



Open Source Software Fact Sheet

Open Source Software (OSS) products are systems whose human-readable ("source") code is always freely available to anyone who is interested in downloading it. This is in contrast to most commercial software, whose source code is considered intellectual property and a trade secret not to be disclosed. Advantages of open source include availability, extensibility, and the opportunity for peer review. Open source products are made available under a variety of licenses, which are discussed below. Although many of the challenges and benefits of using open source software are the same as with commercial software, there are some unique aspects of open source software that need to be kept in mind when selecting a product or vendor.

Questions About Open Source Software

What are the advantages of Open Source Software for healthcare?

Open source solutions have a number of advantages for a healthcare enterprise. The collaborative sharing of ideas and concepts practiced by users of open source software can create 'communities' of developers, partners, testers and users who interact with each other to further improve the software. This can speed up the development process, bringing in skills that a single software vendor would not be able to provide. And the community can also provide an alternative, though unconventional, avenue for technical support.

At the data level, an open source software application does not strand critical health data in a proprietary format. When access to mission critical business data is controlled by an open source application, health care organizations are protected from the risk of a technology vendor business failure, or from a merger or acquisition that leads to the sunsetting of an installed software solution by the new vendor, and the imposition of a mandatory, expensive and disruptive software "upgrade." Upgrades can be a non-trivial event for an enterprise health care software product. Open Source software increases the bargaining position of a health care enterprise, making it possible to "fire" a suboptimal open source software vendor without losing access to the business data.

What are the disadvantages of Open Source Software for healthcare?

Open source solutions present risks for the technology infrastructure of an enterprise lacking prior experience with open source software. Absence of qualified technology staff on site may limit the agility of support for users. In many narrow healthcare verticals there is no compelling open source alternative to the dominant proprietary software vendors. In some cases, there are insufficient options for access to qualified vendor support for the open source solution. There may also be indemnification and liability risks associated with an open source software solution which lacks a well-capitalized vendor to stand behind the product.

What is Open Source Software?

“Open Source Software” refers to the licensing terms governing the use and distribution of the software code as intellectual property. According to the Open Source Definition (1) ten criteria must be met to qualify a software program as “Open Source”:

1. Free Redistribution is allowed and royalty payments are prohibited
2. The program must include source code
3. Modifications and derived works are allowed
4. The integrity of the original source code must be preserved
5. No discrimination against any person or group of persons
6. No discrimination against fields of endeavor
7. The licence remains with the program even if it is redistributed
8. The license must not be specific to a product
9. The licence must not restrict other software
10. The license must be technology neutral.

Open source software has its roots in the 1970s and 1980s when researchers at major universities, such as UC Berkeley and MIT, collaborated to rapidly develop the Unix operating system. During the 1990s, when Linus Torvalds launched the Linux kernel project, the use of open source software grew into a mainstream feature of the computer industry. Today, in addition to the open source operating system based on the Linux kernel, there are many enterprise open source software solutions, such as databases (MySQL, PostgreSQL), CRM solutions (SugarCRM), browsers (Firefox), web servers (Apache), development tools (Eclipse), and more.

What is an Open Source License?

The legal framework for an open source software license is built on existing copyright and contract law. The original author of the software source code retains the copyright while an open source license is assigned to the software code. Others who want to use the software must abide by the terms of the license. All open source licenses stipulate that the source code is available for inspection and reuse.

What types of Open Source Licenses are available?

Open source software licenses fall into two categories, sometimes referred to as “permissive” and “copyleft.” Permissive licenses conform to the ten open source criteria listed above, while copyleft licenses conform to the “Four Freedoms” (see below) published by the Free Software Foundation.

What is “copyleft”?

“Copyleft” (as opposed to “copyright”) is based on the Four Freedoms written by Richard Stallman and published by the Free Software Foundation (2):

0. The freedom to run the program, for any purpose
1. The freedom to study how the program works, and adapt it to your needs
2. The freedom to redistribute copies so you can help your neighbor
3. The freedom to improve the program, and release your improvements to the public so that the whole community benefits

The fourth freedom is also a restriction: by changing the source code, the licensee agrees to release the changed code under the same free software license. In other words, the results must also remain as open source software, allowing the whole community to benefit from all improvements.

What are the differences between “permissive” and “copyleft” open source licenses?

“Permissive” licenses are also called the “BSD style” license, after the original Berkeley Software Distribution license for Unix. The BSD license was based on open collaborative sharing among academic researchers. There are many BSD-style licenses, the most common being the Revised BSD, MIT, L-GPL, Mozilla, Apache and Eclipse licenses. There is only one “Copyleft” license, the General Public License (GPL) published by the Free Software Foundation. The main difference between the two types of licenses is that the GPL requires the software and all derivative works to always be licensed under the GPL. In comparison, BSD-style licenses, like academic collaboration, only require acknowledging the original authors, and place few restrictions on derivative uses of the source code.

What is the advantage of BSD-style licenses?

By allowing derivative works to be licensed under a restrictive, non-open source license, BSD style licenses are ideal for mixed enterprise environments, where proprietary software will be integrated with open source software. The absence of the compulsory open source provision for derivative works incentivizes the BSD licensed intellectual property as a library of components that can be easily integrated with proprietary products. BSD style licenses are also used to preemptively release enterprise software solutions under an open source license in an attempt to gain market share advantages. An example of this strategy is IBM’s market-making release of the Eclipse SDK environment under a BSD-style license.

What is the advantage of the GPL?

By requiring derivative works to remain under the GPL license, the “copyleft” approach incentivizes the rapid accumulation of a public commons of GPL licensed intellectual property. This programmer friendly approach is most useful to enterprises that have no need for systemic integration with non-GPL software. The compulsory openness of intellectual property under the GPL can be a powerful competitive advantage for projects with a large community of users and developers. The Linux kernel is licensed under the GPL.

What is the Free Software Foundation?

The Free Software Foundation (FSF) maintains both the GPL license and the Limited GPL (L-GPL) license. The L-GPL is necessary to allow “permissive” style licensing for instances where the GPL is incompatible with existing intellectual property rights.

What is the business model of an Open Source healthcare software vendor?

Open source software vendors compete for service and support contracts, not for sales. This forces a successful open source vendor to concentrate on customer support, because the absence of proprietary enterprise health care software lock-in allows a customer increased opportunity to “fire” the vendor. In addition, the absence of new sales revenue reduces the vendor’s opportunity to leverage sales to capitalize new feature development.

If Open Source is such a good thing, why isn't implementation more widespread in healthcare?

There is limited penetration of open source solutions into healthcare enterprises. The absence of development capital for open source projects can result in suboptimal user interfaces and feature sets among newly developed open source software solutions. On the other hand, general technology adoption in health care is at abysmal rates in some markets.

Where can I learn more about open source software in health care?

A good place to start is by reading the Linux Medical News website (3). There is a global mailing list named "openhealth" at Yahoo! Groups.(4) O'Reilly, the technology publisher(5), specializes in high quality books about open source software. You can also join the HIMSS Open Source Working Group.

References

- [1] The Open Source Definition is maintained by the Open Source Initiative (<http://www.opensource.org>), a non-profit corporation dedicated to managing and promoting the Open Source Definition for the good of the community.
- [2] The GPL and the L-GPL are maintained by the Free Software Foundation. <http://www.fsf.org>
- [3] <http://www.linuxmednews.com>
- [4] <http://tech.groups.yahoo.com/group/openhealth>
- [5] <http://oreilly.com>