



From FOSS to DAO

The history of open-source collaboration and knowledge sharing

HISTORY OF SOFTWARE SHARING



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- ▶ From 1950s to 1960s, under the influence of hacker culture, almost all software was developed by academic and enterprise researchers, usually shared as public domain software.
- ▶ The hacker culture began in academia in the 1960s, centered on the Massachusetts Institute of Technology's Tech Model Railroad Club (TMRC). In the Jargon File, a glossary and usage dictionary of slang used by computer programmers, hacker ethic is defined as "the belief that information-sharing is a powerful positive good, and that it is an ethical duty of hackers to share their expertise by writing free software and facilitating access to information and to computing resources wherever possible".

HISTORY OF SOFTWARE SHARING

In the 1970s, with the advent of personal computers and more advanced programming languages, the shape of the computer industry and software industry changed dramatically. With the increase of the audience and the expansion of the scope of use, the software attached to the computer hardware itself has been unable to meet the needs of users, and some companies specializing in the development of general software began to emerge (such as Micro Soft).

Unlike hardware companies, such software companies need to charge for software to make a profit, but charging for software is clearly at odds with making the source code available.

February 3, 1976

An Open Letter to Hobbyists

To me, the most critical thing in the hobby market right now is the lack of good software courses, books and software itself. Without good software and an owner who understands programming, a hobby computer is wasted. Will quality software be written for the hobby market?

Almost a year ago, Paul Allen and myself, expecting the hobby market to expand, hired Monte Davidoff and developed Altair BASIC. Though the initial work took only two months, the three of us have spent most of the last year documenting, improving and adding features to BASIC. Now we have 4K, 8K, EXTENDED, ROM and DISK BASIC. The value of the computer time we have used exceeds \$40,000.

The feedback we have gotten from the hundreds of people who say they are using BASIC has all been positive. Two surprising things are apparent, however. 1) Most of these "users" never bought BASIC (less than 10% of all Altair owners have bought BASIC), and 2) The amount of royalties we have received from sales to hobbyists makes the time spent of Altair BASIC worth less than \$2 an hour.

Why is this? As the majority of hobbyists must be aware, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?

Is this fair? One thing you don't do by stealing software is get back at MITS for some problem you may have had. MITS doesn't make money selling software. The royalty paid to us, the manual, the tape and the overhead make it a break-even operation. One thing you do do is prevent good software from being written. Who can afford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting his product and distribute for free? The fact is, no one besides us has invested a lot of money in hobby software. We have written 6800 BASIC, and are writing 8080 APL and 6800 APL, but there is very little incentive to make this software available to hobbyists. Most directly, the thing you do is theft.

What about the guys who re-sell Altair BASIC, aren't they making money on hobby software? Yes, but those who have been reported to us may lose in the end. They are the ones who give hobbyists a bad name, and should be kicked out of any club meeting they show up at.

I would appreciate letters from any one who wants to pay up, or has a suggestion or comment. Just write me at 1180 Alvarado SE, #114, Albuquerque, New Mexico, 87108. Nothing would please me more than being able to hire ten programmers and deluge the hobby market with good software.

Bill Gates

Bill Gates
General Partner, Micro-Soft

COPYRIGHT PROTECTION OF SOFTWARE



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- ▶ In 1961, the first copyright registration of computer software was accepted in the United States (a tape containing a computer program submitted by North American Airlines was successfully registered in June 1964). The United States Copyright Office considered computer programs, which were stored primarily as punched cards or magnetic tapes, to be like a "manual" and thus to be copyrighted like books.
- ▶ The Copyright Act of 1976, which came into force on January 1, 1978, clearly states that software is protected by copyright law as a "literary work". Congress noted that the term "literary work" did not imply that a copyrighted work must contain literary value. Computer databases and computer programs are different from ideas as long as they incorporate authorship into the programmer's representation of the original idea.

FREE SOFTWARE MOVEMENT

In 1983, Richard Stallman quit his job at the AI lab at MIT and, in the name of reviving the spirit of cooperation and mutual help in the software world, published the famous GNU Manifesto on the Net.UNIX-Wizards news group.

Stallman believed that “to serve humanity with software, software should be free, because software belongs to human knowledge. Proprietary software does not belong to human knowledge.”

A program is free software if the program's users have the four essential freedoms:

- The freedom to run the program as you wish, for any purpose;
- The freedom to study how the program works, and change it so it does your computing as you wish;
- The freedom to redistribute copies so you can help others;
- The freedom to distribute copies of your modified versions to others.



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Richard Stallman

American programmer, initiator of free software movement and founder of GNU foundation

OPEN SOURCE MOVEMENT



[Linus Torvalds](#), by Beraldo Leal, licensed under [CC-BY 2.0](#)

Linus Torvalds

Finnish software engineer, creator and the principal developer of the Linux Kernel

▶ In 1991, the free software foundation has finished the development most of the components of GNU operating system (such as compiler, editor, user interface, etc.), but it has not yet completed the GNU Hurd, which is the core of the operating system.

▶ The task of completing the kernel was led by Linus Torvalds, a 21-year-old Finnish university student. For personal interest and testing purposes, Linus wrote version 0.01 of Linux kernel in September 1991. Following version 0.02, programmers from all around the world contributed to the development of the Linux kernel, allowing it to grow at a rapid pace. In March 1994, the development of Linux kernel version 1.00 was completed. Except for personal computers, Linux is now a top player in the operating system market. Linux or its derivatives are used on anything from the world's top 500 supercomputers to a huge number of mobile devices.

OPEN SOURCE PHILOSOPHY

In 1997, Eric Raymond, an American software developer, published *The Cathedral and the Bazaar*, a reflective analysis of the hacker community and free-software principles. In this book, He compared two software development methods.

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Cathedral (Commercial Software)

- Closed development
- High cost
- Long cycle
- Excellent quality

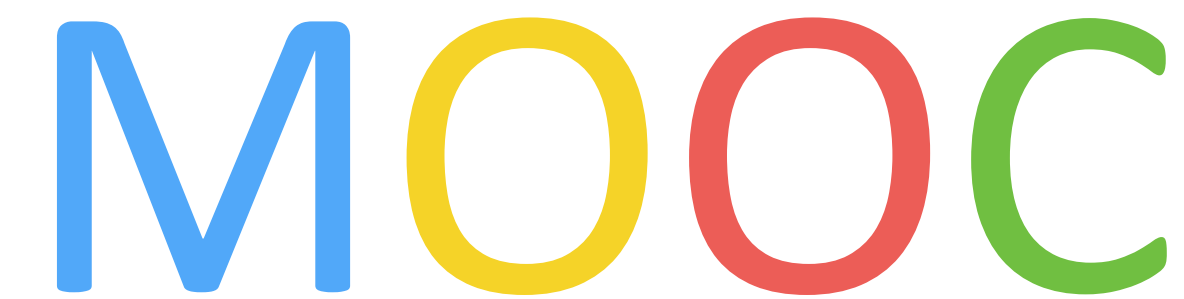


Bazaar (Open Source Software)

- Open development
- Low cost
- Short cycle
- Mediocre quality



EXAMPLES OF OPEN SOURCE MODEL



The Creative Commons license is a type of public copyright license that permits people to share works created under the terms of the license while yet retaining some of their rights. When the concept of Creative Commons was first introduced, it was intended to circumvent the issues associated with current intellectual property rights and copyright law in the context of information sharing. The proposal makes available to copyright holders a number of free copyright agreements that they may use to apply to the work published by authors on the Internet.

MOOC is an acronym for massive open online course, which is an online education format that allows anybody to receive high-quality education at a fraction of the costs of traditional degrees. Several new online education platforms have emerged in recent years, including Coursera, Udacity, and Edx, which integrate teaching materials from a wide range of renowned universities and give students with a diverse range of online learning resources.



DEFINITION OF DAO



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▶ DAO, or decentralized autonomous organization, is a code-based technological tool that runs on the blockchain, as well as a new governing structure. Its goal is to decrease the amount of human input by utilizing predefined rules written in smart contract while increasing the organization's ability to automate and collaborate.

▶ Similar to a company's shares, DAO tokens can represent voting rights, and they can also be utilized for a variety of other purposes (organization costs, reward users, etc.). The capacity to vote and associated incentive system allow DAO to dismantles the hierarchical structure of traditional organizations and assures that a decision-making consensus can be achieved among all who are involved. Some DAOs are also available to non-token holders who wish to cast votes on specific issues.



THE DAO

- ▶ In April 2016, Christoph Jentzsch publicly released the code of “The DAO” on GitHub and conducted a 28-day crowdfunding campaign on the website. The project raised nearly US \$150 million in ETH, attracting 14% of all ETH issued at that time.
- ▶ In essence, the platform aims to allow anybody to pitch their ideas to the community and perhaps receive Support from The DAO. Anyone with DAO tokens could vote on the ideas, and would thereafter earn incentives if the initiatives generated a profit. The DAO was formed as an open source, investor-led venture capital fund without the use of a typical management structure or board of directors, and its tokens were immediately traded on popular cryptocurrency exchanges once they were issued. Techcrunch even called The DAO a paradigm shift in the concept of economic organization.



DEVELOPMENT OF DAO



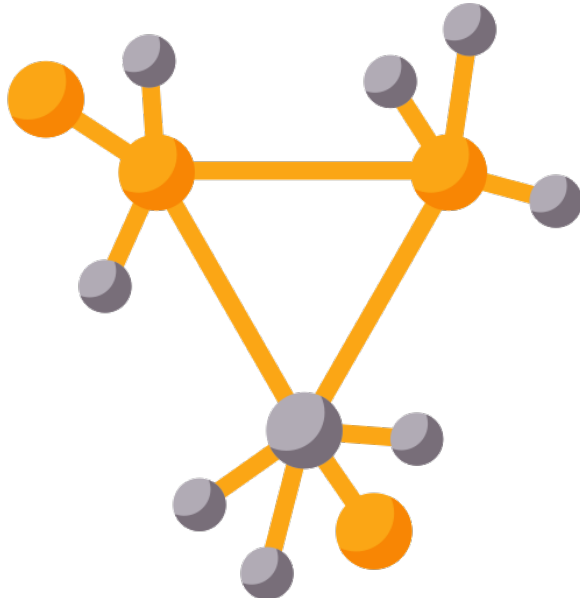
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- ▶ Despite the fact that the DAO had showed unprecedented rapid growth, it was forced to be closed in September of the same year. Attackers were able to steal 11.5 million ETHs (worth about \$50 million USD) as a result of a loophole in the DAO's code. However, because the DAO account is currently in the holding period of 28 days, these monies have never been truly transferred, and Ethereum has returned the cash to the DAO members through a hard fork.
- ▶ 2019 was the beginning of DAO's explosive growth, with a never-ending flood of new concepts and expansions launching into the market. Nowadays, DAO has increasingly grown in importance as a component of the Web3 architecture. The continuous development of various Dao protocols, such as Aragon, DAOstack, Moloch, etc., provides great convenience for organizations that want to initiate, govern and manage DAO.



ADVANTAGES OF DAO

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Decentralization

As DAO's organizational structure is not constrained by the typical hierarchical management structure, every new concept or proposal can be examined in its entirety by the organization.



Efficiency

Within hierarchical companies, bureaucracy has always been a hindrance, significantly slowing down the process. Transaction processing times are faster and more efficient under a totally decentralized organizational structure.



Transparency

As DAO is built on blockchain, every financial transaction, rule, and decision are recorded in a public ledger accessible to all.



DISADVANTAGES OF DAO

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Security

Due to the technology's infancy and the prevalence of security threats, DAO's immutability is both a benefit and a drawback. Additionally, because the code is publicly accessible and difficult to repair, any known security flaws can be exploited.



Legal

Currently, the precise legal status of DAO remains unknown. Startups that utilize the DAO structure require a legal framework in order to function lawfully in some regions and interact with traditional financial systems.



Decisional

Due to the democratic and technical nature of DAO's decision-making, many voters may lack the necessary competence, which means that the outcome of voting is not always optimum and may be influenced by the majority.



EXAMPLES OF DAO ORGANIZATIONS



Gitcoin is a community of developers, builders and innovators dedicated to establishing an open, collaborative, and economically empowered internet. By financing initiatives, fostering community, and facilitating access to learning materials, Gitcoin is collaborating with participants to construct the public digital infrastructure of the future. Since its inception in November 2017, Gitcoin has assisted 33,142 funders in reaching a total of 176,649 bounty earners, and it has financed 1,791 projects with a gross marketplace value of \$14.87 million

THE LAO

The LAO is an OpenLaw-led initiative that aims to establish a new generation of DAOs in the form of limited-liability autonomous organizations. Accredited investors can invest in the fund with others and, as an organization, establish consensus on the fund's profit-generating assets. Current for-profit DAO implementations in the United States run afoul of security legislation, making it impossible for authorized investors to invest in such funds. In contrast to existing DAO models, the LAO avoids these regulatory barriers by incorporating the organization as a limited liability corporation.



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