Open Source Software (OSS) Is Commercial

David A. Wheeler
December 9, 2010

Nearly all publicly-available open source software (OSS) is commercial software. Unfortunately, many government officials and contractors fail to understand this. This misunderstanding can result in higher costs, longer delivery times, and reduced quality for government systems. There are also legal risks: government officials and contractors who do not understand this, yet influence the selection or use of software, will probably fail to comply with U.S. law and regulations on commercial software. Finally, such government officials and contractors do not understand the modern commercial software marketplace, and thus are destined to make poor decisions about it.

This article explains *why* it is important to understand that OSS is commercial; explains why nearly all OSS is commercial software per U.S. law, regulation, and DoD policy; and shows why open source software is commercial even beyond the "letter of the law" because it has all the usual earmarks of commercial practice. But first, we must define the term OSS.

Defining Open Source Software (OSS)

As the official DoD policy on OSS states, "*Open Source Software is software for which the human-readable source code is available for use, study, reuse, modification, enhancement, and redistribution by the users of that software*" [DoD2009]. Other definitions for OSS (also called Free Software, Free/Libre/OSS, and FLOSS) include the Free Software Foundations' "Free Software Definition" and the Open Source Institute's "Open Source Definition." Successful OSS is typically co-developed and maintained by people from multiple organizations working together. For general OSS information, see "Open Source Software (OSS) in U.S. Government Acquisitions" (Software Tech News, Vol. 10, No. 2) and [Wheeler2007].

Why is this important?

Acquirers (both government and contractors) risk much by failing to understand that OSS is commercial.

First, they risk ignoring the best possible alternatives that they are required by law to consider. As [DoD2009] attachment 2 part 2 notes, "Executive agencies, including the Department of Defense, are required to conduct market research when preparing for the procurement of property or services by 41 USC Sec. 253a … (see also FAR 10.001…). Market research for software should include OSS when it may meet mission needs." The Federal Acquisition Regulations (FAR) part 12 requires agencies to "Conduct market research to determine whether commercial items or nondevelopmental items are available that could meet the agency's requirements."

Second, they risk failing to comply with U.S. law and regulations that require preference for commercial software (see 10 USC 2377) and a maximal use of commercial software (where practicable). FAR part 12 states that agencies must "(b) Acquire commercial items or nondevelopmental items when they are available to meet the needs of the agency; and (c) Require prime contractors and subcontractors at all tiers to incorporate, to the maximum extent practicable, commercial items or nondevelopmental items as components of items supplied to the agency."

Finally, there is the risk of paralysis. There are many regulations and local rules about commercial items. Someone who doesn't realize that nearly all OSS is commercial won't know what rules to follow, and can become effectively paralyzed. Once they realize that nearly all OSS is commercial, they can usually follow the well-understood rules for commercial software.

OSS is commercial by law, regulation, and policy

The DoD policy on OSS [DoD2009] attachment 2 part 2 says, "In almost all cases, OSS meets the definition of 'commercial computer software' and shall be given appropriate statutory preference in accordance with 10 USC 2377 (reference (b)) (see also FAR 2.101(b), 12.000, 12.101 (reference (c)); and DFARS 212.212, and 252.227-7014(a)(1) (reference (d)))." We can confirm this by examining U.S. law and regulation.

U.S. law governing federal procurement (specifically 41 USC 403) formally defines the term "commercial item" (underlining added) as:

"(A) Any item, other than real property, that is of a type customarily used by the general public or by nongovernmental entities for purposes other than governmental purposes, and that—

> *(i) has been sold, leased, or licensed to the general public; or*
> *(ii) has been offered for sale, lease, or license to the general public.*

(B) Any item that evolved from an item described in subparagraph (A) through advances in technology or performance and that is not yet available in the commercial marketplace, but will be available in the commercial marketplace in time to satisfy the delivery requirements under a Federal Government solicitation.

(C) Any item that, but for—

> *(i) modifications of a type customarily available in the commercial marketplace, or*
> *(ii) minor modifications made to meet Federal Government requirements,*

would satisfy the criteria in subparagraph (A) or (B).

(D) Any combination of items meeting the requirements of subparagraph (A), (B), (C), or (E) that are of a type customarily combined and sold in combination to the general public.

(E) Installation services, maintenance services, repair services, training services, and other services if—

> *(i) the services are procured for support of an item referred to in subparagraph (A), (B), (C), or (D), regardless of whether such services are provided by the same source or at the same time as the item; and*
> *(ii) the source of the services provides similar services contemporaneously to the general public under terms and conditions similar to those offered to the Federal Government.*

(F) Services offered and sold competitively, in substantial quantities, in the commercial marketplace based on established catalog or market prices for specific tasks performed or specific outcomes to be achieved and under standard commercial terms and conditions.

(G) Any item, combination of items, or service referred to in subparagraphs (A) through (F) notwithstanding the fact that the item, combination of items, or service is transferred between or among separate divisions, subsidiaries, or affiliates of a contractor.

(H) A nondevelopmental item, if the procuring agency determines, in accordance with conditions set forth in the Federal Acquisition Regulation, that the item was developed exclusively at private expense and has been sold in substantial quantities, on a competitive basis, to multiple State and local governments."

This definition in U.S. law is reflected in the Federal Acquisition Regulation (FAR) FAR 2.101, as well as the DoD FAR Supplement (DFARS) 212.212 and 252.227-7014(a)(1). The DFARS definition is shorter, but for our purposes has the same basic thrust.

Thus, OSS that has been released and licensed to the general public, and has at least one non-government use, is by definition commercial. Note that OSS that implements government functions, or was originally developed by the government, is still commercial as long as it meets this definition (e.g., it is licensed to the public and used for at least one non-government purpose). If the OSS isn't released yet, but will be in time, it is still commercial (this enables OSS "bounty systems"). The government can often pay for modifications to OSS (e.g., to address government-specific needs) and still consider the result commercial. Related services (e.g., installation, repair, and training), even if they're from a different source than the original author, are also typically commercial per this definition.

Note that software often ends up being used for non-government purposes, even if it was originally developed for a government purpose. Software developers often work to make their software more general-purpose, so that they have more potential users. In addition, many organizations perform functions that are similar to functions performed by the government. For example, many governments need integrated library systems, but many other non-government organizations (such as large universities and companies) need them also.

DoD's "Commercial Item Handbook" (November 2001) explains that the broadness of this government definition of "commercial item" is intentional, because it "enables the Government to take greater advantage of the commercial marketplace." The DoD policy memo "Commercial Acquisitions" (Jan. 5, 2001), Appendix A in the handbook, explains that the benefits of commercial item acquisition include "increased competition; use of market and catalog prices; and access to leading edge technology and 'non-traditional' business segments." Note that those who created these definitions and policies anticipated that there will be changes in the commercial market, including "non-traditional business segments."

This interpretation is supported by documents other than [DoD2009]. Department of the Navy memorandum "Department of the Navy Open Source Software Guidance" (signed June 5, 2007) was released specifically to make it clear that OSS is commercial. It says that the Navy will "treat OSS as [Commercial Off-the-Shelf (COTS)] when it meets the definition of a commercial item." OMB Memo M-03-14 "Reducing Cost and Improving Quality in Federal Purchases of Commercial Software" is about commercial software, and it specifically says that its SmartBUY initiative will include open source software support.

OSS is commercially developed and supported

OSS is commercial, even if we ignore US law and regulation. The *New York Times Everyday Dictionary* (1982) says that "commercial" means either (a) "oriented to profit-making," or (b) "of, pertaining to, or suitable for … [dealings, the buying and selling of commodities, or trade]." Let's start with the first definition.

Many for-profit companies make some or all of their money developing and/or supporting OSS, including Red Hat, IBM, Oracle, and others. *InformationWeek*'s David DeJean, in his article, "Is Open-Source A Business Model? $500 Million Says It Is," notes that Citrix paid $500 million for XenSource (maker of the OSS Xen hypervisor). IBM says that in 2001 it invested $1 billion in Linux, and that by 2002 it had already almost completely recouped that investment, suggesting some astounding returns on investment. *InfoWorld*'s Savio Rodrigues reported on July 10, 2007, that venture capitalists invested $1.44 billion in OSS from 2001 through 2006. Someone who uses "commercial" as the

opposite of OSS will have trouble explaining why Red Hat is listed in the New York Stock Exchange (for example), since they focus on developing and releasing OSS.

For-profit organizations use or support OSS for many different reasons. Some give away the OSS and sell the support (such as training, customization, and support/ maintenance). Many use and support OSS as a support infrastructure for the product or service they actually sell, i.e., for cost avoidance by cost sharing. Many for-profit organizations have realized the value of "commoditizing your complements," that is, you'll sell more of your product if things related to it (that you don't sell) are cheaper.

Once you use the second broader definition of "commercial," it is even clearer that OSS is commercial. Economists often emphasize the difference between wealth and money. Some OSS projects attempt to earn money (directly or indirectly), but nearly all OSS projects attempt to create wealth in the form of improved software. They attempt to create wealth via trade and dealings ... a fundamentally commercial notion.

OSS developers give their users many more rights than proprietary products do, typically with the expectation that others are thus likely to contribute back to the project. Thus, most non-profit OSS projects are actually trying to achieve financial gain – it just happens that they are trying to receive gains of additional or improved software instead of money. As Linux kernel creator Linus Torvalds noted in a 2003 letter to SCO, the U.S. Code Title 17, Section 101 (the law that creates and defines copyrights in the U.S.) explicitly defines the term "financial gain" as including "receipt, or expectation of receipt, of anything of value, including the receipt of other copyrighted works." Thus, while OSS projects may not receive money directly, they typically do receive something of value in return. Ganesh Prasad's "How Does the Capitalist View Open Source?" captured this concept nicely in May 2001.

The U.S. Court of Appeals for the Federal Circuit formally stated that there are economic considerations with OSS. In their ruling on Jacobsen v. Katzer (August 13, 2008), they said that "*Open Source software projects invite computer programmers from around the world to view software code and make changes and improvements to it. Through such collaboration, software programs can often be written and debugged faster and at lower cost than if the copyright holder were required to do all of the*

work independently. In exchange and in consideration for this collaborative work, the copyright holder permits users to copy, modify and distribute the software code subject to conditions that serve to protect downstream users and to keep the code accessible... Traditionally, copyright owners sold their copyrighted material in exchange for money. The lack of money changing hands in open source licensing should not be presumed to mean that there is no economic consideration, however. There are substantial benefits, including economic benefits, to the creation and distribution of copyrighted works under public licenses that range far beyond traditional license royalties. For example, program creators may generate market share for their programs by providing certain components free of charge. Similarly, a programmer or company may increase its national or international reputation by incubating open source projects. Improvement to a product can come rapidly and free of charge from an expert not even known to the copyright holder. The Eleventh Circuit has recognized the economic motives inherent in public licenses, even where profit is not immediate...."

Also, note that many OSS developers are now well-paid for their work. Consulting company Bluewolf found that "the advancement of open source software is triggering an increasing need for specialized application developers ... higher-end, more complex application development proves difficult to complete overseas ... The rise of open source software in application development puts developers with a specialization in those technologies in a position to ask for a 30 or 40 percent pay increase..." [Eddy2008]. Provably 70% of all Linux kernel development is by developers who are being paid to do this work [Corbet2010], and the actual figure is probably much higher.

Alternatives

The most common antonym for OSS is "proprietary software;" other terms include "closed source," "non-Free," "non-OSS," and "non-FLOSS." I tend to use "proprietary software" as the antonym, simply because it seems to be the most widely used and thus better understood. Do not call OSS *non-commercial*, because nearly all OSS *is* commercial.

Conclusions

It's time to end the nonsense. OSS is practically always commercial, which means that there are two major types of commercial software: proprietary software and OSS. Terms like "proprietary software" or "closed source" are plausible antonyms of OSS, but "commercial" is absurd as an antonym, and phrases like "commercial or OSS" make no sense.

This has real-world implications. In particular, government acquisitions (including work performed by contractors) must include OSS in their market research and must carefully consider OSS candidates.

Bibliography

[Corbet2010] Corbet, et al. December 2010. "Linux Kernel Development" http://www.linuxfoundation.org/docs/lf_linux_kernel_development_2010.pdf.

[DoD2009] DoD CIO. 2009-10-19. "Clarifying Guidance Regarding Open Source Software (OSS)" http://cio-nii.defense.gov/sites/oss/2009OSS.pdf.

[Eddy2008] Eddy, Nathan. 2008-02-26 "Report: Open Source Adoption Increases App Dev Pay," *ChannelWeb*.

[Wheeler2007] Wheeler, David A. 2007-04-16, "Why OSS/FS? Look at the Numbers!" http://www.dwheeler.com/oss_fs_why.html.

[Wheeler2009] Wheeler, David A. "Free-Libre / Open Source Software (FLOSS) is Commercial Software," revised 2009-02-03. http://www.dwheeler.com/ essays/commercial-floss.html. Summary published as "F/LOSS is Commercial Software," *Open Source Business Resource*, Feb. 2009, pp. 25-33.

This article is based on [Wheeler2009].

About the Author

David A. Wheeler works at the Institute for Defense Analyses (IDA). He is an expert on open source software and developing secure software. He can be contacted through http://www.dwheeler.com.

The publication of this paper does not indicate endorsement by the Department of Defense or IDA, nor should the contents be construed as reflecting the official positions of those organizations.