“Open Source”, etc...

Brad Fitzpatrick
2005-10-13
Vocab

- free, Free
- Source, Binary
- Open Source, Free Software, FOSS
- Copyright, Trademarks, Patents
- Freeware, Shareware
- Public Domain
- “Shared Source”, “Source Available”
Free(dom)

Land of the Free, Free Speech, etc
libre, freiheit

free beer, free download, etc
gratis, kostenlos
Source vs. Binary

```
10011001 00100000 11101000 01101001 00011100 10010011 01111010
11101000 01100001 01110001 01000100 00001011 01110101 00111110
11111111 01111100 01011100 01110101 00111110 01101101 01010100
00101000 00101010 00110001 00110111 01100101 00110000 01001101
01010111 10101010 10010011 10000010 01101001 00100100 00100000
01101100 00100101 00100010 01000100 00011001 10111000 01011000
00110001 11111010 11101001 01010100 00100000 01011001 00111110
10011010 11101010 10010011 01101001 10111001 01110100 01101100
01010111 10101010 10010011 01111100 01100110 00100000 00000111
01000001 01110111 01010010 01101110 01100100 01101110 01100101
11101001 01100100 00100000 01000000 00000000 00000000 00000000
10010000 00100101 00110110 01010110 10000000 01001101 10110101
01010101 01011000 00101101 10110110 00100101 01010110 00011100
10110010 00011010 01011010 00100000 00001111 01100101 11111010
00010101 10100011 11111100 10001101 01111110 01000111 10110101
11001001 11001110 10111010 11001100 01111110 10001110 11111000
01100001 11100101 10000011 01111001 00100101 11101101 10101110
01111001 00110111 10101110 01111101 00100101 10100010 10110011
11111010 11011000 01001011 11010010 10001000 10100110 00011100
10001000 11100100 01101011 01110101 00110000 10101001 01011100
00011010 00101110 00111011
```
Buying Software

• typically you buy a license (the right) to use some binary code. you did not buy ownership of those ones and zeros.
Buying Software, Restrictions:

• no access to the source code
  – want to add a feature? can't.
  – want to fix a bug? can't.
  – want to do a security audit? can't.

• want to give copies to your friends? can't, legally.

• for fixes/improvements, wait for the “upgrade”
  – new bugs, more money, runs slower (needs new computer)
The Alternative?
Free Software!

(That's Freedom, yo.)
What is Free Software?

• **Free** access to the source code
  – want to add a feature? **No prob.**
  – want to fix a bug? **No prob.**
  – want to do a security audit? **No prob.**
• want to give copies to your friends? **You may, legally!**
• for fixes/improvements. **Choice:**
  – follow stable series (bug fixes only)
  – follow bleeding edge series (new fun features)
But I can't program! Why do I want the source code?

• sure, you can't. but that dork down the hall in IT/dev can.
  - “With enough eyeballs, all bugs are shallow....”

• million monkeys, million typewriters.....
  - *somebody* will find that obscure bug or security hole
  - no security through obscurity

• **Windows**: source code not available, but security holes keep being discovered (“Critical Updates are required! Please reboot!!!”). found by dorks who read binary.

• **Linux**: source code public, so more people can audit.
I thought this was about Open Source.

- **Free Software**
  - original term, still popular
  - ambiguous. run by hippies (Ricard Stallman, FSF).
  - influential hippies. too zealotrous.

- **Open Source**
  - newer term, less ambiguous
  - backed by OSF, more like a biz coalition to promote open source.
  - too business-y? *shrug*
I thought this was about Open Source.

- FOSS (Free and Open Source Software)
  - people who don't care about naming politics
Why does FOSS work?

- Virtually nil incremental distribution costs
  - cars: metal, fabric, workers, shipping, ....
  - software:
    - used to have distribution costs, and cost of floppies
    - Internet: uh, not so much.
- So if it's free (of cost) to share, why not?
  - we all need browsers (Firefox)
  - and databases (MySQL)
  - and operating systems (Linux, etc)
  - all benefits of open source for no cost
Benefits of Open Source

• peer review
  – bugs, security holes found by others
• programmers write better code/docs, knowing it'll be scrutinized, their respect on the line
• features from others that you didn't get around to writing yet, but somebody else had time
  – I get this all the time! Most my inbox is filled with people sending contributions to LiveJournal, Danga::Socket, Perlbal, memcached, MogileFS, etc...
    • (Annectote: byte ranges for Perlbal)
How does Open Source work, legally?

- based on copyright
- ah, hell, you need to know about copyright...
Copyright vs. Trademarks vs. Patents
Copyright

• specific expression of an idea.
  – others can write book/poem on same topic
• automatic. no need to register.
  – write a poem on a napkin, you own the copyright
  – write some code, you own the copyright
    • caveat: work for hire. Six Apart owns your code.
• term: your life + 80 years or something.
  – Disney keeps lobbying government to extend..
    • otherwise Mickey Mouse would fall into the public domain!
Public Domain

• the absence of copyright
• either explicitly released into the public domain by the author,
  – (not all countries allow you do legally do this)
• or the copyright expired.
  – but Disney.
• Project Gutenburg:
  – awesome. tons of copyright-expired books
    • Mark Twain, etc...
Trademark

• have to register
• have to actively defend its use
• if it falls into common use, trademark is lost
  – “Dude, if you google 'Trademark image', you get an image on a page about Google possibly losing their trademark on the term Google because it's turning into a verb!”
  – Google, Kleenex, Q-Tips, Legos (legos.com)
    • both happy and angry that people use their terms generically
Patents

• registering an idea
  – Cotton Gin, Flowbee, etc
• term is 17 or 20 years
• don't have to actively enforce
• some aren't enforced
• companies build patent arsenals for defensive reasons, bartering with other companies,
  – cross-patent licensing, etc...
How does Open Source work, legally?

- based on copyright:
- “I own this frickin' code! You have no rights to use it or reproduce it or share it unless I explicitly grant you a license to do so.”
- Hence, common Open Source licenses:
  - GPL,
  - BSD, MIT, X,
  - Artistic,
  - (many dozen, only few are common...)

Example License (BSD)

Copyright (c) 2005, Six Apart, Ltd.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
In Summary

• You still own the copyright, but you're just granting a blanket license to anybody that wants one, the license of which permits them certain rights to the code, under certain conditions.
Why so many licenses?

• Every organization's legal department feels like they have to bill some hours and write a new license.
  – Recently: opposition to license proliferation, recognition/acceptance of the few good licenses.

• Only two main types:
  – BSD-ish
  – GPL (copyleft)
BSD-ish

- you may use this code and do whatever with it, except sue us if it doesn't work (no warranty)
  - you may ship it in commercial products
  - make changes, sell the binaries, and never give back the changed source code
- used by researchers / academics / companies
- most permissive.
GPL (copyleft)

- *The* license of the Free Software Foundation and Free Software hippies worldwide.

- Very popular, most restrictive.

- Restriction:
  - if you distributed a changed version, you must shared your changes
  - (if you only change it for personal/internal use, don't need to)
License compatibility

- BSD code can't include GPL code
- GPL code can include BSD code
- etc, etc
- gets ugly quick with dozens and dozens of license
- boring. let's move on...
What do all licenses have in common?

- Open Source Initiative rubber stamps licenses if:
  - free (gratis) redistribution, no royalties
  - source code must be available, and restributable
  - derived works allowed
  - no discrimination against persons or groups
  - no discrimination against fields of endeavor
  - not allowed: “can only use this for personal non-profit use”
OSI definition, continued.

- Distribution of License
  - “The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.”

- License Must Not Be Specific to a Product

- License Must Not Restrict Other Software
  - The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

- License Must Be Technology-Neutral
Copyright: Who owns what?

- “I own all this code, so you can't use it....”

- What if multiple contributors?
  
  - common in open source projects, where sharing/helping is the key to success.
  
  - who owns the copyright?
    
    - Multiple people!
    
    - “I own this line/file/section...”
    
    - “Bob owns that line/file/section...”
    
    - “Six Apart owns that line/file/section...”
    
    - ....
Copyright Assignment

- some companies/organizations aren't happy with contributors owning the copyright on their sections
  - require “copyright assignment” from authors to transfer copyright to primary maintainer
    - Free Software Foundation: requires copyright assignment to FSF out of paranoia
    - MySQL: Junior and I have both sent patches, and been asked to do copyright assignments
      - they make money off of dual licensing, (to be discussed)
    - Trolltech, etc....
Dual Licensing

• you can only grant licenses to others for your code. not others'.

• if you own all the code, you can license it in a dozen different ways:
  – GPL
  – BSD
  – proprietary

• Many companies are based on dual licensing. MySQL: “GPL is our business model.” (you can buy your way out of the GPL's restrictions...)
Projects not owning all their code

- Linux: hundreds of copyright holders
- Debian/Redhat: thousands
- LiveJournal: dozens

Implication:

- Can't dual license it unless you get consent from all copyright holders to change it
  - Hard
  - Sometimes possible: Cairo library dual-licensing for inclusion in Mozilla 1.5's `<canvas>`. My friend Evan was contacted to grant permission. He agreed.
But you can still ship.

- not owning all your code doesn't mean you can't use it in a proprietary product.
  - just have to obey license terms
  - BSD-ish: no brainer
  - GPL: little more care, but fine if you give back the necessary changes (not your entire project)
    - Linksys/Cisco wireless access points
Why do people use Open Source?

No consistent answer... everybody has their own set of reasons....

Freedom
(the principle, freedom to modify)

Cost
(Money, time to acquire)

Quality
Open Source Business Models

• **Dual Licensing** (already discussed)
  - MySQL, Trolltech, etc
  - GPL license for free. Pay money for more permissive license.

• **Support Contracts**
  - somebody to call if questions

• **SLAs**
  - sell a warranty
  - fix it if it breaks
Wrap-up: the Continuum

- Public domain (no copyright, gutenburg.org)
- Copyright:
  - Open Source
    - BSD-ish (some of Comet's javascript, Ben and my CPAN perl code, FreeBSD)
    - GPL (Linux, LiveJournal, Wordpress)
  - Proprietary
    - Source Available (Movable Type)
    - Source not available & gratis
      - “freeware”, “shareware” (Doom*, Commander Keen)
    - Source not available & must pay
      - Windows, Photoshop, Macromedia Breeze