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Research Note

Open Source Policies for Commercial Software Companies

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Abstract: Creating software is a collaborative process, relying not only on the efforts of one team, but also on those of a community. Open source software explicitly allows sharing and reuse, while proprietary software, or closed source software, disallows sharing or modification by anyone but the copyright holder. In consideration of the collaborative process of making software, which often mixes open and closed source software, this paper argues that private companies should have an open source software policy in place if they are using free third-party software to produce their own proprietary software for sale or as part of a paid service. This policy should specify what open source software may be used for which purposes, per license, and set ethical guidelines for the company to give back to the communities on whose work they rely.

Introduction

A piece of computer software is a creative work. Like painting or architecture, software draws from and builds on prior work. This is true for any art or craft. The body of accumulated knowledge, patterns, and practices in a given field are continuously shared, mixed, reused, and improved upon by its practitioners from one generation to the next. Jack Balkin argues that, in the digital age, our most cherished right, free speech and expression, should entail the right to interact with and appropriate information objects freely to protect a democratic culture in which everyone can participate in the production and distribution of culture, each person building on the what others did before her.¹ Even if particular information objects are not always free, we might say that ideas are free: no one can lay claim to exclusive use of an idea. Ideas themselves are not copyrightable, but expressions of ideas are. Copyright protects the intellectual property of creative work, from poetry to software, granting exclusive rights to its owners. Under copyright law in the United States, all software is copyright protected. Software licenses, which fall under contract law, are used by copyright holders to grant rights or impose restrictions on how users may use the software.

Software copyrights and licenses fill a vast arena of law and philosophy. This paper focuses on ethical use of third-party open source code by businesses building proprietary software and urges businesses facing this issue to institute an open source policy that specifies what type of open source software may be used, to what end, how external software sources are to be tracked, and

how the company and its employees should contribute back to the communities whose work it appropriates. To do so we will begin with a definition of open source and proprietary software and the philosophical differences between these licensing models. Then we will look at news of the U.S. government implementing an open source policy and how a similar policy is beneficial to private organizations. After diving into some ethical considerations of how software is produced and used, we will suggest discuss what belongs in an open source policy and how it benefits employees as well as the larger community of developers and users.

Open Source and Proprietary Software

Software consists of code and we distinguish between two kinds: source code and object code. There is further nuance to the distinction, but suffice it to say that source code is human-readable code, written by and for programmers, while object code is the machine executable code, opaque to human readers, which results from compiling or interpreting source code. It is therefore possible to release software that is either open (with source code) or closed (without source code).

The motivation to release closed source software is to protect intellectual property by hiding underlying functionality and design.ⁱⁱ The motivation to release open source software, on the other hand, is typically a social or ethical one: a desire to share with others, collaborate with or receive contributions from others, to gain skill or reputation, or simply produce something of use to the community.

Open source software is based on an ethical principle, put forward by computer ethics pioneer Norbert Wiener in 1948, that technology should be used to promote human freedom and creativity. In Weiner's words, justice requires that we grant "the liberty of each human being to develop in his freedom the full measure of the human possibilities embodied in him."ⁱⁱⁱ By this way of thought, to limit a person's ability to use software freely is to stifle a human right. Open source software, which is roughly synonymous with free software, is not a matter of price. "Free as in free speech, not as in free beer" is the common refrain. Lawyers know this as the *libre* vs. *gratis* distinction. Free and open source software ("FOSS") allows users to use, copy, and modify it without restriction.^{iv} Proprietary software may or may not be *gratis*, but is, by definition, not *libre*.

Proprietary Software Licenses

Proprietary software licenses preserve ownership of software solely to its publisher and grant limited rights to using copies of the software to end-users. Any company selling software products or services will already have an end-user license agreement in place for its customers.

Open Source Software Licenses

There are dozens of open source licenses. Broadly speaking, they all grant freedom to use, share, and modify the software, but beyond that, there are important differences from one license to another.^v Due to what may be considered a philosophical divide, open source software licenses are split into two broad categories. There are permissive licenses, such as the MIT license and BSD licenses, which have minimal requirements on how software may be redistributed, and there are copyleft licenses, such as GNU (an operating system), which ensure redistributions of modified software have the same freedoms (i.e. the same copyleft license) as the original distribution.



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Copyleft licenses, popularized by Richard Stallman’s GNU General Public License, maintain four freedoms, which cannily start from zero:

- Freedom 0 – the freedom to use the work,
- Freedom 1 – the freedom to study the work,
- Freedom 2 – the freedom to copy and share the work with others,
- Freedom 3 – the freedom to modify the work, and the freedom to distribute modified and therefore derivative works.^{vi}

These are freedoms of the user, not the original software publisher. Freedom 0 allows the user to use the program in ways different than the publisher intended. Freedom 2 lets the user distribute copies of the software (either for free or for a fee!) without having to ask permission. Freedom 3, as it is interpreted by GNU Free Software Foundation, is the strongest freedom and the one that sets copyleft licenses apart from permissive licenses because this freedom requires that derivative works, if distributed, be distributed with open source code. Only by ensuring that derivative works preserve the same four freedoms as the original work does software stay free as it is used, modified, and shared from person to person. In other words, strong copyleft licenses only allow derivative work to be distributed only under equally strong copyleft licenses. Copyleft treats owner and user the same. It is a controversial license, which its detractors pejoratively call “viral licensing.”

Permissive licenses generally share the same four freedoms but without the requirement that derivative work preserve those freedoms. In turn, copyleft supporters are quick to point out that—freedom being a right—any “freedom” that can be revoked at whim is not a true freedom.

The divide between these two camps of open source software is due as much to ethics as to practicality. Copyleft licenses empower users to use software freely as long as they, in turn, maintain those freedoms for others. Permissive licenses give permission to “do as you please” with the software with fewer strings attached. The implications for businesses making proprietary software are important. There are legal restrictions to how software may be used and which licenses are compatible with proprietary software, as well as ethical considerations to make for those whose work has been used.

U.S. Government Announces Open Source Policy

The federal government is giving open source software its own stamp of approval. In September 2014, at the U.N. General Assembly, President Obama promised to produce an open source policy for the federal government by the end of 2015.^{vii} This policy is part of the Open Government commitment “to promote transparency, fight corruption, energize civic engagement, and leverage new technologies to open up governments worldwide”.^{viii} The administration claims that it will use and contribute back to open source software as a way of spurring innovation and cutting costs.

Although details of the policy are unknown, the tenets of the initiative are already established. 18F is a new digital services agency that resembles a Silicon Valley startup, but is actually run by the federal government. Created in the wake up the Healthcare.gov debacle in effort to reform citizen-facing government technology, 18F embraces lean software development practices and releases open source code. Anyone can view their code repositories online and track project updates from

their webpage. Its Open Source Policy specifies the benefits and uses of FOSS, its commitment to community involvement, and the software licenses under which their own code is released.^{ix}

Ethical Considerations

An open source policy is not just for the public sector. Private companies should give equal concern to how they draw from and give back to the wide community of open source software developers. By its nature, software is creative work that builds on work before it. One program is built on others, which, in turn, may become a building block for yet another. The desire to preserve intellectual property should be balanced by ethical considerations.

Returning to Weiner, the great principles of ethics concerning information technology are freedom for human development, equality of positions, benevolence towards all, and minimal infringement of freedom by the community and state.^x FOSS embodies the principles of freedom, equality, and minimal infringement quite well. Lawrence Lessig, Stanford Law professor, has claimed, “open code is a constraint on state power.”^{xi} To that one might add corporate power. Indeed, Stallman, for whom free software is a moral imperative, considers proprietary software unethical: “I cannot in good conscience sign a NDA or a software license agreement.”^{xii} Copyleft licenses prevent any one owner from taking away freedoms from others.

Is selling proprietary software unethical? Can Weiner’s principles be reconciled with proprietary software, which uses copyright to limit free use and distribution, withholds source code that others could benefit from, and holds the rights of the owner above those of the user? Contra Stallman, I suggest that it is not. Open source and closed source software projects can coexist as peacefully as public libraries and private bookstores, or, more to the point, nonprofit organizations and for-profit businesses. Information is a public good as well as a traded good. Selling some information (e.g. object code) while withholding other information (e.g. source code) may not be morally commendable, but is morally permissible.

In order for software businesses and makers of proprietary software to be socially responsible, they should recognize that they have benefitted directly or indirectly from free information and free software and give back accordingly. For example, a proprietary software project that draws heavily on the work of third-party software under an MIT license has legal right to sell its product for profit without permission from or payment to the third-party developer. Nevertheless, the company has an ethical duty to support that developer or her community in some way, such as contributing open source work back to the original project or publically sharing related research. This is how open source and proprietary software can coexist and benefit from each other. An open source policy sets the conditions and boundaries for employees to do the right thing, with company support.

Creating an Open Source Policy

The details of an open source policy will differ from company to company. A company that only creates internal IT software that is not sold or widely distributed will have different considerations and concerns than a software publisher. So, too, will the software license for a company’s product affect how it deals with using outside code under various open source licenses.

As a rule, proprietary software is incompatible with strong copyleft software licenses such as GPL. This means that GPL-licensed code cannot be used in production code for proprietary software, but GPL-licensed software may be used for developer tools in support of producing that software. It is good practice for engineering teams to record and track all open-source contributions and dependencies in their code base and for management to audit this list regularly. Practical guidelines such as these should be laid out in the policy for developers to follow when pulling bits of code or programs from the Internet.

In addition, the policy should set ethical guidelines for community engagement and socially good practices. It is common for developers to modify open-source projects to fit their needs. In many cases, these modifications would be of benefit to the community. The open source policy should establish a procedure for internally reviewing code and approving it for release back into the wild (i.e. open-source project). The policy may also specify whether this is to be done through a developer's personal account or through a company account. Regular contribution to an open-source community is not only socially responsible but also improves the public reputation of the company.

Just as the federal government is using the open source policy to improve transparency by doing its work in the open, a commercial company can use the policy to ensure copyright law is followed internally and the guiding principles of information technology are well respected.

Conclusion

After three decades of development, the open source movement has become mainstream. For over a decade, Linux, a FOSS alternative to proprietary operating systems like Windows or Mac, has seen widespread use in production servers. Today open source is gaining ground in cloud stacks, software networks, and big data platforms.^{xiii} From operating systems to applications to single-purpose programs to snippets of code, open source software is everywhere. Any business that creates its own software will use third-party open source software: as a platform, as a development or operations tool, as a dependency for one's own software, as code directly integrated into one's own software, or all of the above. Developers working on a software product must know how this mixture of external (shared as open source) and internal work (released as closed source) should be handled. The policy should establish when and how open source software may be used in accordance with license agreements and upholding ethical obligations towards the community.

ⁱ Balkin, Jack M. *Digital Speech and Democratic Culture: a Theory of Freedom of Expression for the Information Society*. New York University Law Review, Vol. 79, No. 1, 2004.

ⁱⁱ Lessig, Lawrence. *Code: And Other Laws of Cyberspace, Version 2.0*. Basic Books. Dec. 2006.

ⁱⁱⁱ Bynum, Terrell. "Computer and Information Ethics." *The Stanford Encyclopedia of Philosophy*. 2011. Accessed Dec. 2014 <plato.stanford.edu>.

^{iv} Baase, Sara. *A Gift of Fire: Social, Legal, and Ethical Issues for Computing Technology – 4th Revised Edition*. Pearson Education Limited. 2012.

^v "Open Source Licenses by Category." Open Source Initiative. 4 Dec. 2014. Accessed Dec. 2014 <opensource.org>.



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vi “What Is Free Software?” GNU Project - Free Software Foundation. 5 Aug. 2014. Accessed Dec. 2014 <www.gnu.org>.

vii Clozel, Lalita. “U.S. to Craft Open Source Policy by Next Year.” *Technically*. 29 Sep. 2014. Accessed Dec. 2014 <www.technical.ly>

viii “Announcing New U.S. Open Government Commitments on the Third Anniversary of the Open Government Partnership.” The White House. 24 Sep. 2014. Accessed Dec. 2014 <www.whitehouse.gov>.

ix “18F/open-source-policy.” *GitHub*. 18F. 20 Nov. 2014. Accessed Dec. 2014 <github.com>.

x Bynum.

xi Lessig.

xii Marko, Kurt. “Open Source Vs. Proprietary: Time For A New Manifesto - Network Computing.” *Network Computing*. 20 Nov. 2014. Accessed Dec. 2014 <www.networkcomputing.com>.

xiii *Ibid*.