

Open Source Revealed: How the IIS Community Can Benefit From Being an Open Source Community



AIRA National Meeting
Seattle, WA
April 6, 2016

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Agenda

- Introduction and definitions
- Open Source “Community”
- SWOT for Open Source and Proprietary
- Examples from Outside of IIS
- Examples in IIS World
- Strategies for Success
- Resources



Definitions

“Copyright is a legal right created by the law of a country that **grants the creator of an original work exclusive rights to its use and distribution**, usually for a limited time. The exclusive rights are not absolute; they are limited by limitations and exceptions to copyright law, including fair use.”

<https://en.wikipedia.org/wiki/Copyright>

“Software copyright is the **extension of copyright law to machine-readable software**. While many of the legal principles and policy debates concerning software copyright have close parallels in other domains of copyright law, there are a number of distinctive issues that arise with software.”

https://en.wikipedia.org/wiki/Software_copyright



Definitions

“Public domain software is software that has been placed in the public domain, in other words **there is absolutely no ownership** such as copyright, trademark, or patent. Unlike other classes of licenses, there are **no restrictions as to what can be done with the software**. The software can be modified, distributed, or sold even without any attribution.”

https://en.wikipedia.org/wiki/Public_domain_software

Popular in the early days of computing but often a misused term. “Free” software may or may not actually be public domain. Public domain products have *no license*.



Definitions

“**Copyleft** (a play on the word copyright) is the practice of offering people the **right to freely distribute copies and modified versions** of a work with the stipulation that the same rights be preserved in derivative works down the line.”

<https://en.wikipedia.org/wiki/Copyleft>

Typically, this is used to make sure a modified piece of software is not then converted into a commercial product with restricted access or use. Pretty much all Copyleft products are Open Source, but not the other way around.



Definitions

“Generally, **open source** refers to a **computer program in which the source code is available to the general public for use and/or modification** from its original design.”

https://en.wikipedia.org/wiki/Open_source

Source code: What programmers write

Machine code: What computers understand

Source code is compiled (transformed) into machine code which users can then execute. Only machine (executable) code is typically available to end-users, but open source includes the human-readable *source* code.



Definitions

Open Source Initiative:

1. Free Redistribution – no restriction on selling or giving software away, and no fee
2. Source Code – must be included, as well as compiled form, without fee
3. Derived Works – must be allowed, with distribution under same terms
4. Integrity of The Author's Source Code – can require that modifications are distinguishable from the original (*e.g.*, different version number)
5. No Discrimination Against Persons or Groups
6. No Discrimination Against Fields of Endeavor (*e.g.*, business use, or research use)
7. Distribution of License – included with the software
8. License Must Not Be Specific to a Product – rights transfer even if software parsed or repackaged
9. License Must Not Restrict Other Software that might be distributed with it
10. License Must Be Technology-Neutral (*i.e.*, no particular technology dependence)

<http://opensource.org/osd-annotated>



Definitions

“Proprietary software is licensed under legal right of the copyright holder, with the intent that the licensee is given the right to use the software only under certain conditions, and restricted from other uses, such as modification, sharing, studying, redistribution, or reverse engineering.”

https://en.wikipedia.org/wiki/Proprietary_software

Generally source code is not made available. Can also be referred to as “closed source.”



Definitions

- Over the years, open source license varieties began to proliferate
- OSI initiated an approval process to identify compliant licenses to try to reduce confusion
- Popular licenses:
 - Apache
 - GNU General Public License
 - BSD
 - MIT
 - Mozilla Public License
- Some licenses permit downstream commercial development (*e.g.*, BSD); some require contributions back to the originator (*e.g.*, GPL) - each has benefits and challenges.



Definitions

■ Conclusions

- Open source is an easing of default copyright for software
- Open source concept is about right to *modify source code* as well as the right to *use* software
- Many variations and conditions possible
- Open source can promote sharing, but also inhibit sharing through potential loss of intellectual property rights
- Mixing open source and proprietary products can have important impacts on a software developer



Open Source Community

- Not all projects operate this way
- More common where the community of *users* is smaller, but there are exceptions (*e.g.*, Linux)
- Focus on collaboration
- Benefit from the knowledge of others: many project encourage others to “fork” the software and make their own modifications
- Most successful model offers a paradox: collaborative development but fierce control of the “production” source code



SWOT Analysis: Proprietary

Strengths

- Source code remains unified
- Vendor bears the burden of enhancements
- Software support usually easy to secure
- Software is relatively mature and well tested

Weaknesses

- License fee to use
- Only vendor can make changes
- Potential loss of access to source code if developer stops work
- Users may or may not get the enhancements they want
- May or may not enable modular IIS deployment

Opportunities

- CDC NCIRD IDIQs/BPAs may fund and facilitate product-specific enhancements
- Vendors of these products may more readily support external hosting

Threats

- Small IIS market may see fewer vendors over time
- Vendor reaction to encroachment of Open Source is hard to predict
- Agency funding continues to be constrained



SWOT Analysis: Open Source

Strengths <ul style="list-style-type: none">• No license fee to use• No loss of access to source code if developer stops work• Freedom to make/share changes• Transparency in governance• Enables modular IIS deployment	Weaknesses <ul style="list-style-type: none">• Risk of <i>detrimental</i>/source code “forking”• Burden of enhancements may fall to individual users/organizations• Software support may be harder to secure
Opportunities <ul style="list-style-type: none">• “Joint development” can reduce cost of enhancements & support• Commercial vendors often provide solid support• More modular IIS might enable more Open Source component use	Threats <ul style="list-style-type: none">• IIS community will not financially support product development• IIS community expects open source market to behave like commercial market• Commercial vendor reactions



Examples from Outside of IIS

- Linux: Major operating system
- WordPress: Used for blogging
- FireFox, Thunderbird: Web & E-mail
- OpenOffice: Desktop productivity
- PostgreSQL: Relational Database Management System
- Moodle Virtual Learning Environment (VLE): Course management



Examples from IIS World

- CAT Quality Assurance Tool
- Choicemaker (patient matching)
- Data Quality Assurance Tool (DQA)
- FEBRL (patient matching)
- HAPI (HL7 Parser)
- Immunization Calculation Engine (ICE)
- Mirth (Interface Engine)
- Texas Children's Hospital Forecaster

Policy Models

Source Code Freely Available	Yes	Managed Open Source <i>(e.g., Linux, PostgreSQL)</i>	Fully Open Source <i>(e.g., ICE, NYC CIR at some point, FEBRL)</i>
	No	Proprietary <i>(e.g., STC iWeb, Envision WebIZ)</i>	Opportunistic <i>(e.g., WIR)</i>
		No	Yes
		Source Code Maintained by Multiple Parties	



Strategies for Success

- Begin to move IIS to modularity and SOA
- Leverage widely-used Open Source products *where feasible* (*e.g.*, Linux, PostgreSQL, HAPI, Mirth)
- Jointly develop/support more specialized products when necessary (*e.g.*, forecaster, QA tools)
- Look beyond IIS community for collaboration (*e.g.*, EHRs, PHRs)
- Encourage one organization to maintain stewardship over and support each product to prevent “detrimental” forking (Managed Open Source)
- Recognize and manage any turbulence this may cause in the commercial product marketplace



Resources

- Open Source Initiative
<http://opensource.org/>
- Open Source Electronic Health Record Alliance
<http://opensource.org/>
- OSEHRA License Terms Document
https://www.osehra.org/sites/default/files/osehra_licensing_terms_v.1.0.pdf
- Draft Federal Source Code Policy
<https://github.com/WhiteHouse/source-code-policy/blob/gh-pages/SourceCodePolicy.pdf>



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