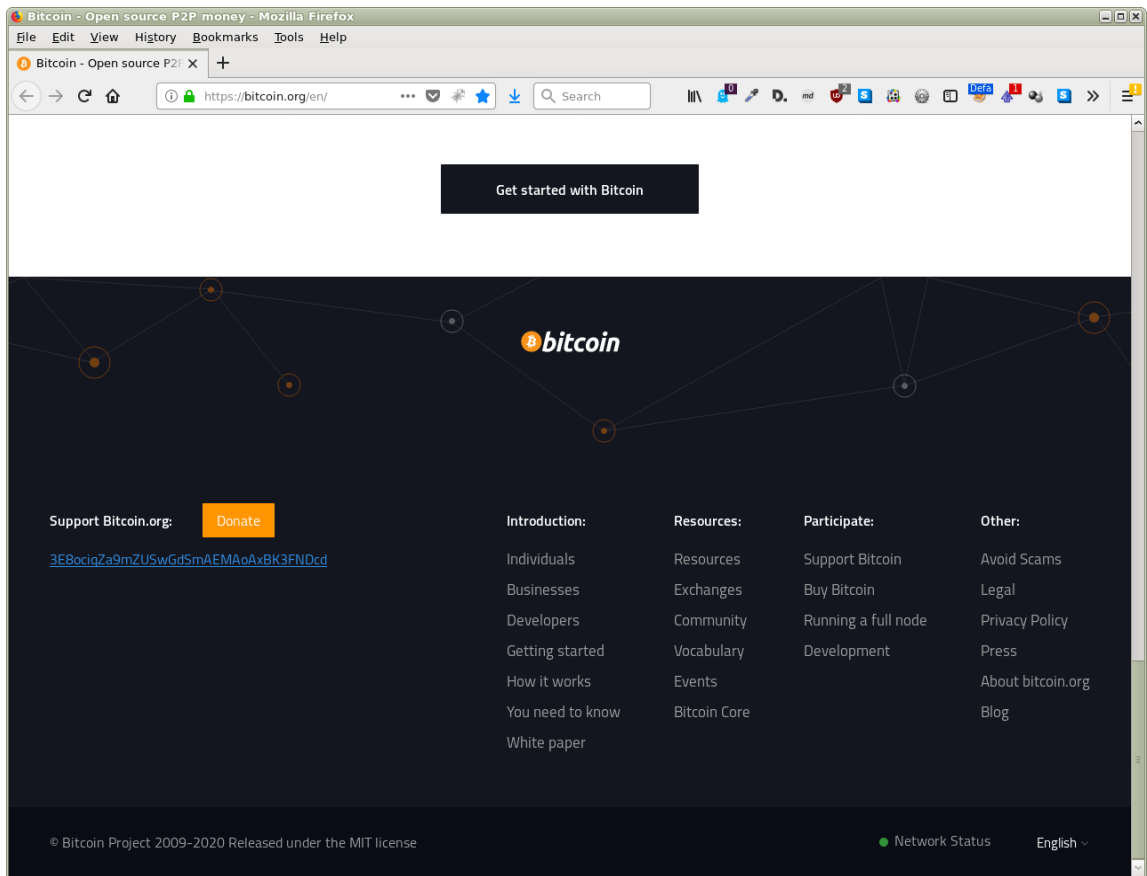
Figure 2 -The call to support including a Bitcoin address on the Bitcoin.org website

Due to the inherent transparency of the public blockchain data structure, anyone can see the incoming (and outgoing) transactions for a given wallet. For example using the blockchain explorer at Blockchain.com.[3]

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[3] https://www.blockchain.com/explorer
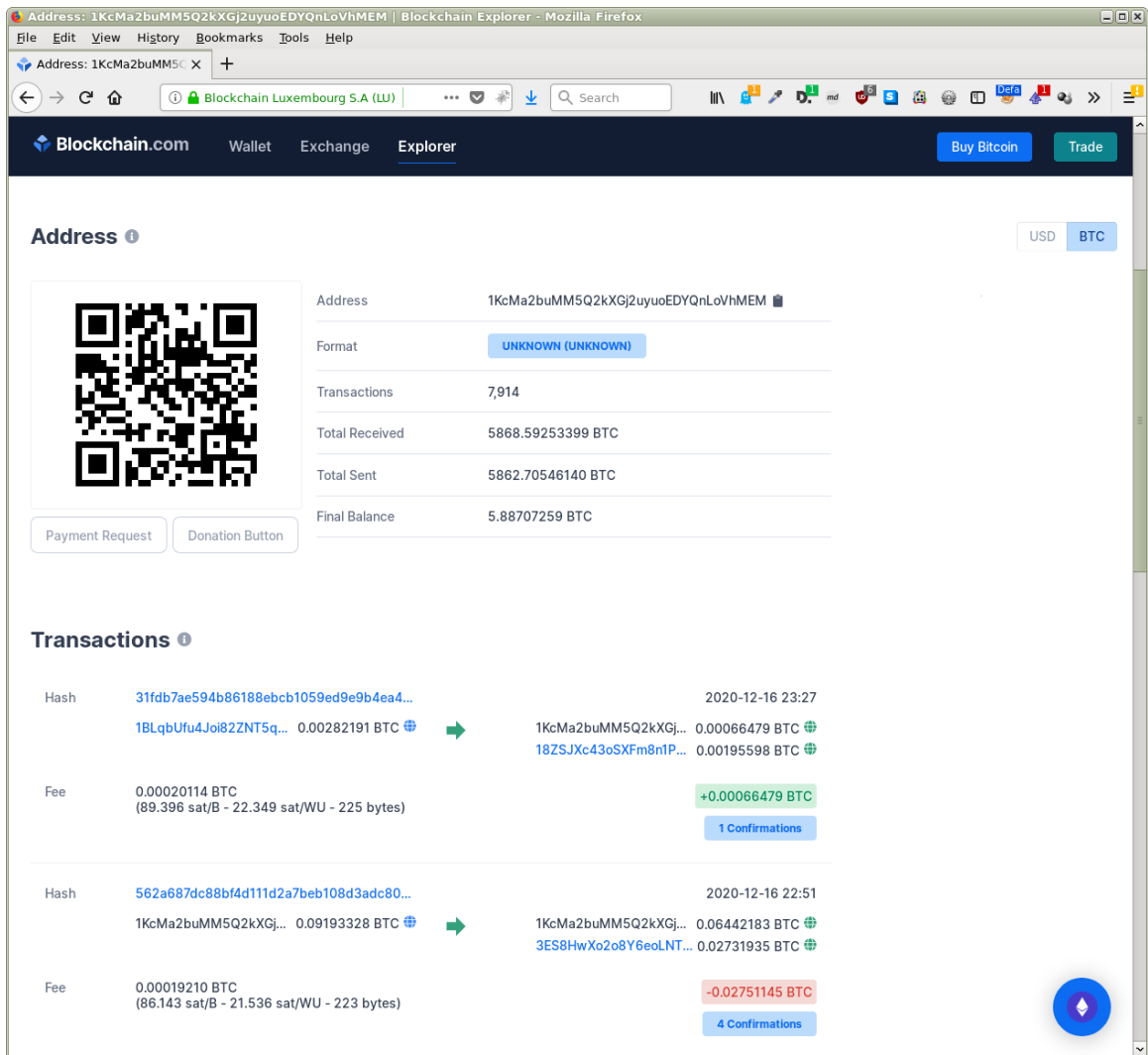
Figure 3 - Blockchain explorer on blockchain.com

Bitcoin walltet

- **vision/aims:** roots in crypto-anarchism;
- **model:** decentralised, pseudonymous, cryptocurrency transaction network;
- **transaction cost:** tens of cents USD in quiet times, up to tens of USD at busy times; USD 8.16 on average on 19 December 2020;[1]
- geographical area: worldwide;
- **base:** decentralised network, basically run by the developers[1] of the Bitcoin Core software[1] (FOSS) and miners (the latter being businesses running large datacentres filled with dedicated mining equipment, of which more than 50 percent is based in China);[1]
- **website:** https://bitcoin.org/en/
- **Wikipedia:** https://en.wikipedia.org/wiki/Bitcoin
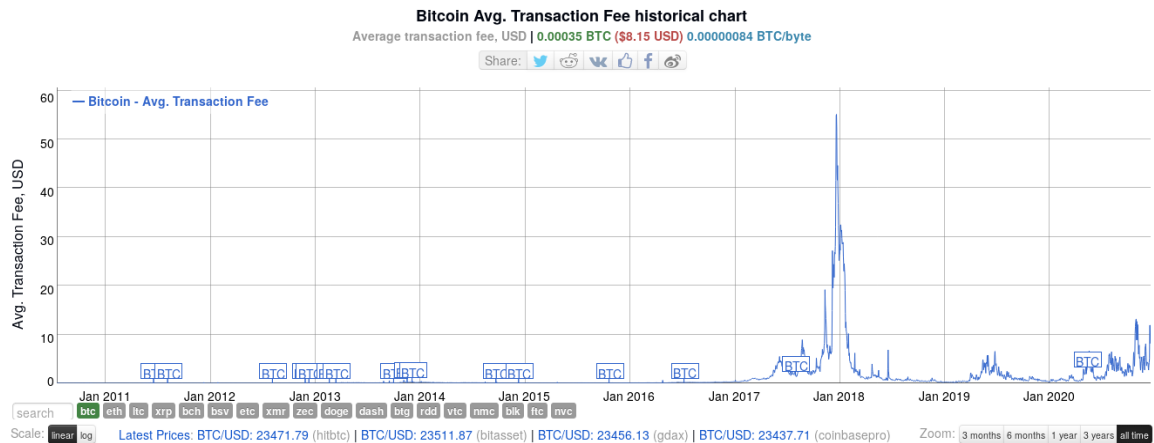
Figure 4 - Bitcoin average transaction fee historical chart. Source: BitInfoCharts[4]

B.1.2.1   An example

In addition to various other (more traditional) payment methods, the Tor Project[5] accepts eight different cryptocurrencies, including several privacy coins.[6] Fox example, between 27 October 2020 and 6 January 2021, the Bitcoin wallet address shown in Figure 5 processed a total of 1.49 BTC (worth about EUR 42,000 on 6 January 2021) in 184 transactions (both incoming and outgoing).

Figure 5 - An example of payments processed on a Bitcoin wallet address[7]

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[4] https://bitinfocharts.com/comparison/bitcoin-transactionfees.html

[5] https://www.torproject.org/

[6] https://donate.torproject.org/cryptocurrency/

[7] https://www.blockchain.com/btc/address/bc1qtt04zfgjxg7lpghk9vk8hnmnwf88ucwww5ars d

While the fees for Bitcoin transactions are generally too high to facilitate micropayments, the pseudonymity provided by the decentralised network could be useful in sending funds to contributors who insist on staying anonymous.

B.1.3   Patreon

Patreon is a US-based company offering a membership platform where content creators can run a subscription service. In exchange for their financial support (a pledge), subscribers (patrons) can be given (early) access to new or specific content, perks, or the creator him/herself.

As the home page of Patreon makes clear, the company wants to appeal to individuals and original creators. Its messaging opposes the established, traditional, "broken" pre-Internet system in rather strong words.
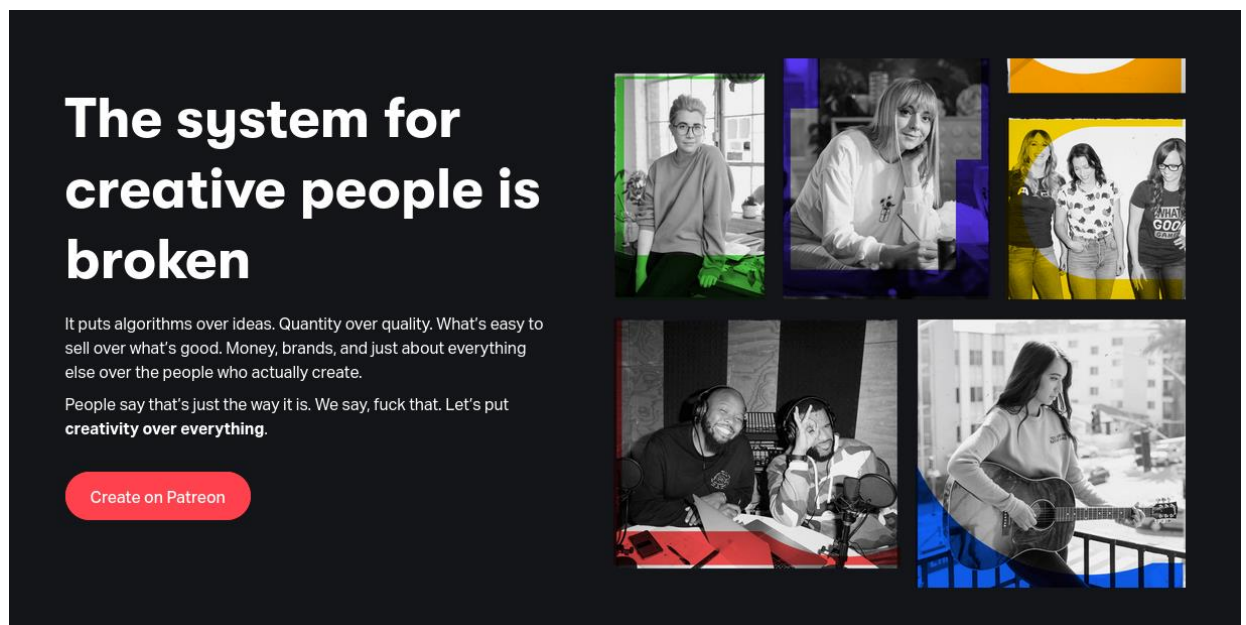
Figure 6 – Patreon: "The system for creative people is broken"

Although Patreon aims at and is used by a wide range of creators and artists, it appears to be increasingly popular with FOSS developers and content creators. It may not be the first choice for actual software (other than for simple sponsorships), but it could be used for instruction, getting-started and problem-solving videos, how-to's and hands-on's, for example.[8]

Registering and setting up a basic account at Patreon is a straightforward, 15-minute process. When opening a creator account, there is a separate category for 'Games & Software'. In a second stage, the creator selects various tiers, through which different monthly contributions give patrons access to specific content and functionality, e.g. access to messages and content, voting power, and so on. Patreon provides a range of pre-cooked tiers to choose from, but these can also be customised by the creator.

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[8] Here you can read about the experiences of several creators with the Patreon platform: https://digg.com/2019/patreon-creator-plans-user-interviews. Although there are no (explicit) software developers among these 13 creators, two of them are game designers.

Patreon

- **vision/aims:** business: targeting individual and original creators, opposing the established/traditional/broken pre-internet system;
- **model:** membership/subscription service for content creators;
- **transaction cost:** in addition to the financial transaction fees (e.g. basic PayPal rate plus an additional 1 percent), Patreon takes a percentage of 5, 8 or 12 percent, depending on the service plan chosen (December 2020); the Lite plan (with a fee of 5 percent) seems sufficient for basic sponsorhips;
- **billing and payments:** patrons are charged on the first day of each month (for a subscription, or per creation);
  creators can pay out their income (minus fees, costs and taxes) manually (up to once every 24 hours) or automatically (once a month)[1] to their Stripe (USA only), PayPal or Payoneer accounts;[1]
- **geographical area**: worldwide;
- **base:** VC-driven USA company;
- **website:** https://www.patreon.com/europe
- **Wikipedia:** https://en.wikipedia.org/wiki/Patreon

Figure 7 - The Patreon registration process for content creators

Creators can ask visitors for support and/or promote their offerings by publishing a 'Become a Patron' button on their websites. Patreon itself provides a snippet of HTML code for displaying a button widget:[9]

Figure 8 - Patreon "Become a Patron" button

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9 https://www.patreon.com/dashboard/widgets

There are also two plugins for WordPress (the most used (FOSS) Content Management System). Available (for free) from 'CodeBard',[10] [11] these display a 'Become a Patron' button on your WordPress site.

Weebly, a web hosting company with an online website builder provides a Patreon button[12] as part of its widget toolkit (i.e. a set of configurable user interface components).
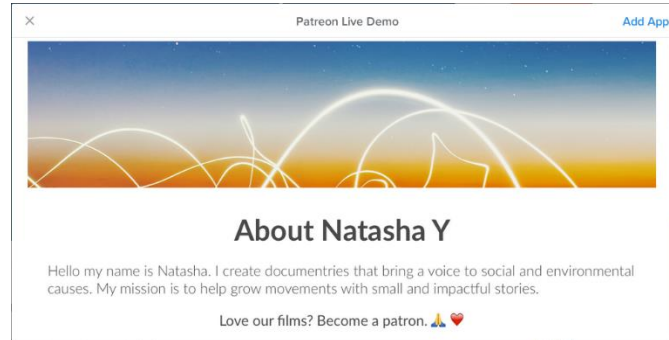
Figure 9 - Patreon button on Weebly.com

B.1.4   Ko-fi

Ko-fi[13] is a social sponsorship platform run by the UK company Ko-Fi Labs Limited. It positions itself explicitly against Patreon[14] [15] as a "low-pressure" alternative that charges no fees for basic donations.

Ko-fi addresses independent ("indie") creatives[16] such as artists, musicians, cosplayers, writers, bloggers, podcasters, video creators/streamers, curators, and developers.[17] The latter offer content like software, course materials and visual effects.

Creators can use the platform to present portfolios and galleries of their work, write blogs, and notify fans and supporters on updates. The platform can be used for:

- one-off monetary donations (i.e. sponsorships),
- subscriptions (i.e. monthly donations, without the commitment for the creator to deliver new or exclusive work – hence the "low-pressure" attribute – but creators can reward their supporters),
- sales of digital goods and physical products (and merchandise) in the Ko-fi shop, and
- sales of commissions for unique pieces of work made to order.

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[10] https://profiles.wordpress.org/codebard/#content-plugins

[11] https://codebard.com/

[12] https://www.weebly.com/app-center/patreon1

[13] https://ko-fi.com/

[14] https://more.ko-fi.com/patreon-alternative

[15] https://medium.com/@kofi_blog/patreon-or-ko-fi-whats-the-difference-e2ce81a4334e

[16] https://ko-fi.com/Explore

[17] https://ko-fi.com/Explore?category=software

Creators can incorporate a Ko-fi button into their Wordpress sites using an open-source plugin.[18] The Ko-fi team has also just published a short how-to on doing the same thing on GitHub.[19]

Figure 10 - An example of Ko-fi account on Twitter

B.1.4.1   Business model and platform

Unlike Patreon (see above), Ko-fi functions not as a payment processor, but only as an intermediary. This means that payments go directly (and instantly) from supporters to creators. The platforms supports PayPal (see section B.1.1), Stripe and Apple Pay.

Ko-fi's members are bound by the conditions imposed by these service providers. Ko-fi forbids adult content and services, and violent and aggressive content.[20]

The business model of Ko-fi itself is based on the freemium model, a strategy often used in the software world (and not without controversy in the FOSS community):

- basic pages and donations are free (for now) (apart from the fees imposed by the payment processors for receiving money), but

- monthly subscriptions, goals that can be funded (i.e. crowdfunded, see section B.2), the shop, a paywall to sell exclusive content, and commissions all require either a Gold membership (currently USD 6 per month),[21] or a 5% cut of all transactions.

Ko-fi started in July 2012,[22] and has been a Limited company since November 2017. It has 500,000 registered Creators, of which about 40% (circa 200,000) are based in Europe. Ko-fi has millions of Supporters (not necessarily registered), and has overseen the payment of more than 50 million USD to Creators.[23] [24] According to a

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[18] https://wordpress.org/plugins/ko-fi-button/

[19] https://help.ko-fi.com/hc/en-us/articles/360021025553-How-to-Use-Ko-fi-with-Github

[20] https://more.ko-fi.com/terms

[21] https://ko-fi.com/gold

[22] https://medium.com/@kofi_blog/the-story-so-far-af61709d39cd

[23] https://www.linkedin.com/in/simonellington/

[24] https://www.linkedin.com/in/nigelpickles/

blog post,[25] Ko-fi is an "independent, profitable platform, funded directly by Ko-fi Gold subscriptions, donations to the platform and optional transaction fees for some features".

Co-founder Simon Ellington[26] confirmed that the Ko-fi company can sustain itself. Of the 50 million USD in total transactions, 24 million was made in 2020. "Ko-fi has been growing more than 100% per year." The company currently consists of seven people, with a few more expected this year.[27]

Ko-fi is a company of developers, but is not itself a FOSS-driven initiative.

According to Ellington, most of the developers are more into games and visual effects (i.e. more arty) than pure coding. At the same time, Ko-fi's most successful creator of 2020 was web developer Avi Schiffmann,[28] who brought in more than 300,000 USD for his COVID-19 information portal nCoV2019.live,[29] which also won him the title '2020 Webby Person of the Year'. [30] [31]
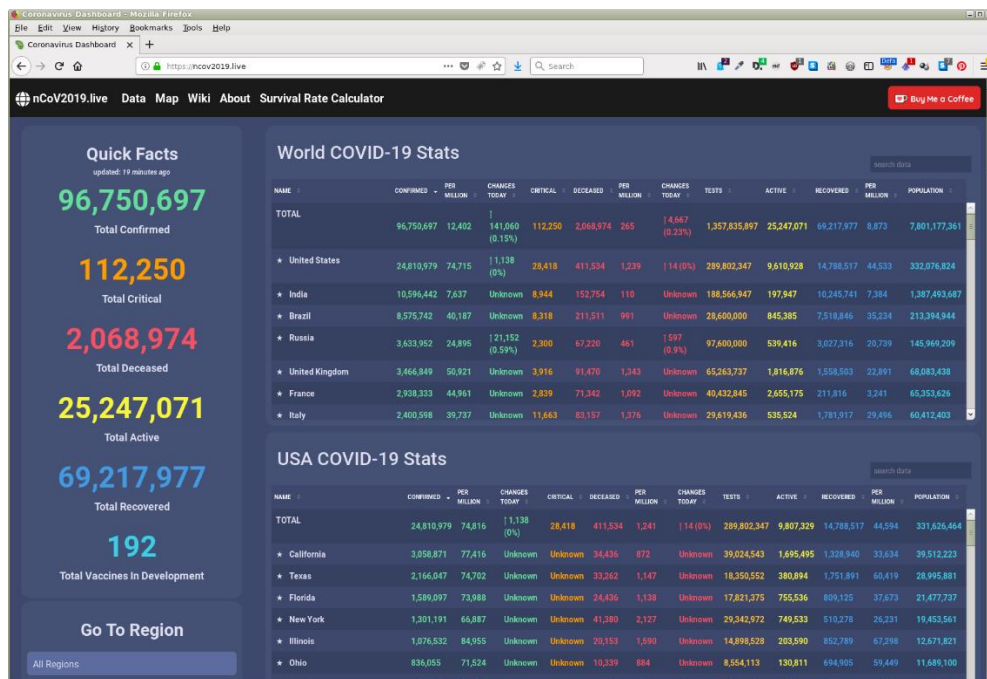
Figure 11 - Schiffmann's COVID19 information portal nCoV2019.live, with Ko-fi's 'Buy Me a Coffee' button at the top[32]

B.1.4.2   Interview

The key points from an interview with Simon Ellington, Co-founder of Ko-fi, on 20 January 2021, are:

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[25] https://medium.com/@kofi_blog/patreon-or-ko-fi-whats-the-difference-e2ce81a4334e

[26] https://www.linkedin.com/in/simonellington/

[27] interview with Ko-fi co-founder Simon Ellington, 20 January 2021

[28] https://www.linkedin.com/in/avi-schiffmann/

[29] https://ncov2019.live/

[30]   https://www.webbyawards.com/press/press-releases/winners-announced-for-the-24th-annual-webby-awards/

[31]   https://medium.com/@kofi_blog/avi-schiffmann-chooses-ko-fi-to-fund-top-covid-tracker-turns-down-8m-in-advertising-68a2f47ef726

[32] https://ncov2019.live/

- 20,000 of the 500,000 Creators (i.e. only 4%) are developers;
- by a large margin most of the creators cannot sustain themselves through Ko-fi, e.g.
  - the top 2% can earn a significant amount of money;
  - mid-level creators have some income; and
  - the vast majority make only small amounts, which for example covers (part of) their hosting;
- for each creator there is a similar pyramid on the supporters' side:
  - a small number of dedicated fans willing to provide substantial financial contributions;
  - a larger number of supporters donating smaller amounts and/or occasionally;
  - the largest fraction of users do not contribute;
- Ko-fi wants to provide a set of tools for monetisation that feels less like marketing or "begging";
  - although it started with donations, Ko-fi now includes subscriptions, and sales of digital and physical products, merchandise and commissions;
  - in January 2021, Ko-fi introduced direct messages;[33]
  - later this year, the platform will support tiered access that visitors can buy;
  - according to Ellington, creators are more and more using goals (e.g. a code audit) that can be sponsored (compare crowd funding, see section B.2) and tiered access;
  - from the available tool set, creators can select their own mix, depending on their specific needs and wishes;
  - a big problem is that most creators have a very modest audience;
- according to Ellington, platforms like YouTube (for videos), Medium[34] (for texts) and Stack Overflow[35] (for computer programming knowledge) were built for discovery, but share only a small percentage of their income with the creators;
- servicing the wider creator community makes it hard for Ko-fi to implement tools targeting specific groups within this community, so for now the platform will offer (and work on) a set of more generic tools;
- according to Ellington, the platform may move into providing discovery tools in the future.

Three examples of developers (all women) who successfully use Ko-fi to generate a modest income are:[36]

- https://ko-fi.com/lotte
- https://ko-fi.com/jennyonrails
- https://ko-fi.com/cyberbarbie

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[33] https://ko-fi.com/post/New--Direct-Messages-Are-Live-D1D53DB4F

[34] https://medium.com/

[35] https://stackoverflow.com/

[36] Provided by Simon Ellington, co-founder of Ko-fi

B.1.5 Compare DeviantArt

One of the popular platforms offering similar membership/subscription services to specific creators and audiences is DeviantArt.

DeviantArt[37] is a community for creators of art including traditional and digital artwork, photography, videography and literature; not just for aesthetic purposes (i.e. to look at) but also (originally) to be used in technical ways, e.g. skins, themes and textures.

In addition to generic social media functionality, artists ("deviants") can present their portfolios and journals (i.e. blog posts), annotate and comment on each other's works ("deviations"), and sell their works (e.g. as prints) and their skills (on a commission basis).

A competitive element is provided by companies who organise contests through which members can make themselves seen and win cash prizes.

Members use the Creative Commons (CC) license[38] in all its variants to publish and protect their works.

B.1.6 Examples

Examples of people asking for support through Patreon, Ko-fi and others while communicating their FOSS productions:

Figure 12 - Examples of OSS projects asking for support through micro-monetisation

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[37] https://www.deviantart.com/
[38] https://creativecommons.org/

B.1.7 How micro donations are not working: a tale of half a dozen micro-monetisation mechanisms

Cajetan Bouchard, the founder of FOSS Torrents (see section B.4.2), shared his experiences with more than half a dozen micro-funding and monetisation mechanisms over the last few years. His experiences are summarised below.[39]

The reason for including this story is that it seems typical of the issues a great many individual developers experience when trying to sustain their FOSS productions.[40]

- **Google Adsense** (i.e. advertisements on your website/products): some ads give you a few USD per click, but most give a few cents. That means that you need a very high number of page views to make substantial money.

  Bouchard says he currently (January 2021) receives 700 page views per day, which generates about 10 cents (without any clicks). Furthermore, last month his account was suspended for click fraud investigation after someone clicked on 26 ads on his website in a few minutes ("As a product owner, I'm at the mercy of a big corporation – let alone how my users get tracked by those third parties"):

- **Ko-Fi** (a platform where people can make donations typically of a few Euros; see section B.1.4): platforms like this are mostly one-time donations. Bouchard received nothing at all using this platform.

- Patreon (a platform where people can sponsor you with a small amount of money every month, usually in exchange for some exclusivity; see section B.1.3): After two months, Bouchard is now receiving 6 USD per month from two patrons, one of which is a Linux distribution group that uses his FOSS Torrents service. Subtracting the fee that Patreon takes, his income is about 5.20 USD per month.

- **Affiliates** (i.e. premium ads from which you earn commission on the sale of a showcased product): this looks promising on paper, as some will give you 20 USD on a 100 USD sale. However, Google will immediately pinch off your organic search traffic (since affiliate marketing is a competing monetisation model; "Google hates affiliates!")

Bouchard shared with us a diagram (see Figure 13) clearly showing a strong decline in traffic after just adding information on affiliate advertisements for The Linux Foundation (Training)[41] and the Yubiko authentication key (YubiKey)[42] to his site.[43]

According to him, affiliate programmes should work better when embedded in (YouTube) videos and audio (e.g. podcasts) than on websites, or Google will kill your traffic.

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[39] mail exchange with Cajetan Bouchard (Canada), founder of FOSS Torrents; January 2021

[40] interview with Ko-fi co-founder Simon Ellington; 20 January 2021

[41] https://training.linuxfoundation.org/affiliates/

[42] https://www.yubico.com/about/affiliate-program/

[43] https://fosstorrents.com/affiliate/
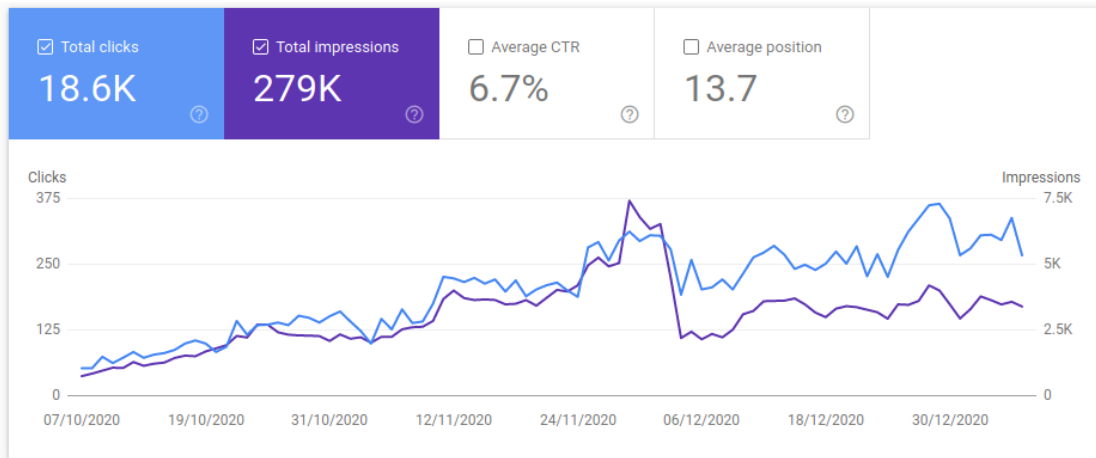
Figure 13 - Organic search traffic of the FOSS Torrents website slumped after affiliate advertisements were added to the site. Source: Cajetan Bouchard

- **Redbubble** (a partner shop selling print-on-demand merchandise such as clothing, stickers and phone cases): Bouchard recently created images and logos to feature on his blog posts, with the idea that these could be printed on merchandise that readers could buy. Currently he is partnering and sharing the profits with someone else. With only three items in the shop at that moment, two articles were sold, earning the partners about 5 USD.

Bouchard is currently looking into donations, based on PayPal (see section B.1.1) and/or cryptocurrencies (see section B.1.2).

In a later instance, Bouchard reported positive experiences using Open Collective and EthicalAds:[44]

- **OpenCollective** (see section B.3.1) is an amazing service to help funding existing open-source projects that are well established. The major criteria is to be an open-source project with your code available on GitHub or GitLab. Your project should have at least 100 stars to be considered an active contribution to the community. Services are available to help manage the money and generate the fiscal reports for the company.

- **EthicalAds**[45] is a small advertisement company that uses the page's content to suggest an ad (not the user's previous page views); they don't use cookies, they don't track the user. They will check the users IP address and prevent an ad to be displayed if their IP doesn't belong to a country that their client supports. The amount received is quite interesting, after using it for seven days, I've made USD 4.01 for 3 277 page views (Note: I only display ads on about 20 pages in order to eventually be able to cashout Google's money and convert everything to EthicalAds).

"Both groups are human focused and will contact you in person before approving or rejecting your partnership. You are not a number in a database managed by bots."

This is what Bouchard said about his personal experience and situation: "*FOSS communities run on the good will of good people. I think only one user in 10,000 will consider donating money to a FOSS project. That doesn't make a lot of money for the people who are creating amazing products. With FOSS Torrents, I've had the pleasure of being in contact with many great people, but I noticed that many projects are run by just one or two core contributors. That's the case for us too: I*

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[44] mail exchange with Cajetan Bouchard (Canada), founder of FOSS Torrents; February 2021

[45] https://www.ethicalads.io/

basically do everything and ask for opinions and expertise from two of my friends from time to time. I'm lucky to have a wife who makes a good living, so we have food on the table, but I will need to start making serious money soon if we want to survive 2021. I started to look for paid jobs, and I know it will affect FOSS Torrents when I go back to coding for someone else. That's the reality: we all need to make a living somehow."

B.1.8 Personal cross-subsidising

Cajetan Bouchard described above how he (more specifically, his wife) has been cross-subsidising his FOSS endeavours. From this project and the EU-FOSSA 2 project we learned that this is very typical for individual FOSS developers and small groups: they often work on projects in their spare time, alongside their day jobs, and not infrequently at a cost of other people (e.g. family members) and themselves (e.g. their health). Below we include two examples from an article published by The Register in December 2020:[46]

"*To make ends meet, [Ciprian Bacioiu, or Zapa] takes on mobile game development contracts for freelance clients. When he has enough to live on for a few months, though, he concentrates on his one-person development studio, Bearded Giant Games, which pumps out ports and original creations for Linux fans.*

Zapa copes with the revenue issue by keeping costs low. As a solo developer living in Romania, selling 5,000 copies of a $10 game can keep him working on more games full time. "That gives me a runway of about six months," he says. "In some cases, that's equal to about two to four games."

He generally gets at least $200 through from sales of [Ebony Spire: Heresy] and his other game on Steam. That might buy an Ubisoft executive lunch. 'In a low-income country, that by itself pays rent' he says.

[Caspian Prince] works remotely with pals in his spare time, often staying up till 3am to code after his day job... developing software.

Even with its Patreon donations, the firm is just about breaking even. Doing stuff for free or donations is a big part of the Linux gaming ethos, which is often steeped in open source. Prince open-sourced the LJGL [Lightweight Java Game Library, a framework he developed] in 2002, and six years later Markus Persson (aka "Notch") used it as the graphics engine for that obscure indie title Minecraft. Persson sold his studio, Mojang, to Microsoft for $2.5bn in 2014. Neither Prince nor the LJGL project saw a penny in sponsorship or goodwill money."

B.1.9 An example of a high-profile project: Linux Mint

Linux Mint[47] is a popular Linux distribution, ranking number three[48] on the Distro Watch portal.[49] Its distinguishing feature is its out-of-the-box one-click support for

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[46] article 'Why make games for Linux if they don't sell? Because the nerds are just grateful to get something that works', published by The Register on 26 December 2020;

https://www.theregister.com/2020/12/26/linux_game_development_scene/

[47] https://linuxmint.com/

[48] https://distrowatch.com/table.php?distribution=mint

[49] https://distrowatch.com/

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proprietary multimedia formats and programs (e.g. plugins with FOSS-incompatible licences, codecs, firmware blobs) during installation.[50]

The Linux Mint website has several pages on how to support the project, including lists of people and organisations who have supported the distro:

- sponsorships,[51]
- partnerships,[52]
- a store,[53] and
- donations.[54]

From the Donations page – featuring PayPal buttons, a Patreon button and several cryptocurrency wallet addresses – we learn that most donations are small amounts up to a few dozen USD. Amounts of 100 USD or more are exceptions. According to an overview diagram on the same page, the monthly totals typically vary between 10,000 and 15,000 USD (with each December bringing in roughly double that amount).
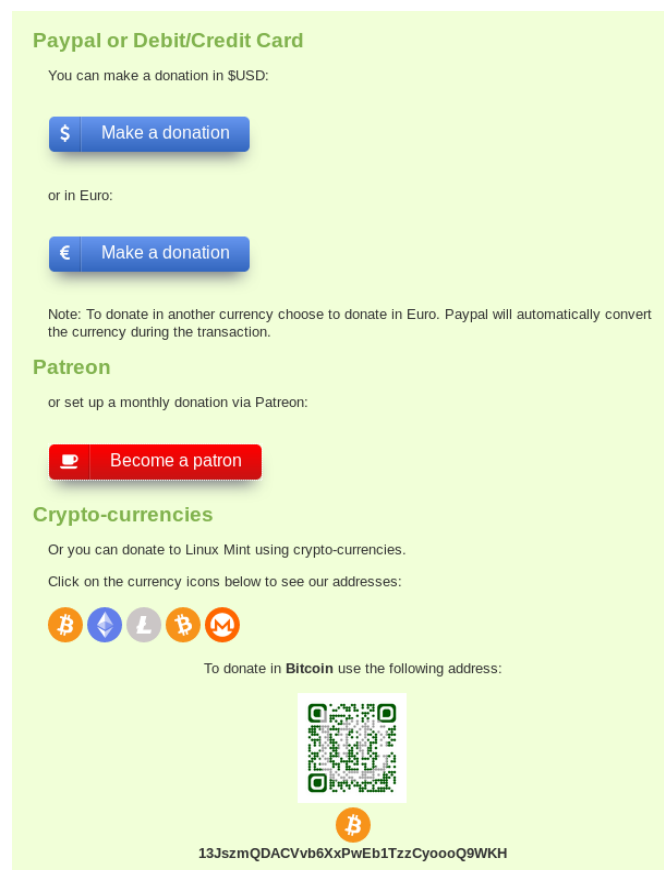
Figure 14 - The Donations page featuring PayPal buttons, a Patreon button and cryptocurrency wallet addresses. Source: Linux Mint Donations page, January 2021[55]

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[50] https://linuxmint-installation-guide.readthedocs.io/en/latest/install.html

[51] https://linuxmint.com/sponsors.php

[52] https://linuxmint.com/partners.php

[53] https://linuxmint.com/store.php

[54] https://linuxmint.com/donors.php

[55] https://linuxmint.com/donors.php
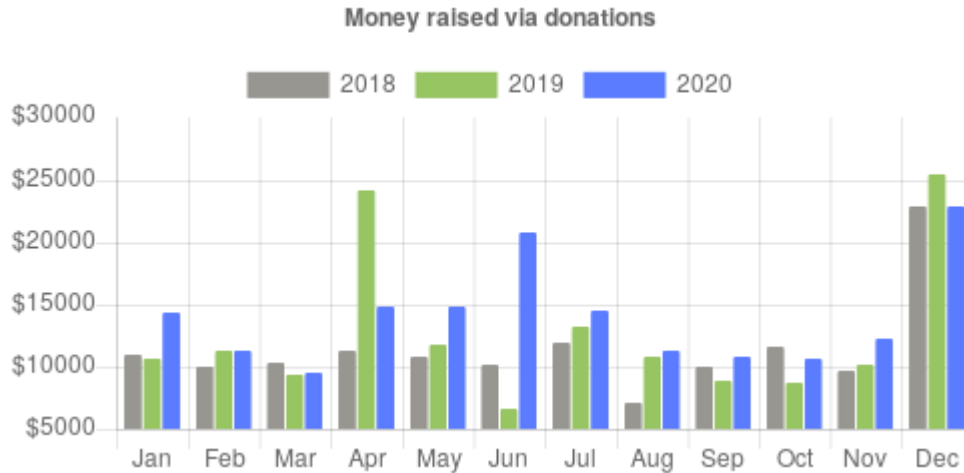
Figure 15 - Money raised via donations. Source: Linux Mint Donations page, January 2021[56]

Looking at Linux Mint's Patreon page,[57] we see that they currently (13 January 2021) have 518 Patrons, donating EUR 2,314 monthly.

Figure 16 - Patrons and donations to Linux Mint as of 13 January 2021[58]

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[56]https://linuxmint.com/donors.php

[57]https://www.patreon.com/linux_mint

[58] https://www.patreon.com/linux_mint

Even though to individual developers this may come across as a large amount, it is actually rather limited if you consider the popularity of Linux Mint and the fact that is used by millions of people and in many companies.

Figure 17 - Pledge to support Linux OS developers and open source teams[59]

[59] From https://twitter.com/OrdinaryGamers/status/1351730683924897795: Mutahar Anas, owner and operator of the YouTube channel SomeOrdinaryGamers (S.O.G.; 2.39M followers - https://www.youtube.com/user/SomeOrdinaryGamers)

B.2 Crowdfunding platforms

B.2.1   Kickstarter

Kickstarter,[60] launched in 2009, is a US-based crowdfunding platform where creators and backers meet. Creators can upload their ideas, and third parties can choose to back a product by pledging their money. "Every project creator sets their project's funding goal and deadline. If people like the project, they can pledge money to make it happen. If the project succeeds in reaching its funding goal, all backers' credit cards are charged when time expires."[61]

Kickstarter's mission statement says:[62]

"Our mission is to help bring creative projects to life. We believe that art and creative expression are essential to a healthy and vibrant society, and the space to create requires protection.

We don't want art world elites and entertainment executives to define our culture; we want creative people – even those who've never made anything before – to take the wheel. We help creators connect directly with their communities, putting power where it belongs.

In 2015 we became a Public Benefit Corporation – a for-profit company that prioritises positive outcomes for society as much as our shareholders. We updated our corporate charter to lay out specific goals and commitments to put our values into our operations, promote arts and culture, fight inequality, and help creative projects happen."

Kickstarter

- **vision/aims**: "Our mission is to help bring creative projects to life. We believe that art and creative expression are essential to a healthy and vibrant society, and the space to create requires protection.
  We don't want art world elites and entertainment executives to define our culture. We help creators connect directly with their communities, putting power where it belongs."

- **model:** a US-based, Delaware-registered Public Benefit Corporation (more generally, a benefit corporation) providing a crowdfunding platform;
  Kickstarter applies a 5% fee to the funds collected for creators (in addition to the roughly 3--5% of payment processor Stripe);

- **funding:** since 28 April 2009, almost 200,000 projects have been successfully funded, over 19 million people have backed a project, and nearly 5.6 billion USD has been pledged (February 2021);
- **geographical target**: worldwide;
- **base:** New York, USA;
- **website:** https://www.kickstarter.com/
- **Wikipedia:** https://en.wikipedia.org/wiki/Kickstarter

Just like Patreon and Ko-fi (see sections B.1.3 and B.1.4), Kickstarter aims at independent creators, positioning itself as an alternative to the traditional art and entertainment world.

All three initiatives, of course, are examples of internet-driven disintermediation, where traditional intermediaries are replaced by internet platforms directly connecting creators (supply) and buyers (demand).

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[60] https://www.kickstarter.com/

[61] https://www.kickstarter.com/help/taxes

[62] https://www.kickstarter.com/about

The Kickstarter team consists of 92 people (developers, designers, support specialists, writers, musicians, painters, poets, gamers, robot-builders), who mostly work from New York.[63]

B.2.1.1   The platform

To protect the core values of the platform – transparency, trust and honesty – Kickstarter has set three rules for the users of its platform (the community):[64]

- "don't spam";

- "don't be a jerk"; and

- "if you see something, say something".

These rules relate to the goal of Kickstarter, which is "to provide a safe and trusted platform where people are honest and open with one another as they collaborate to bring creative projects to life". It is enforced by the Trust & Safety team, which is "always watching over the platform and reviewing reports from the community".[65]

At the same time, Kickstarter emphasises that its role is limited to being a platform provider. It urges potential backers to do their homework before backing a project, and to have realistic expectations:[66]

Creators are responsible for their projects. When you back a project, you're trusting the creator to do a good job, so if you don't know them personally or by reputation, do a little research first. Kickstarter doesn't evaluate a project's claims, resolve disputes, or offer refunds – backers decide what's worth funding and what's not.

Some projects won't go as planned. Even with a creator's best efforts, a project may not work out the way everyone hopes. Kickstarter creators have a remarkable track record, but nothing's guaranteed. Keep this in mind when you back a project.

When a creator posts a project on Kickstarter, they're inviting other people to form a contract with them. Anyone who backs a project is accepting the creator's offer, and forming that contract.

Kickstarter is not a part of this contract – the contract is a direct legal agreement between creators and their backers.

The terms that govern the agreement can be found at https://www.kickstarter.com/terms-of-use.

B.2.1.2   Creators

Creators on Kickstarter must meet the following requirements:[67]

- be 18 years of age or older (people under the age of 18 can launch projects only in collaboration with an adult or guardian who meets all the listed requirements);

- be a permanent resident of the US, UK, Canada, Australia, New Zealand, the Netherlands, Denmark, Ireland, Norway, Sweden, Germany, France, Spain,

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[63] https://www.kickstarter.com/about

[64] https://www.kickstarter.com/help/community

[65] https://www.kickstarter.com/trust

[66] https://www.kickstarter.com/trust

[67] https://help.kickstarter.com/hc/en-us/articles/115005128594-Who-can-use-Kickstarter-

Italy, Austria, Belgium, Switzerland, Luxembourg, Hong Kong, Singapore, Mexico, Japan, Poland, Greece, or Slovenia;

- the project must be created in your own name, or on behalf of a registered legal entity with which you are affiliated;

- have an address, bank account, and government-issued ID based in the country that you're creating a project in; only a limited number of EU countries are eligible on Kickstarter;

- the bank account must belong to the person who verified their identity for the project;

- have a major credit or debit card; and

- must have the authority to represent the organisation to Kickstarters' payments partner, Stripe.

B.2.1.3   Projects

Project should fall into one of these categories: Art, Comics, Crafts, Dance, Design, Fashion, Film & Video, Food, Games, Journalism, Music, Photography, Publishing, Technology, and Theatre.[68]

Creators are advised to be open, honest and responsive with regard to their projects and the questions they receive. They are warned not to game the system or make the project look more popular than it is (e.g. by self-funding). The penalty for such behaviour is suspension of the project.[69] [70]

Kickstarter offers creators a 'collaborators tool' that allows them to grant teammates access to help with the project (e.g. edits to the project or managing the community).[71]

Kickstarter does not endorse or have any affiliation with people who promote or market a project. To protect creators against unsolicited and unnecessary services, the team has created a list of 'creator tested and recommended services' for fulfilment.[72] They have also created a section on the website that tells creators how to deal with requests from service providers offering their help in getting exposure. They advise creators to use free tools like Trello, TweetDeck and HootSuite for project management or planning social media posts.[73]

After visiting the project page of a creator, backers should have a clear sense of:[74]

- what the creator is trying to create;

- how the creator plans on doing so;

- the creator's story, i.e. the creator needs to let their backers know what brought them to Kickstarter;

- the progress the creator has made so far, i.e. how far along is the project? and

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[68] https://www.kickstarter.com/rules

[69] https://help.kickstarter.com/hc/en-us/articles/115005139813

[70] https://www.kickstarter.com/trust

[71] https://help.kickstarter.com/hc/en-us/articles/115005127874

[72] https://www.kickstarter.com/help/resources

[73] https://www.kickstarter.com/blog/before-you-work-with-a-marketing-service-consider-this

[74] https://help.kickstarter.com/hc/en-us/articles/115005134273-What-information-should-I-share-on-my-project-page-

- the budget, and how the creator plans to use their funds.

A list of prohibited projects and prohibited rewards can be found at https://www.kickstarter.com/rules/prohibited.

All projects are reviewed by Kickstarter before they are launched to ensure that an idea is new and creative, is properly thought out, has a clear end goal, and doesn't break the rules of the platform.[75]

To help creators get their projects ready to launch, Kickstarter provides them with a list of tips and resources.[76]

Projects that stand out can received a 'Project We Love' badge.[77]

To help creators estimate their funding goals, Kickstarter offers them the use of a funding calculator.[78]

In addition, there is the Project Budget tool, which helps creators build an informed budget, avoid unforeseen costs, and set a funding goal. This tool appears to be hosted on Google Sheets.[79]

The content submitted to Kickstarter by creators is not owned by the company, but certain licences with regard to the submitted content are required for Kickstarter to perform its services: "You grant to us, and others acting on our behalf, the worldwide, non-exclusive, perpetual, irrevocable, royalty-free, sublicensable, transferable right to use, exercise, commercialise, and exploit the copyright, publicity, trademark, and database rights with respect to your content. In general, we use this content to promote projects and showcase our community on the website."[80]

B.2.1.4   Backers and rewards

"*Anyone, from anywhere, can pledge to a project as long as they have a major debit or credit card*."[81] Backers are advised to do some research before they decide to back a project. Kickstarter gives them some guidance and advises them to explore the project page, where information about the project is shared. This includes a 'risks and challenges' section. Questions about a project can be directed to the creator through the 'ask' button at the bottom of each project page. If a backer comes across something suspicious, there is also a 'report this project' button on every page.[82]

If a backer decides to back a project, two options are possible. There is the option to 'pledge without a reward', which means you back the project because you believe in it or it speaks to you. In this case, the backer gets no physical reward for investing in the project. The other option is to 'pledge with a reward', in which case

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[75]   https://help.kickstarter.com/hc/en-us/articles/115005134333-Can-Kickstarter-be-used-to-fund-anything-

[76]   https://help.kickstarter.com/hc/en-us/articles/115005128554-What-are-some-things-I-should-do-before-launching-my-project-

[77]   https://help.kickstarter.com/hc/en-us/articles/115005135214-How-does-my-project-become-a-Project-We-Love-

[78]   https://help.kickstarter.com/hc/en-us/articles/115005134293-What-should-I-consider-when-setting-my-funding-goal-

[79]   https://help.kickstarter.com/hc/en-us/articles/360035551894-Using-Project-Budget-to-calculate-your-project-s-funding-goal

[80] https://www.kickstarter.com/terms-of-use

[81] https://help.kickstarter.com/hc/en-us/articles/115005128594-Who-can-use-Kickstarter-

[82] https://www.kickstarter.com/trust

the rewards are divided into tiers. A small pledge returns a small reward if the pledge goal has been reached within the set time limit. If a larger amount is pledged, a larger reward is granted.[83]

Rewards take the form of the subject of the project. An example is provided by the most funded project on Kickstarter:[84] the Pebble Time smartwatch. The more money you chose to pledge, the more watches you received (plus more choice in the material the watches are made of) once the funding goal was reached.[85]

Kickstarter says about rewards:[86]

"*Rewards are typically items created as a result of running a successful Kickstarter project (a copy of the album, a print from the collection) or more experiential rewards (visits to the set, a private cooking class). Your reward idea doesn't necessarily need to be a physical item. However, rewards should aim to bring backers closer to your project. You know better than anyone what your community wants, think of things that would get you excited to back a project.*"

Kickstarter offers creators tools and options that will help them itemise the rewards they plan to offer, build a range of reward tiers, and more. More information about creating and managing rewards can be found at https://help.kickstarter.com/hc/en-us/articles/360053598973-How-do-I-create-and-manage-rewards-. A list of the minimum and maximum reward tier values per country can be found at https://help.kickstarter.com/hc/en-us/articles/115005128334-Is-there-a-maximum-reward-tier-value-.

Investments are not permitted on Kickstarter. This means that projects can not offer incentives like equity, revenue sharing or investment opportunities.[87] Project creators keep 100% ownership of their work. "Some projects that are funded on Kickstarter may go on to make money, but backers are supporting projects to help them come to life, not financially profit."[88]

"*While nonprofits are welcome to launch projects on Kickstarter, projects can't promise to raise funds to donate to a charity or cause. Funds raised on Kickstarter must go towards facilitating the project outlined by the creator on the project page.*"[89]

If a backer decides to back a project, he/she is not charged immediately. Only if the project reaches its fundraising goal will payment be collected. Also, a backer can cancel or decrease their pledge at any moment before the funding goal is reached (except for the last 24 hours of the campaign, at which point customer support needs to be contacted because otherwise the project might drop below its funding goal).[90]

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[83] Two examples are provided here: https://www.kickstarter.com/projects/eduonix/javascript-bootcamp-build-apps-with-top-3-js-frameworks; https://www.kickstarter.com/projects/emilyree/pand-emi-c-sketch-make-100

[84] https://www.kickstarter.com/discover/advanced?sort=most_funded

[85] https://www.kickstarter.com/projects/getpebble/pebble-time-awesome-smartwatch-no-compromises

[86] https://help.kickstarter.com/hc/en-us/articles/360053598973-How-do-I-create-and-manage-rewards-

[87] https://www.kickstarter.com/rules

[88] https://www.kickstarter.com/help/taxes

[89] https://www.kickstarter.com/rules

[90] https://www.kickstarter.com/terms-of-use

If a project does not reach its funding goal, no fees are collected by Kickstarter, but: "If a project reaches its funding goal, Kickstarter applies a 5% fee to the funds collected for creators. Stripe, our payments processor, will also apply payment processing fees (roughly 3–5%). The complete fee breakdowns are available at https://www.kickstarter.com/help/fees.[91]

The statistics on Kickstarter projects are updated daily and are available at https://www.kickstarter.com/help/stats.

This data is not available on a year-by-year basis but reflects all available data since the platform was launched. Since 28 April 2009, almost 200,000 projects have been successfully funded, over 19 million people have backed a project, and nearly 5.6 billion USD has been pledged (February 2021).[92]

B.2.2   Crowd Supply

Crowd Supply,[93] launched in 2012, is a US-based crowdfunding platform revolving around hardware. On the platform, creators can start a crowdfunding campaign to try and attract enough backers to meet the funding goal for their projects. After the funding goal has been reached, the product can be produced and distributed to the backers. Crowd Supply serves as the platform where supply meets demand, and as the distributor of the resulting products.

The mission of Crowd Supply is to "bring original, useful, respectful hardware to life".[94] Crowd Supply is a place for designers, developers and engineers to launch open-source electronics hardware and related products. It is not a place for projects that are 'software only', 'tooling only', 'services' or 'research & development only'.[95] "It's important to understand that Crowd Supply is both a crowdfunding platform for bringing new products into being and a store for selling those products once they have been developed and successfully crowdfunded."[96]

Crowd Supply

- **vision/aims:** "bringing original, useful, respectful hardware to life";
- **model:** a US-based, for-profit company providing a crowdfunding-plus-fulfilment platform for hardware (open source recommended but not obligatory);
- **funding:** takes a crowdfunding fee of 5–15%, depending on the service plan;
- geographical target: worldwide;[1]
- **base:** Portland, Oregon, USA;[1]
- **website:** https://www.crowdsupply.com/
- **Wikipedia:** https://en.wikipedia.org/wiki/Crowd_Supply

"Throughout 2020, Crowd Supply established its position as a hub for innovation by hosting important RISC-V-based development boards, FPGA devices, and an open-source DIY laptop called MNT Reform.[97] Crowd Supply also hosted the launch

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[91]   https://help.kickstarter.com/hc/en-us/articles/115005134293-What-should-I-consider-when-setting-my-funding-goal-

[92] https://www.kickstarter.com/about

[93] https://www.crowdsupply.com/

[94] https://www.crowdsupply.com/about

[95] https://www.crowdsupply.com/guide/when-to-submit

[96] https://www.crowdsupply.com/guide/supporting-projects

[97] https://www.crowdsupply.com/mnt/reform

of Precursor, a RISC-V system-on-a-chip (SoC) mobile device.[98] Precursor raised nearly 400,000 USD during its Crowd Supply campaign."[99]

100% of funded projects on Crowd Supply have delivered to backers, 80% of launched projects have successfully funded (twice the rate for comparable Kickstarter projects), and the average amount raised per successful project is 61,000 USD (six times more than comparable Kickstarter projects).[100]

B.2.2.1 Proclamation of User Rights

Crowd Supply products embody the principles of the Proclamation of User Rights, as well as the mission of Crowd Supply of bringing original, useful and respectful hardware to life.[101] Instead of relying on a legal contract (between the platform and creators), the platform places its confidence in good-faith efforts of creators to hold these user rights in the highest regard, rather than sacrificing them in the name of profit, efficiency or carelessness. Similarly, the platform relies on users to assert their rights, both by supporting projects they care about and by speaking up when their rights are threatened. The rights are[102]:

- curiosity:
  The user has the right to explore, hack, investigate and reverse engineer the product, and circumvent any restrictions or checks that are built into the product. The creator agrees not to take any legal action that would prevent users from circumventing and exploring the product.

- independence:
  The user has the right to use the product unencumbered by a subscription or any other connection to the creator.

- association:
  The user has the right to use, combine, or otherwise associate the product with other products or services, whether produced by the creator or not.

- longevity:
  The user has the right to use the product indefinitely, limited only by normal wear and tear, without suffering interference from the creator or planned obsolescence.

- transfer:
  The user alone has the right to decide to whom and for what compensation to transfer the product.

- discourse:
  Information or opinions about the product can be discussed freely and publicly.

- privacy:
  The user has the right to control and know how information collected by the product is shared with and by the creator.

- security:
  The user has the right to be informed of and to address safety and security concerns stemming from the product.

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[98] https://www.crowdsupply.com/sutajio-kosagi/precursor

[99] https://www.crowdsupply.com/press/review2020

[100] https://www.crowdsupply.com/launch

[101] https://www.crowdsupply.com/guide/when-to-submit

[102] https://www.crowdsupply.com/about#user-rights

B.2.2.2   Projects

Projects should be:[103]

- original:
  a Crowd Supply project should add something new and exciting to the world. Improvements on existing projects are fine, knock-offs are not.

- useful:
  a Crowd Supply project should address a real need. Just because it's possible, doesn't mean it should be done – no one needs more landfill.

- respectful:
  a Crowd Supply project should honour user rights: curiosity, independence, association, longevity, transfer, discourse, privacy, and security.

B.2.2.3   The life cycle of a Crowd Supply campaign

The life cycle of a Crowd Supply campaign passes through the following phases:

Part 1: submission:

Before a project is launched, Crowd Supply almost always requires the creator to build a working prototype (preferable an EVT prototype),[104] in order to determine funding goals.[105] Once this prototype is ready, the creator can head to the launch page on the Crowd Supply website and click the 'Tell Us About Your Project' button, which will take him/her to a form with questions about the project.[106] A Crowd Supply campaign manager will evaluate the application, ask follow-up questions if necessary, and decide if the project is a good fit for the platform. This can take a couple of weeks. If the project is a good fit, a Statement of Work (SoW) needs to be signed. This document sets out the rights and responsibilities of Crowd Supply and of the creator.[107] Creators can choose between two types of 'launch plan': basic (at a 5% fee) or standard (at a 6–15% fee). The standard launch plan provides the creator with more guidance from Crowd Supply than the basic launch plan. The details are available at https://www.crowdsupply.com/launch.

Once the SoW is signed, Crowd Supply assigns a project manager to the project, who will create and subsequently manage a private GitHub repository to manage content and collaborate on project details. The project manager is the main point of contact for the duration of the campaign. The repository will be the main form of communication, file storage, staging and organization for the campaign.[108]

Part 2: pre-launch:

This phase consists of two batches. For the first batch, Crowd Supply needs to be provided with information to populate the product's pre-launch page, including images that the platform can use while waiting for a prototype. Also, the basic elements of the campaign's message to backers[109] need to be provided, as well as an overview of the estimated pledge levels and a campaign goal.[110] Once the

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103 https://www.crowdsupply.com/about

104 https://medium.com/@chris_boucher/the-different-engineering-validation-stages-in-a-nutshell-evt-dvt-pvt-41d1b4b2bc4a

105 https://www.crowdsupply.com/guide/when-to-submit

106 https://www.crowdsupply.com/project-submission

107 https://www.crowdsupply.com/guide/when-to-submit

108 https://www.crowdsupply.com/guide/the-life-cycle-of-a-crowd-supply-campaign

109 https://www.crowdsupply.com/guide/on-campaign-text

110 https://www.crowdsupply.com/guide/funding-goals

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prototype is ready, it needs to be sent to Crowd Supply. As an option, the creator can include a Bill of Materials (BoM), so Crowd Supply can seek a discounted quote from Mouser.[111]

In the second batch, the creator needs to provide details to Crowd Supply for the shipping charges to be determined. This is because Crowd Supply must be provided with the final manufactured products in bulk after the funding goals has been reached, so they can be shipped to backers worldwide. All Crowd Supply orders must be shipped through the platform's shipping and logistics system. Crowd Supply charges the creator a flat fee for each item shipped. An overview of Crowd Supply's fulfilment services is available at https://www.crowdsupply.com/guide/fulfillment-and-logistics.

Other information that needs to be provided in batch two relates to the funding goal[112] (how much the campaign needs to earn to be successful), the pledge levels, and getting the campaign page ready. All the details on part two are at https://www.crowdsupply.com/guide/the-life-cycle-of-a-crowd-supply-campaign.

Part 3: live campaign:

The creator and the project manager coordinate to launch the crowdfunding campaign at an agreed date. During the campaign, in addition to finalising the project design, the creator will work through the next batch of GitHub issues (referred to as batch three): responding to questions from backers and writing weekly updates on the campaign.[113] Crowd Supply provides creators with guidance on communicating with their backers[114] and with advice on building an 'open source community forum' around a project.[115] Crowd Supply strongly advises creators to make their projects open source (both hardware and software), but this is not an absolute requirement.[116] Still, in 2015 GNU founder Richard Stallman endorsed Crowd Supply as the preferred platform for FOSH.[117] A campaign typically lasts 30–60 days.[118] The campaign can end in three ways: funded, unfunded, or suspended.[119]

Part 4: post-campaign:

This is the phase after the project has successfully reached its funding goal. The creator must now prepare for post-campaign sales, put the manufacturing plan into action and keep the backers updated (this phase is identified as batch four). Information needs to be provided on details such as the transfer of funds, pricing, and a list of providers. Creators can use the provider directory[120] to find one (or they can recommend adding a provider to the directory). Furthermore, the creator needs to prepare for the sale and shipment of the products. Details can be found at https://www.crowdsupply.com/guide/when-your-campaign-ends and https://www.crowdsupply.com/guide/the-life-cycle-of-a-crowd-supply-campaign.

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[111] https://www.crowdsupply.com/guide/the-life-cycle-of-a-crowd-supply-campaign

[112] https://www.crowdsupply.com/guide/funding-goals

[113] https://www.crowdsupply.com/guide/the-life-cycle-of-a-crowd-supply-campaign

[114] https://www.crowdsupply.com/guide/backer-communications

[115] https://www.crowdsupply.com/guide/building-community

[116] https://www.crowdsupply.com/guide/why-open-source

[117] https://arstechnica.com/information-technology/2015/07/founder-of-gnu-bestows-blessing-upon-open-source-crowdfunding-site/

[118] https://www.crowdsupply.com/guide/supporting-projects

[119] https://www.crowdsupply.com/guide/when-your-campaign-ends

[120] https://www.crowdsupply.com/providers

Crowd Supply points out that products to be shipped to consumers within the EU Single Market (EEA) will have to be certified with a CE mark.[121] Finally, the creator is expected to solicit field reports from users about their experiences with the product.[122]

B.2.2.4 Backers

There are four different ways for backers to support projects on Crowd Supply:[123]

- crowdfunding: making a pledge during a project's crowdfunding campaign, i.e. pre-paying for a product that doesn't exist yet.
  If a project fails to fund or is suspended, backers will not be charged anything.[124] Funded projects go on to use the collected funds to manufacture the first batch and ship the order as soon as it is ready, at which point the backer will receive a shipping confirmation email. Campaign backers often enjoy special pricing, access to limited edition versions, and other perks.

- pre-order: if a campaign has ended successfully, Crowd Source often purchases enough inventory to cover anticipated future demand. Backers can place a pre-order to reserve a spot in line while the first batch is manufactured. Pre-orders are filled after crowdfunding orders, but still offer a discount from the eventual retail price.

- in stock: after the crowdfunding orders and pre-orders have been shipped, the leftover inventory is stocked in the Crowd Supply warehouse and shipped to customers when they place an order (just like a normal retail store). Shipping takes about three business days.

- backorders: sales of the product while waiting for inventory to be replenished.[125]

These products are also sold through trusted partners of Crowd Supply.[126]

B.2.2.5 Fees

Crowd Supply's fee structure is as follows:[127]

- credit card processing fee: 2.9% + USD 0.30 per transaction;
- crowdfunding fee: depending on the service plan,[128] 5–15% of the total pledged during the campaign;
- fulfilment fee (optional);[129]
- if a campaign does not reach its funding goal, no money is collected and no fees are charged.

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[121] https://www.crowdsupply.com/guide/about-ce-certification

[122] https://www.crowdsupply.com/guide/the-life-cycle-of-a-crowd-supply-campaign

[123] https://www.crowdsupply.com/guide/supporting-projects

[124] https://www.crowdsupply.com/guide/when-your-campaign-ends

[125] https://www.crowdsupply.com/guide/when-are-funds-received

[126] https://www.crowdsupply.com/distributors

[127] https://www.crowdsupply.com/guide/how-are-funds-received

[128] https://www.crowdsupply.com/launch#pricing

[129] https://www.crowdsupply.com/guide/fulfillment-and-logistics

B.3 Platforms offering legal and financial services

B.3.1 Open Collective

Open Collective[130] is an online funding platform that provides open projects ("Collectives") with a transparent legal and financial infrastructure that helps them to sustain themselves.[131]

Projects can use the platform to:[132]

- receive donations and sponsorships (i.e. recurring donations),
- offer tiered access and perks to contributors,
- set goals for crowdfunding,
- publish updates,
- manage expenses and generate monthly reports,
- manage events, and
- publish their financial ledger, thereby providing transparency and gaining trust.

In contrast to the platforms that we have discussed above (e.g. Patreon, Ko-fi, DeviantArt), the software for Open Collective itself is available under a (permissive) open-source licence (MIT).[133]

The projects using Open Collective do not necessarily have to be software projects. They don't even have to be projects; they can be communities, initiatives and movements, basically anything that involves a collective looking for a platform to receive and manage funds transparently.

Despite this far wider scope, roughly half of the 4,700 Collectives are open-source projects.[134] The most popular FOSS projects appear to be doing reasonably well, collecting tens or even hundreds of thousands of USD annually. But just as with the other funding platforms, the incomes appear to have a longtail distribution, which means that only the most popular projects can sustain themselves this way. A few dozen case studies can be found at https://blog.opencollective.com/tag/case-studies/.

B.3.1.1 Fiscal sponsorship

The projects on Open Collective are organised into two levels:

- Fiscal hosts,[135] which serve as a legal entity[136] (currently more than 320, of which ten public and hosting more than ten collectives; see table below). Each host has its own independent legal entity, which means that liability lies with them. Open Collective's fee for this type of project is 15% of the fee that the hosts are asking their collectives (so if a host is asking 10%, Open Collective charges 1.5%).[137]

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[130] https://opencollective.com/

[131] https://docs.opencollective.com/help/

[132] https://opencollective.com/how-it-works

[133] https://github.com/opencollective

[134] https://opencollective.com/discover?show=open%20source

[135] https://opencollective.com/hosts

[136] https://opencollective.com/become-a-host

[137] https://opencollective.com/pricing?tab=organization

- Individual projects underneath these hosts, i.e. fiscal sponsorships, or virtual non-profits.

Number of collectives hosted	Host	Description
1109	https://opencollective.com/opensource	Non-profit fiscal host promoting a healthy and sustainable open source ecosystem
180	https://opencollective.com/the-social-change-nest	The Social Change Nest specialises in supporting people-powered networks. Through our Accountable service groups can easily receive and pay out money; taking joint control over their finances.
173	https://opencollective.com/foundation	Fiscal host organisation for US-based collectives with a charitable mission
105	https://opencollective.com/allforclimate	Host dedicated to movements for climate and social justice
85	https://opencollective.com/europe	Brussels-based non-profit to host open collectives across Europe
78	https://opencollective.com/wwcodeinc	US-based non-profit to host Women Who Code networks around the world
60	https://opencollective.com/brussels	Launch your socio-cultural project in a few clicks
25	https://opencollective.com/paris	Facilitate citizen initiative by offering a transparent management tool for volunteers
17	https://opencollective.com/kent-food-hubs-cic	
11	https://opencollective.com/platform6-coop	A platform co-op crowdsourcing innovation, funding and expertise to grow the cooperative economy

Table 1 - Hosted collectives on Open Collective

Most open-source projects by far (2,408; February 2021) are hosted under the Open Source Collective umbrella, a 501(c)(6) entity (i.e. a non-profit business league) positioning itself as "an 'API' [an interface] between the world of distributed collaboration and the world of accounting and invoices."[138]

According to co-founder Xavier Damman, due to the innate transparency of FOSS projects, joining the Open Source Collective host is generally the easiest and fastest way to go. Although some may find the 10% fee too expensive (compared to the typical 5% asked by platforms such as Patreon and Ko-fo), it's the fiscal sponsorship that makes the difference.

Open Collective and the Open Source Collective are both Collectives themselves.

In addition to the generally available funding options, Open Collective offers small bounties to people who contribute fixes and new functionality to the Open Collective codebase.[139]

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[138] https://www.oscollective.org/

[139] https://docs.opencollective.com/help/contributing/development/bounties

B.3.1.2 Open Source Collective

Joining the Open Source Collective host – as so many have done – allows a FOSS project to receive and disburse funds, and hold IP assets,[140] without the need to set up and maintain its own foundation. You don't even have to have a bank account.

This means developers don't have to spend their time on accounting, taxes, invoices and administration. The advantage to sponsors is that this entity can comply with their accounting and legal requirements, and connect to their purchase order processes.[141] [142]For a lot of sponsors these are absolute minimum requirements to allow their sponsorship to happen at all.[143]

The fees for projects under the Open Source Collective host are 10% in addition to the fees of the payment processor (e.g. Stripe or PayPal).

B.3.1.3 Membership

The most important requirement for joining the Open Source Collective is that the FOSS project is using one of the many recognised open-source licences. Meetup groups and conferences, as well as advocacy, research, and awareness initiatives, are also welcome under this host.

For projects having fewer than 100 stars on GitHub and fewer than two contributors, there is a list of criteria that allow a project to demonstrate that it is indeed an established collective. The official legal agreement can be read at https://docs.google.com/document/u/1/d/e/2PACX-1vQbiyK2Fe0jLdh4vb9BfHY4bJ1LCo4Qvy0jg9P29ZkiC8y_vKJ_1fNgIbV0p6UdvbcT8Ql1gVto8bf9/pub.

B.3.1.4 Google Open Source

A notable Open Source Collective project is Google Open Source,[144] [145] which contributed 1.2 million USD to a dozen projects. The largest receiver is Chrome's Web Framework & Tools Performance Fund[146] (USD 700,000), which distributes these funds further over more than a dozen other Open Collective projects.

In a recent interview,[147] Addy Osmani,[148] Senior Staff Software Engineer at Google for Chrome and Web, talked about the difference between supporting open source and sponsoring open source, and finding a balance between the two. The first one "entrusts open source projects the means to focus on the things that matter to them," whereas "a sponsor may care about certain things improving and hope financial investment can move those things forward".

This is how Google is in the game: "*We don't want undue influence but we do need to balance value back.*"

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[140] https://www.oscollective.org/trademarks

[141] https://opencollective.com/become-a-sponsor

[142] https://docs.opencollective.com/help/fiscal-hosts/become-a-fiscal-host

[143] https://www.oscollective.org/how

[144] https://opencollective.com/google

[145] https://opensource.google/

[146] https://opencollective.com/chrome

[147] https://blog.opencollective.com/chromes-framework-of-open-source-investment/

[148] https://www.linkedin.com/in/osmani/

Osmani also describes the growing pains of inexperienced individual developers who have a hard time when their projects suddenly take off:

What we tend to find is that there are some open source maintainers who've been doing it for a long time and have a very clear idea of where they need funding. And then there's a much larger group of people who maybe just started a project during a lunch break and it accidentally took off and is now 30% of their time. Those people don't really know how to ask for funds, or how much they should be asking for.

B.3.1.5 Open Collective Europe

Open Collective has a separate hosting entity for Europe, based in Brussels: Open Collective Europe.[149] Its legal form is an 'association sans but lucratif' (ASBL), a Belgian entity type for non-profits. The downside of this specific type is that it does not allow you to hire people; you can only send and receive invoices.

B.3.1.6 Interview

The following are the key points from an interview with Xavier Damman,[150] co-founder of Open Collective, on 3 February 2021:

- Open Collective was started in 2015, by applying what we had learned from developing websites: New applications became easier to create by abstracting away the complexity of the underlying operating system in a web browser where everybody can "view the source" and learn from each other. That allowed people to focus on the highest level, where the value is.
- Open Collective was also inspired by the Occupy Wall Street movement. The fear was that the Internet as a massive collaboration platform wouldn't last, because in the end everyone has to get food on the table. So with Open Collective the founders created the infrastructure for a sustainable Internet-based movement. "*To sustain yourself independently, you have to be able to receive funds.*"
- We have been talking about the sustainability of FOSS for decades now, but made very little progress.
- Some of the problems that Open Collective wants to solve are:
  - Even if you want to fund a project, there often is no legal entity, or not even a bank account behind it.
  - Government or corporate funding from organisations such as the Linux Foundation is only available to larger projects, not to lose affiliations.
  - A lot of developers started their projects for fun and learning, and they want to stay that way (i.e. small). In this case, people should also not complain about sustainability issues.
  - But sometimes a project quickly becomes very popular, after which the initial developer is drowned in tickets. Sometimes the pressure from the community becomes so high that the developer burns out.
    - The latter relates to another problem: if the FOSS community really wants to attract a more diverse type of people (e.g. women), it will have to avoid creating an unattractive environment like that.
  - FOSS projects shouldn't have to set up their own legal entities and administrative infrastructures. That's why we provide a "virtual legal entity", taking care of the legal and financial infrastructure for these projects. The idea is to bring projects to a higher maturity level in a "single click", after which they immediately are able to receive donations.

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[149] https://opencollective.com/europe

[150] https://www.linkedin.com/in/xavierdamman/

- Open source seems a natural fit to Europe. The US is driven by companies, China by government, and Europe is somewhere in between.
- The European Commission should stay away from large top-down projects, and focus instead on creating a level playing field, and providing the infrastructure for a lot of initiatives to emerge from the bottom up.
  The number of startups and cooperatives we're creating should be our key metric.
- Apart from open source, there are plenty of companies already offering their services to help you get subsidised – for a percentage.
  Projects shouldn't have to pay to receive funding. So the Commission could set up its own fiscal sponsorship service – the Open Collective software is freely available – or sponsor the existing Open Collective Europe ASBL (i.e. the infrastructure).
- It would be fairer to subsidise these grassroots projects from European taxes levied on large Internet companies than from the current budget, because those companies are the largest users.
- The reality is that a large number of FOSS developers want to remain free, so there is another level of FOSS projects beneath the ones that can (or are willing to) be helped through fiscal sponsorship such as Open Collective is offering.
- The European Commission shouldn't impose restrictions on the licences these projects are using before sponsoring them.
  Software will only be used by others [developers that is] if they (or their companies) can invest in it. A developer selecting packages to use will only take the ones with the most permissive licences.
  So what Amazon did to Elasticsearch was fair. They forked the code when the original developers decided to migrate to a more restrictive licence, in an attempt to keep Amazon from offering Elasticsearch from the AWS cloud in a way the original developers did not agree with.
- If FOSS is a commons, we should fund it collectively, since we all are reaping the benefits.
- The European Commission should incentivise companies to contribute to this FOSS commons, because of the large value multiplier due to cost-sharing and code reuse.
  Matching the investment would be the model to use here.
- The number of days a developer is allowed to work on FOSS should be another key metric (a reason for Damman to advocate a universal basic income).

B.4 Platforms offering project and community services

B.4.1   Code Shelter

Code Shelter aims to connect experienced developers with projects that need their help. It introduces FOSS maintainers and developers to open-source projects whose authors need a hand or no longer have the time to maintain them. In addition to a pool of about 35 project maintainers[151], Code Shelter also has almost 300 contributors[152].

Owners of a project can invoke help[153] by assigning maintainer access rights to Code Shelter through their repositories on GitHub[154] or GitLab[155]. That allows people from Code Shelter to contribute code, process contributions and pull requests, and release packages. In a 'note to maintainers', the owner can explain what his/her issues are and what is needed.

Code Shelter currently maintains almost 100 projects[156], of which the Light Table code editor for JavaScript/HTML/CSS[157] is the best known.

B.4.1.1   Interview

The key points from an interview held with Stavros Korokithakis[158], founder of Code Shelter, on 6 December 2020 are:

- Maintainers (who will have full access to (all) the projects on the platform) are normally vetted by the community. Currently, developers receive maintainer rights if they are already responsible for at least one other (external) open-source project.
- Projects are not evaluated for viability. Unlike large projects where sustainability problems are often caused by governance issues ("large projects generally die for a reason"), these projects' main problem is that their maintainers are no longer available or no longer have the time.
- Code Shelter started one year ago, but so far has not really taken off. According to Korokithakis, the small number of projects makes it hard for maintainers/developers to find something that matches their passion ("opportunistic").
  Korokithakis estimates that for the platform to sustain itself this way, it would have to be home to a few hundred high-quality projects.
  Alternatively (or for the future) there should be a (financial) incentive for developers contributing to a project, e.g. fundraising for a goal.
  According to Korokithakis, every community needs an active core to attract and engage newcomers.

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[151] https://www.codeshelter.co/maintainers/

[152] https://www.codeshelter.co/contributors/

[153] https://www.codeshelter.co/projects/add/

[154] https://github.com/code-shelter

[155] https://gitlab.com/codeshelter

[156] https://www.codeshelter.co/projects/

[157] http://lighttable.com/

[158] https://www.linkedin.com/in/skorokithakis/

- Newcomers are welcomed in the forum. But although they start enthusiastically, they are hard to activate. Korokithakis says the primary motivations for maintainers/developers to join are the will to contribute ("passion") and to learn.
- So the platform is quiet right now – a "graveyard" for a substantial fraction of the projects there – but remains fully functional. According to Korokithakis, there is no acute sustainability problem for the platform itself, since it is stable and runs on a cheap (~10 EUR) Virtual Private Server (VPS) together with his other projects and sites.
  The only development work required right now is keeping up to date with changes in the APIs of GitHub and GitLab.
- Korokithakis says he does not need GitHub and GitLab to run his platform (he simply connects to their APIs), and he has never had any contact with these code repositories for collaboration or help.
- According to Korokithakis, the site needs a new user interface and design, but the return would not justify spending the necessary thousand Euros.
  The highly-intrinsical motivation ("fun/hobby") of developers (including himself) makes that they would rather spend 10 hours of their time than 5 Euros from their pockets. This is true even though they often do the very same type of work in paid jobs or as freelancers ("the key difference is not the work but the goal").

B.4.2 FOSS Torrents (case study)

FOSS Torrents[159], started in February 2020, offers FOSS packages for download over the peer-to-peer BitTorrent network. Advantages of this service are:

- it is more efficient in terms of hosting and bandwidth when there is a significant number of downloads (hosting popular software on a website, by comparison, may cost hundreds or thousands of Euros per month);

- it absorbs peaks in traffic after a new software release: for example, according to founder Cajetan Bouchard, when a new version of Blender (a 3D graphics creation suite)[160] is released, thousands of people try to download it during the first half hour ("it's almost like a DDoS attack"). Since systems and traffic plans are (traditionally) sized for peak loads, using the BitTorrent network in this case can save substantially on resources;

- it provides redundancy: when a server goes down, BitTorrent provides an alternative way for people to download software.

FOSS Torrents creates and hosts the torrent file (containing the meta-information required for people to initiate a download) and seeds the software (i.e. makes sure that there is always at least one full package of the latest version available online). In addition it sends out announcements when new versions are available. Currently (January 2020), FOSS Torrents is doing this for about 140 packages in the categories Linux/BSD Distributions,[161] Games[162] and (other) Software.[163]

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[159] https://fosstorrents.com/

[160] https://www.blender.org/

[161] https://fosstorrents.com/distributions/

[162] https://fosstorrents.com/games/

[163] https://fosstorrents.com/softwares/

In addition, FOSS Torrents currently (16 January 2021) has partnerships with 11 projects, including Amarok Linux[164] (a Brazilian Linux distribution), FreeCAD[165] (3D CAD; see section <4.6>), GDevelop[166] (a 2D game engine), Ubuntu Unity[167] (a Linux distribution), and several other Linux distributions.[168] For all these, FOSS Torrents tracks RSS/Atom feeds, downloads and hosts the source files, builds torrent files, releases them as soon as possible (seven days a week), and publishes on social media and in its own RSS feed.
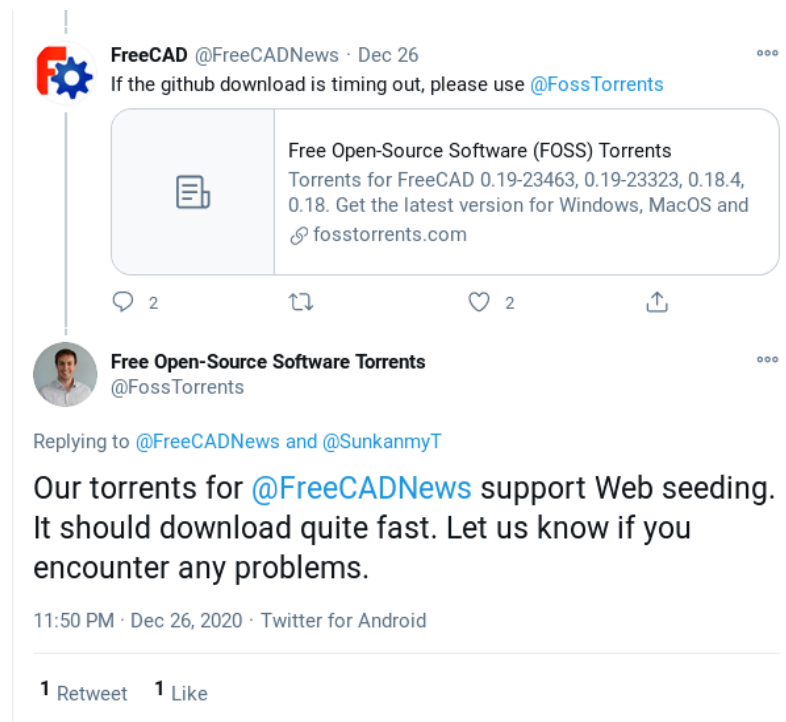
Figure 18 - FreeCAD referring users to the latest (nightly) version of its software, available via the BitTorrent network; <https://en.wikipedia.org/wiki/BitTorrent>[169]

On the Supporters page,[170] FOSS Torrents provides an overview of its financial sustainability goals and its current position. According to this page, the total cost of hosting is almost USD 100 per month (which the organisation calls expensive), while current income is less than USD 10 per month (through Patreon[171] and Ko-fi).[172] When income reaches USD 200 per month, FOSS Torrents would like to pay a web designer, and at USD 500 per month the plan is to hire a (part-time) web developer. When income reaches USD 750 per month, FOSS Torrents will give back USD 100 monthly to the FOSS projects it uses itself.

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[164] https://amaroklinux.org/

[165] https://www.freecadweb.org/

[166] https://gdevelop-app.com/

[167] https://ubuntuunity.org/

[168] https://fosstorrents.com/partnership/

[169] From https://twitter.com/FreeCADNews/status/1342960607897792515

[170] https://fosstorrents.com/supporters/

[171] https://www.patreon.com/fosstorrents

[172] https://ko-fi.com/fosstorrents
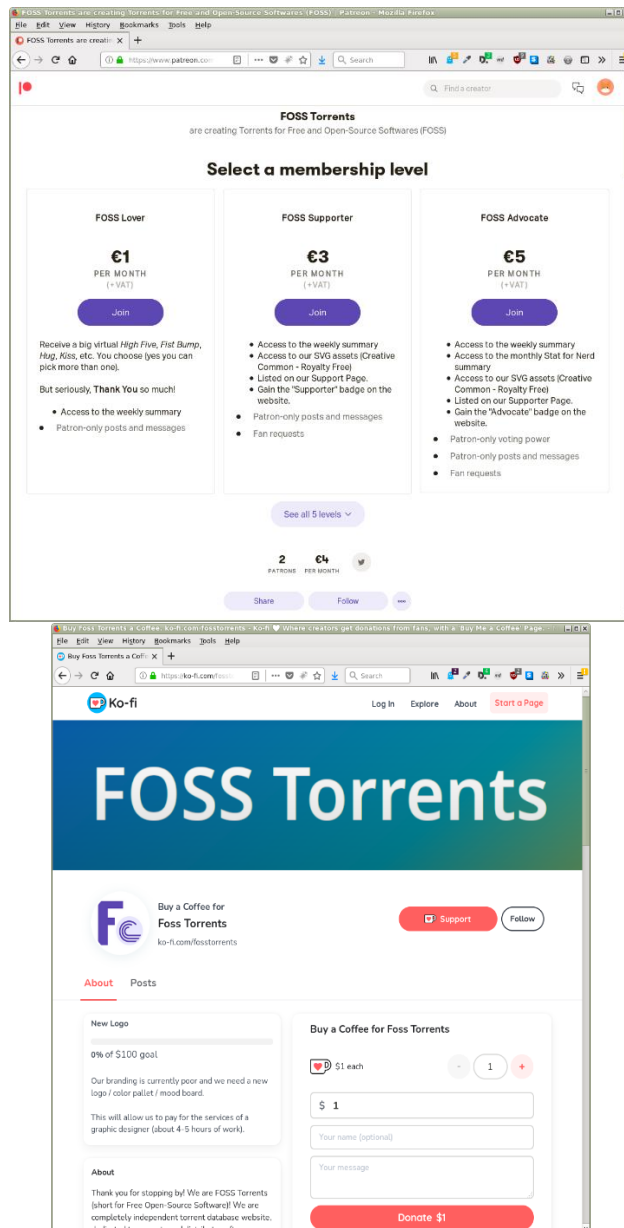
Figure 19 - FOSS Torrents membership levels and "Buy a Coffee" option

Bouchard does not think it wise (or even feasible) to ask for money from the project owners. "They might be like me and don't have any spare money. Some projects already provide a torrent file, and we simply reshare this. We wouldn't be able to charge them for that. It wouldn't be fair to ask 'the little guy' to pay to be on our platform. We have partnerships with university students and one adolescent who created Ubuntu Unity, Ubuntu Web and UbuntuEd. They probably don't have any money to give to be featured on our platform."[173]

To make his project sustainable though, Bouchard does need money. "*My goal would be to reach about 500 CAD (~325 EUR) per month. At this point, I would be able to tackle another project and continue from there. I think I have another eight months of research and development before FOSS Torrents will fall into maintenance, where we will only release new content.*"

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[173]exchange, January 2021

- "*Hosting/traffic is not a problem; I do self-hosting on a computer that I bought for this purpose for 200 CAD (~130 EUR) back in 2010. I'm lucky to have unlimited bandwidth for a fixed price (CAD 89/month (EUR 58/month)). But since it's in our house, that also covers our personal use.*"
- On web design: "*In our group, there is one graphic designer; I would like to hire her to give the site a really good facelift and help me to create a few graphics. But I don't have enough money to hire her yet.*"
- On time: "*When I started the project in February 2020, I was a father at home; our daughter didn't go to daycare until August. My wife encourages me to continue working on this project full time so I can build myself an amazing career. So for now, she can support the three of us, but when we want to have another child, I will have to have a stable income to support the four of us.*"
- On wishes for the future: "*I live in a small town (about 4,000 people); the two biggest cities (~90,000 people) are both about 45 minutes' drive (80 kilometres) away. I've worked for a few companies (national research facility, university, startups) and I realised that I was not happy. There is always a boss who doesn't understand the product and losing two hours commuting every day became a real pain.*" "*I'd like to become my own boss and make a living out of this and future projects. I want to help people and help them grow. My ultimate goal is to be able to make CAD 5/hour (EUR ~3.25/hour) over the whole year (about CAD 43,800/year (EUR ~28,550/year)), then increase this by 1 CAD each year.*"
- On the availability of a funding mechanism: "*I would write an application for sure. I would also be available to mentor other FOSS projects on discoveries I've made myself.*"[174]

B.5 FOSS (business) consortia and companies

B.5.1 Eclipse Foundation

The Eclipse Foundation[175] is a not-for-profit association hosting more than 400 open-source projects,[176] of which the Eclipse integrated development environment (IDE)[177] [178] – used by millions of developers – is the best known.

After IBM made the Eclipse software available as open source in November 2001, the Foundation was created in January 2004 to act as the steward of a vendor-neutral, open, and transparent community around the Eclipse IDE.[179] Since then, hundreds of project have been added, including the widely used Java EE project, which has been renamed to Jakarta EE.

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[174] exchange, January 2021

[175] https://www.eclipse.org/

[176] https://projects.eclipse.org/

[177] https://www.eclipse.org/ide/

[178] https://www.eclipse.org/eclipse/

[179] https://www.eclipse.org/org/

> **Eclipse Foundation**
>
> - **vision/aims:** "providing a global community of individuals and organisations with a mature, scalable, and business-friendly environment for open-source software collaboration and innovation";
> - **model:** not-for-profit association hosting more than 400 open-source projects; providing: vendor-neutral governance and processes, intellectual property (IP) management and licensing, ecosystem development and marketing, and IT infrastructure;
> - **funding:** mainly by its more than 300 Members, each of them paying an annual fee between 1,500 EUR and 250,000 EUR per year, depending on membership level and corporate revenue;
>   2020 budget: 6.9 million USD;[1]
> - **geographical target**: worldwide;
> - **base:** Brussels, Belgium (since January 2021);
> - **website:** https://www.eclipse.org/; Legal Resources: https://www.eclipse.org/legal/
> - **Wikipedia:** https://en.wikipedia.org/wiki/Eclipse_Foundation

In January 2021 the Foundation moved its residence from the US to Brussels, making it the largest OSS foundation in Europe.[180] [181] [182]

The Foundation "provides a global community of individuals and organisations with a mature, scalable, and business-friendly environment for open-source software collaboration and innovation." It provides four services to its community:[183]

- vendor-neutral governance and processes,

- intellectual property (IP) management and licensing,

- ecosystem development and marketing, and

- IT infrastructure.

The Foundation is funded mainly by its more than 300 members,[184] each of whom pays an annual fee of up to 250,000 EUR per year, depending on membership level and corporate revenue.[185] It employs a full-time professional staff[186] and is governed by a Board of Directors,[187] in which the different types of members are represented.

Collaboration between the members on specific topics is carried out in working groups, which currently number 15.[188]

The Foundation hosts various types of events, such as conferences and hackathons.

According to the Foundation, the more than 240 million lines of code it hosts represent an economic value of 13 billion EUR.[189]

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180   https://newsroom.eclipse.org/news/announcements/open-source-software-leader-eclipse-foundation-officially-transitions-eu-based

181 https://www.eclipse.org/europe/

182 https://www.eclipse.org/europe/faq.php

183 https://www.eclipse.org/europe/faq.php

184 https://www.eclipse.org/membership/exploreMembership.php

185 https://accounts.eclipse.org/contact/membership

186 https://www.eclipse.org/org/foundation/staff.php

187 https://www.eclipse.org/org/foundation/directors.php

188 https://www.eclipse.org/org/workinggroups/

189 https://www.eclipse.org/org/foundation/reports/annual_report.php

B.5.1.1 Interview

The key points from interviews with Gaël Blondelle,[190] Vice President, Ecosystem Development at the Eclipse Foundation, and Marc Vloemans,[191] Head of AI at the Eclipse Foundation, in January 2021, are the following:

- Continuity is a crucial aspect of sustainability.
- The project-driven approach to almost everything we produce, or have produced, is a fundamental impediment to the sustainability of our productions.
- "*We are very concerned about security and sustainability. After the recent SolarWinds attack, securing the software supply chain is high on our agenda again. Signing the individual components adds traceability to our software. We are working on reproducible builds, but that is a complex issue and will take some time to solve.*"
- "A strong distinction between individual developers vs. companies and FOSS organisations:
  - *Individual developers are often freelancers and/or people who do FOSS development on the side. They cannot play a role in the continuity of FOSS projects, as they move from one assignment to the next, or do FOSS development mainly to promote their skills. The individual FOSS developer working from his garret is a dying breed. Developers want to develop, not run a business.*
    Individual developers who approach us usually already have a business, often a team, and sometimes a concrete project. We can help them with hosting and with organising processes, connect them with other parties, further expand their projects and communities, and take care of legal, IP and administrative affairs.
  - Businesses with for example ten people or more, can provide continuity, simply because they need the software to sustain their business.
  That is the difference between a FOSS community (of technical people) and a FOSS ecosystem (where business people provide economic sustainability, and thereby technical sustainability).
- FOSS organisations such as Eclipse can provide continuity, because that's their mission. For example, BIRT[192] (a BI/reporting/graphing tool) has been inactive for two-and-a-half years. Now, ten days after first contact from a company that wants to start using it, Blondelle expects it to be alive again in a few weeks. A part of their role is to keep a project in hibernation until it is needed again. They provide:
  - transparency,
  - an ecosystem, i.e. a community and diversity,
  - openness, which includes attracting new people and contributions, and
  - readiness, allowing a project to be revived quickly when needed.
- Getting your project funded is not a problem; there is enough opportunity for research projects.
- Some Eclipse projects do "suffer from the tragedy of the commons". This applies to the foundation projects that form a basis for others; these are vulnerable, because they lack visibility and yet require the most skills.
- *"The world [i.e. industry] has made a choice for permissive licences." "Our impression is that in practice there is little difference between copyleft and permissive licences". "A copyleft licence reduces your opportunity to be used by industry."*

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[190] https://www.linkedin.com/in/gblondelle/

[191] https://www.linkedin.com/in/marcvloemans/

[192] https://www.eclipse.org/birt/

- For example, the Horizon 2020 project FIWIRE[193] is an open-source middleware component platform for smart/IoT applications. It initially used the (copyleft) GNU Affero GPL licence, but that turned out to be a killer for the uptake of the software. So, more recent software is now produced under the (permissive) Apache Licence. For example, the original Orion broker component[194] of FIWIRE has been published under the copyleft AGPL license, while the more recent ScorpioBroker[195] uses the permissive BSD license and the Stellio Broker[196] comes under the Apache Licence.
- Current requirements regarding FOSS in tenders and the Framework Programmes are not enough:
  - FOSS is often an afterthought: "On the last day a licence is randomly chosen and the code is pushed to GitHub." That's only fulfilling a technical requirement. *We need stronger requirements to really do open source.*"[197] []
  - Suppliers don't want to do open source, because that takes money out of a project's budget. But if the software and tools that are produced during a project are to live on afterwards, money and a governing entity are required.
  - For example, the Horizon 2020 project DINPAD[198] allocated 15% of its budget to sustain it for another two to three years after the project ended.
- There's often friction between the public and private parties involved in the development of a FOSS project.
  - This is especially important to FOSS, since many FOSS projects originate from the public sector. For example, more than 50% of geospatial FOSS is initially funded by the defence and intelligence sectors.[199]
  - Using a FOSS foundation as an intermediary can reduce this friction and diminish legal complexities along the way.
  - For example, one of the requirements set by the US National Geospatial-Intelligence Agency (NGA) for the development of the GeoWave project[200] was that the contractors (RadiantBlue Technologies and Maxar) became a member of the Eclipse Foundation to ensure the continuity and governance of the project.

Developing this software as open source and funding the project maintenance through the Foundation kept everything transparent to all stakeholders, and the development and implementation partners could have their say through the Working Groups.

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[193] https://www.fiware.org/

[194] https://github.com/FIWARE/context.Orion-LD

[195] https://github.com/ScorpioBroker/ScorpioBroker

[196] https://github.com/stellio-hub/stellio-context-broker

[197] Compare the 'Think Open' vision in the European Commission's 'Open Source Software Strategy 2020–2023'
[198] https://attract-eu.com/showroom/project/digital-integration-front-end-for-high-dynamic-range-pixel-area-detectors/

[199] Eclipse LocationTech Working Group; https://www.osgeo.org/

[200] https://locationtech.github.io/geowave/

B.5.2 OW2

OW2[201] is a non-profit FOSS organisation based in Paris, France.[202] It arose in 2007 from a merger between a French and a Chinese consortium. The basis of the merger lies in a decision by the partners to share their respective industrial middleware software and start co-developing it as open source.

OW2 introduces itself as "an independent community dedicated to promoting open-source software for information systems and to fostering their business ecosystems". It identifies itself as "the only global non-profit open-source consortium of European origin and DNA".[203]

OW2 aims to be as open and transparent as possible. Membership is open to companies, public organisations, academia and individuals.[204]

OW2 only accepts projects with open-source licences approved by the Open Source Initiative (OSI),[205] but leaves IP (i.e. copyright on contributed code) with the original owners.[206]

Although OW2 itself does not accumulate copyrights or impose Contributor License Agreements, individual projects are free to set their own policies.[207]

B.5.2.1 Common infrastructure and services

OW2 fosters a common technical architecture and open-source enterprise infrastructure that can be implemented by systems integrators and end-user organisations. It hosts more than 80 FOSS projects, mostly open-source middleware and information infrastructure software, and related development and management tools.[208]

OW2 provides three types of services to its community:[209]

- operating a technical infrastructure, by delivering tools and collaborative services to project teams (i.e. a GitLab repository/development server);210

- community services, by organising activities and through the decision-making process; and

- marketing services, by helping to build the community identity, brand, and the projects' visibility.

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[201] https://www.ow2.org/

[202] https://www.ow2.org/view/About/Contacts

[203] https://www.ow2.org/view/About/OW2_Introduction#What_is_OW2

[204] https://www.ow2.org/view/About/OW2_Introduction

[205] https://opensource.org/

[206] https://www.ow2.org/view/About/Open_By_Rule

[207] https://tc.ow2.org/view/wiki/Intellectual%20property

[208] https://www.ow2.org/view/About/OW2_Introduction#What_is_OW2

[209] https://www.ow2.org/view/About/OW2_Introduction#What_is_OW2

[210] https://gitlab.ow2.org/

> **OW2 Consortium**
>
> - **vision/aims:** "promoting open-source software for information systems and fostering their business ecosystems";
> - driven by the FOSS market opportunity for infrastructure software;
> - **model:** a non-profit member-driven organisation hosting more than 80 FOSS projects, mostly open-source middleware and information infrastructure software, and related development and management tools;
> - **funding:** from members who contribute annually and subsidies from publicly-funded collaborative projects;
> - **geographical target:** worldwide, focus on Europe;
> - **base:** Paris, France;
> - **website:** https://www.ow2.org/; **governance:** https://www.ow2.org/view/About/OW2_Governance; **bylaws:** https://www.ow2.org/download/Membership_Joining/Legal_Resources/OW2-BylawsVERSION2017.pdf
> - **Wikipedia:** https://en.wikipedia.org/wiki/OW2_Consortium

The consortium relies on five guiding principles:[211]

- openness,

- fairness,

- trust,

- transparency, and

- independence.

B.5.2.2   Vision

OW2 is driven by the FOSS market opportunity for infrastructure software.[212] It finds itself at "the intersection of two recent innovations in business: open-source software and business ecosystems".

The rationale behind this vision is explained in three publications:

- 'Introduction to the OW2 Consortium Business Ecosystems Strategy':[213] positioning the business ecosystem (a foundation interconnecting an economic community) against the traditional value chain concept (a linear process of progressively adding value);[214]
- Platform Strategies and the OW2 Consortium:[215] positioning OW2 as a multi-sided platform, supporting the business ecosystem, by creating the necessary business, community, and legal environment to make open source a sustainable phenomenon;[216] and

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[211] https://www.ow2.org/view/About/OW2_Introduction#What_is_OW2

[212] https://www.ow2.org/view/About/OW2_Introduction#OW2_opportunity

[213]
https://www.ow2.org/download/About/OW2_Introduction/CedricThomasBusinessEcosystems0805.
pdf

[214] https://www.ow2.org/view/About/OW2_Introduction#OW2_business_ecosystem

[215]
https://www.ow2.org/download/About/OW2_Introduction/CedricThomasPlatformStrategy0903.pdf

[216] https://www.ow2.org/view/About/OW2_Introduction#OW2_ecosystem_platform

- Software Commoditisation and Open Source Strategies:[217]contending that open source is one of three forms of software commoditisation, next to offshore outsourcing (i.e. offshoring) and cloud computing.[218]

B.5.2.3   Benefits to members

OW2 provides a pool of reliable FOSS. It hosts over 80 projects and is backed by more than 5,000 supporters.[219]

OW2 works for software vendors and systems integrators in reducing time to market (through shared development and reuse), facilitating business and market opportunities between members, and providing a common architectural vision. It works for end-user organisations deploying FOSS from the OW2 pool in reducing technology, legal and market risk.

B.5.2.4   Projects

OW2 is focused on projects.[220] But in addition to these technology-driven innovations (push), the consortium also deploys market-driven initiatives (pull) – see below for two of these initiatives.

Community-driven local chapters engage at a regional scale.[221] [222]

Open-source projects can be submitted[223] by members. Additions of projects to the hosting platform (infrastructure)[224] are supervised by the Technology Council.[225]

The project submission process, the admission/rejection criteria, and how projects move through a lifecycle,[226] are described at https://tc.ow2.org/view/wiki/project-submission.

OW2 has participated in several H2020 projects. One of them is AppHub, a European non-profit marketplace for the dissemination of open-source software, which in 2015-2016 received 849,260 EUR in funding from the Horizon 2020 programme.[227]

B.5.2.5   Market readiness and good governance

OW2 has recently set up two programmes that may be of wider interest:

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[217]

https://www.ow2.org/download/About/OW2_Introduction/CedricThomasOSSandCommodization
JUL10-Draftv1.1.pdf

[218] https://www.ow2.org/view/About/OW2_Introduction#OW2_OS_Strategies

[219] https://www.ow2.org/view/Membership_Joining/Membership_Benefits

[220] https://projects.ow2.org/view/wiki/

[221] https://www.ow2.org/view/About/OW2_Structure

[222] https://www.ow2.org/view/Activities/Fundamentals

[223] https://projects.ow2.org/view/wiki/submission

[224] https://www.ow2.org/view/IT_Infrastructure/

[225] https://tc.ow2.org/view/Main/

[226] https://tc.ow2.org/view/wiki/Project%20lifecycle

[227] https://www.ow2.org/view/Collaborative_Projects/AppHub

- the Market Readiness Levels (MRL): [228] inspired by NASA's Technology Readiness Levels (TRL), a method for estimating the maturity of technologies during the acquisition phase of a programme.

OW2 aims to facilitate the adoption of its software by mainstream decision makers by allowing them to assess the risks involved with projects building on the OW2 code base.

The MRL project assessment programme is an evolution from the quality and deployability programme previously implemented in OSCAR (the Open-source Software Capability Assessment Radar), a platform providing tools for assessing and reporting on quality. [229]

All mature OW2 projects will have an MRL score by the end of February 2021.

- the Open Source Good Governance Initiative: [230]: growing awareness and expertise on how to properly use and contribute to FOSS.

According to CEO Cedric Thomas, it's the developers, systems integrators, vendors and FOSS organisations that all together create the value in the FOSS ecosystem. In Europe, though, most users behave like consumers; they don't understand that they are part of that ecosystem. "Many organisations are using FOSS, but without a plan."

That's why OW2 is developing a blueprint for a FOSS policy. It is based on five goals (i.e. levels):

- usage: basic skills in using FOSS; [231]
- trust: using FOSS securely and responsibly; [232]
- culture: implementing best practices and an open culture for participating in the FOSS community; [233]
- engagement: engaging with the FOSS ecosystem, i.e. contributing back, increasing project visibility, and participating in events; [234] and
- strategy: using FOSS strategically, i.e. proactively using FOSS for innovation and competitiveness; FOSS as an enabler of digital sovereignty and transformation; awareness at management C level. [235]

B.5.2.6 Organisation

The legal form of OW2 is a non-profit association, which means that funding comes from members who contribute annually. The fee structure is based on the type of membership; for Corporate Memberships [236] the cost depends on the size of the company. [237] Subsidies from EU-funded collaborative projects represent a significant part of OW2's financial resources.

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[228] https://www.ow2.org/view/MRL/

[229] https://oscar.ow2.org/view/wiki/

[230] https://www.ow2.org/view/OSS_Governance/

[231] https://www.ow2.org/view/OSS_Governance/Level_1

[232] https://www.ow2.org/view/OSS_Governance/Level_2

[233] https://www.ow2.org/view/OSS_Governance/Level_3

[234] https://www.ow2.org/view/OSS_Governance/Level_4

[235] https://www.ow2.org/view/OSS_Governance/Level_5

[236] https://www.ow2.org/download/Membership_Joining/Legal_Resources/OW2-2019-ReportOn
FinanceAndOperations.pdf

[237] https://www.ow2.org/view/Membership_Joining/Membership_Categories

And an example of a membership agreement can be found here: [238]

https://www.ow2.org/download/Membership_Joining/Legal_Resources/ow2-membership-agreement-ProForma.pdf

After two years of negative income, OW2 achieved a positive result in 2019. In that year, membership revenue increased substantially.[239] OW2 recruited key open source players such as the French Gendarmerie Nationale and Microsoft.[240] Also, seven Associate Organisations[241] signed with OW2, including the Eclipse Foundation (see section <B.5.1>), The Document Foundation and OpenStack Foundation.[242]

B.5.2.7   Interview

These are the key points from an interview with Cedric Thomas,[243] the CEO of the OW2 Consortium, on 10 February 2021:

- OW2 promotes a catalogue of industry middleware and application software for business information systems.
    - It does not specialise on advocacy or lobbying for FOSS, as many other organisations do.

- Despite its French and Chinese roots, OW2 refocused on the European FOSS ecosystem five years ago. Projects from other regions are welcome, but the focus of OW2 is on Europe.
- OW2 takes an economic standpoint and sees FOSS as part of the software industry. It is about value creation, but played by different rules. FOSS mainly works through economic externalities (i.e. costs/benefits external to producers/consumers). The difference between this concept and a commons is that the latter is not commercialised.
- Another type of externality is digital sovereignty, which plays an important role in the new 'Open Source Software Strategy 2020-2023' of the European Commission.[244] According to Thomas, FOSS may be 10-15% of the market, but gives us 50% of our sovereignty (i.e. leverage).
- The main advantages of European open source is that it helps to keep here high-value jobs with high purchasing power. Since FOSS is monetised primarily through services, this cannot easily be separated (i.e. offshored) from the (geographical) customer base.[245]
- FOSS also creates instant standards: the software serves as a reference implementation which can immediately be used. This creates value through the social aspect of interconnected applications – another externality.
- The thinking of OW2 follows the business principle of trying to turn everything that doesn't contribute to profit into a commodity that is complementary to your

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[238] https://www.ow2.org/view/Membership_Joining/On_Line_Registration

[239] https://www.ow2.org/download/Membership_Joining/Legal_Resources/OW2-2019-ReportOn
FinanceAndOperations.pdf

[240] https://www.ow2.org/view/Membership_Joining/Members_Updated

[241] https://www.ow2.org/view/Membership_Joining/Associate_Organizations

[242] https://www.ow2.org/download/Membership_Joining/Legal_Resources/OW2-2019-ReportOn
FinanceAndOperations.pdf

[243] https://www.linkedin.com/in/cedricthomas/

[244] https://ec.europa.eu/info/departments/informatics/open-source-software-strategy_en

[245] Cedric Thomas, CEO of OW2, in 'Public Money Public Code – Modernising Public Infrastructure with Free Software', published in 2019 by FSFE; https://fsfe.org/activities/publiccode/brochure

product offer. "If a developer produces something innovative, there is no incentive to publish that as open source." There is an incentive, though, for:

- technology followers (through cost sharing and reuse of non-competitive technology),
- companies that have a competitive advantage through their business processes and customer ownership, and
- complex development that must be undertaken collectively by different complementary companies that must cooperate.

- FOSS can be profitable, but there can also be market failures, e.g when the winner is not the most competitive supplier but the one with the most market power.
- The software industry is dominated by US companies. You can see that, for example, from the fact that so many FOSS foundations are based and/or centered in the US.

  In software – and FOSS is "an avatar" [a derivative] of that – the market power lies with large US companies such as IBM, Microsoft, Oracle and SAP. IBM buying Red Hat and Microsoft buying GitHub [see also platform evangelism] are expressions of this market power. The same is true for Red Hat (IBM) sponsoring events of Open Forum Europe[246] and their over-large presence at EC events. In this regard Thomas also mentions the Linux Foundation and Eclipse.

  From their own perspective, these large US companies are doing a great job. But OW2 wants to make the European FOSS ecosystem more competitive.
- FOSS developed by these large companies: it's a new ("counter") movement that appeared after these companies had become mature. And that's why FOSS (too) is dominated by US business interests.
- OW2 could use (financial) help with the Market Readiness Levels (MRL) and the Open Source Good Governance Initiative programmes (see above).The two could be funded through a programme like Horizon 2020, but OW2 has not been able to find an appropriate entrance point in the current Framework Programme.

B.5.3   Kotlin/JetBrains

Kotlin[247] is a Java-like programming language that targets the Android operating system (i.e. the Java Virtual Machine, JVM), JavaScript for web applications, and (via the LLVM compiler) native platforms such as Apple iOS, Windows and Linux.

The Kotlin language is developed by JetBrains,[248] an international company with its headquarters in Czechia, The company offers a family of software development tools – most of them closed source – for a range of languages. The Kotlin Foundation, created by JetBrains and Google, holds the Kotlin trademark and steers the development of the language.[249]

The Kotlin language was introduced by JetBrains in 2011, who released version 1.0 in February 2016.[250] In May 2017 Google's Android team announced first-class support for Kotlin.[251] And in May 2019, Google announced that the Kotlin programming language is now its preferred language for Android app developers

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[246] https://openforumeurope.org/event/policy-summit-2021/

[247] https://kotlinlang.org/

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

[249] https://kotlinlang.org/foundation/kotlin-foundation.html

[250] https://blog.jetbrains.com/kotlin/2016/02/kotlin-1-0-released-pragmatic-language-for-jvm-and-android/

[251] https://blog.jetbrains.com/kotlin/2017/05/kotlin-on-android-now-official/

[252] ("Kotlin-first").[253] As a consequence of Google's announcements, the language became highly popular among Android developers and won severals awards.

Another consequence was that the value of the privately held JetBrains company exploded. According to Bloomberg, the company is currently worth about 7 billion USD, a figure it achieved in 20 years without ever attracting external financing. Currently 9.5 million programmers use JetBrains software and 20% of them are paying customers.[254]

This relatively low paid share reflects a business strategy that aims to charge those who are creating value and making money from JetBrains' tools and technologies, while at the same allowing the core technology to blossom and providing access to non-commercial users:

- The language and core tools (e.g. compilers, security, and internationalisation & localisation are completely open, so they can (and hopefully will) be used by anyone.
- The crown jewels (e.g. tools for productivity and creating business value) are restricted or even closed source and are commercially available.
- Users who would not be able to become paying customers – e.g. academics, students,[255] non-profits, FOSS developers[256] and tech communities[257] – can use these high-end tools for free under special conditions. In addition, JetBrains sponsors several FOSS projects on GitHub.
- From a business perspective: openness of the underlying technology is an investment in the uptake of your software, and a sustainable open-source business requires a balance between permissive and less permissive or even closed-source licensing.

B.5.3.1   Interview

The following are the key points from an interview with Hadi Hariri,[258] Vice President of Developer Advocacy at JetBrains, on 3 February 2021:

- JetBrains's IntelliJ IDE for the Java programing language had been competing against Eclipse (see section B.5.1) for more ten years, when Google in 2014 released Android Studio, based on the open-source community edition of IntelliJ.[259] According to Hariri, this brought in large numbers of users and service-based business. "*Our customers do not want our tools for free; they want us to be available and exist in the future*", so sustainability here is all about continuity of the tools and services.
- "*We also don't want the European Commission to sponsor our customers. It would send the wrong signal, and others than our customers would be paying for our services.*"

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[252]   https://techcrunch.com/2019/05/07/kotlin-is-now-googles-preferred-language-for-android-app-development/

[253] https://developer.android.com/kotlin/first

[254]   https://www.bloomberg.com/news/articles/2020-12-18/czech-startup-founders-turn-billionaires-without-vc-help

[255] https://www.jetbrains.com/community/education/

[256] https://www.jetbrains.com/community/opensource/

[257] https://www.jetbrains.com/community/user-groups/

[258] https://www.linkedin.com/in/hadi-hariri-b0368a83/

[259]   https://venturebeat.com/2014/12/08/google-releases-android-studio-1-0-the-first-stable-version-of-its-ide/

- Companies that can sustain themselves through the classic open-source business model – by offering services such as training and consultancy – are the exception. The bulk of them will not make it without using a multi-licensing model (i.e. market segmentation) or VC investments.
- In general, less permissive or even closed-source licensing is still required to sustain an open-source business (i.e. free as in beer is not sustainable).
- It's hard to change to a less permissive license later on, a move typically made to prevent large cloud service providers from offering your (server) software as a (commercial) service (SaaS). See below for some recent examples.
- Hariri mentioned a friend who moved to a less permissive license for a FOSS project, because the two people involved could not sustain the project. The two received a lot of pushback from the community. "There is a horrendous level of entitlement out there; it has to be free to be great. But we [FOSS developers] have done this to ourselves."
- "There is a lot of naivety among FOSS developers in sustaining themselves and their projects. You don't realise the consequences of the choice for a specific licensing model until your project takes off. It's so easy to burn out because of this feeling of entitlement of others. I have seen it happen several times."
- A dual-licensing strategy (using different types of licences for the same piece of software) is generally seen as more friendly than the open-core model (using different types of licences for different components/releases of the software).
- If you forbid others from hosting your (network/server) software as a commercial service by moving to a less permissive license, you may even lose your whole project. "A handful of very large cloud players – Alibaba Cloud, Amazon Web Services (AWS), the Google Cloud Platform (GCP) and Microsoft Azure – are so powerful that smaller projects/companies don't stand a chance. As the MongoDB case [see below] shows, these tycoons have practically infinite money, so if you resist [by moving to a less permissive license] they simple fork your code and make more money."
- Microsoft's control over the GitHub development portal (after the acquisition in October 2018) is increasingly becoming an issue: Microsoft is slowly/subtly pushing developers to its own ecosystem.[260] At the time, JetBrains had serious objections against the takeover of GitHub,[261] as had others.[262] [263] [264] The .NET Foundation is another example of how Microsoft's interests align more with its own branding and marketing than with the prosperity of the projects or the ecosystem as a whole.[265]
  There were similar concerns when GitHub took over NPM, (the company behind the eponymous package manager for the JavaScript programming language) in March 2020.[266] This could lead to a situation where anything not Microsoft, or strong Microsoft competitors, would be treated as second-class citizens with regard to integration and the like.
- In August 2018, GitLab – the (open-core) competitor/alternative to GitHub, having Ukrainian roots – moved from Microsoft's Azure platform to the Google

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[260] For example, through the positioning of Visual Studio Code, even over GitHub's own Atom, which was where VS Code originated

[261] In a confidential interview by the European Commission

[262] https://jacquesmattheij.com/what-is-wrong-with-microsoft-buying-github/

[263] https://www.theverge.com/2018/6/18/17474284/microsoft-github-acquisition-developer-reaction

[264] https://www.nature.com/articles/d41586-018-05426-0

[265] https://github.com/dotnet-foundation/Home/discussions/60

[266] https://www.theserverside.com/news/252480267/GitHubs-NPM-acquisition-sparks-Microsoft-related-worries

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Cloud Platform.[267] No-one will be surprised if GitLab were to be taken over by Google one of these years,[268] [269] which would leave the FOSS developer community without a large, <u>independent</u> development portal.

- Many FOSS projects were started by developers for their own needs, not to sustain their families. But at the time they didn't realise how much blood, sweat and tears it would take to sustain these projects. The COVID-19 pandemic has made this even worse, as many developers working as consultants have seen their income decrease drastically last year.

- "*When I complain, people often refer to the multi-billion-dollar acquisition of Red Hat by IBM.[270] But only if your FOSS project is complex and requires deep knowledge can you build an open-source consultancy business on that.*"

- It's a myth that a community around your project is the secret to sustainability. You can easily see that by comparing the number of substantial pull requests and contributors with the number of downloads and users. Maybe one in 10,000 users will become a substantial contributor. A large user community will get you a lot more bug reports though.

- "*FOSS is wonderful to do, but only if it's sustainable. And sustainability is not about money; it's about your health*."[271]

- According to Hariri, we need to move to permissive licenses that are sustainable. Microsoft, for example, starts charging you for their Visual Studio IDE if you're a company with more than 250 employees or more than 1 million USD in annual revenue[272].

- FOSS developers are slowly moving toward less permissive licensing models and more commercial business models.

- More and more developers of successful FOSS projects are thinking about sustainability, but things are changing very slowly.
  There is a need for education on this subject and raising awareness: "*That's what should be subsidised.*"
  Another issue that needs attention is cross-border sales, e.g. the tax rules and the additional burden of selling over the Internet.

- FOSS developers want to create great software, and not get stuck in legal issues and bureaucracy. They want to focus on the technical rather than the business aspects. So we need to find ways to make projects sustainable without forcing developers to become business people. That's where umbrella organisations providing non-technical infrastructure and fiscal hosting (see section B.3.1 on Open Collective) can play an important role.

- It would not be unreasonable to attach requirements on sustainable licensing to the funding of a project, but you will have to explain very well the rationale behind it.

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[267] https://about.gitlab.com/blog/2018/06/25/moving-to-gcp/

[268] https://www.theverge.com/2018/6/28/17512908/google-github-microsoft-acquisition-comments

[269] https://www.theregister.com/2018/06/28/google_wanted_github_too/

[270] https://www.redhat.com/en/about/press-releases/ibm-closes-landmark-acquisition-red-hat-34-billion-defines-open-hybrid-cloud-future

[271] The danger of burnout is confirmed by research undertaken as part of the Critical Digital Infrastructure Research project. See https://www.fordfoundation.org/just-matters/equals-change-blog/posts/a-critical-time-for-digital-infrastructure/

[272] https://visualstudio.microsoft.com/wp-content/uploads/2017/11/Visual-Studio-2017-Licensing-Whitepaper-November-2017.pdf

B.5.3.2 Moving to less permissive licenses

These are some recent examples of companies changing to less permissive licenses in an attempt to prevent cloud service providers from offering their server/components as a commercial online service:[273]

- In August 2018, Redis Labs changed the licensing scheme for its Redis modules (i.e. extensions to the Redis directory software) from the Affero General Public Licence (AGPL) to the Apache Licence modified with the Commons Clause.[274] While the first is a copyleft licence and the second is a permissive licence, adding the Commons Clause turns the code into so-called source-available software, since the Clause prohibits commercialising the software in any way. [275] [276]

- In February 2019, following in the footsteps of MongoDB and Confluent, which created their own restrictive licences (see below), Redis introduced the Redis Source Available License (RSAL) for its modules, thereby fine-tuning the previously used Apache/Commons combo.[277] Redis itself remained available under the 3-Clause-BSD licence,[278] a highly permissive licence that protects only the names of the owners and contributors.

- In October 2018, MongoDB moved from the GNU Affero General Public Licence (a copyleft licence that includes using the software as a network service) to the more restricted Server Side Public Licence (SSPL).[279] This licence has been developed by MongoDB itself and forces a cloud service provider using the software to publish the service's entire source code under the same licence.[280] [281] [282]

- In response, Amazon created (from the ground up) its own (proprietary) DocumentDB service "with MongoDB compatibility".[283] [284]

- In December 2018, Confluent[285] changed the licence for some of its software components from the permissive Apache Licence to its own Confluent

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[273] Private investment firm Bain Capital played an important role in most of these cases, since it invested in several of the FOSS companies/organisations involved. Source: https://www.geekwire.com/2018/might-time-big-cloud-share-wealth-open-source-startups/.

[274] Two other FOSS projects, Dgraph and Neo4J, followed suit, but this did not last long. Dgraph went on to create its own Dgraph Community License (DCL) but shortly thereafter switched to an open-core model (based on the Apache License). Source: https://dgraph.io/blog/post/relicensing-dgraph/. Neo4J also quickly moved away from the Commons Clause and is now using an open-core model based on the GPLv3 and the Apache License. Source: https://neo4j.com/blog/open-core-licensing-model-neo4j-enterprise-edition/.

[275] https://commonsclause.com/

[276] https://redislabs.com/blog/redis-license-bsd-will-remain-bsd/

[277] https://redislabs.com/blog/redis-labs-modules-license-changes/

[278] https://opensource.org/licenses/BSD-3-Clause

[279] https://www.mongodb.com/blog/post/mongodb-now-released-under-the-server-side-public-license

[280] https://www.mongodb.com/licensing/server-side-public-license/faq

[281] https://www.zdnet.com/article/its-mongodbs-turn-to-change-its-open-source-license/

[282] https://opensource.org/node/1099

[283] https://aws.amazon.com/documentdb/

[284] https://arstechnica.com/information-technology/2019/10/is-the-software-world-taking-too-much-from-the-open-source-community/

[285] https://www.confluent.io/

Community Licence,[286] thereby forbidding the use of the software itself as a SaaS offering.[287]

- In January 2021, Amazon forked Elasticsearch and Kibana, after Elastic announced that it would be relicensing its products from the permissive Apache License to the SSPL.

The main issue behind these cases is that large cloud providers simply take open-source server software, turn it into a proprietary cloud service, and start charging for it,[288] sometimes also hijacking the name of the original project, using their market power to make it almost impossible for the owners to sustain themselves through a viable services/SaaS business [OIN].

In all these cases, the companies involved received backlash from the Internet community for moving to less permissive or even source-available licences.[289] [290] [OIN] But that also happened to Amazon for not behaving in the spirit of FOSS.

The use of source-available licences, which are generally not considered open-source licences since they discriminate against commercial use, has been reason to remove software packages from Linux distributions (e.g. Debian, Fedora) [Hemel].

Interestingly, JetBrains, Redis Labs and Confluent all maintain sophisticated but similar matrices of products/components and licences.[291] [292] [293] This suggests comparable reasoning behind their business models, i.e. a multi-tiered open-core model.

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[286] https://www.confluent.io/confluent-community-license/

[287] https://www.confluent.io/blog/license-changes-confluent-platform/

[288]   https://www.geekwire.com/2018/might-time-big-cloud-share-wealth-open-source-startups/

[289] https://www.scylladb.com/2018/10/22/the-dark-side-of-mongodbs-new-license/

[290] https://www.percona.com/blog/2020/06/16/why-is-mongodbs-sspl-bad-for-you/

[291] https://www.jetbrains.com/store/comparison.html#LicenseComparison

[292] https://redislabs.com/legal/licenses/

[293] https://www.confluent.io/confluent-community-license-faq/

B.6 Initiatives from the public sector and civil society

B.6.1　OS2

OS2 was founded in 2012 by five Danish municipalities. It originated from the idea that digitalisation tasks can't be solved by central government bodies alone. [294] Since then, it has evolved into a network of Danish public bodies (mainly municipalities) that use and produce open software to ensure local anchoring and shared development. [295]

OS2 focuses on digital solutions for the (Danish) public sector, more specifically for municipalities. [296] The legal ownership of the core code and documentation of the software are held by the network. Some of the software is developed by the network members working together; the rest is contributed to the network by individual members. [297]

To ensure the free co-development and exchange of ideas, all results from the OS2 network are released under an open-source licence or a Creative Commons license, with OS2 as the legal owner of all IP rights.

The Mozilla Public License (MPL)[298] is used for source code, and the Creative Commons license CC BY-SA[299] for documentation and other materials that are not code. The use of other open-source licences is also possible.

B.6.1.1　Philosophy

OS2's philosophy is based on:[300]

- openness: transparency is key in our open community;
- collaboration: we are better and stronger if we unite;
- sharing: knowledge and good solutions should not be proprietary;
- digital development: we want to be frontrunners where relevant; and
- IP ownership and open source licences: prevent vendor lock-in.

B.6.1.2　Open sources

The purpose of OS2 is to spread knowledge and use of open source in Danish municipalities, regions and state institutions. It does so by creating and sharing relevant digital solutions to the benefit of citizens. Through OS2, development power is created and shared. [301]

The entire business of OS2 is built on openness, local ownership and open source. The group currently has about two dozen products available. [302]

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[294] https://os2.eu/sites/default/files/media/presentation_os2_in_english_compressed.pdf

[295] https://os2.eu/sites/default/files/media/os2_one-pager_eng_2020.pdf

[296] https://os2.eu/node/332

[297] https://os2.eu/sites/default/files/media/os2_one-pager_eng_2020.pdf

[298] https://www.mozilla.org/en-US/MPL/

[299] https://creativecommons.org/licenses/by-sa/4.0/

[300] https://os2.eu/node/332

[301] https://os2.eu/side/vedtaegter-os2-offentligt-digitaliseringsfaellesskab#paragraf10

[302] https://os2.eu/produkter

B.6.1.3 Network

The network consists of members (public organisations)[303] and partners (suppliers/vendors).[304]

Almost all members of OS2 (currently 74)[305] are municipalities. The Danish Agency for Governmental IT Services and the Danish Department of Prisons and Probation are also members.

The annual membership fee for OS2 is EUR 3,350.[306]

Even though the OS2 network does include suppliers, they have no voting rights (and pay no fees). Their role is to provide:

- knowledge about technology (consultancy work),
- (open-source) software development and code reviews,[307]
- hosting and support,
- implementation help (consultancy, education and the like), and
- other services.

The suppliers have an interest in participating because OS2 is also a sales funnel and provides access to more customers at one time. They often sell to a group of municipalities instead of just one.[308]

B.6.1.4 Projects and products

At OS2, ideas are turned into projects, which are turned into new products.[309] Products and projects are organised into three levels. Each level deals with minimum requirements as to the relevance of the project, formal requirements, governance, and strategic context.[310]

"*A project or a development of a software solution grows from a challenge or a need from the member or a suggestion of a supplier. Every project needs two or three formalised teams with representatives from the public bodies, but at least one. Hereby the idea "matures", increases in governance level, and quickly becomes an actual product.*"[311]

Governance levels:[312] [313]

- smaller projects and test projects,
- products with greater impact and strategic linkage, and
- products of a widespread and strategic nature.

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[303] https://os2.eu/offentlige-partnere

[304] https://os2.eu/leverandoerer

[305] https://os2.eu/offentlige-partnere

[306] https://os2.eu/node/332

[307] https://os2.eu/dokument/os2-leverandoerpartneraftale

[308] Exchange with Rasmus Frey, Business Manager OS2; February 2021

[309] https://os2.eu/sites/default/files/media/presentation_os2_in_english_compressed.pdf

[310] https://os2.eu/side/governance

[311] https://os2.eu/sites/default/files/media/os2_one-pager_eng_2020.pdf

[312] https://faq.os2.eu/formkrav-produktniveauer-os2-projekter-og-produkter?collection=48

[313] https://os2.eu/sites/default/files/media/presentation_os2_in_english_compressed.pdf

OS2 currently (February 2021) hosts seven projects[314] and 23 products.[315]

B.6.1.5 Funding and governance of projects

Each software development project is funded through an agreement between its initiating partners. So if ten municipalities agree on a project, they also agree on how much of the cost each contributes. [316]

When a project is in use and needs to be maintained, it is funded through an agreement between all the partners using and supporting the product. For example, if there are ten municipalities that initiated the project and five new municipalities using the product, they all pay a share of the costs for maintaining and improving the product.

Every project/product has a steering committee responsible for securing funding and other resources. In addition, each project/product has a coordinating group to do project management, i.e. making sure everyone is heard, collecting development wishes and bug reports, and prioritising these for development.

Both groups are staffed by people from the municipalities using the product, and at least one private vendor is involved, as there must always be someone with technical knowledge and development power that can help. The OS2 secretariat also provides support to the working groups (basically the communities of maintainers, contributors and developers around the projects).

B.6.1.6 Needs

To move to the next level, OS2 could use two or three more people in its secretariat. "We need one or two technical people that can do code review and have knowledge of IT architecture. It would be great if we did not have to rely on the suppliers for that. We could also use a contract manager, to make sure procurement and agreements are done correctly. To get this, we would need more funding, and to get that we will need a higher level of interest at the political level and top management in the public sector. But to be honest, we have gotten far with very little, and we will keep pushing and keep dreaming big on behalf of open source in the public sector."[317]

B.6.2 Code for Romania (Code4RO)

Code for Romania (Code4RO)[318] is a civil society organisation consisting of almost 2000 volunteers who create open-source digital tools to solve societal challenges. Their mission is to innovate through open data, transparency and civic tech: "At Code for Romania, we believe that technology can enable citizens to more meaningfully engage in the public sphere and have a positive impact on their communities."[319]

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[314] https://os2.eu/projekter

[315] https://os2.eu/produkter

[316] Exchange with Rasmus Frey, Business Manager OS2; February 2021

[317] Exchange with Rasmus Frey, Business Manager OS2; February 2021

[318] https://code4.ro/en

[319] https://code4.ro/en

Code4RO is part of the international 'Code for All'[320] network of civic tech organisations,[321] "driving change through digital technology, citizen participation, collaborative decision-making and good governance to deliver solutions for social challenges while improving the relationship between governments and citizens.[322]

The network enables individual organisations to scale by leveraging international resources, sharing expertise, and promoting shared funding to tackle social issues collectively."[323] [324]

Code4RO runs several programmes:[325]

- for building solutions to Romania's problems:
  - Civic Labs,[326]
  - Tech for Social Good[327]:"*We are the ones that we've been waiting for*",
  - Critical Civic Infrastructure;[328] and

- for helping the civil society and the government:
  - Civic Tech 911,[329]
  - Update Romania,[330] and
  - the Code for Romania Task Force.[331]

in the following domains:

- education,[332]

- health,[333]

- environment,[334]

- care,[335] and

- participation.[336]

B.6.2.1   Interview

The following are the key points from an interview with Bogdan Ivănel, Managing Director, on 29 January 2021:

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[320] https://codeforall.org/

[321] https://codeforall.org/members

[322] https://codeforall.org/projects

[323] https://codeforall.org/resources

[324] https://codeforall.org/about

[325] https://code4.ro/en

[326] https://code4.ro/ro/civic-labs

[327] https://tfsg.code4.ro/ro/

[328] https://code4.ro/ro/critical-civic-infrastructure

[329] https://code4.ro/ro/civic-tech-911

[330] https://code4.ro/ro/update-romania

[331] https://code4.ro/ro/code-for-romania-task-force

[332] https://code4.ro/ro/education-for-romania

[333] https://code4.ro/ro/health-for-romania

[334] https://code4.ro/ro/environment-for-romania

[335] https://code4.ro/ro/care-for-romania

[336] https://code4.ro/ro/participation-for-romania

On Code4RO:

- Code4RO is the second-largest member (after Code for America) of the Code for All network,[337]
  - because of the large IT industry in Romania, and
  - because software developers are well paid compared to the rest of the country, so they can afford to "give back to their country".

  According to Ivănel, this situation is similar in other Central and Eastern European countries to which software development is being outsourced. A drawback of this is that there is now a severe imbalance in the country's IT workforce: There is a lack of user experience (UX) designers, business analysts, and software architects, for example. They simply do not exist in the country.

  Another consequence is that 20–25% of all members don't live in Romania, but elsewhere in Europe and in other countries like the US and Canada.

On funding:

- The founders of Code4RO decided never to take any funds from the Romanian government, as they were afraid that corruption within the government would damage their initiative. "*We try to stay away from our government because of lingering questions on corruption. We don't want any sort of 'communication problem'. So we had to do this to protect ourselves and our organisation, and to build trust with the community.*"

  According to Ivănel, there is not much government funding available for the IT sector anyway. Most of the available public money goes to NGOs running social projects and to infrastructure projects.
- Code4RO does not have a principle problem with receiving other public money, though: the funding they receive through the Romanian-American Foundation (RAF)[338] comes basically from US tax payers.
- For the first 2.5 years of its existence, Code4RO did not have any financial resources, only volunteers.
- For the last 2.5 years Code4RO has had funding, currently about 500,000 EUR per year. Most of this comes from corporate sponsors and crowdfunding (see section B.2).
  - The bulk of the funding comes from three strategic sponsors: the RAF (above), the Dutch bank ING and the Lidl supermarket chain. Each of these contributes between 70,000 and 120,000 EUR annually.
  - Despite some big names among the other sponsors – Vodafone, Amazon, Bosch, Continental – most of these contribute just 5,000 EUR per year. Sponsors can support a work package or adopt a project.
  - In addition, there are almost 20 sponsors who contribute in kind, such as Amazon Web Services (AWS), GitHub, Google for Nonprofits, Microsoft Azure, Salesforce and Slack.

  The current funding allows Code4RO to maintain a paid staff of 12 full-time employees.
- Funding the development of FOSS through grants is going well, but it is difficult to fund:
  - the administration, management, maintenance and support of software, and
  - helping institutions (the ultimate users of the software) in building capacity.

  According to Ivănel, this is because corporate sponsors can get exposure (e.g. positive press) for funding a project, but not for the deployment and maintenance of the software.
- The current funding is just adequate for the current applications. Code4RO currently has:

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[337] https://codeforall.org/

[338] https://www.rafonline.org/en/

- 115 prototypes (designed but not yet developed),
- 21 applications launched, and
- 12 applications under development.

While the current funding allows the existing applications to be maintained, this will no longer be the case after the 12 applications now in development have been launched.

According to Ivănel, this year will be the first in which the organisation will struggle:

- More people will be needed to maintain the software.
- More "DevOps" (development-operations) and other IT professionals will be needed.
- The new applications will increase the technical footprint of Code4RO, so it will have to start paying for its infrastructure. "Our current use is covered through donations from Microsoft and Amazon, but they will not be sponsoring our growth. We expect to be needing another 1,500 EUR per month for our infrastructure. And we need more professionals to run these systems."

- According to Ivănel, for the coming year an additional 70,000–150,000 EUR is needed for software maintenance.
- Code4RO has never ("not yet") applied for funding from the EU, because of:
  - the bureaucracy involved, and
  - the inflexibility of the institution (so they have heard from others).
- But they would definitely and happily go for EU funding if a lightweight application process were available.

On the Update Romania programme:
- Code4RO has – in collaboration with Babeş-Bolyai University – set up a programme to build more capacity in government agencies[339] – "something that is much needed to make this digital jump". "*We have been building the information and communication systems that the government is using. We received a lot of cheers for that, but also a greater call for help. The problem is that sponsors are not interested in supporting this: 'We are paying taxes already.'*"
- "*There is a great lack of capacity and knowledge within the government, and at the same time a great need. But they cannot do it by themselves. The government has tried to create capacity, but they didn't even have the capacity to do that, so this is not going to be solved any time soon.*"
  "*We have been working closely with all stakeholders, but at every point where we tried to work with the government, we encountered a lack of will and we found that digitalisation is not a priority.*"
  "*Even if we could start today, it would take years. So at this stage we have defined a set of seven public policies that we want to push with the government (part of the 'Update Romania' programme).*"[340]
  "*One of these policies is that we want the government to have an open-source software policy, because it currently does not exist, and it takes a long time to educate people in government.*"
  "*We have applied for funding from Norway, Liechtenstein and Iceland, so that's where current funding is coming from. But we're also cross funding, i.e. using money from the community.*"
- "*We want to showcase in Romania that open-source software is an inherent part of digitalisation and can make public and social projects sustainable: government and NGOs will not be taken hostage by a company (i.e. locked in), and the shared cost make it far more attractive to sponsor: "By building open-*

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[339] https://code4.ro/en/update-romania

[340] https://code4.ro/ro/update-romania

source software, we diminish the cost for each next implementation. For example, we are now reusing parts of the election system we developed before in two new, unrelated software projects.”

- *“Re-replication is one of the core problems in civil and government technology. Especially in Europe with so many language barriers. And the same is true for documentation. That's why at Code4RO we do all our work in English. That means that not only do we have to invest more in reuse, we also have to do more in curating knowledge about reusable software.”*

[note that this latter point resonates strongly with the 'alternatives to' idea the Open Source Programme Office is working on]

On the future:

- *“In 2018 I've been coordinating the Code for All organisation, which allowed me to see a lot of civil and government technology around the world. The Civic Hall model in New York[341] (a location bringing together the local civil society community) is something that works really well. They are currenty constructing their own new building.[342] I wish we could have something like that here.”*
- Another dream of Ivănel is to have a 'Code for Europe' organisation. *"There is so much work to do."*

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[341] https://civichall.org/

[342] https://civichall.org/about-civic-hall/civic-hall-union-square/