



Free and Open Source Software

Rowan Wilson
rowan.wilson@oucs.ox.ac.uk



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What we will be talking about:

- What is 'free'? What is 'open'?
- How does FOSS licensing work?
- What is OSS Watch? What do we do?
- Some common FOSS licences
- Some FOSS exploitation models





Free and Open Source Software

- Software that the user has the right to adapt and distribute
- Adaptation is achieved by giving users access to the software's source code
- These rights are transmitted via licensing
- It is often available at minimal or no cost
- It is often maintained and developed by a community of interested parties who may or may not be salaried for their work
- It has an increasingly high public profile and market share (linux, apache httpd, firefox, open office, xensource)





Open Development Methods

- Widely distributed networks of developers
- Open governance
- 'Release early, release often'
- 'Many eyes'
- Helped along by the open source licensing framework, freely available project infrastructure software (versioning systems, issue trackers, mailing list managers etc) and inexpensive global data communication networks



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Some History

- Until the late 1970s most software thought to have little intrinsic value
- Exchange of software and its source code the norm (permissive BSD-style licences)
- Advent of personal computers in 1980s changed the perception of software's value
- Software became productized, source access closed off
- Many developers, particularly within academic communities, felt that this was detrimental to software quality





Some More History

- As a result of the 'closure' of the source code to Emacs in 1985, MIT Artificial Intelligence researcher Richard Stallman rewrote it and made his version available under a new kind of licence
- His licence prevented re-licensing under variant terms and mandated that derivative works must carry the same licence
- Stallman founds the Free Software Foundation at the same time, committed to maintaining software 'Freedom' as both a pragmatic and political aim
- Due to an unfortunate semantic collision in English, the use of 'Free' is widely and incorrectly thought to refer to price, not liberty (beer vs speech)





The FSF's Four Freedoms

- The freedom to run the program, for any purpose (**freedom 0**).
- The freedom to study how the program works, and adapt it to your needs (**freedom 1**). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (**freedom 2**).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (**freedom 3**). Access to the source code is a precondition for this.





Yet More History

- In late 1997 Eric Raymond gave a paper at the O'Reilly Perl Conference called 'The Cathedral and The Bazaar'
- In early 1998, partly as a result of the success of Raymond's paper, Netscape decides to release the source code of its struggling web browser to the world
- Some within the Free Software community decide that Raymond's apolitical, business-oriented explanation of the virtues of the Free Software and permissive licences ought to have an advocacy group
- In February 1998 the Open Source Initiative is founded, with Raymond as its first president. The term 'Open Source' begins to be widely used.





Open Source Initiative

- The OSI adapts the Debian Free Software Guidelines to form the basis of its remit. The resulting Open Source Definition gives ten criteria that a licence must meet to be considered Open Source by them...



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Open Source Definition

- Freely Redistributable
- Source Code Included
- Derived Works Permitted
- Integrity of Author's Source Code
- No Discrimination Against Persons or Groups
- No Discrimination Against Fields of Endeavour
- Distribution of Licence (Rights)
- Licence Must Not Be Specific to a Product
- Licence Must Not Restrict Other Software
- Licence Must Be Technology-Neutral (no 'click wrap')





Open Source Initiative

- Fifty eight licences are accredited by the OSI as meeting these criteria
- The most commonly used are the BSD (permissive) and the GPL (copyleft)
- The sheer number of OSI-approved licences is officially considered a problem, and the OSI is working to reduce this number through retiring some licences which duplicate the functionality of others. Recently the OSI has categorised their licences with a result that just nine achieve the description of 'Licenses that are popular and widely used or with strong communities'
- For practical purposes OSS Watch defines its remit with reference to the OSI approved licence list



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Any questions so far?



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How FOSS Licensing Works...

What is an FOSS Licence?

- A licence to exercise rights normally reserved to the author by copyright law
- Consistent with Open Source Definition
- Either explicitly perpetual or practically so
- A licence which offers a grant of rights to anyone





How FOSS Licensing Works...

How does copyright law protect FOSS software?

- No explicit communicated acceptance necessary
- Copyright law effectively prevents copying, adaptation and distribution of copyright material without a licence
- FOSS licences provide an avenue to licensed use if the user abides by the conditions (*but then isn't it a contract..?*)
- Without the licence, it is likely no permission exists, and the author can sue for copyright infringement
- Generally considered to work, but little case law
- Licences with more conditions (eg GPL) most likely to be attacked





How FOSS Licensing Works...

FOSS Case Law

- No UK case law
- Since 2004 District Courts in Germany have repeatedly confirmed the enforceability of the requirements of the GNU General Public License v2
- In 2005 a US District Court rejected a suit against the Free Software Foundation alleging anti-competitive behaviour:

"[The GPL] acts as a means by which certain software may be copied, modified and redistributed without violating the software's copyright protection," he wrote. "As such, the GPL encourages, rather than discourages, free competition and the distribution of computer operating systems, the benefits of which directly pass to consumers. These benefits include lower prices, better access and more innovation."



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How FOSS Licensing Works...

FOSS Case Law and Enforceability

- The enforceability of the terms of the GPL and other FOSS licences in court remains only minimally tested due to the fact that the vast majority of infringers come into compliance when informed of their infringement
- Social and community pressures play a large role (SCO, Blackboard)
- Large companies like IBM, Novell and Sun have a stake in the enforceability of FOSS licences



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How FOSS Licensing Works...

How do FOSS Licences deal with patents?

- Some licences (Apache 2, Nokia, Microsoft Reciprocal Licence and many others) explicitly grant rights to licensor's patents that are necessarily infringed by use or distribution
- Even those that do not will grant implied licences (in some jurisdictions) by permitting acts that would require a patent licence
- Some licences terminate their patent grants if the licensee initiates patent infringement litigation against the licensor





How FOSS Licensing Works...

What patent-related issues do FOSS licences raise?

- FOSS patent licences (explicit or implicit) relate only to the functionality of the software as it is distributed by the licensor; subsequent modifications by downstream users may end up infringing the licensor's other patents, or indeed someone else's.
- The question of whether software ought to be patentable at all is a controversial one, particularly within the free and open source community. The 1973 European Patent Convention excludes software inventions from patent protection, but this exclusion has eroded in the subsequent years.
- Some large open-source-invested companies (Red Hat, Novell, IBM) have established the Open Invention Network patent pool for use in defense of the FOSS operating system Linux and associated software.



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Any questions on this?



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What is OSS Watch?

- We are funded by the Joint Information Systems Committee (JISC)
- JISC runs JANET and funds about 200 software development projects at any given time
- OSS Watch is based within Oxford University Computing Services
- More specifically, we are part of the Research Technologies Service, which hosts many externally funded projects and national services
- We are **not** an advocacy group
- We are not lawyers, although we do know some



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OSS Watch

What does OSS Watch do?

- *“OSS Watch promotes awareness and understanding of the legal, social, technical and economic issues that arise when educational institutions engage with free and open source software. It does this by providing unbiased advice and guidance to UK higher and further education.”*
- We have expertise in open source software, especially software licences and IPR, development methods and community building, open standards, institutional policies for software development, procurement and deployment
- We publish briefing notes and longer guides on our web site
- We advise the JISC
- We make site visits to provide advice to our community
- We are free, in the price sense if not the liberty sense



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Our Initial Experience

- In our early consultations with software authors and academics we often found that...
- Some were unsure of the ownership of the software they had developed
- Some had 'released' software under an open source licence without researching who actually owned it
- Some had asked their departmental heads about the procedure for release and had been told to do it 'off the books'
- Some tried to obtain permission to release but find the processes within their institution confusing or unsuitable
- Some were looking to commercialise their software and – either through choice or legal compulsion – and were looking at open source licensing





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Public Policy

→**2004** Version 2 of the UK government's Open Source Policy published:

→*“Publicly funded R&D projects which aim to produce software outputs shall specify a proposed software exploitation route at the start of the project. At the completion of the project, the software shall be exploited either commercially or within an academic community or as FOSS.”*

→**2005** JISC's Open Source Policy goes one step further:

→*“Copyright of software, documentation, design materials, manuals, user interface and source code must be released under an OSI-approved open source licence, unless the bid explicitly argues why this should not be the case and proposes an alternative licence.”*



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How the JISC policy helps

- A major aim of the JISC's open source policy was to help development projects think through the exploitation routes for their software before they started hacking – meeting the right people within their institution and recording the ownership of the material they create
- The intention is not to mandate the use of open source licensing
- As the policy placed conditions upon funding, it automatically engaged those within institutional administration with responsibility for research support
- As a result of our initial experience, OSS Watch asked (and received from) JISC permission to expand our list of stakeholders to Knowledge Transfer Professionals, Research Support Staff and Legal Support Staff with institutions



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Funding aims

- JISC has added “support(ing) institutions' engagement with the wider community” as a fifth strategic aim
- HEFCE's Strategic Plan 2006-11 states: *“Sharing knowledge effectively is often as important as the original research and scholarship. Professional practice in knowledge exchange can be the engine of economic and social regeneration, and the driver of business and institutional innovation. However, harnessing its potential depends on effective exchange between the discoverers of knowledge and its users. Universities and colleges have a growing part to play through local, regional, national and global partnerships, sharing expertise and facilities to support regeneration and growth.”*
- DTI and OSI stress importance of greater interaction between HEIs and the wider community



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Open Source as 'Knowledge Transfer'

- Promoting and mentoring involvement with HEI-initiated FOSS projects provides many community benefits as well as raising the HEI's profile among technical specialists worldwide
- These benefits can be realised in combination with one of the many business models that permit financial returns from activities directly and indirectly related to FOSS release
- Creating a software-project-based forum for interaction with external academics can make your academics happy and better known
- For many pieces of useful software, the alternative to FOSS release is 'death'



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What do we tell developers?

- Strongly consider obtaining contributor licence agreements where necessary
- Keep track of your inbound licences and what they oblige you to do (licence compatibility)
- Keep track of the employment/consultancy agreements of contributors, including all institutional regulations that they import
- Keep track of funding conditions associated with contributors
- Your versioning system can be used as a basis for this record-keeping
- Establish what (if any) patents might be obtainable in relation to the work, and plan your code accordingly
- Assess your competition and your risk





Any questions about
that stuff?



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FOSS Watch

Some Common FOSS Licences

- **GNU General Public License v2, v3 and AGPL**
- **GNU Lesser General Public License v2.1 &v3**
- **Modified BSD (Berkeley Software Distribution) License**
- **Apache License v2**
- **Mozilla Public License v1.1**



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Some Common FOSS Licences

GNU General Public License v2

● Significant Features

- All modified versions of GPL-licensed software must also be distributed under the GPL (if they are distributed at all) (section 2)
- All modified versions must advertise prominently what has been modified, who modified it, and when it was modified.
- Source code must be provided with all GPL-licensed software, either directly or via a request to the distributor (section 3)





FOSS Watch

Some Common FOSS Licences

GNU General Public License v2

Significant Features

- All licensees of the software gain their licence directly from the original licensor (section 6).
- No redistributing licensee may impose further restrictions on recipients (section 6)
- Additional restrictions placed on a licensee by a court mean that the licensee cannot distribute the software at all (section 7).



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Some Common FOSS Licences

GNU General Public License v2

Notes

- Section 2 embodies the 'copyleft' or 'viral' aspect of the GPL. Where GPL'd code is used to produce a 'derivative work' (US term) the resulting work **must** also be licensed under the GPL if it is distributed
- The intention of this section is to prevent code that has been released to the community under an open source licence being 'closed' again by licensee who wishes to redistribute a work based on GPL'd code without also providing the source code to those who receive it. This usually happens when someone wants to make a closed-source commercial product using GPL'd code.





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Some Common FOSS Licences

GNU General Public License v3

Significant Features

- Released June 2007
- Very similar in function to the GPLv2, although substantially rewritten
- Differences
 - 'Anti-Tivoisation' – all keys needed to run adaptations must be provided
 - Corrects unintentional incompatibility with some open source licences (most notably Apache 2)
 - Removes US-specific legal terminology and allows inclusion of regionalised exclusions of warranty and limitations of liability
 - Undermines customer-focused software patent non-enforcement covenants as a means of dividing the Free Software community





FOSS Watch

Some Common FOSS Licences

GNU Affero General Public License v3

Significant Features

- Identical to GPLv3 except:
- Adds a provision that obliges any user to preserve any 'source-spewing' functionality
- Designed to allow the community to benefit from Application Service Providers who use and improve AGPL'd software but do not distribute it and therefore would have no responsibility to make source code available under the standard GPL
- When requested over a network, any adaptation of the AGPL'd must send its current source code





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Some Common FOSS Licences

GNU Lesser General Public License v2.1

Significant Features

Terms are substantially identical to the GPLv2 with the following exceptions:

- A work that is designed to be compiled or linked with the LGPL'd code is, in isolation, not a derivative work of the LGPL'd code and can thus be licensed in any way the author chooses (section 5).
- When distributing such code (perhaps in binary only form), the author can either not include the LGPL'd code at all, or include the LGPL'd code with its source and with copyright statements intact. The author must also make available tools and information that will allow the licensee to debug the interaction between the LGPL'd code and the author's code (section 6).





FOSS Watch

Some Common FOSS Licences

GNU Lesser General Public License v2.1

Significant Features

- Licensees may relicense LGPL'd code under the full GPL if they wish. They do this by changing the accompanying notices that refer to the LGPL so that they refer to the GPL, and including a copy of the GPL itself.



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Some Common FOSS Licences

GNU Lesser General Public License v2.1

Notes

- (Slightly) less restrictive version of the GPL
- Originally intended to deal with the case of open source libraries.

“A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.”

- The LGPL can be used for any code, not just libraries, however:
- Derivative works of LGPL'd code must be libraries if they are themselves to be licensed under the LGPL. Other derivative works must be converted to the GPL, as detailed in section 3.





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Some Common FOSS Licences

GNU Lesser General Public License v3

Significant Features

- Terms are substantially identical to the GPLv3, with the same modifications as between GPLv2 - LGPLv2.1



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Some Common FOSS Licences

Modified BSD (Berkeley Software Distribution) License

Significant Features

- Short
- Unmodified versions of the software must retain the copyright statement, the licence conditions and the disclaimer of warranties.
- Prior permission must be obtained from the licensor before their name can be attached to any modified version.





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Some Common FOSS Licences

Modified BSD (Berkeley Software Distribution) License

Notes

- The BSD licence does not prevent the code it licenses being absorbed into a closed source derivative.
- It is most appropriate for software which the author wishes to be as widely used as pFOSSible, regardless of whether it remains open source – for example code that implements a standard.
- The Modified BSD License is compatible with the GPL – code licensed under it can be combined with GPL'd code and the whole released under the GPL with no problems.





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Some Common FOSS Licences

Apache License v2

Significant Features

- Unlike the GPL, linking your code to the interfaces of Apache v2 licensed software does not render the linked whole a derivative work (section 1).
- The licence grants patent rights as well as rights under copyright inasfar as those patent rights are necessary to operate the software (section 3).
- Anyone who starts patent litigation against a licensor automatically loses their licensee status (section 3).





FOSS Watch

Some Common FOSS Licences

Apache License v2

Significant Features

- Derivative works may be licensed in any way provided that the new licence's terms accord with those of the Apache v2 licence (section 4).
- Permission to use the licensor's trademarks, trade names, service marks or product names is not granted under the licence (section 6).





FOSS Watch

Some Common FOSS Licences

Apache License v2

Notes

- Section 3 (withdrawal of licence to individuals pursuing patent claims against the licensee) makes this licence incompatible with the GPLv2 (it is an additional restriction).
- GPLv3 *is* compatible with this licence
- This licence does not prevent the 'closed-sourcing' of code licensed under it.



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Some Common FOSS Licences

Mozilla Public License v1.1

Significant Features

- Modification may be distributed as differential comparisons against the licensed code (patches) (section 1.11)
- Source code must be made available with any distribution of the software or modified versions of the software (section 3.2).
- Executable versions of the code may be distributed under a separate licence provided that the distributor himself is in compliance with the MPL and the source to the executable continues to be available under the terms of the MPL (section 3.6).



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FOSS Watch

Some Common FOSS Licences

Mozilla Public License v1.1

Significant Features

- Licensees may create a 'Larger Work' – that is a combination of the MPL-licensed code and other code – and distribute the whole. In these circumstances the MPL-licensed code must continue to be distributed under the terms of the MPL, but the other code may be licensed as the author wishes (section 3.7).





Some Common FOSS Licences

Mozilla Public License v1.1

Notes

- Resembles a commercial licence more closely than other open source licences, due to its origin in a large corporation.
- The MPL represents a half-way house between the permissiveness of the BSD licence and the strictness of the GPL. Section 3.7 opens the pFOSSibility of a licensee taking the code, including the contributions of many other programmers, and adding functionality to this codebase in a fashion that qualifies as 'other code' (meaning code under another licence). In this case, the licensee can sell licences to their own 'other code' without providing the source, and distribute it as a bundle with the MPL-licensed material.





Any questions about those?



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“It's free – how am I
supposed to make
money?”



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- First I should say...
- Many commonalities with software-related business in general
- Not an exhaustive list
- Still an evolving area of business practice
- Your aim may just be sustainability or internal cost reduction
- Dissatisfaction with the short-comings of current proprietary models is a strong factor in the current success of some open-source businesses
- Smorgasbord





FOSS Watch

→FOSS Exploitation Models

→*Trademarking*

→Just because your code is open, it does not mean that your brand has to be

→Competitors may fork your code but they cannot use your trademark

→Effective both for direct software provision and service provision

→Possible downside: Trademark law not as internationally consistent as copyright law



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FOSS Watch

- FOSS Exploitation Models
- Service Provision*
- Training and accreditation
- Customisation
- Consultancy
- Support
- Possible beneficial interactions with 'rivals' (Zea consortium model)



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→FOSS Exploitation Models

→*Red Hat monolithic subscription model*

→Customers pay a subscription to gain access to live support, a knowledge base, intellectual property indemnification, a tested suite of binaries including upgrade facilitation technologies and free distribution upgrades as long as the subscription lasts

→Red Hat runs the Fedora project in parallel with Red Hat Enterprise Linux and migrates tested developments in Fedora to the commercially-supported RHEL

→The source to RHEL's components remains available to anyone



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→FOSS Exploitation Models

→*Xensource B2B model*

→Specialist consultancy to resellers

→Provide bundles of second-tier support to resellers

→Interact with development community while leaving customer support to downstream resellers



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→FOSS Exploitation Models

→*Squiz proprietary bolt-on model*

→Core software is available under an open source licence

→Certain plug-in modules for commonly requested functions are available under a non-open licence with additional support

→Possible downside: may have to compete with community-developed open plug-ins





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→FOSS Exploitation Models

→*Community Creation*

→A body of useful software can become the focus of academic, social or commercial work for people from many different backgrounds

→Work on publicly-tracked and -available software can be a convenient route to recognition and progress within a given problem domain or community, both for individuals and institutions

→Increasingly funding bodies stress Business and Community Engagement as a desired outcome for the projects that they fund. FOSS communities can serve as examples of both.



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→FOSS Exploitation Models

→*MySQL / LAMS / Sleepycat Dual Licensing model*

- IPR in community-submitted patches must be assigned to the company if they are to be included in the 'core' release
- Software is available to all under a 'copyleft' open source licence (GPL)
- Software is also available under a non-open licence to those who wish to adapt it and distribute it under something other than a 'copyleft' open source licence
- Sun Microsystems recently bought MySQL for \$1b





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→FOSS Exploitation Models

→*International Characters / Simon Fraser University
“Patentleft” model*

→Obtain patent on a software invention embodied in your software

→Release your software under a 'copyleft' licence

→(Optional) Covenant not to assert patent rights against other FOSS software implementations, (perhaps with some exceptions – undistributed, distributed with hardware)

→Sell patent licences to interested parties who are not protected by the covenant or prepared to accept the responsibilities of your copyleft licence.



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The End...
Questions?



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→Links

→**OSS Watch** – <http://www.oss-watch.ac.uk/>

→**Free Software Foundation** - <http://www.fsf.org>

→**Open Source Initiative** – <http://www.opensource.org/>

→**UK Government Open Source Policy** –

http://www.govtalk.gov.uk/policydocs/policydocs_document.asp?docnum=905

→**JISC's Open Source Policy** -

http://www.jisc.ac.uk/fundingopportunities/open_source_policy.aspx

→**Software Freedom Law Center's Legal Issues Primer for Open Source and Free Software Projects**

<http://www.softwarefreedom.org/resources/2008/FOSS-primer.html>

→**Bird and Bird review of German case law on the GPL**

http://www.twobirds.com/english/publications/articles/Review_German_GNU_General_Public_License.cfm

→**The Open Invention Network**

<http://www.openinventionnetwork.com/>

→**This Talk**

<http://www.oss-watch.ac.uk/talks/2008-04-10/foss10042008.pdf>

