



Perspectives and Myths About Open Source Software

November 10, 2021

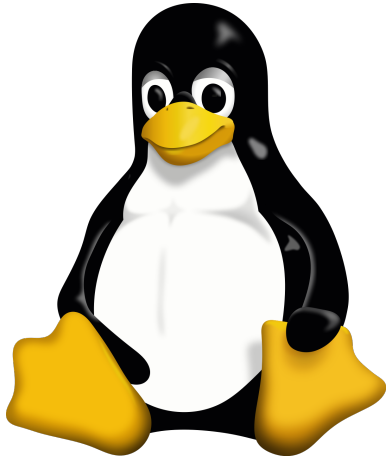
Jon Baker, Crowell & Moring

Keith Coleman, Accenture Federal Services

Vince Galluzzo, Crowell & Moring



What Is Open Source Software?



What Is Open Source Software?

- Software where the source code is available (“open”) to the public and licensed by its creators without charge
- Anybody can review it, modify it, improve upon it
- It benefits programmers because they don’t have to “recreate the wheel” and can customize the software for their specific needs
- It benefits non-programmers because it reduces the cost of software development

```
503         message =
504         if not hasattr(self, '_headers_buffer'):
505             self._headers_buffer = []
506         self._headers_buffer.append((" %s %d %s\r\n" %
507                                     (self.protocol_version, code, message)).encode(
508                                         'latin-1', 'strict'))
509
510     def send_header(self, keyword, value):
511         """Send a MIME header to the headers buffer."""
512         if self.request_version != 'HTTP/0.9':
513             if not hasattr(self, '_headers_buffer'):
514                 self._headers_buffer = []
515             self._headers_buffer.append(
516                 ("%s: %s\r\n" % (keyword, value)).encode('latin-1', 'strict'))
517
518         if keyword.lower() == 'connection':
519             if value.lower() == 'close':
520                 self.close_connection = True
521             elif value.lower() == 'keep-alive':
522                 self.close_connection = False
523
```

What Is Open Source Software?

Comparison	Proprietary Software	Open Source Software
Price	Cost varies	Free***
Freedom to customize	Limited	Customizable
Security	Closed for review	Open for review by everyone
After-sales support	Depends on SLA terms, but usually provided	Usually only self-help through user forums
Stability	Usually more stable, but can be discontinued	Depends on user base and development community
Warranty	Usually provided	None

What Is Open Source Software?



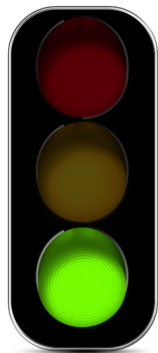
- Why is it “free***”?
 - Licensing terms vary, and some may create onerous obligations
 - Three different categories of licenses:
 - Permissive
 - Weak Copyleft
 - Strong Copyleft

A Quick Primer on Copyright Law

- Copyright law gives the owner a set of exclusive rights over the copyrighted work:
 - Reproduction
 - Adaptation (preparing derivative works)
 - Distribution
 - Perform publicly (if a literary, musical, or audiovisual work)
 - Display publicly (if a literary, musical, audiovisual, or artistic work)
 - Perform publicly by digital audio transmission (if a sound recording)



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 - MIT
 - zlib

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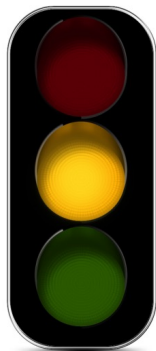
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Weak Copyleft Licenses



- Similar to permissive, but imposes strict obligations depending on how the software is used
- “File-level” copyleft license – is the OSS being used “in” your software or just “with” it?
- Examples:
 - LGPL
 - Java GPL + Classpath Exception
 - Linux GPL with system library exception
 - Mozilla Public License (MPL) 1.0

Weak Copyleft Licenses – LGPL 2.0 License

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

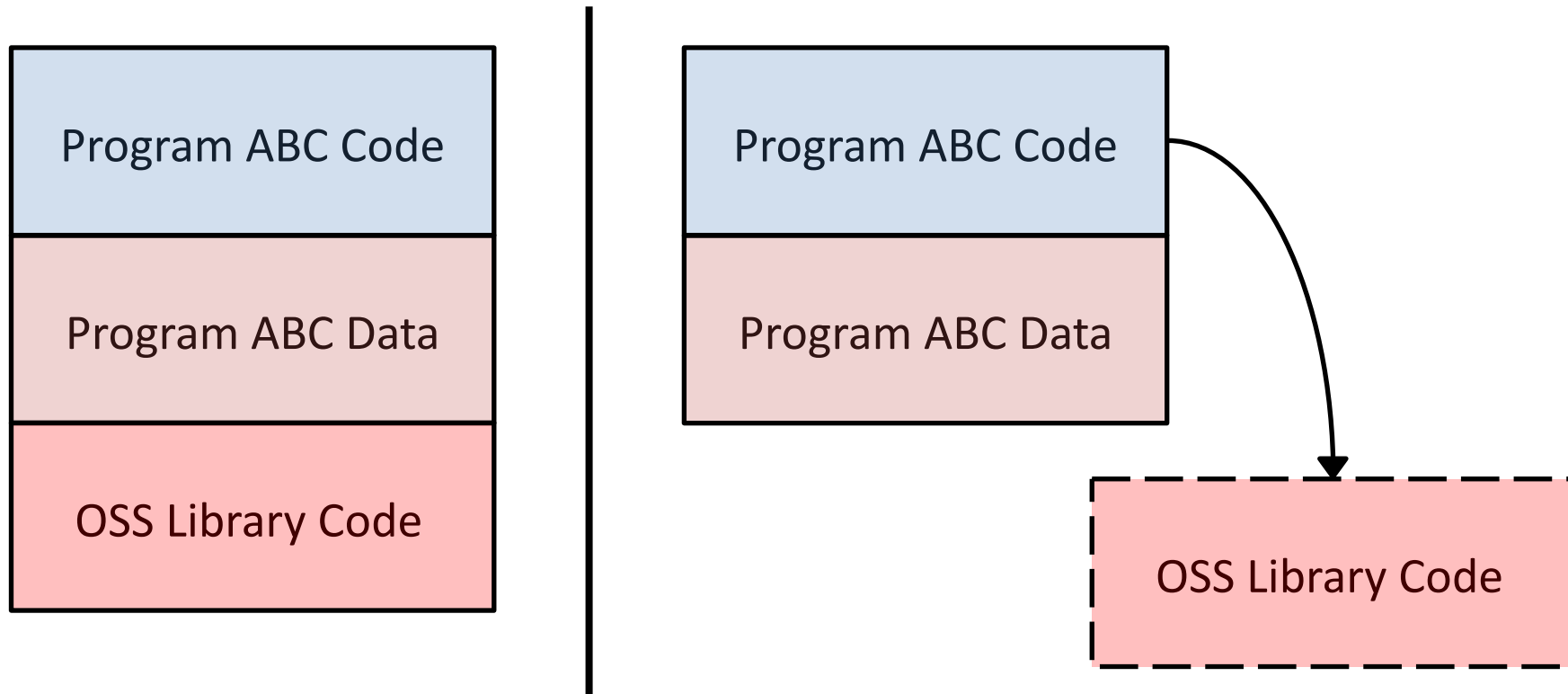
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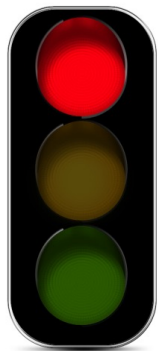
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Static Linking vs. Dynamic Linking



Strong Copyleft Licenses




- Similar to weak copyleft, but does not have a distinction between static/dynamic linking
- Require that any software that is based on the OSS be subject to the same strong copyleft license
- Usually only triggered on “distribution” (but some licenses such as AGPL extend to SaaS / PaaS hosted environments)
- Examples:
 - GPL
 - Affero GPL (AGPL)
 - Creative Commons ShareAlike Licenses

Strong Copyleft Licenses – GPL 3.0 License

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to “keep intact all notices”.
- c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.
- d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.



Commercial Computer Software Under the FAR & DFARS

Commercial Computer Software

- Commercial computer software = computer software that meets the FAR 2.101 definition of “commercial item”
- USG policy is for agencies to:
 - “Acquire commercial items . . . When they are available to meet the needs of the agency”
 - “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.”

(FAR 12.101)

Open Source Software

- OSS that is available to the public and has at least one nongovernmental use is considered commercial computer software
- USG regularly procures OSS pursuant to OSS licenses

<https://dodcio.defense.gov/open-source-software-faq/>

Commercial Computer Software

FAR/DFARS Policy

- USG required to acquire commercial computer software and commercial computer software documentation under licenses customarily provided to the public to the extent such licenses are:
 - Consistent with Federal law and
 - Otherwise satisfy the Government's needs

(See FAR 12.212; DFARS 227.7201-1.)

Commercial Computer Software

FAR/DFARS Policy

- Generally, USG cannot require contractors to:
 - Deliver technical information related to commercial computer software or commercial computer software documentation that is not customarily provided to the public
 - Note: DFARS contemplates that USG can require contractors to provide information documenting the specific modifications made at USG expense to commercial computer software and commercial computer software documentation. (DFARS 227.7201-1(c)(1))
 - Provide the USG rights except as mutually agreed to by the parties

(See FAR 12.212; DFARS 227.7201-1.)

Commercial Computer Software

FAR/DFARS Policy

- USG must negotiate rights that are additional to those in the contractor's standard commercial license. DFARS 227.7202-3(b).
- Licenses should be included as part of the contract. FAR 12.212(b).

Commercial Software License Red Flags

- Click-wrap/browse-wrap licenses
- Open-ended indemnification by licensee
 - Per FAR 52.212-4, unenforceable and severed (unless otherwise authorized by law)
- Choice of law/forum
- Contractual limitations on actions
- Automatic renewals
- Limitations on warranties
- Injunctive relief for licensee breach
- Immediate, unilateral termination by the licensor for licensee breach
- Licensor's unilateral right to change license terms
- USG liability for licensor's taxes
- Certain confidentiality provisions

Addressing “Red Flags”

- Separate forms for “true” commercial and USG commercial licenses
- Case-by-case revisions and negotiations
- Riders/addenda
- “USG End User” clauses
 - Needs a proper “safety valve”

9. U.S. GOVERNMENT END USERS.

The Licensed Software under this Agreement is “commercial computer software” as that term is described in DFAR 252.227-7014(a)(1). If acquired by or on behalf of a civilian agency, the U.S. Government acquires this commercial computer software and/or commercial computer software documentation subject to the terms and this Agreement as specified in 48 C.F.R. 12.212 (Computer Software) and 12.111(Technical Data) of the Federal Acquisition Regulations (“FAR”) and its successors. If acquired by or on behalf of any agency within the Department of Defense (“DOD”), the U.S. Government acquires this commercial computer software and/or commercial computer software documentation subject to the terms of this Agreement as specified in 48 C.F.R. 227.7202 of the DOD FAR Supplement and its successors.

Notice/Marking

- Data rights assertions
 - Ensure any solicitation provisions requiring assertions are satisfied in order to provide USG notice of restrictions, including use of OSS
- Marking
 - Noncommercial: Strict rules for marking noncommercial technical data & software
 - Unlabeled data is unlimited rights data
 - Use the contractually required labels
 - Commercial:
 - FAR 52.227-19, Commercial Computer Software License
 - Specifies legend language
 - DFARS 252.227-7015, Technical data – Commercial items
 - Requires marking but does not specify language



“Other Transactions”

Other Transactions

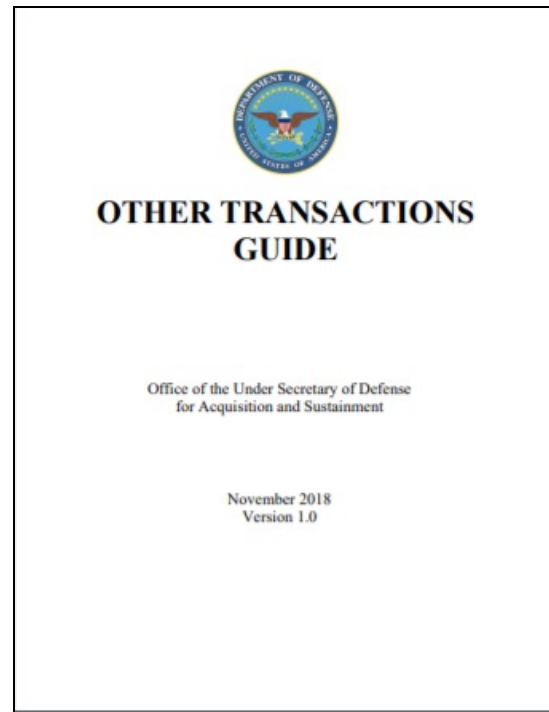
- Three general types:
 - Research OTs
 - Prototype OTs
 - Production OTs
- Only certain agencies have authority to issue OTs
- Cost share contribution may be required
- OTs frequently (but not always) issued to consortia
- More opportunity to negotiate terms & conditions
- Use of OTs by DoD has increased exponentially over the past several years

IP Guidance

2018 DoD Other Transaction Guide

- Encourages use of “a tailored IP scheme”
- Tailored IP terms may include, *inter alia*:
 - Royalty provisions
 - Limited licenses (scope, duration, manner)
 - Options, Conditions
 - Right-of-first refusal, Exclusivity terms
- Encourages negotiation of rights that differ from Bayh-Dole Act (for patents) or 10 USC 2320-21 (for technical data)
- Negotiated IP terms “should facilitate all parties’ business plans and project goals, including any likely production and follow-on support”
- Recognizes “reduced need for rights in IP” when project calls for reliance on commercial marketplace to produce, maintain, modify, or upgrade technology

DoD OT Guide does not discuss OSS, but OSS and OSS licenses are permitted, so long as the USG agrees.



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USG Policy Shifts in OSS

August 2016 – Federal Source Code Policy: Achieving Efficiency, Transparency, and Innovation through Reusable and Open Source Software

- As of 2016, annual \$6B on software through 42K transactions
- USG concerned that custom-developed code is not made available widely within the USG
- Policy sought to ensure that new custom-developed code is made broadly available within USG for reuse
- But also sought to make custom-developed code available to public as OSS
 - Potential benefits:
 - Enable continual improvement of Federal code
 - Make it easier to conduct software peer reviews & security testing
 - Enhance future competitions by granting code access to potential maintenance or enhancement vendors
- Created pilot program that required agencies to release at least 20% of new custom-developed code as OSS for 3 years

August 2016 – Federal Source Code Policy: Achieving Efficiency, Transparency, and Innovation through Reusable and Open Source Software

- Key Objectives:
 - Identify considerations that must be made prior to acquiring custom-developed code
 - Require agencies to obtain appropriate data rights to custom-developed code, including, at a minimum, the rights to reuse and modify within the USG
 - Require agencies to consider value of publishing custom code as OSS
 - Establish requirements for releasing custom-developed source code

August 2016 – Federal Source Code Policy: Achieving Efficiency, Transparency, and Innovation through Reusable and Open Source Software

- Established Three-Step Software Solutions Analysis
 - Conduct strategic analysis & analyze alternatives
 - Consider existing commercial solutions
 - Consider custom development
- Factors to consider in each phase:
 - Hybrid solutions
 - Modular architecture
 - Cloud computing
 - Open standards
 - Targeted considerations

Department of Commerce – Source Code Policy

- Requires at least 20% of new custom-developed code to be released as OSS
- DOC operating units must register new custom code in the Department Software Code Inventory
 - Will be made available to all other federal agencies
 - Discoverable at www.code.gov.
- Operating units must incorporate Three-Step Software Solutions Analysis

Questions?



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