International
Free and Open Source
Software Law Review

Volume 04 } Issue 01 } March 2012

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The Editorial Committee wishes to thank the work of the many referees and peer reviewers whose professional expertise and dedication to high standards have made the publication of this issue possible.

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Graphic design

The Editorial Committee wishes to thank Tomasz Politański Design for its logo and associated graphic design work.

http://tomaszpolitanski.com

Publisher & sponsorship

IFOSS L. Rev. is published by its Editorial Committee, with financial and administrative assistance from NLnet Foundation and Mozilla Foundation. Please note that neither NLnet Foundation nor Mozilla Foundation accept correspondence on behalf of this publication. All correspondence should be directed to the Editorial Committee via email (see below).

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ISSN: 1877-6922

Publication schedule

IFOSS L. Rev. is published biannually. Submissions for publica-tion are welcome at any time, but publication deadlines exist for each issue. For the latest information on papers sought and deadlines for submission, please consult the IFOSS L. Rev. website or contact the Editorial Coordinators at (**admin@ifosslr.org**)

Editorial

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DOI: 10.5033/ifosslr.v4i1.70

Abstract
Introducing Volume 4, Issue 1

Keywords
Law; information technology; Free and Open Source Software; Freedom

Welcome to the 4th volume of IFOSSLR, Issue 1!

This issue covers a broad variety of topics that are relevant to free and open source software licensing, from core issues such as the meaning of "distribution" of software under US law (highly relevant with respect to GPL licensing), to the more exploratory issues of open hardware and open database licensing. It also touches upon dealing with the GPLv2's "*liberty or death*" clause and the pros and cons of setting up an open source foundation to shepherd a FOSS project.

The variety of articles show two trends which I think are important. First, that there are still key legal issues relevant to free and open source licensing that need "digging into" and sharing, such as Heather Meeker's article on the meaning of distribution, but also topics that have also been touched upon the Law Review, such as the meaning and scope of copyleft under the GPLv2, or issues about multiple ownership of code.

Second, that "freedom" and "openness" are (and indeed already have been) branching out into new areas such as data, and more particularly databases, and hardware. Without mentioning the trends for open governance, open standards, open APIs… These areas are raising new legal issues that are both interesting and challenging to get to grips with.

Open data is a movement that is gaining ground, as governments are leading the way in making more and more information (data) available, often under laws or directions given regarding access and reuse of what is called "Public Sector Information". I have seen several such online data repositories, "released" under open source software licenses (!), Creative Commons or other content licenses, or custom made licenses using terms that are associated with generic copyright protected works, or even patent-style wording. Creating understanding and inertia towards

adapting open data licensing terms to the legal framework for data and databases (legislated, at least, in the EU, but also under common law principles in the US, for example) is a good idea, as would be some consensus and even standardisation, to avoid the fragmentation that the free and open source software community is facing. Simone Aliprandi's article here comes at the right moment. And Open Data Commons[1] has made a good start – something that may need "internationalising" as governments may want or have to use jurisdiction specific licenses (in their own language). Mixing and reusing data is going to be as useful and innovative as mixing and reusing software, so anything to make this easier must be a good thing.

So this is a highly "active" space, albeit in our own quite specialist manner. Space that the courts are currently moulding (or remoulding), in their own way, viz. the recent European Court of Justice decision in *SAS Institute Inc. v. World Programming Ltd.*[2], the US Supreme Court's decision in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*[3] and the jury's preliminary finding in the ongoing *Oracle America Inc. v. Google Inc*. case[4].

While the latter is very preliminary, and has created more noise than substance, the other two decisions are of interest. We are grateful to Rob Tiller for the his note on the Mayo decision, which will have overall implications in the software patentability debate and the application of the "law of nature" exclusion to patenting.

The ECJ decision, while not ground shaking, is of considerable interest and something that we hope will provide an incentive to contribute a new paper (or papers) to the Law Review – in the next issue! Coincidently, it bears some similarity to the Mayo decision, in that the Court is creating an exclusionary ("no-go") zone for things that are not protected or monopolised by Intellectual (and Industrial, for continental EU lawyers) Property Rights. Maybe not so "coincidently", if we are - hopefully? - seeing a jurisprudential trend towards defending the public interest, innovation and "technical progress".

> *44. As the Advocate General states in point 57 of his Opinion, to accept that the functionality of a computer program can be protected by copyright would amount to making it possible to monopolise ideas, to the detriment of technological progress and industrial development.*

It seems, from a quick reading of this decision in the short time available since being handed down, that it supports the argument that certain "elements" of a computer program, such as its programming language, its "functionality" (a more abstract concept that I think needs deeper analysis), or the format of data files requested for APIs or for exchanging parameters, are not protected by copyright law, reinforcing the principle set out in the EU Software Directive that only the expression of a computer program is protected by copyright. The devil will probably be in the details, and it will be interesting to see how the English High Court applies this decision (clarification?) to the case before it.

1 Online at http://opendatacommons.org/

2 Case C-406/10, 2 May 2012, online at http://curia.europa.eu/juris/document/document.jsf?text=&docid=122362&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=115060

3 Decision online at http://www.supremecourt.gov/opinions/11pdf/10-1150.pdf

4 Online at http://www.groklaw.net/pdf3/OraGoogle-1089.pdf. Comment from Groklaw, at http://www.groklaw.net/article.php?story=20120507122749740

We would also like to welcome on board the new members of the Editorial Committee, Jilayne Lovejoy, Alex Newson and Daniel German, to whom we are enormously grateful for the knowledge, skills and experience they bring to our team, and for helping us share the "not unburdensome" task of editing this and future Issues of the IFOSSLR.

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This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Bain, Malcolm (2012) 'Editorial', *IFOSS L. Rev.*, 4(1), pp 1-5
DOI: 10.5033/ifosslr.v4i1.70

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Open licensing and databases

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DOI: 10.5033/ifosslr.v4i1.62

Abstract
Data and databases are a complex, nuanced area within intellectual property law.
In the European Union databases have a special legal treatment that provides two levels of protection. A database is protected by copyright in the classical sense when it can be considered an intellectual work with a creative nature. Where databases represent mere collections of data without sufficient creativity to trigger copyright, EU jurisdictions protect the database under *sui generis* rights when substantial investment has been made in obtaining, verifying, or presenting the database contents according to Directive 96/9/EC.
This system creates a substantial discrepancy between the situation of European countries and the rest of the world, and also affects those databases that have been released under open licenses.
Not all of the currently available open licenses take account of the legal and practical implications of this discrepancy, and we should examine the consequences and options.
The paper aims to provide a high-level analysis on the protection of databases under European law and identify the main legal problems arising from it in an open data scenario. Then it will focus on the solutions tried so far to implement a proper open licensing framework for the database (with an introduction to the licenses offered by Creative Commons and the Open Data Commons project). Finally, some of the most prominent use cases of open licensing for data will be analysed (such as those of geo-data and linked-data), with some observations on the modus operandi of the various promoters of projects.

Keywords
Open data, open licensing, open content, public domain, Creative Commons, copyright, database right.

1. Introduction: data and database

As is well-known, digital technologies allow the management, storing and processing of huge amounts of information. Work that recently required the contribution of many people can now be done using a simple automated software; information which had to be stored in entire rooms a few years ago can now be stored on a very small USB pen; tasks that once required entire working days to complete can now be easily sorted out in few minutes. Time, space and effort have been reduced, to the benefit of a constantly increasing supply of data and increasingly numerous ways of managing it.

But what exactly is “data”?

> *“The word data is the Latin plural of datum, neuter past participle of dare, "to give", hence "something given". [...] Also, data is a representation of a fact, figure, and idea. Such usage is the origin of data as a concept in computer science: data are numbers, words, images, etc., accepted as they stand”.*[1]

It may seem obvious but, in order to avoid dangerous misunderstandings, I think it is important to clarify the meaning of “data”; there is confusion about the real meaning of this term. Indeed, there is a trend of generally talking about “data” when referring to all the material stored on a computer or digital media, regardless of whether it is films, music files, documents, images etc.

From the point of view of legal language (which must be taken into consideration when making an observation of this kind) “data” has a smaller semantic range and only refers to “facts” which are not organized and processed by human intelligence. These, as single pieces of information deducible from the nature of things, are not subject to copyright protection and patent rights, and are therefore not important from the point of view of the right of intellectual property.

Intellectual property does not deal as much with data as it deals with databases, and it is very important to always consider this distinction.

According to the Encyclopedia Britannica, in the computer science field a database is «any collection of data, or information, that is specially organized for rapid search and retrieval by a computer».[2] Therefore, “data” is only subject to regulations and legal protection when it is presented as organized systems.[3]

As will be seen below, with the advent in the 1990s of an *ad hoc* European regulation for database protection, the concept of the database has been further clarified and explored by legal science.[4]

Obviously, it is no coincidence that a need for questioning the appropriateness of a particular legal process for databases has only arisen in recent decades: this is closely linked to the new

1 http://en.wikipedia.org/wiki/Data.

2 http://www.britannica.com/EBchecked/topic/152195/database.

3 Of course, we have always to consider the existence of other legal protection, such as the rules related to trade secrets and unfair competition.

4 See, in this regard, the definition provided by art. 1.2. of directive 96/9/EC: «'database' shall mean a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means.»

possibilities for collecting, organizing and using huge amounts of data stemming from digital technologies and business opportunities based on this kind of activity.

2. The particular legal treatment for databases in Europe

2.1. Before the Database Directive

In a way, databases can be compared to collective works, a category recognized in the copyright field long before the reforms of the 1990s. Indeed, the Berne Convention and, in general, all national regulations inspired by it, also include, among the types of works protected by the law, those created through the collection of other works independent from the collective work.

Indeed, this is the text of art. 2 (5) of the Berne Convention: «Collections of literary or artistic works such as encyclopedias and anthologies which, by reason of the selection and arrangement of their contents, constitute intellectual creations shall be protected as such, without prejudice to the copyright in each of the works forming part of such collections».[5]

The person who selects, collects and organizes data according to particular creative criteria holds, therefore, a stand-alone copyright with respect to the individual collected works.

With the advent of new methods of storage and technological management of information, databases have become a fundamental part of cultural and technical production. Therefore, the world of law has begun questioning whether specific forms of protection for this new category of creations are necessary or if, on the contrary, it is enough to (extensively) apply pre-existing copyright categories and principles.

2.2. The inadequacy of the classic copyright protection

From a first reading of the overall copyright principles, it can be easily grasped that the definition of collective works (in the sense of collection of works) refers to phenomena not always comparable to a database. Not all databases have a requirement of choice and organization of material according to creative criteria; “particularly not those that, offering to provide all available information about a certain topic, do not apply any form of selection and present the information itself in a manner that is either uninteresting or dictated by information requirements”.[6]

Furthermore, there is another “Achilles Heel” with regard to the copyright of atypical works such as databases: namely the principle that the copyright only covers the expressive form of a work, that is, the way the author expresses their idea and not the idea itself. Therefore, and particularly in this case, on the basis of the sole copyright, another person may use the contents of the database,

5 http://www.wipo.int/treaties/en/ip/berne/trtdocs_wo001.html. Also see, in this regard, Article 5 of WIPO Copyright Treaty, 1996: «Compilations of Data (Databases) – Compilations of data or other material, in any form, which by reason of the selection or arrangement of their contents constitute intellectual creations, are protected as such. This protection does not extend to the data or the material itself and is without prejudice to any copyright subsisting in the data or material contained in the compilation.»

6 Auteri, P., *Diritto d'autore*, part VI of *Diritto industriale. Proprietà intellettuale e concorrenza*, Giappichelli, 2005 (pp. 505-508).

modifying the organization and arrangement criteria, effectively creating a work which is different from a legal point of view, but substantially repetitive and "parasitic".

With the sole application of the copyright, a large portion of databases would be left without any legal protection; all that would remain would be protection ensuing from the principle of unfair competition or the possible application of technological protection systems. This has been considered insufficient by the European legislator, who, after a lively debate on the appropriateness of the choice, decided to take action with a special directive.

This choice has been supported by the idea according to which certain types of databases that would be excluded, because of their nature, from the scope of the copyright, require a large investment and that, therefore, this investment in itself is worthy of protection and should be encouraged accordingly.[7]

2.3. A double level of protection: the EU Directive and the sui generis right

Therefore, in 1996, the European legislator decided to outline a special model of protection, according to which databases are potentially eligible for a double level of protection. According to Directive n. 96/9/EC, on the one hand, databases have been formally included among the categories of creative works protected by copyright in the community legislation; on the other hand, special rights have been created for the author of the database. As Paolo Auteri points out:

> *«the object of the first protection [copyright] is the "expressive form", i.e. the way information material is selected and organized, while the object of the second protection is the information content or rather the information as a whole, in the measure in which research, verification and presentation require a significant investment».*[8]

The text of the Directive is made up of sixteen articles divided into four Chapters. Chapter II deals with the protection of databases as the author's own intellectual creation[9] and therefore to be protected by copyright. Up to this point, the Directive does nothing more than clarify and formally ratify what was already easily inferable from the principles of copyright.

Conversely, the truly innovative (and also the most criticized) part of the Directive is Chapter III, where new rights are established for protecting databases of a non-creative type, which are therefore not considered legitimate intellectual works. Such rights (generally referred to with the Latin phrase "*sui generis* right", in order to highlight their peculiarity with respect to copyright and related protection rights) are exclusive rights arising from a party referred to by the regulation

7 Read in this regard the Whereas n. 7 and n. 12 of the Directive: 7) Whereas the making of databases requires the investment of considerable human, technical and financial resources while such databases can be copied or accessed at a fraction of the cost needed to design them independently; 12) Whereas such an investment in modern information storage and processing systems will not take place within the Community unless a stable and uniform legal protection regime is introduced for the protection of the rights of makers of databases.

8 Auteri, P., *Diritto d'autore*, part VI of *Diritto industriale. Proprietà intellettuale e concorrenza*, Giappichelli, 2005 (pp. 505-508).

9 Art. 3.1: In accordance with this Directive, databases which, by reason of the selection or arrangement of their contents, constitute the author's own intellectual creation shall be protected as such by copyright. No other criteria shall be applied to determine their eligibility for that protection.

as “the maker of the database”; they relate to the money invested in the creation of the database (and not to the creative contribution, as in the case of copyright and related rights protection) and are valid for 15 years from the constitution of the database[10]. The principles of the Directive were then implemented by the member states of the EU and have become an integral part of national regulations, thus standardizing to a certain extent the regulatory framework of the European Union.[11]

Chapter III, which deals with the *sui generis* right, describes two primary activities for which the “maker” is responsible and over which these rights are exercised: the extraction of data from the database (understood as the permanent or temporary transfer of all or a substantial part of the contents of a database to another medium by any means or in any form) and the re-utilization of data (understood rather as any form of making available to the public all or a substantial part of the contents of a database by the distribution of copies, by renting, by on-line or other forms of transmission).[12]

In other words, the maker has the exclusive right, for a period of 15 years, to control these activities on the database (or on a substantial part of it) that they created and made available to the public. This – precisely – occurs in the case of a database without creative features, but which has required a substantial investment in terms of quality and quantity.

2.4. Database categories according to protection levels

As a result of the principles established by the Directive and therefore the different cases of overlap between the two levels of protection, it is possible to outline the following categories of databases protected by the European regulation:

- *Type 1* - Databases with creative features containing creative works
  → protected by copyright on two independent levels
  → the author of the database holds the copyright with regard to its structure and the specific organization of its contents; the authors of the individual contents hold the copyright on the independent contents in a totally independent manner.
- *Type 2* - Databases with creative features containing simple data
  → protected on two different levels (copyright and *sui generis* right)
  → the author of the database holds the copyright with regard to its structure and the specific organization of its contents; the author themselves also fills the role of maker and holds the *sui generis* right as far as the extraction and re-utilization of substantial parts of the data are concerned.

10 Specifically, art. 10.1 of the Directive reads: «The right provided for in Article 7 shall run from the date of completion of the making of the database. It shall expire fifteen years from the first of January of the year following the date of completion.»

11 In 2005 the European Commission has published an evaluation of the protection EU law gives to databases. This interesting and insightful report is available at http://ec.europa.eu/internal_market/copyright/docs/databases/evaluation_report_en.pdf.

12 See Art. 7 – Object of protection.

- *Type 3* - Databases without creative features containing simple data, but nevertheless requiring a significant investment
  → protected only by the *sui generis* right
  → the maker of the database holds the *sui generis* right as far as the extraction and re-utilization of substantial parts of the data are concerned.[13]

This pattern highlights how important it is that the two levels of protection are always clearly defined, especially when dealing with the licensing of a database.

We should always have very clear ideas about what rights and what objects we intend to license; at the same time, we should try to clearly communicate our intentions to the licensees, specifying whether we are referring to the database itself, its contents or both.

The determining factor for the subdivision in these three types – as often occurs in copyright – is the presence of creative features. A study on this concept would require a number of pages and it is not possible to look further into the matter here; therefore, you are advised to refer to more specialist sources and study case law on database protection.[14]

3. The open licensing paradigm applied to databases

3.1. Licenses that do not license

Once the complexity of this protection system has been clarified, it is possible to deal with the problems that arise when the holder of the rights on a database decides to regulate its use through the application of a free distribution license or copyleft.

As already pointed out, all the most commons licenses that one would consider to also license databases (such as GPL, GFDL, Creative Commons) are modelled upon a "pure" copyright system. This does not always mean they conveniently deal with the *sui generis* right, which differs in some aspects from copyright (in the strictest sense of the word). Therefore, their use in the field of databases in the European area may not cover the part relative to the *sui generis* right.

Let us try to understand this better. The function of these licenses is to authorize, permit or, more precisely, "license" free use of the work to which the license refers, and in order to do so, the text of the licenses explicitly refers to the single rights involved in the cession. However, not all these licenses expressly take into consideration the *sui generis* right.

There is a reason for this: most of these licenses, despite having been "exported" to Europe, were conceived within the US legal system, where the double protection level for databases does not

13 We can also find more complex cases of databases, with hybrid features or made by the ensemble of other (already existing) databases.

14 «This feature may be sought alternately or cumulatively in the choice or arrangement of materials.» UBERTAZZI, L.C. (editor), *Diritto d'autore*, *estratto da Commentario breve alle leggi su Proprietà Intellettuale e Concorrenza*, 4° ed., CEDAM, 2009 (p. 185)

exist.

Essentially, whenever we have to deal with a database licensed under one of these licenses, we cannot be assured to be able to use it freely as, except in the case a specific integration to the license text is added, the rights holder (i.e., the maker) would withhold the full control over the *sui generis* right.

It is, therefore, necessary to think of the best way to deal with these particular types of rights and there are substantially two ways: either the waiver of these rights, or their specific licensing.

An important clarification: the considerations below refer only to the licensing of databases not considered intellectual works and therefore only protected by the *sui generis* right (i.e. the Type 3 described in paragraph 2.4).

3.2. The waiving option

The first of the two ways that can be implemented involves the maker waiving their rights on the database, before the first 15 years foreseen by the Directive have elapsed and the database permanently enters the condition of *public domain*.

In order to reach this situation, it is necessary for the holder of the rights to issue a public statement in which they waive their rights in an unlimited and unconditional manner.

This solution has been successfully applied with reference to copyright: consider the Public Domain dedication proposed in the past by the Creative Commons project and the latest tool called CC zero, which allows the holder of the copyright to release their work in a sort of artificial public domain.[15] A similar outcome may be reached through the Public Domain Dedication and License (PDDL) proposed by the Open Data Commons Project.[16]

On the one hand, this solution certainly provides the most freedom of use of the database and, on the other, creates fewer problems from the point of view of the distribution and use of the database on an international scale. Indeed, in the event of a maker of a European database [17]deciding to waive the *sui generis* right, they would allow their product to circulate freely without any doubts about the systems of protection to be applied. Accordingly, a non-European user need not wonder whether the database, coming from the European area, is protected by a protection system that differs from the one used in their own country.

The approach of waiving the *sui generis* right was promoted by Creative Commons, not only with a call to use the CC0 tool as much as possible for the release of databases[18], but also by adding a

15 Further details on tools proposed by Creative Commons for the public domain can be found on the website http://creativecommons.org/publicdomain/,

16 In this regard see the website www.opendatacommons.org/licenses/pddl/.

17 Database rights are only granted to European makers. This is a considerable difference with the copyright, which is granted in Europe – as in any country who adopted the Berne Convention – regardless of the country of first publication.

18 «We do recommend CC0 for scientific data — and we're thrilled to see CC0 used in other domains, for any content and data, wherever the rights holder wants to make clear such is in the public domain worldwide, to the extent that is possible (note that CC0 includes a permissive fallback license, covering jurisdictions where relinquishment is not

specific waiver in European version 3.0 licenses.[19]

As a matter of fact, the Creative Common licenses, in their original conception, do not expressly take into consideration the so-called "database rights" as they represent licenses originating from the United States.[20] Those licenses had become one of the main points of reference for the free distribution of intellectual works in the European countries; it would have been therefore problematic for their full adoption had they been left outside the field of application of databases.

Therefore, the need was perceived to adapt the national versions so that they could also license the *sui generis* right. This porting process required long deliberation and a constant comparison between the various national working groups of the Creative Common Project, and it was only completed at the beginning of 2011, with the release in these countries of the version 3.0 license, in which "database rights"[21] have been specifically mentioned and waived.[22]

3.3. The specific licensing option

The waiver solution is not always applicable and therefore due licensing of the *sui generis* right is required. It refers, for example, to those cases in which the holder of the rights intends to release the database with specific conditions, such as, for example, the attribution of authorship or the so-called "share-alike". In these cases, it would only have an effect on the *sui generis* right.

In 2008, an independent project also got underway, aimed at the creation of a license specifically designed for databases.[23] This British project began life at Edinburgh University, through the initiative of a Texan lawyer who had moved to Scotland to continue his work as a researcher and teacher: Professor Jordan Hatcher[24]. The most important result of this project, which by no accident was called "Open Data Commons", was the release of the license "Open Database License" (OdbL)[25].

The ODbL is a rather complex but well put-together license; and it can effectively apply the copyleft model with reference to databases. It includes, in fact, a set of clauses that reproduce the model of the Attribution – Share Alike licenses proposed by Creative Commons.

It licenses only the right relating to databases; therefore, if the database contains creative works, in

thought possible).» https://creativecommons.org/weblog/entry/26283.

19 «We adopted a policy that version 3.0 EU jurisdiction ports must waive license requirements and prohibitions (attribution, share-alike, etc) for uses triggering database rights — so that if the use of a database published under a CC license implicated only database rights, but not copyright, the CC license requirements and prohibitions would not apply to that use.» https://creativecommons.org/weblog/entry/26283.

20 This approach is however likely to change with the upcoming release of the version 4 of the Creative Commons Licenses, still under development at the time of writing.

21 On the relationship between Creative Commons licenses and database rights read the study http://sciencecommons.org/projects/publishing/open-access-data-protocol/; and also the page http://sciencecommons.org/resources/faq/database-protocol/.

22 See for example the Italian porting of CC 3.0.

23 The full text of the law is available on the website http://www.opendatacommons.org/licenses/odbl/

24 Hatcher's personal blog has quite an emblematic name: http://www.opencontentlawyer.com.

25 Some of the activists involved in this project had previously dealt with another license of the same type, in truth rather superficial and almost immediately abandoned: the Talis Community License, currently available on the website http://w.talis.com/tdn/tcl

order to guarantee free use of the whole work, it is advisable to apply another license relative to the works contained in the database itself. Indeed, the preamble of the license specifies as follows: «Because databases can have a wide variety of types of contents, this document only governs the rights over the database, and not the contents of the database individually. You should use the Open Data Commons together with another license for the contents, if the contents have a single set of rights that governs all of them». This implies the need for a certain degree of shrewdness in choosing the license for the content: so as not to create further complications for licensees and indeed also for interpreters (lawyers, judges...), it is necessary to choose a license that reproduces the same effects for the contents as well.

Between the choice of waiving the *sui generis* right and the choice of licensing with the share-alike clause there is obviously an intermediate option, that is a licensing that only requires the attribution of authorship of the original database. In essence, it is the same effect produced by a Creative Commons Attribution brought in the scope of the mere *sui generis* right rather than the copyright.

For this purpose, the Open Data Commons project has proposed a further license called a “ODC Attribution License”[26].

From its own point of view, while still following this pattern, the government of the United Kingdom drew up a specific license called “License to Reproduce Public Sector Information”, the aim of which is to release, in open mode, information (by which is meant both content and data) produced by British institutions where so-called Crown Copyright is applied[27]. There is a recent evolution of this project: a new "attribution-only"license delivered by The National Archives and called “Open Government Licence for public sector information”.[28] The choice of creating this license by the British government is part of the pursuit of the objectives set by the European Union with the Directive 2003/98/EC on the re-use of public sector information[29] and the subsequent Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)[30].

26 The foreword in the license reads: «The Open Data Commons Attribution License is a license agreement intended to allow users to freely share, modify, and use this Database subject only to the attribution requirements set out in Section 4.» The complete text of the license is available at www.opendatacommons.org/licenses/by/.

27 Indeed, the article 1.3 of the license reads: «Waived material can be re-used free of charge without requiring a formal license provided that it is: i) acknowledged; ii) not used in a misleading way; iii) reproduced accurately and kept up to date». The full text of the document is available at www.opsi.gov.uk/click-use/system/licenceterms/CCWPS03-00.pdf. Althouth the database rights are not expressly mentioned, it is clear from the context and scope of the license that it deals with *sui generis* rights in the first place.

28 http://www.nationalarchives.gov.uk/doc/open-government-licence/

29 «Directive 2003/98/EC on the re-use of public sector information, otherwise known as the PSI Directive is an EU directive that encourages EU member states to make as much public sector information available for re-use as possible. Previously this area was left to member states to regulate. This directive now provides a common legislative framework for this area. The Directive is an attempt to remove barriers that hinder the re-use of public sector information throughout the Union.» http://en.wikipedia.org/wiki/Directive_on_the_re-use_of_public_sector_information

30 In the proposal act of the Directive (par. 2) we can read: «The proposed Directive creates a legal framework for the establishment and operation of an Infrastructure for Spatial Information in Europe, for the purpose of formulating, implementing, monitoring and evaluating Community policies at all levels and providing public information. A key objective of INSPIRE is to make more and better spatial data available for Community policy-making and implementation of Community policies in the Member States at all levels. INSPIRE focuses on environmental policy but is open for use by and future extension to other sectors such as agriculture, transport and energy.» http://ec.europa.eu/information_society/policy/psi/docs/pdfs/inspire/en.pdf.

The other European countries are trying to move in the same direction set by the two directives, with different initiatives for the issuing of public data[31]. In France a license called Licence Information Publique, whose effects are similar to the Creative Commons Attribution license, has been released[32]. In Italy, one of the most interesting pilot projects is the one set up by the Piedmont Region, which has chosen to primarily use the CC0[33] tool; recently also a new license has been created and called Italian Open data license (with version 1.0 following the CC by-sa paradigm and version 2.0 following the CC by paradigm)[34].

As is clear by reading this paragraph, which has a purely introductory purpose and does not get to the heart of the matter concerning the emerging legal issues, the choice of a specific licensing of a database protected by the *sui generis* right implies some considerable legal complications.

A clear overview of all the most important licenses cited above is available as a diagram where they are classified according to their legal effects (attribution and share-alike, attribution only, public domain).[35]

4. Some interesting cases

4.1. Openness in geodata: the Open Street Map project

One of the most interesting cases to have dealt with this kind of problem is the extremely topical one of geographical data and its use in an open pattern. In the wake of cultural movements inspired by the free sharing of contents (open source, open content, open access), a growing share of activists/volunteers have become committed to the creation of a geographic information system (the so-called GIS) that is freely accessible and usable, without being subject to intellectual property restrictions.

On the other hand, when talking about the relationship between databases and open licensing, this topic cannot be overlooked, as it was precisely because of the cultural ferment stemming from communities developing free geographical data that the importance of also delving into certain aspects from a legal viewpoint was perceived.

The category of geographical data is difficult to qualify from a legal point of view, as it concerns various kinds of creativity and representations of reality.

We may have to deal with “simple” data such as, for example, coordinates of longitude and latitude, height, distance from points of interest etc.; and in this case the single data item certainly

31 For a complete overview of the main projects inspired by the “open data” model in Europe see the interesting study “Open Data, Open Society” carried out by Marco Fioretti for Scuola Sant’Anna di Pisa (available on the website www.dime-eu.org/node/907).

32 More information about the license and its entire text are available at http://www.rip.justice.fr/information_publique_librement_reutilisable.

33 The official website of this project is http://dati.piemonte.it/.

34 Version 1.0 is available at http:www.formez.it/iodl/ and Version 2.0 is available at http://www.dati.gov.it/iodl/2.0/.

35 The diagram is availbale at http://www.ifosslr.org/public/opendata_graph.pdf or at http://www.aliprandi.org/doc/opendata_graph.pdf.

cannot be protected by copyright, as it would be nothing more than a natural “fact", a revelation of reality, without any mediation by the human mind. As already explained, this kind of data can only be protected as an “organized system of data”, through the *sui generis* right.

If, on the other hand, we have to deal with something more elaborate and, above all, that has required a certain creative approach, the situation becomes more complicated.

In this case, in order to assess what level of protection to apply to the contents, it is necessary to verify, each time, the type of creative work (among those envisaged by the principles of copyright) that the reprocessed and conceivably represented data item may be included in. It is not always an easy analysis to undertake, as contents sometimes appear in the form of aerial or satellite photographs (protected by a relevant right); other times (and this is currently the most frequent case), they are not real photographs but (two-dimensional or three-dimensional) vector graphic reconstructions of a geographical reality, and therefore more likely to be assimilated to architectural and engineering works (drawings, projects, etc.) and thus also protected by a relevant right.

There are also those who have pointed out that a map containing georeferenced information (e.g. height, average temperatures, frequency of rainfall, texture of the soil, etc.) also implicitly represents a database that is subject to the *sui generis* right as well. This keen observation, however, somewhat complicates the legal qualification of the cartography.

At any rate, in addition to the licenses of wider application analyzed above, several licenses specifically conceived for geographical data have been drawn up in Europe in recent years, the most important of which are listed below.

The first is the Public Geodata License: of French origin, available in French since 2003 and currently also available as an English version dating back to June 2004. Its foreword reads: «This license applies to geographical data, attributes, and associated metadata. It applies to any derivative work, too. Its purpose is to facilitate production, exchange, and distribution of geographical data, in respect of author rights and users rights to benefit of the same liberties.» However, this license, specifically inspired by the principles of GNU GPL (including the copyleft effect), has remained at version 0.1, dating back to 2004, and therefore probably stopped at a purely experimental level[36].

Between 2004 and 2005, some British activists in the sector proposed to apply a license modeled on the Creative Commons Attribution-ShareAlike and called “Open Geodata License”. The project must have been abandoned at a very early stage (probably because of previously acknowledged legal problems), so much so that only a few traces of the license exist on the web[37].

There is no doubting the fact that the most relevant current project concerning open geographical data is OpenStreetMap, both in terms of the number of users and active participants and the level of articulation and efficiency of information (data, maps and integrated services) produced by the project.

36 See the website http://en.giswiki.org/wiki/Public_Geodata_License.

37 One of the few websites where it is possible to read the document is http://socialtapestries.com/outcomes/index.html.

At the date of writing, the geographical data of the OpenStreetMap project are released to the public with a Creative Commons Attribution-ShareAlike 2.0[38]; however a process of transition has already begun and almost completed to the Open Database License 1.0, which the OpenStreetMap Foundation considers more secure from a legal point of view[39].

In conclusion, when thinking about the legal nature of geographical data, one of the main doubts held by jurists about the effectiveness of the *sui generis* right arises. Going back to our introductory arguments on the principles of the 1996 Directive, let us remember that the *sui generis* right does not protect data itself, but rather data that is collected and organized in a database; and, above all, it comes into play when the creation of the database requires a significant investment.

Right now, 15 years since the approval of the Directive, one may wonder whether current technology has also affected the idea of "significant investment" as initially intended by the European legislator. Nowadays, in fact, any mobile phone equipped with GPS (that is, most of the devices available on the market) can be used to detect high precision geographical data which, thanks to freeware, can also be easily processed, even by non-professional users and enthusiasts[40].

Therefore, no particular investments seem to have been made in the collection, verification or presentation of data, only in the maintenance of the servers and the usage and sharing platform managed by the Open Street Map Foundation. Can this be considered a sufficient level of investment for *sui generis* protection to be applicable? Let us deliberately leave the question open.

4.2. Wikipedia as a database? The DBpedia project

DBpedia is an interesting project aimed at extracting and restructuring information from Wikipedia so that it is more easily integrated with the so-called "semantic web" or "web of data"[41].

The project activists carry out a very meticulous job of extracting data from the various Wikipedia entries and then organizing it according to predefined standards, compatible with typical patterns of the semantic web. In this way, the information from individual entries becomes more easily interpretable by on-line computers (in a word, it becomes "machine-readable")[42] and can therefore

38 Besides the license mentioned (representing the document whereby OMS geographical data is distributed to the public), it is important to consider the "Contributor Terms" which, on the other hand, represent the terms whereby the active participants in the project agree to waiving the data they have collected. The foreword of this document reads: «This contributor agreement (the "Agreement") is made between you ("You") and The OpenStreetMap Foundation ("OSMF") and clarifies the intellectual property rights in any Contents that You choose to submit to the Project in this user account. Please read the following terms and conditions carefully and click either the "Accept" or "Decline" button at the bottom to continue.» http://www.osmfoundation.org/wiki/License/Contributor_Terms.

39 «We are considering changing to the Open Database Licence ('ODbL'). This is very similar in intent to our current license, but the OSM Foundation believes it is more secure legally, and offers more clarity for both contributors and users.» http://wiki.openstreetmap.org/wiki/Legal_FAQ#What.27s_this_about_a_licence_change.3F

40 This is precisely the spirit upon which most of the Open Street Map project is based, with volunteers privately collecting, processing and sharing data according to the guidelines of the project.

41 «The Semantic Web is a "web of data" that enables machines to understand the semantics, or meaning, of information on the World Wide Web.[1] It extends the network of hyperlinked human-readable web pages by inserting machine-readable metadata about pages and how they are related to each other, enabling automated agents to access the Web more intelligently and perform tasks on behalf of users» http://en.wikipedia.org/wiki/Semantic_Web.

42 According to a famous statement by Tim Berners-Lee dating back to 1999, this is the spirit of the semantic web: «I have a dream for the Web [in which computers] become capable of analyzing all the data on the Web – the content,

be easily reused in other works.

At the date of writing, the official website of the project carried the following laconic disclaimer:

> *"DBpedia is derived from Wikipedia and is distributed under the same licensing terms as Wikipedia itself. As Wikipedia has moved to dual-licensing, we also dual-license DBpedia starting with release 3.4. Data comprising DBpedia release 3.4 and subsequent releases is licensed under the terms of the Creative Commons Attribution-ShareAlike 3.0 license and the GNU Free Documentation License. Data comprising DBpedia releases up to and including release 3.3 is licensed only under the terms of the GNU Free Documentation License."*[43]

The main doubt that may arise in the mind of a jurist is whether such a short disclaimer is sufficient to clarify the legal status of the DBpedia database. Indeed, both the Creative Commons Attribution-ShareAlike license and the GNU Free Documentation License are licenses not specifically for databases but for creative contents (and rightly so for a work of this type).

When only information in the form of data is extracted from that work in order to be included in a database, the only feasible protection becomes that of the *sui generis* right.

It is far from certain that such activity of extraction implies a derivative relationship in the most technical sense, unless Wikipedia itself is also considered a database covered by a *sui generis* right. But, if this was the case, we would again fall into an impasse which a Creative Commons License in itself would not be sufficient to resolve.

This doubt may exist all the same, even if we apply the opposite approach. Would a Wikipedia entry created using data drawn from a database protected by the *sui generis* right establish a derivative relationship with it? Take the case of an entry referring to a river or mountain, the georeferenced data for which is drawn entirely from the Open Street Map database. In the case of single entries the problem would not even arise, as the quantity of extracted data would not be sufficient to trigger the prohibition concerning the extraction and reutilization of data required by the Directive[44]. But the situation would be quite different if, for example, it occurred with all the rivers or mountains in a specific area. In this case, would a Wikipedia entry created in this way have a derivative relationship with the Open Street Map database? If the answer is yes, a problem of compatibility between the licenses for the two projects would arise.

As can be seen, in both the case of open georeferenced systems and that of DBpedia, the issue becomes intricate and genuinely complex; and, in the end, does nothing more than highlight the weak points of an extremely unclear right such as the *sui generis* right.

links, and transactions between people and computers. A 'Semantic Web', which should make this possible, has yet to emerge, but when it does, the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines. The 'intelligent agents' people have touted for ages will finally materialize.»

43 http://wiki.dbpedia.org/Imprint

44 As seen, in the text of the Directive, reference is in fact made to "all or a substantial part of the contents of a database". According to Italian law (Court of Catania 8-1-2001), a non-substantial part of a database is represented by an insignificant percentage of the data contained therein (quantitative criterion), which does not present systematic coordination therein (qualitative criterion), so that it cannot, per se, be defined and used as a database, and the reproduction and distribution of which is totally insufficient for devaluing the database protected by the *sui generis* right.

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Licence and Attribution

This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Simone Aliprandi (2012) 'Open licensing and databases', *IFOSS L. Rev., 4(1),* pp 5-18
DOI: 10.5033/ifosslr.v4i1.62

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GPL “Liberty or Death!” Clause: An Israeli Case Study

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DOI: 10.5033/ifosslr.v4i1.63

Abstract

This Article analyzes Section 12 of the GPL in light of a national statutory regime that directly conflicts with some of the core requirements of the license. The Israeli Encouragement of Industrial Research and Development Law restricts an entity's ability to disclose source code or provide certain licenses required under the GPL. This article analyzes the application of the GPL in this particular statutory setting, but also bears on broader interpretative issues raised when the GPL conflicts with local law. The article also discusses the purpose and scope of Section 12, and highlights the potential consequences of ignoring the impact of local regulatory issues in assessing the effect of the GPL.

Keywords

Law; Free and Open Source Software; GPL, Section 12

Introduction

This Article analyzes Section 12 of version 3 of the General Public License (the “GPL”) in light of a national statutory regime that directly conflicts with some of the core requirements of the license. Section 12, which has been referred to as the GPL's “Liberty or Death” clause,[1] is an attempt to ensure that the freedoms granted by the GPL are not taken away by other statutory, judicial or contractual obligations. In pursuing this goal, Section 12 provides that users who are not able to comply with the obligations of the license may not convey a licensed work at all.

The Israeli Encouragement of Industrial Research and Development Law (the “R&D Law”) restricts an entity's ability to comply with several obligations of the GPL, including the obligation

1 The first draft of Version 3 of the GPL titled this section “Liberty or Death for the Program,” but this colourful title was changed to the only slightly less provocative “No Surrender of Others' Freedom” in the second draft of the license. Unless stated otherwise, all section references in this article are to version 3 of the GPL.

to distribute source code. As such, when the R&D Law applies to a GPL-licensed program, it directly conflicts with the core requirements of the license and triggers the application of Section 12. The analysis here clarifies the application of the GPL in this particular statutory setting, but also bears on broader interpretative issues raised when the GPL conflicts with local law. In addition, the article discusses several questions regarding the purpose and scope of the “Liberty or Death” clause. The analysis also highlights the potential consequences of ignoring the impact of local regulatory issues in assessing the effect of the GPL, as well as providing lessons for the structuring of similar regimes in other countries.[2]

In full, Section 12 provides:

> *If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.*

Several interpretative issues are immediately raised by the language of the provision. First, it is not immediately clear what operative purpose the provision serves, since Section 8 of the GPL in any event provides that distribution of a program in violation of the license “automatically” terminates the licensee's rights under the GPL. Second, it is clear that the primary concern of the provision seems to have been the threat posed by patent litigation and consequent settlement and licensing arrangements.[3] As such, the provision expressly refers to the “court orders” and “agreements” that “contradict the terms of this License,” but glosses over the possibility that national law or regulations may also conflict with the terms of the GPL. In a similar vein, the example in the provision directly addresses the possibility that a licensee may be subject to a separate agreement that would obligate it to collect a royalty for distributing a GPL-licensed work, but does not address the possibility that local law may contradict the terms of the license. Nevertheless, the broad drafting of the provision seems to state that Section 12 is triggered by any obligations that contradict the terms of the license, whether that obligation is judicial, contractual or statutory.

Version 3 of the GPL made some minor changes to the previous formulation of this clause in version 2 of the license. First, the initial sentence of the clause was revised slightly to clarify that, in addition to the judgments of a court, the provision also covers contractual agreements and

2 The Canadian Province of Ontario, for example, has considered imitating this Israeli regime. See http://www.thestar.com/news/ontario/article/814123--israeli-scientific-success-convinces-premier-mcguinty-to-name-a-chief-scientist-to-advise-government.

3 The threat posed to free and open source software by the possibility that patent license agreements may require the collection of royalties for the distribution of such software is a motif than runs through the GPL. For example, the third through fifth paragraphs of Section 11 of the GPL address the issues raised by the Microsoft/Novell patent settlement of 2006, pursuant to which Novell agreed to pay royalties to Microsoft in consideration for Microsoft not bringing patent litigation against Novell's Linux software. For a broader discussion of this topic, see Free Software Foundation, GPLv3 Third Discussion Draft Rationale, at Section 3.4.4, *available at* gplv3.fsf.org/gpl3-dd3-rationale.pdf.

settlement arrangements that contradict the conditions of the license. Second, version 3 of the GPL omitted the severability provision which was previously included in the license. The severability provision had stated that:

> *If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.*

The deletion of this provision was a tactical decision made by the drafters of the GPL in the belief that this omission would ensure that all provisions of the GPL are held up in court.[4] Third, the previous version of the GPL had included a relatively lengthy explanation of the rationale behind this provision of the GPL, and this explanation was omitted in version 3 of the license.[5]

This article examines the provisions of Section 12 in light of the specific requirements of the Israeli R&D Law. Section II provides a short summary of the goals and requirements of the R&D Law. Section III provides an in-depth discussion of how these requirements contradict the obligations of the GPL. Section IV discusses the operative effect of Section 12 given the contradicting requirements between the GPL and the R&D Law. Section V concludes by suggesting an explanation of the purpose served by Section 12.

The Israeli Research and Development Law

The Israeli R&D Law was adopted in 1984, and provides a statutory framework for the grant of government seed money to Israeli technology start-up companies.[6] The R&D Law established the Office of the Chief Scientist ("OCS") which, as a part of its general mission to assist in the development of technology in Israel, reviews and approves grants for industrial research and development. The R&D Law requires the OCS to consider, in determining whether to award a grant, the economic benefit of the technology to Israel. In 2010, the OCS disbursed approximately $400 million in grant money to some 600 companies.[7] The impact of OCS funding is significant in encouraging the growth of the Israeli hi-tech industry, and it is not unusual for Israeli software companies to be the recipients of substantial OCS seed funding.

OCS grants are not "free money" – they are typically structured such that commercial success of

4 See Free Software Foundation, GPLv3 First Discussion Draft Rationale, Section 2.1, *available at* http://gplv3.fsf.org/gpl-rationale-2006-01-16.html.

5 Section 7 of version 2 of the GPL had provided that "[i]t is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice." While this provision did state that the purpose of the section was "protecting the integrity of the free software distribution system," this does not help to explain the operative necessity of the provision in the context of the license.

6 The OCS has provided an unofficial translation of the R&D Law, which is available at http://www.tamas.gov.il/NR/exeres/9F263279-B1F7-4E42-828A-4B84160F7684.htm. This unofficial translation has not yet been updated to reflect all current amendments to the law.

7 http://www.moit.gov.il/NR/rdonlyres/83C79A59-DCCE-4950-8257-DE48B9D0B9DC/0/IncentivePrograms.pdf

the funded technology obligates the receiving company to make payment of “royalties” to the OCS.[8] These are typically calculated as a percentage of sales. In addition to these payment obligations, the R&D Law restricts the transfer of intellectual property and other know-how developed as a result of the grant.[9] Moreover, grant recipients are typically required by the OCS to execute written undertakings in which the recipient expressly agrees not to transfer rights to OCS-funded technology without the consent of the OCS. The OCS typically approves transfers of such intellectual property between Israeli entities, provided that the transferee accepts all obligations associated with the grant. Transfers of rights to OCS-funded technology outside of Israel, if approved by the OCS, are usually subject to the payment by the grant recipient of a lump-sum amount, calculated pursuant to complex statutory formulas. The R&D Law does not provide clear guidance regarding the grant of licenses to OCS-funded intellectual property and, in actual practice, the OCS scrutinizes such transactions, may prohibit the grant of such licenses, and can require the payment of royalties prior to the approval of any such transaction.[10]

The OCS has put forth a broad interpretation of the kind of know-how and intellectual property that is subject to the transfer restrictions of the R&D Law. As such, the OCS requires its consent both for a transfer of the legal rights in any grant-developed know-how, as well as for a transfer of the substance of such know-how. In the context of software, for example, the position of the OCS is that the source code of software developed with grant monies may not be transferred without OCS consent. The OCS has further opined that commercial source code escrows may violate the transfer restrictions of the R&D Law unless they comply with specified requirements, including regarding release conditions. In addition, the position of the OCS is that any license granted pursuant to the release of a source code escrow must be limited to the maintenance and support of the escrowed code. The escrow agreement is also subject to the approval of the OCS.[11]

The royalty obligations and transfer restrictions imposed by the OCS and the R&D law have become increasingly important for commercial entities seeking investment or looking to be acquired. International acquisitions of Israeli companies can involve extensive negotiations with the OCS regarding the transfer of intellectual property and the amount of “royalties” to be paid. In addition, investment agreements and merger or acquisition agreements typically incorporate representations that the company is in compliance with the R&D Law and any undertakings towards the OCS.

8 It should be noted that this requirement for the payment of royalties to the OCS does not seem to violate the GPL. Sections 10 and 12 of the GPL only address the collection of royalties by the distributing entity, not the payment of royalties by the distributing entity for the right to distribute the licensed work. In addition, section 11 of the GPL only prohibits the payment of royalties to a “third party that is in the business of distributing software”, such as with regard to Novell's 2006 agreement to make royalty payments to Microsoft.

9 Section 19(b1) of the R&D Law provides that with respect to OCS-funded research that “[k]now-how … and any right deriving therefrom will not be transferred to another outside of Israel except in accordance with the provisions of section 19B.” Section 19(c) of the R&D Law also provides that the approval of the applicable committee of the OCS, as well as the satisfaction of certain other requirements, is required for the transfer of OCS-funded intellectual property within Israel.

10 Section 19(j) of the R&D Law provides that regulations shall be promulgated regarding the grant of licenses for the use of OCS-funded technology outside of Israel. No regulations have as of yet been enacted pursuant to this provision. As such, it can be difficult to obtain authorization from the OCS for licensing transactions.

11 For an English translation of the OCS letter setting forth its position, see http://www.moit.gov.il/NR/rdonlyres/C4BD683E-D888-4929-B819-FBA809C3A179/0/nemanuteng.doc

Conflicts

The requirements of the GPL clearly conflict with any obligations a company may have under the R&D Law or pursuant to any separate contractual undertaking to the OCS. Before describing the conflicts in more detail, it should be emphasized that the OCS has not expressed any public position nor promulgated any regulations regarding the effect of the R&D Law on FOSS. In informal conversations, however, individuals at the OCS have stated that under appropriate circumstances – for example, as part of an economically justified dual-licensing strategy – the office may consent to the GPL-licensing of funded software. Even so, in the absence of such consent, the OCS does seem to take the position that the R&D Law prohibits the release of grant funded software under the GPL.

Several conflicts may arise between the GPL and the requirements of the R&D Law. Of course, the most obvious tension between the two is the GPL's requirement that the source code of distributed works be disclosed. As noted, the position of the OCS is that funded source code may generally not be transferred without its consent. As such, recipients of OCS funds may not be permitted to provide source code under the GPL, or combine their software with GPL-licensed programs in a manner that would require disclosure of their own software code. Closely related to this conflict are the restrictions imposed by the OCS on the licensing terms of released source code. The GPL not only requires that distributors provide source code, but commands that this code be provided under the GPL's own licensing terms. The provision of source code pursuant to a more restrictive set of licensing terms is a violation of the GPL's requirements. As noted above, the OCS imposes substantial restrictions on the licensing terms pursuant to which source code may be released. These two conflicts would seem to clearly preclude use of the GPL and GPL-licensed software for release by OCS funded companies.

Some conflicts between the GPL and the R&D Law may be less obvious, though no less problematic. Such conflicts may even restrict an entity's freedom to apply the GPL to software that was not directly developed with OCS funds. Section 11 of the GPL, for example, provides that any contributor to a GPL-licensed program grants a “non-exclusive, worldwide royalty-free” patent license to all patents owned or controlled by the contributor.[12] This broad patent license can conflict with a party's statutory obligations under the R&D Law: as described above, the interpretation of the OCS is that licensing arrangements may also be restricted by law. As such, OCS-funded entities may not be legally able to grant the patent license required by the GPL with respect to patents where the technology underlying the patent was funded with OCS grants. As such, even if specific source code was not funded with OCS grants, an OCS-funded entity may not be permitted to release it under the GPL if that entity owns or controls other relevant patents that were developed with OCS funds.[13]

12 Section 11 defines “control” as the “right to grant patent licenses in a manner consistent with the requirements” of the GPL. As such, under the GPL, an OCS-funded entity which also licenses third party patents would not be required to grant licenses to such patents if it is legally unable to do so according to the R&D Law. The GPL, however, contains no similar exception for owners of patents, who are required to grant the Section 11 patent license in respect of all patents to which they hold title.

13 While this article focuses on the restrictions that the R&D Law imposes with respect to the GPL itself, it should be noted that the inability of an OCS-funded entity to grant patent licenses may affect the ability of such entity to contribute code to any open source software project. The contribution agreements required by many open source projects contain express patent license provisions which an OCS-funded entity may not be able to grant. See, for example, Section 3 of the standard Apache Software Foundation Software Grant and Corporate Contributor License

OCS-backed companies may even be restricted in their ability to link their own proprietary programs with GNU Lesser General Public License (LGPL) -licensed programs. Section 4 of the LGPL provides that the conveyor of a program which uses an LGPL-licensed library must convey its own software in a form and under terms that allow “modification of the portions of the Library contained in the Combined Work, and reverse engineering for debugging such modifications.” Section 4 may also require that the program of the OCS-funded entity which uses the library be provided “under terms that permit the user to recombine or relink” this program with a modified version of the LGPL-licensed library.[14] As noted above, the OCS restricts the licensing terms which may be applied to source code developed with OCS funds. Indeed, the OCS is typically especially sensitive about licensing terms that allow for modification or development. As such, recipients of OCS funding may be unable to provide their proprietary software under the license terms required by Section 4 of the LGPL.

Liberty or Death

The previous section detailed several possible conflicts that may arise when an OCS-funded entity wishes to distribute a work pursuant to the GPL. These conflicts impact different types of obligations under the GPL. The first conflict involved statutory restrictions on the freedom of an OCS-funded entity to provide source code with respect to OCS-funded technology. This conflict involves a clear legal restriction on the ability of the OCS-funded entity to comply with the core purpose of the GPL. The receipt of source code is central to the GPL: a downstream licensee that cannot receive the source code of licensed works will not be in any position to exercise its freedom to modify and redistribute GPL-licensed software. The second and third conflicts raised by the R&D Law, however, involve restrictions on the granting of legal license rights (source code and object code pursuant to GPL licensing terms and the GPL patent license) rather than a tangible item (the actual source code). The fact that a distributor is restricted from granting the required patent license, for example, may never have any actual practical effect on the recipient of any GPL-licensed source code. The fourth potential conflict relates to the inability of an OCS-funded entity to grant a right under the LGPL, a right that seems less central to the goals of FOSS than the obligations listed above. The fourth conflict only limits a licensee's legal right to reverse-engineer programs that make use of LGPL-licensed works, but does not restrict the freedom to use the LGPL-licensed work itself. Again, the fact that a distributor is restricted from granting such permissions may never have any practical effect on the recipient of the LGPL-licensed code.

Does Section 12 of the GPL differentiate between the restrictions listed above? On a purely literal level, the language of Section 12 applies to a licensee's inability to comply with its “obligations” under the license. It is possible to interpret this provision as applying only to a licensee's inability to comply with the tangible obligations of the GPL (providing source code) and not its less concrete requirements (the grant of intangible legal rights). This interpretation, however, would seem to undermine the purpose of the GPL, as Section 12 would not be triggered as long as the OCS-funded entity technically complied with its obligation to provide source code, even if it was

Agreement, *available at* http://www.apache.org/licenses/cla-corporate.txt.

14 This latter requirement would apply when distributing the LGPL-licensed library statically linked to other code. Alternatively, Section 4(d)(1) of the LGPL may allow distributors to dynamically link to the LGPL-licensed library with “a suitable shared library mechanism,” as that term is defined in the license.

unable to grant the necessary legal rights to make use of the code. As such, it seems more likely that Section 12 provides that that the inability of an entity to comply with any obligations of the GPL –including the inability to grant an intangible right such as a patent license –completely precludes such entity from distributing GPL-licensed code in any manner. In addition, it should be noted that Section 12 does not grant the restricted entity the choice to disregard its alternative statutory or contractual obligations and instead comply with the obligations imposed by the GPL. The blunt language of Section 12 seems to provide that the simple existence of any restrictions on the ability of an entity to comply with the license completely bars the entity from conveying any licensed code.[15]

How would Section 12 be interpreted under Israeli law?[16] As with other legal systems, Israeli law provides that a contract which contravenes applicable law is void.[17] At the same time, and again as with other legal systems, Israeli law does provide for the severability of contracts, provided that the contracting parties have agreed to such severability.[18] According to the principle of severability, a court may enforce the lawful part of a contract while ignoring any unlawful parts. Section 12 of the GPL seems to clearly provide that the drafters of the GPL did not intend that the license be severable in this regard: according to the language of Section 12, any restriction on a potential conveyor's ability to comply with any condition of the license seems to mean the loss of all rights to convey the licensed work, regardless of whether the conveyor may comply with other conditions of the license. Of course, courts typically have broad latitude in interpreting contracts, and it is quite difficult to predict how a court would approach tensions between the GPL and conflicting law. Nevertheless, the drafters of the GPL seem to have made clear what they perceive the preferred outcome of any such conflict to be. [19]

15 But see Lawrence Rosen, Open Source Licensing: Software Freedom and Intellectual Property Law 134 (2005) (interpreting the parallel provision in version 2 of the GPL to mean that "it will take more than the threat of patent infringement to invoke this provision. An actual patent dispute has to be alleged and either litigated or settled"). This interpretation of version 2 of the GPL may be correct with respect to obligations imposed as a result of patent litigation. The broader language of version 3 of the GPL, however, as interpreted in the context of a clear legal restriction on complying with the obligations of the GPL, would seem to imply that the mere existence of statutory restrictions (even without a court order that requires the party to comply with these restrictions) would be enough to invoke the "Liberty or Death" clause.

16 While this Article focuses on the effect of Section 12 under Israeli law, it is possible that suits regarding the conflict between the GPL and the Israeli R&D Law would be brought in non-Israeli courts. For example, a suit to obtain an injunction to prevent a foreign licensee from using OCS-funded software pursuant to the GPL may need to be brought in the jurisdiction of such foreign licensee. Such cases would raise complex questions of illegality under foreign law.

17 See Section 30 of the Law of Contracts – 1973 (the "Law of Contracts"). This discussion skirts the question of whether the GPL should be considered a contract or a license. In any event, the principles for interpretation of licenses under Israeli law likely does not differ very much from the principles for the interpretation of contracts. See TONY GREENMAN, ZEHUYOT YOZRIM, "Copyright", 2nd ed. 2008, at 573.

18 Sections 19 and 31 of the Law of Contracts provide that an illegal contract may be severable. Gabriella Shalev, Contract Law 268 (1990), notes that the question of whether a particular contract is severable depends on the parties' intent.

19 This article has focused on the interpretation of the GPL. Of equal practical importance, however, are the consequences to an OCS-funded company that has violated its statutory obligations to the OCS by granting licenses or source code pursuant to the GPL. The R&D Law does not expressly address the effect of licenses (or other rights in intellectual property) granted in violation of the law. For example, the R&D Law does not expressly provide that a license granted in violation of the R&D Law should be "unwound." Nevertheless, such contracts may be deemed void under Section 30 of the Contracts Law. See *supra* text accompany note 17. In addition, section 45 of the R&D Law does provide that violations of the law may result in the requirement to return OCS grant money plus interest, and may preclude a violator from obtaining any further grant money. In addition, the OCS may potentially attempt to obtain additional amounts from the OCS-funded company in respect of any economic benefit received from the grant of the prohibited license. While licenses under the GPL will generally be granted at no or minimal cost, Section 19B(6)

What happens if the licensed work is conveyed in violation of Section 12? First, such distribution would result in the termination of all rights under the license. Section 8 of the GPL expressly provides that attempts to “propagate or modify” a work in violation of the license “will automatically terminate your rights”. On the one hand, Section 12 would not seem to affect the rights of any downstream recipients of the licensed work. Section 10 of the GPL provides that “[e]ach time you convey a licensed work, the recipient automatically receives a license from the original licensors to run, modify, and propagate that work, subject to this License.” Section 10 does not differentiate between situations in which the conveyor has or does not have the rights to distribute the licensed work. In addition, Section 8 provides that “[t]ermination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License.” As such, it seems that any actual downstream recipient continue to receive all applicable rights under the GPL, even if Section 12 prohibits the distribution of that work by a particular recipient. On the other hand, and especially with respect to the patent licenses granted under Section 11 of the license, it is difficult to see a local court enforcing a license granted in violation of applicable law.

Conclusion

One of initial questions raised by this article concerned the operative purpose of Section 12. The discussion has shown that Section 12 operates as an anti-severability clause. In other words, according to Section 12 a court may not pick and choose among the distribution rights granted by the GPL and the conditions imposed on the exercise of those rights. If any condition is unenforceable, whether as a result of statute, contract or judicial decision, then no distribution rights are granted under the license. The effect and interpretation of severability and anti-severability clauses will obviously vary depending on the jurisdiction and the specific facts and circumstances. In Israel at least, a court will generally give effect to the wishes of the parties concerning the severability of the provisions in an agreement.

It may be more appropriate to call Section 12 a **limited** anti-severability clause, since it only addresses the right of a licensee to distribute a licensed work, but does not demand that the right to use a work be restricted together with the loss of any distribution right.[20] Section 2 of the GPL allows the use of a licensed work “so long as the license otherwise remains in force.” As such, so long as a user has actually complied with the terms of the GPL (and not distributed a licensed work without complying with the applicable conditions), the effect of Section 12 should not be to make a user lose its rights to run or otherwise use a licensed work.[21]

grants the OCS broad powers to recalculate due amounts based on any actual economic benefit gained by the OCS-funded company by granting the license. In addition, it should definitely be noted that Section 47A of the R&D Law provides that individuals who transfer know-how in violation of the R&D Law can be subject to three years imprisonment.

20 Similarly, the loss of distribution rights pursuant to Section 12 in one specific situation will not lead to the loss of distribution rights in other factual situations in which Section 12 is not implicated. Section 17 of the GPL provides an addition example of how the Section 12 anti-severability clause does not apply to all rights under the license. Section 17 provides that if the disclaimer of warranty and limitation of liability provisions in the license “cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.”

21 This understanding of Section 12 as a “limited” anti-severability clause may help in interpreting Section 7 of version

The GPL, as well as other open source licenses, are somewhat unique as legal documents, as they are in broad use throughout the world, and yet may not specify that they are governed by the law of any specific jurisdiction.[22] Such licenses present the possibility of being interpreted differently in various jurisdictions, as well as the possibility of conflicting with the local law of any number of jurisdictions. This article, in reviewing a specific conflict that may arise between the GPL and local Israeli law, has highlighted the GPL's approach to such conflicts, as well as potential questions that such approach may raise. As with other issues raised by the GPL, resolving these questions of interpretation may need to wait for the decision of a court faced with concrete facts and circumstances.[23]

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2.0 of the GPL, which contained both an earlier version of Section 12 (which this article has interpreted as an "anti-severability clause") as well as a standard severability clause. See *supra* text accompanying note 4. As with our understanding of Section 12 in GPLv3, the effect of the two somewhat contradictory clauses in GPLv2 may be to withhold rights of distribution even while continuing to grant rights of use.

22 See Free Software Foundation, GPLv3 Second Discussion Draft Rationale, n.70, available at gplv3.fsf.org/gpl3-dd1to2-markup-rationale.pdf (stating that choice of law clauses "are typically found in license documents drafted from a contract-oriented perspective" but are in the opinion of the Free Software Foundation incompatible with the GPL).

23 Other commentators have pointed out other possible conflicts between the GPL and local law. Such conflicts would of course also raise questions under Section 12. Rosen, *supra* note 12 at 132, points out that the GPLv2 requirement that licensed works be distributed "at no charge" could raise another potential conflict between the GPL and local antitrust law. Section 10 of GPLv3 imposed a similar requirement that conveyors may not "impose a license fee, royalty, or other charge for the exercise of rights" under the license. But see *Wallace v. International Business Machines,* 467 F.3d 1104 (7th Cir. 2006) (stating that "[t]he GPL and open-source software have nothing to fear from the antitrust law"). As the requirements of antitrust law can be vague and hard to apply without the guidance of a court decision, especially in the context of open source licensing, it would be difficult to pronounce how Section 12 should be interpreted in these circumstances.

Licence and Attribution

This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Greenbaum, Eli (2012) 'GPL “Liberty or Death!” Clause: An Israeli Case Study', *IFOSS L. Rev.*, 4(1), pp 19 - 28
DOI: 10.5033/ifosslr.v4i1.63

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The Gift that Keeps on Giving – Distribution and Copyleft in Open Source Software Licenses

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DOI: 10.5033/ifosslr.v4i1.66

Abstract
Copyleft obligations in licenses like GPL version 2 are triggered by "distribution," but what exactly does that mean? This article examines the question of what constitutes distribution under U.S. copyright law, and how that question plays out in complex business settings where free software thrives today.

Keywords
Law; copyright; software; copyleft

Info
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In 1991, version 2 of the GNU General Public License was released. GPLv2, the most popular and controversial of open source software licenses, sparked a revolution in software licensing. Under its “copyleft” scheme, anyone distributing the licensed software, or derivative works of it, was required to make available source code, and offer that source code on GPLv2 terms.

Over the past two decades, as the popularity of GPL-licensed software like the Linux kernel has skyrocketed, the requirements of GPLv2 have driven business and technical strategy in the information technology market. Those in private industry therefore have placed significant economic resources at stake, hinging on the precise meaning of certain terms of GPLv2. One of those is the question of what constitutes “distribution” – the act that triggers the copyleft requirements of GPLv2. Using and modifying a program are allowed under the GPL without restriction, but when distribution occurs, the copyleft obligations apply. Companies struggle every day to identify what constitutes distribution, and often to avoid it, in order to avoid expending technical and legal resources on complex GPL compliance analysis. This article summarizes the

open questions, and how those questions can be considered and resolved in everyday practice.

An American Term of Art

The GPL is at essence a conditional copyright license, and has no choice of law provision. Therefore, theoretically, only an action regulated by the applicable copyright law can trigger application of its copyleft conditions. In the United States, the "commercial right" of copyright is called distribution or publication. Therefore, in the United States, the question of what triggers copyleft obligations is considered to be identical to what constitutes distribution under copyright law.

GPL version 3, or GPLv3, which was released in 2007, attempted to internationalize the license to fit with local variations on this concept, by using neutral words such as "propagate" and "convey." Unlike its successor, GPLv2 specifically names distribution as the trigger for copyleft requirements. GPLv2 remains in wide use – and particularly is the license applicable to the Linux kernel, so the question of what constitutes distribution under GPLv2 is still alive and well in the open source world.

Distribution, though one of the enumerated rights of copyright under U.S. law, is not defined in the Copyright Act (Title 17 of the United States Code). Title 17 grants a copyright owner the exclusive right to "*distribute copies…of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending*."[1] The Act states that "*offering to distribute copies…to a group of persons for purposes of further distribution, public performance, or public display, constitutes publication*."[2] – but this does not define distribution. Where a statute's terms are ambiguous on its face, the rules of statutory interpretation allow us to look to the statute's legislative history. The 1976 House Report[3] also does not define "distribution", but defines "publication" in the negative by saying, "*any form of dissemination in which a material object does not change hands – performances or displays on television, for example – is not publication*."[4] Later case law equated distribution with publication.[5]

Section 106(3) of the Copyright Act accords to the copyright owner the exclusive right "*to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending*." Put differently, the copyright owner has the exclusive right publicly to sell, give away, rent or lend any material embodiment of his work.[6] As the legislative history of this Section shows, the definition of "distribution" is "*virtually identical with that in the definition of 'publication' in section 101*."[7] Thus, in essence, exclusive right of distribution is a right to control the work's publication.

In the United States, therefore, distribution means providing a tangible copy to another person.

1 17 U.S.C. Section 106(3).
2 17 U.S.C. Section 101.
3 H.R. Rep. No. 94-1476.
4 See http://copyright.gov/circs/circ1.html.
5 *Harper & Row Publs., Inc. v. Nation Enters.*, 471 U.S. 539, 552 (1985).
6 *National Car Rental Sys., Inc. v. Computer Assocs. Int'l, Inc.*, 991 F.2d 426, 430 (8th Cir. 1993).
7 *Reg. Supp. Rep.*, p. 19.

The question of what constitutes distribution therefore devolves to two questions: what is a tangible copy and what is another person?

The transfer of the work must be made "to the public" in order to trigger the definition of "distribution" under the Copyright Act. In the absence of a statutory definition of the phrase "to the public," courts have held that a "limited" distribution that "*communicates the contents of a manuscript to a definitely selected group and for a limited purpose, and without the right of diffusion, reproduction, distribution or sale*," is not distribution to the public.[8]

In other words, a distribution is a "general" publication if it is not made (1) to a limited group, (2) for a limited purpose, and (3) "without the right of diffusion, reproduction, distribution or sale." The legislative history of the Copyright Act makes clear that, "*when copies or phonorecords are offered to a group of wholesalers, broadcasters, motion picture theaters, etc., publication takes place if the purpose is further distribution, public performance, or public display*."[9] Thus, even if the work is distributed to a single person or entity, the publication would be general if the recipient is free to diffuse, reproduce, distribute, or sell copies of the work.

In the contemporary world of information technology, many activities stray close enough to a transfer of a copy to challenge the boundaries of this definition. It is these activities that make the question of what is distribution under GPL of such great interest to companies implementing day-to-day strategies for GPL compliance. Starting at the baseline, the most obvious business case is that of a distributed product. Whether the product is software alone, or a hardware product as well, business people understand what it means to sell a product and for it to change hands. Companies trying to comply with open source licenses like GPLv2 therefore have more difficulty assessing activities that they do not consider to be the business case of commercial distribution, but that may nevertheless constitute distribution under the law. Below, this article discusses those other business cases, from the clearest to the murkiest, as a matter of law.

A Clear Case in the Clouds

Companies constantly ask whether software transmissions or remote use – sometimes called the ASP or SAAS model, or cloud computing – constitute distribution.

While this is one of the most controversial aspects of free software licensing, it is not a troublesome interpretation issue under U.S. law for GPLv2. Advocates of free software have long recognized that if the trigger for copyleft requirements is distribution, increasingly popular cloud computing models will circumvent those requirements. This is sometimes referred to as the "ASP loophole."[10]

8 *White v. Kimmell,* 94 F. Supp. 502, 505 (S.D. Cal. 1950); *Data Cash Sys., Inc. v. JS&A Group, Inc*., 628 F.2d 1038, 1042-43 (7th Cir. 1980) (concluding that "a 'limited publication' is really in the eyes of the law no publication at all"); *John G. Danielson, Inc. v. Winchester-Conant Props., Inc.*, 322 F.3d 26, 36 (1st Cir. 2003); *Brown v. Tabb,* 714 F.2d 1088, 1091 (11th Cir. 1983); *William A. Graham Co. v. Haughey,* 430 F. Supp. 2d 458, 470 (E.D. Pa. 2006); *Milton H. Greene Archives, Inc. v. BPI Commc'ns, Inc.,* 378 F. Supp. 2d 1189, 1198 (C.D. Cal. 2005); *Penguin Books U.S.A., Inc. v. New Christian Church of Full Endeavor, Ltd.*, 288 F. Supp. 2d 544, 555 (S.D.N.Y. 2003).

9 H.R. Rep. No. 94-1476, at 138 (1976).

10 The term is often attributed to Richard Stallman, but that may not be accurate. See the interview with Mr. Stallman in Groklaw, in which he says the term is misleading. http://www.groklaw.net/articlebasic.php?

During the drafting of GPL version 3, this issue engendered significant controversy. At one point, a variation on GPLv3 was proposed to allow the author to select an option that would cause online use to trigger copyleft requirements. Ultimately, this variation was removed from GPLv3 and memorialized in an alternative form of the license known as the "Affero GPL." The basic form of GPLv3 makes clear that ASP or SAAS use does not trigger copyleft requirements. In GPLv3, copyleft is triggering by "conveying" rather than distribution, and "*To 'convey' a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying*."

Under US law, distribution requires actual transfer of a copy, in whatever form. Therefore, under US law, SAAS use – which involves the access of software without transfer of a local copy to the user – does not trigger copyleft requirements.[11]

The Edge Cases

Leaving aside the two relatively clear business cases of a distributed product (which clearly constitutes distribution) and pure SAAS deployment (which does not), we turn to some of the edge cases that also are common business activities, but do not fall so neatly on one side of the distribution coin or the other.

- **Employees**. While companies often worry about this case, it is not a difficult one. Clients often ask whether "internal distribution" within a corporation triggers copyleft requirements. However, under law, there is no such thing as "internal distribution," because corporations and their employees are considered a single legal person. Therefore, the act of one employee in a corporation providing a copy of software to another employee is clearly not distribution; while it may be a transfer of a copy, it is not a transfer to another person. Free software advocates sometimes refer to this as providing "private copies."
- **Independent contractors – individuals.** Companies often engage individuals as independent contractors rather than employees. Emerging companies in particular do this to avoid the regulatory overhead costs (such as employment taxes) associated with hiring employees. The function of the contractor in such cases is nearly identical to that of an employee; however, because the contractor is not an employee, providing a copy of software to the contractor could be considered distribution. This is one of the thornier areas of GPLv2 interpretation, and it is discussed in more detail below.
- **Independent contractors – consulting firms.** Companies often hire small consulting firms to develop, test or support software. These consultant entities often consist of a few persons working in a team, but their functional relationship to the company is similar to that of an individual consultant or an employee. Individuals in small consulting firms are not legally employees of the company, and therefore providing a copy to them is probably distribution. However, there may be arguments

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11 It is worth considering that even in SAAS implementations, some components may be distributed. Today, most SAAS is accomplished only via a browser, so client software is no longer a common requirement to use SAAS. However, there are always exceptions, mostly notably Javascript, or mobile applications. Keep in mind that these are usually clearly distributed and would be subject to copyleft requirements.

that the copies are not intended for public availability, and thus transferring them is not publication, and therefore not distribution. This argument has risks, but is probably supportable under law, particularly if buttressed by a written consulting agreement that recites the parties' intentions. This business case is very similar, in a legal sense, to the engagement of an individual contractor.

- **Independent contractors – outsourcing.** Larger companies often outsource entire business areas such as software development or software support. Outsourcers are clearly separate companies, rather than employees, and therefore providing a copy to them is clearly providing a copy to a person other than the company. However, some outsourcing companies provide "leased" staff to work on servers and equipment owned or controlled by their customers. In this case, IT companies may reasonably make arguments that copies made available to those persons have not been transferred outside the companies' control. This argument may be less successful, however, for outsourcers that are outside the U.S. – as most are. The international divide may make it unclear which body of law will determine what is "distribution" under GPL.
- **Subsidiaries and affiliates.** Companies often create affiliate structures to conduct business, for various strategic reasons such as tax planning, the need to do business in other countries through local entities, or creating entities to engage in a particular line of business. For example, a company may use a copy of the Linux kernel, which it has modified for its own purposes, to run an on-line service. It may provide this modified kernel to a subsidiary or affiliate in Europe or China to offer a local service. For tax, regulatory, or other reasons, it may be important to locate the servers for the business in Europe or China in those territories. If the recipient entity is a wholly-owned subsidiary of the company, the company has a good argument that, due to unity of ownership, the copy is a "private copy" that has only been given to the company itself, and therefore no distribution has taken place. This argument is also reasonably strong for a majority-owned affiliate, because the parent effectively exercises control over the affiliate.[12] But if the recipient is a minority-owned affiliate, the company faces a more serious concern over whether distribution has taken place. This scenario is quite common, particularly where companies have little option but to create minority-owned operating entities in territories, like India or China, that impose significant restrictions on foreign ownership of businesses operating within their borders.
- **Mergers and acquisitions.** U.S. law can be quirky and counter-intuitive on the subject of assignments by operation of law in connection with mergers and acquisitions. An assignment of a contract (or a license) occurs when one party to the contract transfers its rights to another. Therefore, for instance, if a corporation enters into an agreement with another party, it may be able to transfer that agreement to another corporation – depending on what the agreement has to say about it. Contracts are generally considered assignable under U.S. law,[13] but intellectual property licenses are subject to different rules. Generally, non-exclusive copyright

12 In addition, because the copyleft requirements of GPL only allow binary recipients to seek source code copies, where the recipient is a majority-owned affiliate, the issue may be moot; the recipient would simply never make the request.

13 Other than special kinds of contracts, where assignment would change the basic nature of the contract, like contracts for personal services or requirements contracts. See Restatement (Second) Contracts, Section 317.

and patent licenses are not assignable.[14] Therefore, if a corporation takes a non-exclusive license to a patent, it cannot transfer it to another corporation unless the license agreement expressly allows transfer. To make matters even more complicated, there are courts that have held that an acquisition – even a transaction such as a reverse triangular merger in which the target entity survives – can be an assignment by operation of law. Even if the licensee is the same corporation before and after the acquisition, the license may not be exercisable after the transaction. This rule of law may also have implications for the definition of distribution. If a change of control is an assignment by operation of law, one might logically conclude that it also constitutes providing a copy to another entity, and thus a distribution triggering copyleft obligations. Keep in mind, also, that the effectuation of some forms of M&A transactions such as asset sales are clearly assignments, and also likely to constitute distribution as well under GPLv2.

- **Productization.** Although this business case is not complex from a legal standpoint, it is such a frequent trap for companies managing open source compliance that it is worth mentioning in any discussion of distribution issues. Companies that offer SAAS solutions tend to rely on the fact that they are not distributing their products to ensure their GPL compliance. They do this by merely avoiding licenses like Affero GPL that have requirements even in the absence of distribution. However, this can be a dangerous strategy. For a business development manager who is not focused on legal and technical niceties, it is easy to cause transactions to trip over the distribution line. A company with a SAAS offering may, for instance, approach a customer operating in a highly regulated market (such as a health care or financial institution), that will insist that the SAAS offering be operated via a private instance on the customer's premises, or on servers under the customer's control. This demand usually arises from security or regulatory auditing concerns. From the business point of view, a private instance of a SAAS product is a technical detail. But of course, providing a copy to the customer will likely constitute distribution. If the company's open source compliance strategy hinges on refraining from distribution within the context of a SAAS model, the company may find that it cannot deliver a compliant product in any reasonable amount of time – usually because it has intermixed GPL and non-GPL compatible code, or has not properly kept track of open source elements in the product.

With these edge cases in mind, we now turn to extrinsic evidence of the meaning of GPLv2, and best practices in managing distribution issues.

The FSF View

The GPLv2 FAQ, promulgated by the Free Software Foundation (FSF) offers the the FSF's insight as to what it considers a distribution that would trigger copyleft requirements. For example, one of

14 For patent, see *PPG Indus. Inv. v. Guardian Indus. Corp.*, 597 F.2d 1090 (6th Cir. 1979). For copyright, although the law is conflicting see e.g. *SQL Solutions, Inc. v. Oracle Corp.,* 1991 U.S. Dist. LEXIS 21097 (N.D. Cal. 1991). This is an unpublished decision and arguably contrary to the California Supreme Court's view in T*rubowich v. Riverbank Canning Co.,* 182 P.2d 182 (Cal. 1947).

the FAQ questions is:

> ***Is making and using multiple copies within one organization or company "distribution"?***
>
> *No, in that case the organization is just making the copies for itself. As a consequence, a company or other organization can develop a modified version and install that version through its own facilities, without giving the staff permission to release that modified version to outsiders.*
>
> *However, when the organization transfers copies to other organizations or individuals, that is distribution. In particular, providing copies to contractors for use off-site is distribution.*[15]

The FAQ also discusses a transfer between an organization and a majority-owned subsidiary:

> ***Does moving a copy to a majority-owned, and controlled, subsidiary constitute distribution?***
>
> *Whether moving a copy to or from this subsidiary constitutes 'distribution' is a matter to be decided in each case under the copyright law of the appropriate jurisdiction. The GPL does not and cannot override local laws. US copyright law is not entirely clear on the point, but appears not to consider this distribution.*
>
> *If, in some country, this is considered distribution, and the subsidiary must receive the right to redistribute the program, that will not make a practical difference. The subsidiary is controlled by the parent company; rights or no rights, it won't redistribute the program unless the parent company decides to do so.*[16]

In this FAQ, the FSF acknowledges that, at least in the United States, a transfer to or from a majority-owned and controlled subsidiary may not constitute distribution. Further, the FSF gives weight to one organization's effective control over another to determine whether the two entities are effectively one entity for the purposes of the analysis.

There is also discussion in the GPLv2 FAQ about providing modifications of GPL code under a non-disclosure agreement:

> ***Does the GPL allow me to develop a modified version under a non-disclosure agreement?***
>
> *Yes. For instance, you can accept a contract to develop changes and agree not to release your changes until the client says ok. This is permitted because in this case no GPL-covered code is being distributed under an NDA.*

15 http://www.gnu.org/licenses/old-licenses/gpl-2.0-faq.html#InternalDistribution (emphasis added). This same FAQ appears in the GPLv3 FAQ as well. (http://www.gnu.org/licenses/gpl-faq.html#InternalDistribution.)

16 http://www.gnu.org/licenses/old-licenses/gpl-2.0-faq.html#DistributeSubsidiary (emphasis added). This same FAQ appears in the GPLv3 FAQ as well. (http://www.gnu.org/licenses/gpl-faq.html#DistributeSubsidiary.)

> *You can also release your changes to the client under the GPL, but agree not to release them to anyone else unless the client says ok. In this case, too, no GPL-covered code is being distributed under an NDA, or under any additional restrictions.*
>
> *The GPL would give the client the right to redistribute your version. In this scenario, the client will probably choose not to exercise that right, but does have the right.*[17]

Many companies find the distribution question confusing because they find this FAQ confusing. In this FAQ, the FSF considers two different scenarios: (1) the contractor releases the modified code to the public generally at the direction of the client and (2) the contractor releases the modified code to the client under the GPL, and the contractor promises not to release the modified code to anyone else. Unfortunately, this FAQ section does not specify whether "a modified version" refers to a modification of the contractor's own GPL code, or GPL code that may have been already modified by the client, or a modification of third party code. Clearly, these three situations could be analyzed differently. If the FAQ refers to GPL code owned by either the client or the contractor, it is a trivial question; obviously the owner of GPL code can choose to deliver that code under GPL terms or not as it sees fit, because an author (as licensor) is not bound by the copyleft obligations of GPL, only the licensee. If the FAQ refers to modifications to third party code, it implies that, even if the delivery of the original code constitutes a distribution, that distribution does not trigger the copyleft obligations of GPL.

Other information promulgated by the FSF suggests that this FAQ element is not intended to address third party code. But that is, by far, the most common situation: a company wants to use some GPL code, but needs modifications. It finds an expert in the code willing to modify it on a contract basis. This is a common scenario, and in fact its ubiquity is one of the touted advantages of open source software. But the company may not plan to ever distribute the software. Therefore, if providing the code to the consultant is distribution that triggers copyleft requirements, the company will likely be unwilling to engage the consultant.

The FSF's view is problematic for a couple of reasons. First, a practical problem: companies that hire consultants simply don't distinguish between the business cases of in-house and contractor development. They do not expect to encounter a completely different GPL compliance landscape based on the distinction. Because FSF's view contravenes business expectations, it is a trap for the unwary. Second, a legal problem: the provision of code for development purposes is more akin to "communicat[ing] the contents of a manuscript to a definitely selected group and for a limited purpose, and without the right of diffusion, reproduction, distribution or sale" (i.e. not publication under copyright law) than it is to common notions of redistribution or publication. Therefore, there is a strong argument that such a transfer is not distribution under the law.

The International View

It is important to keep in mind that the "distribution" question as it is analyzed here is largely unique to United States law. Because GPLv2 does not have a choice of law provision, and is a

17 http://www.gnu.org/licenses/old-licenses/gpl-2.0-faq.html#DevelopChangesUnderNDA. This same FAQ appears in the GPLv3 FAQ as well. (http://www.gnu.org/licenses/gpl-faq.html#DevelopChangesUnderNDA.)

conditional copyright license, it governs only what is protected via local copyright law. A full discussion of the tenets of international copyright law bearing upon this issue is beyond the scope of this article, but it seems likely the question would have different answers outside the U.S. The Berne Convention for the Protection of Literary and Artistic Works,[18] as amplified by the WIPO Copyright Treaty, provides for a right to "make available" a literary work, which may be broader than the United States' notion of distribution, and most importantly, could include SAAS offerings. Therefore, the triggers for copyleft obligations, based on activity outside the U.S., may have a lower threshold than in the U.S.

Best Practices for Contract Drafting and Deal Structuring

As lawyers in private practice await clarity in the common law on distribution issues, they may wish to consider certain drafting and structuring practices to clarify their clients' intent, or to minimize the uncertainty of result in the event that courts later announce decisions on distribution questions. None of these is certain to address distribution issues in light of a contrary court pronouncement, but they might help discourage claims, provide evidence of intent, or reduce confusion when those not directly involved in the deal are asked to later assess distribution issues.

Development Agreements

To avoid confusion on whether development activities constitute distribution, consider adding terms such as:

- **Limit work to customer-controlled servers.** "*Contractor shall conduct development services only on systems and equipment under the control of Customer.*" This will address whether a distribution has occurred, the theory being that even though the contractor is a separate person, no copy of the software has been transferred.
- **State that copies are intended to be private.** "*Contractor acknowledges that it is performing the development services solely for the benefit of Customer, and solely as directed by Customer, and shall not make any copy of the Software available to any other person or entity.*" This addresses the situation that the FSF FAQ says constitutes distribution.

These approaches are attractive because they comport with customary confidentiality provisions and "work made for hire" provisions in development agreements, which often recite customer control of the development activities to support treatment of the work as "work made for hire", under *CCNV v. Reid.*[19]

18 Online at http://www.copyright.gov/title17/92appii.html

19 *Community for Creative Non-Violence v. Reid,* 490 U.S. 730 held that the factors for determining whether a work of authorship is a work made for hire (owned by the company) or not (and owned by the company, but by the author), are, among others, the level of skill required to create the work, the source of the tools used in creating the work, where the work was created, the duration of the relationship between customer and author, the extent of the contractor's discretion over when and how long to work, and whether the work is part of the regular business of the customer or consultant. Therefore, many consulting agreements recite where work will be performed, as well as other facts that might bear on whether distribution has occurred.

Mergers and Acquisitions

- **Avoid delivery of GPL software.** Particularly in asset purchase deals, determine if there is a reasonable way to refrain from delivery of open source packages, in favor of the buyer downloading them directly from the original or a third party source. This approach is useful mostly in situations where drivers or other significant original code of the seller is being delivered, but not integrated modifications. In that case, the seller would deliver only its additions, and the buyer would receive third party open source code separately. Clearly, if third party open source code is extensively modified, this strategy may not be feasible, because it would be so difficult to separate the seller's code from third party code. However, companies that are very conservative on this issue may deliver only *diffs* or patches, in an attempt to avoid delivery of any third party GPL code. Keep in mind that distribution is usually an issue for the seller, not the buyer. Therefore, asset purchases that consist of all the assets of the seller entity may render the concern moot, but a seller's divestiture of partial assets, business lines or product lines may cause the seller to have concerns about GPL distribution. A seller wishing to sell its own code may find buyers unwilling to pay for that code if it must be delivered under GPL.

SAAS Agreements

- **Avoid drafting that confuses SAAS with distribution.** There is some controversy among technology lawyers as to whether SAAS agreements are licenses or mere service agreements. Sometimes, as an artefact of their business antecedents in distributed software, SAAS agreements are drafted so much like distributed software licenses that it is difficult to tell the difference. Although the distribution question would likely turn primarily on the supplier's actions, not mere document drafting, it is best not to hurt your position by using a SAAS agreement that reads like it covers a distributed product.

Intercompany Agreements

- **Recite intent not to distribute.** In software agreements between corporate affiliates, parent entities may wish to clarify that no distribution is intended, much in the same way as recommended above for consulting or development agreements. This may seem obvious, but in fact, intercompany technology licenses are often not drafted by technology lawyers, but by tax or corporate lawyers who are documenting intercompany arrangements for the purpose of managing imputed tax issues, rather than precisely considering intellectual property issues. It is crucial to review these agreements with a view to open source as well as intellectual property issues.

An Enduring Puzzle

Distribution questions seem unlikely to be answered any time soon by United States courts. The open source enforcement actions that have been brought to date have not addressed the question. Given the other heady issues still unclear in open source law (such as the scope of derivative works under GPLv2 and the interaction of patent law and open source licensing), they may not be

ripe for dispute. Also, most authors who release code under GPLv2 are simply not focused on issues like intercompany agreements and mergers or acquisitions, because they are primarily technologists rather than corporate strategists. If GPL authors generally do not intend to enforce their rights in these edge cases, there may not be a constituency that is interested enough to bring a lawsuit that will make law in this area. It therefore seems likely these questions will persist as long as GPLv2 remains a widely used license, and based on the prevalence of the Linux kernel alone, this will be a long time. Companies assessing open source compliance should be sure they have identified the types of distribution that are most likely to be questioned, so they can use open source software with confidence, and plan their transactions in a way that comports with their open source compliance strategy.

About the author

Heather Meeker *is the chair of the IP/IT licensing and transactions group at Greenberg Traurig, LLP, and specializes in drafting and negotiating intellectual property transactions for software and other technology clients. She was an Adviser to the Principles of the Law of Software Contracts project of the American Law Institute, and in 2011 was selected by the Daily Journal as one of the top 25 intellectual property licensing lawyers in California. Her book The Open Source Alternative: Understanding Risks and Leveraging Opportunities was published by Wiley & Sons in February, 2008.*

Licence and Attribution

This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Meeker, Heather (2012) 'The Gift that Keeps on Giving – Distribution and Copyleft in Open Source Software Licenses', *IFOSS L. Rev., 4(1),* pp 29-40
DOI: 10.5033/ifosslr.v4i1.66

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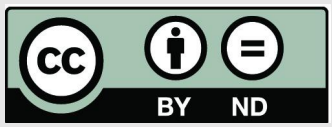

Towards a Functional Licence for Open Hardware

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DOI: 10.5033/ifosslr.v4i1.69

Abstract
Open hardware lags open source software in maturity. The two main licences assert a form of copyleft. This paper argues that copyleft's applicability to hardware is problematic, and concludes by proposing a simpler non-copyleft licence, based on Apache 2.0, for hardware.

Keywords
Open Hardware, Open Source Hardware, Licensing, Copyleft

There are currently two main licences vying for serious consideration as open hardware licences. They are the TAPR[1] Open Hardware License, and the CERN[2] Open Hardware Licence. Both of these licences are intended to assert a form of copyleft on open hardware, the intention being that, as with free software, open hardware must be distributed in a way that guarantees availability of the underlying design documents, and provides the right to reuse, adapt and redistribute them, with the same rule applied downstream as those designs and hardware based on them are re-distributed. Once open hardware has become free, there is, in this philosophy, no way of closing the design again.

Like free software advocates, many open hardware designers are concerned with entities "stealing their designs" by turning the design proprietary: a concern similar to that expressed by proponents of the GNU General Public License (GPL) who wish to avoid free software becoming non-free. (Other open hardware designers are more concerned that their designs are made as easy to use – from a licensing perspective – as possible and believe that, like many open source software advocates, the best way to achieve this is by attaching a licence which does not restrict entities from incorporating their open designs into closed proprietary designs or from merging them with projects which have adopted a different form of open licence).

1 http://www.tapr.org/ohl.html (all URLs in this paper were accessed on 11 April 2012)
2 http://www.ohwr.org/projects/cernohl/wiki, and see Myriam Ayass's article in this issue Ayass, Myriam; Serrano, Javier, (2012) 'The CERN Open Hardware Licence', *IFOSS L. Rev.*, 4(1), pp. 71 - 78 DOI: 10.5033/ifosslr.v4i1.65

When drafting the GPL, Richard Stallman cunningly tweaked the copyright licence bargain to make it a licence condition that GPL code, when distributed, would itself be subject to the GPL, and because the condition impinges on derivative works as well[3], the ecosystem of GPL works would continually expand, guaranteeing an ever larger pool of free software[4]. Open hardware designers have been attracted to this mechanism, and have tried to attach a copyleft-style licence to hardware. The CERN and TAPR licences are both examples of this approach.

This paper argues that there are significant problems in applying a form of copyleft to hardware and that a more practical way forward is to use a permissive, non-copyleft form of licence. The Apache 2.0 license suggests itself as one starting point. Adapting it for hardware would avoid many of these problems, and have the additional advantage of a licence which is familiar, well understood and respected.

What is Hardware?

Not surprisingly, hardware projects which have been considered as candidates for openness are typically electronic devices, but there are counterexamples. The author first became involved in open source hardware through an open car project, the Riversimple[5] Hyrban hydrogen fuel-cell car.

Thinking about open hardware in terms of mechanical devices is a useful thinking tool. Electronic devices, especially those with programmable components, are more akin to software than hardware, and it's more effective to think about open hardware in terms of more traditional mechanical devices.

A licence drafted to cover the relatively narrow scope of electronic designs may not be appropriate to more traditional "heavy metal" hardware.[6] It helps to consider a number of different use cases when examining the effectiveness of an open hardware licence: software, FPGAs, analogue electronic circuits, hydraulic and fluidic circuits, mechanical memories,[7] mechanical sub-assemblies, stormtrooper helmets and Michelangelo's David being examples on a loosely defined spectrum of hardware in order from the "softest" to the "hardest". An effective open hardware licence should address the full range of hardware (and frequently will also, incidentally, address associated software).

3 Whether GPL2 intends to impinge on a wider subset of works than those that are simply derivative is a matter of debate, for example, see *The Time Travel Problem* below. GPL3 is more explicit in that in intends to be limited to derivative works only.

4 Open source advocates may argue that freeing software by coercion is unnecessary and counterproductive.

5 http://www.riversimple.com/

6 For example, a circuit board layout is a 2D graphic work which retains its 2D nature when reproduced from a mask. Under the UK Copyright Act, copying a 2D work in 2D is a restricted act, whereas reproduction of a 2D work (unless it is an artistic work), is not a restricted act. Section 51, Copyright, Designs and Patents Act 1988.

7 The Friden Flexowriter, an entirely electromechanical device, had a mechanism of rods and cams which enabled it to translate alphanumeric characters to and from a paper tape punched in Baudot code. That mechanism undeniably amounted to a mechanical ROM, the content of which would, presumably attract copyright as an independent literary work, and possibly database right as a database of mappings of characters against code).

The TAPR Open Hardware License

The TAPR Open Hardware License was drafted by John Ackermann, an attorney and radio amateur[8], as a response to designers of electronics comprising the Tucson Amateur Packet Radio System. It is expressly intended to apply copyleft to hardware, and details of its rationale and drafting process can be found in Ackermann's article in the University of Dayton Law Review[9]. Ackermann is refreshingly candid about the challenges arising from applying copyleft to open hardware. A copy of the licence can be found in the article[10]

The licence is expressly intended to be a contract (unlike the GPL, which was drafted to be a bare licence subject to conditions[11]). It primarily deals with design documentation (which includes CAD files, board layouts and mechanical drawings), requiring anyone who uses design documentation of covered hardware to comply with the licence obligations, and specifically, to make the design documentation (including any modifications to them) available to any recipient of the hardware (there are also obligations to attempt to pass details of the obligations back to the upstream licensors).

Clauses of particular relevance are:

> *1.5 By (a) using, copying, modifying, or distributing the Documentation, or (b) making or having Products made or distributing them, you accept this Agreement, agree to comply with its terms, and become a "Licensee."....*

and

> *Making Products*
>
> *5.1 You may use the Documentation to make or have Products made, provided that each Product retains any notices included by the Licensor (including, but not limited to, copyright notices on circuit boards).*
>
> *5.2 You may distribute Products you make or have made, provided that you include with each unit a copy of the Documentation in a form consistent with Section 4. Alternatively, you may include either (i) an offer valid for at least three years to provide that Documentation, at no charge other than the reasonable cost of media and postage, to any person who requests it; or (ii) a URL where that Documentation may be downloaded, available for at least three years after you last distribute the Product.*

These clauses raise some issues which are referred to below. The other clauses of the contract are similar to a FOSS licence, and cover limitation of liability, patent licensing and so on. As they are not pertinent specifically to copyleft they are outside the scope of this paper. The licence provides

8 N8UR

9 http://www.tapr.org/Ackermann_Open_Source_Hardware_Article_2009.pdf (2009) Volume 34, number 2, page 183

10 And here: http://www.tapr.org/TAPR_Open_Hardware_License_v1.0.odt

11 Although whether it is a bare licence or contract is not a matter for the Free Software Foundation, but a matter of judicial interpretation from jurisdiction to jurisdiction.

that any software (including firmware) in the project is not covered by the licence, but is governed by whatever (generally open source) software licence is applicable to it[12]. There is also a non-commercial version of the TAPR License, but like the Creative Commons *non-commercial* option, this is neither a free nor open source licence.

John Ackermann has indicated that he is happy to engage in an updating exercise for the TAPR licence.

The CERN Open Hardware Licence

The CERN Open Hardware Licence, discussed elsewhere in this issue, has a similar aim. Also primarily covering design documentation, it has undergone a more structured revision process and is currently at version 1.1. The next version is currently under active discussion.

A clause of particular concern is:

> *4.1 The Licensee may manufacture or distribute Products always provided that the Licensee distributes to each recipient of such Products a copy of the Documentation or modified Documentation, as applicable, and complies with section 3.*

This raises issues which are discussed below.

Copyleft and Open Hardware

Copyleft in software has detractors: from the proprietary software companies who see it as a "viral" mechanism which could "infect" their precious proprietary codebase, to the proponents of an open, permissive development model, who argue that openness does not need to be forced, but, as a better model, openness will inevitably succeed. The arguments as they relate to software relate also to hardware, but there are some differences in emphasis, as well as arguments apply solely to hardware. These arguments are explored below.

The Legal Arguments

For there to be a licence, there first must be something unlawful.

A licence is a permission to do something which would otherwise be unlawful. It therefore follows that there has to be something unlawful in the first place, for which the licence can grant permission. In software licences, the rights granted are, in the main, related to copyright, and permissions are permissions to do what would otherwise be contrary to copyright.

Copyright impinges on software at almost every stage of its use and exploitation: the acts of

12 Although there are edge cases – for example the programming of FPGAs, where the boundary is not clear. See section *Boundary Problem* below.

running and copying the software are controlled by copyright. The extent to which distribution is governed by copyright is covered in Heather Meeker's article in this edition.

The upshot is that, at each of these stages, permission of the copyright owner is required to avoid breaching copyright law, and thus at each point, the copyright owner has the opportunity to grant a licence and apply licence conditions. The authors of software licences take advantage of this in order to exercise control at many different times.

Richard Stallman and Eben Moglen notably exploited the opportunity to apply conditions to the distribution of software in the GPL, and provided that any distribution of GPL code must be accompanied by (or allow access to) the corresponding source.

This does not apply to hardware to anything like the same degree. Running a software program like a spreadsheet requires a software licence. Using a hardware device like an abacus (or a difference engine)[13] does not.

Hence, any licence which tries to echo the GPL by requiring the distribution of hardware to be accompanied by the source will necessarily be limited in its effectiveness by virtue of the extensive opportunities for making use of the underlying design without having to rely on the licence.

For example, if A possesses a piece of object code which is only available under the GPL, unless A has already violated the GPL, A will be able to make free use of that code herself. It may be the case that A does not possess the corresponding source (either because A's provider didn't provide it to her under the GPL, or A has not requested the source from the provider). However, A will be unable to distribute that code to any third parties, unless A can fulfil her own obligations under the GPL by delivering the source code to the recipient, or making it otherwise available in compliance with GPL.[14]

However, generally speaking,[15] using a piece of hardware, or transferring a piece of hardware from one person to another does not potentially contravene any intellectual property rights, and therefore does not require any licence on which copyleft-type requirements can impinge. This makes it difficult to effectively implement a copyleft licence for hardware which is effective, if the trigger is to be distribution of the physical hardware. For application of the copyleft to the design documents, see below.[16]

13 But possibly not an analytical engine

14 To muddy the waters, this also suggests a possible way of circumventing the GPL: under the Computer Programs Directive (2009/24/EC), where a copy of a program has been put into circulation in the European Economic Area with the consent of the copyright owner, the copyright owner's right to control further circulation of that copy ceases. How, therefore, can the GPL be enforced if a person who receives a copy of a GPL program and does not obtain the source, then passes the copy to another person, relying on the directive? There are a number of counterarguments to this but a paper on open source hardware is not the place to discuss them.

15 Patents and some design rights may complicate this argument.

16 One question, which has not been extensively explored, even if the distribution of a piece of hardware itself does not require a licence under an intellectual property right, can such distribution cause the distributor to lose rights under an existing licence which it *does* require for other purposes, as a means of enforcing the licence. For example, can the licence to replicate the source code to code W be lost if the licensee fails to distribute a related piece of software S in accordance with copyleft, even if that piece of software S is not a derivative work of W, and therefore the licence of W's proprietor is not required for the distribution.

An option which can be considered is whether a contractual mechanism can be applied. In effect, each licensee is contractually obliged to impose a licence on a subsequent owner of the hardware, where that licence requires the subsequent owner to comply contractually with the terms of the licence, and to only pass derived hardware onto a third party once that third party has been bound in a similar manner.

The difficulty is that the contract creates an *in personam* relationship between the parties, so that the recipient of the derived hardware from the licensee will only be bound if the licensee has fulfilled his part of the bargain with the licensor and imposed the licence terms on the third party.[17]

If the licensee is in breach and fails to impose the contract on the subsequent recipient, then the licensor may have a claim against the licensee for breach of contract,[18] but will have no right of action against the recipient under contract, who will then be free and clear to pass the hardware on free of any contractual restriction. Thus the chain of contracts will become long and fragile, and any failure to impose contractual terms on a subsequent recipient will break the chain. It is also arguable that requirement to impose contractual terms on third parties is, in itself, an unenforceable restraint of trade.[19]

The Time Travel Problem

If a licensee fails to comply with a licence condition, then it is axiomatic that the licensee is in breach of copyright. However, the situation is not always quite so simple. It is usually the case that it is possible to determine whether the condition is fulfilled at the point when the otherwise infringing act takes place. For example, where a licensee under the GPL passes a complete copy of the relevant source code alongside the binary, the distribution is the restricted act, and the attached condition is fulfilled by providing the source at the same time. However, licences sometimes fall into the trap of trying to make a licence conditional on the licensee *doing something in the future*.

It would be a bizarre but functional condition of a licence agreement to assert that the licensee has to wear a bowler hat while making a copy of design documentation. However, it would be difficult to see how it would be possible to make it a licence condition that a licensee can copy design documentation so long as he will be wearing a bowler hat *in a week's time*. In the intervening week between copying, and the requirement to wear the hat, is the licensee in a state similar to that of Schrödinger's unfortunate cat, neither infringing nor non-infringing, until the point occurs, in a week's time, at which compliance with the condition can be determined?

By adopting a wording similar to that contained in copyleft licences like the GPL, which make distribution contingent on a number of conditions (for example, to make the source code available), the drafters of both hardware copyleft licences have unwittingly fallen into this trap. The assumption[20] is that distribution of a copyright work requires the licence of the copyright

17 And, in England and Wales, until the passing of the Contracts (Rights of the Third Parties) Act 1999, it would, owing to privity of contract, be difficult to establish a mechanism by which the licensor would have a direct contractual right of action against the licensee, although possibly some form of agency could have been applied.

18 The remedy for this will be damages, which will be difficult to assess, given that the licensor has made it clear his willingness to license on a zero-cost basis.

19 e.g. Dunlop Pneumatic Tyre Co Ltd v Selfridge & Co Ltd [1915] UKHL 1

20 Unfortunately, this assumption is not necessarily correct, and the question of whether a specific distribution is a

owner, and that, accordingly, the restricted act of distribution can only be carried out if it can be determined that the condition is fulfilled at the time the distribution is taking place. The GPL, therefore, to that extent, works, because the condition can be determined at the point that the licence is being relied on[21].

However, it's not quite so simple to apply this to hardware. If distribution of hardware is not, in itself, a restricted act under copyright law, then a condition, like that contained in clause 4.1 of the CERN OHL, or clause 5.2 of the TAPR OHL, is difficult to interpret.

Either it is a condition, breach of which has the effect of terminating (or allowing the licensor to terminate) the licence, or it is a condition which somehow retrospectively makes previous acts of the licensee (like copying the documentation) become unlawful (as described above). A third possibility is that the clause is a contractual obligation (for example, you agree that if you distribute the hardware, you will also, as a contractual obligation, transfer the design documentation).

Looking at each of these in turn:

If breach of the condition allows termination of the licence, then it does not itself make the specific restricted act unlawful, but may make subsequent restricted acts unlawful. We have already established that manufacture of the hardware itself (and distribution of it) may well *not* be a restricted act. No licence is needed, so although the licensee will be restricted from making copies of the design documentation, for example, this is not going to provide a major hindrance to exploitation of the hardware[22] as it may well remain possible to continue to manufacture the hardware without being in breach of the licence. However, copying and adapting the design documentation would no longer be lawfully possible (and it may be that this residual copyleft effect is sufficient to provide the normative effect that the licensor will be seeking).

If it is a condition with retrospective effect, then the time travel problem arises.

If it is a condition which is (solely) a contractual obligation, then this may place a specific obligation on the licensee, but it still only creates an *in personam* right as considered above, and does not have effect as an operative condition on third parties, because the act in question is not a restricted act under copyright law[23].

restricted act is likely to vary from jurisdiction to jurisdiction. GPL3 tries to clarify this issue by using “propagate” and “convey” and limiting them to acts which are specifically restricted under copyright law.

21 However, this does leave open the question as to what happens where the licensee opts to offer to make the corresponding source available for a period of three years, and fails to honour that offer. Thankfully, this is not a paper about GPL enforcement.

22 Another issue with termination is that licences rarely explicitly deal with termination (although CERN OHL does). Automatic termination is always problematic, as inadvertent breaches are easy, and will trigger automatic termination. Termination with notice has its own problems (the licensor needs to know about the breach, for one thing). Also, how easy is it for the licence to be reinstated? Does the termination apply to all instances of that licence irrespective of the hardware it applies to? All instances of that licence for any iteration of that hardware? All instances of that licence for one iteration of that hardware? Or just the specific instance of that licence as it was applied to the specific design documents downloaded at a specific time (so that re-downloading the design documents would reinstate the licence)?

23 The wording of both the TAPR and CERN licences is not effective to make the obligations contractual. They both say, in effect, the licensee *may* manufacture and distribute the hardware, *provided that* she also makes the design documentation available. If the permission (“you may”) is not required (because the underlying act is not contrary to copyright law, or other intellectual property law), the condition (“provided that”) is irrelevant, and can be ignored.

These uncertainties cause problems for an effective copyleft hardware licence. They can be addressed to an extent by drafting[24], but the problems they raise provide another reason to question the appropriateness of copyleft in a hardware context.

Copyright and the Design Documents

It's important to distinguish between the hardware itself and the associated design documents. The design documents will generally be subject to copyright, and reproduction, adaptation and distribution of design documents to the public will therefore require a copyright licence. Thus any appropriate document licence such as one of the Creative Commons licences or the GNU Free Documentation Licence can be applied, with copyleft adopted (or not) accordingly. However, documentation licences do not, in themselves, require the distribution of the design documents with the related hardware.

The Boundary Problem

For a copyleft mechanism to work, there needs to be a clear boundary, such that certain interactions between a copyleft piece of software ("CS") and a non-copyleft piece of software ("NCS") mean NCS can only be distributed subject to the copyleft licence, and certain other interactions allow NCS to be distributed free of the copyleft licence (but subject of course to whatever other licence, if any, may be required in respect of NCS).

Typical technical questions in a software context are, "does copying a snippet of GPL and incorporating it into my app require me to distribute the whole app under the GPL", or "does dynamically linking my app to a GPL library require me to distribute the whole app under the GPL?" There is much debate about this.[25] In the world of hardware it is a significantly greater problem. The types of interaction are much greater: would bolting a copyleft wheel to your proprietary car mean that (assuming hardware copyleft is possible) you could not sell your old car without being able to provide the design document to the wheel, or the whole car?[26]

Better wording (to make this work contractually) would be "You are under a contractual obligation to provide the design documentation to any recipient of the hardware [by an appropriate means]". It may even be possible, in some jurisdictions, to make the requirement enforceable by recipients under third party beneficiary doctrine. For example, recipients would be a permissible class of potential enforcers under the Contracts (Rights of Third Parties) Act 1999 in England and Wales.

24 One possibility the author is considering, in connection with the CERN licence, is that undertaking any restricted act (such as copying the design documents themselves, creating derivative works, or, if restricted, making articles and distributing them) is conditional on the licensee having made available to the public the complete design documentation from an easily locatable and publicly indexed place. As it stands, this is onerous (any trivial act of copying, or amending the design documentation, even before distribution, would trigger the condition), so the licensor undertakes not to *enforce* the terms of the licence unless and until an article made to the design (or part of it) has been passed to the public (and only in relation to breaches taking place after the passing of the design). This sidesteps the time travel problem, as the licensee would technically be in breach, but would be safe from enforcement until the design, or its instantiation in a physical object, had been passed to the public.

25 See the linking interactions document referenced in Bain, Malcolm (2010) 'Software Interactions and the GNU General Public License', *IFOSS L. Rev, 2(2)*, pp 165 – 180 DOI: 10.5033/ifosslr.v2i2.44 which is devoted to discussing in-depth interactions solely in relation to one version of one licence: GPL2.

26 If it's possible to effectively place restrictions on the on-sale of a car in this way, or if freedom advocates successfully lobby for the implementation of laws which enable this to be possible, this suggests the unintended consequence of providing a framework to enable car manufacturers, for example, to quash the used car market other than through authorised dealers. Alternatively, the advocates will find themselves arguing a point which sounds like (or can easily

Very quickly, a restriction on the on-sale of any complete item containing maybe only a single copyleft part would become stifling. The alternative is to have a copyleft licence where the scope and extent of the copyleft is restricted in some way, possibly to a specific sub-assembly, by analogy with the file-level copyleft applied by the Mozilla licence. However, a "file" is a relatively well understood concept in computer science. An "assembly" in terms of mechanical engineering is less well understood. Is the assembly the wheel, the wheel+tyre, the wheel+tyre+hub, the wheel+tyre+hub+stub axle, etc.?[27]

A way of dealing with this (suggested by Myriam Ayass as part of the ongoing development of the CERN licence) is to deal with the boundary issue in terms of the design documentation: by requiring the recipient to pass on changes to the design documentation only at the same level of abstraction as the original design documentation was received, this means that there is no need to provide greater detail. In other words, an electronic circuit diagram can be amended and redistributed without having to provide details of how to manufacture the individual components. Tying the copyleft to the design documentation also helps as regards incorporation of sub-assemblies into larger assemblies. If the copyleft only applies at file-level, it becomes more akin to Mozilla-style weak copyleft, and is more easily manageable.

Open Hardware and Open Source Hardware

The OHANDA[28] four freedoms, based on the four freedoms of the Free Software Foundation[29], are:

> *Freedom 0: The freedom to use the device for any purpose.*
>
> *Freedom 1: The freedom to study how the device works and change it to make it to do what you wish. Access to the complete design is precondition to this.*
>
> *Freedom 2: Redistribute the device and/or design (remanufacture).*
>
> *Freedom 3: The freedom to improve the device and/or design, and release your improvements (and modified versions in general) to the public, so that the whole community benefits. Access to the complete design is precondition to this.*

Freedoms 0 and 3 require "access to the complete design". Unfortunately, "complete design" does

be portrayed as) special pleading, and tying themselves in logical knots, like Richard Stallman did when he found himself arguing with the Pirate Party that their proposals to shorten the copyright term should be subject to a special *longer term of copyright* for free software, to enable copyleft to continue to function http://www.gnu.org/philosophy/pirate-party.html

27 A possible solution does suggest itself in that the licensor can describe the scope of the "assembly" in granting the licence, and that subsequent licensees can expand that scope but not contract it. However, this is very reliant on the licensor and subsequent licensees coming up with a sensible definition of the scope, and makes licence hygiene complex in terms of determining whether a particular project is in compliance with all the licences relating to relevant sub-assemblies. The lower end of the scope also needs consideration. Does a full materials-science description of the metal alloys comprising the wheel need to be provided? An effective copyleft hardware licence will need to address this issue.

28 ohanda.org

29 fsf.org

not neatly map onto "source code". A kit of parts to make an electronic egg-timer may consist of a circuit board and a number of discrete components such as LEDs, transistors, and an integrated circuit like a 555 timer. It may be "obvious" to some that in this context the complete design consists of the schematic, a list of standard components, and the board layout, but why does "complete design" not include a description to make the 555 timer (a very simple device in IC terms, but nonetheless a little black box – literally – with 8 conductive legs sticking out of it)? Whether or not this is "obvious" in the context, the question is much more difficult when considering a car. Is it acceptable to specify a standard, widely available type of electric motor for the starter motor, or is it necessary to also provide the schematics of the motor, including the materials from which the armature and bearings are made, the torque of the nuts used to secure it, the precise composition of the copper windings, and details of the materials used in lubrication, so that an engineer with access to a handy oil well, copper mine, refinery, smelter and machine shop can effectively manufacture the car from scratch?[30]

This is an issue for whether a particular piece of hardware complies with the OHANDA definition, but it also impinges on licence, and in particular copyleft hardware licences, because release of the complete design documentation is likely to be a condition of distribution of hardware for compliance with such a licence.

It also means that the number of compliant components available to build a compliant assembly will, of necessity, be very small, if each component needs to be available with complete design documentation. In effect, without a practical constraint, the design documentation for an open source car will require every piece of information required to synthesise the car from a bunch of atoms of the appropriate elements used in its construction. Not even Ford and General Motors have access to that amount of information.

Accordingly, a degree of realism needs to be employed, and one way to do this is to distinguish between *open hardware* and *open source hardware.*

"Open hardware" means hardware components which are readily available (whether commercially or otherwise) and for which all relevant specifications are known, such that if (without necessary access to the original design materials) someone created a component compliant with the relevant specifications, it would work in the main assembly for all expected use-cases and environmental considerations applicable to the main assembly (it also requires that such use can be made without impinging on any intellectual property rights for that use-case). Open hardware will not, in itself, be OHANDA compliant. Standard electronic components, such as 74 series ICs, transistors, resistors, capacitors etc. will generally be open hardware, but not themselves OHANDA compliant.

"Open source hardware" is any hardware which fulfils the OHANDA criteria, where "complete design documentation" means the documentation required to build the assembly from components which are either themselves open source hardware, or are open hardware.

This is consistent with requiring that a piece of software have access to a library compliant with a

30 Of course, the equivalents in the world of software, such as GCC, can be downloaded for free and run on a very modest computer.

specific, published API. The 555 timer is a good example of a piece of open hardware, which is not necessarily open source hardware. Its specifications are known in great detail: clearly its electrical specifications are of great importance, but its physical dimensions, operating temperature range and so on are also important and necessary to enable the item to be regarded as open hardware.

It is submitted that this distinction between open hardware and open source hardware provides practical benefits in a licensing context by suggesting a way in which a copyleft hardware licence (if otherwise feasible) can be constructed which provides a practical way of determining where the boundary of design information lies: namely that design documentation of the assembly must be provided, but that the assembly can consist of components which are open hardware, and therefore only their specification, and not their design documentation, need be revealed.

There still remain, however, arguments which may militate against the effective adoption of an open hardware licence, even if legally feasible, and the boundary problem is solved.

The Economic Argument

Software, as bits, costs essentially nothing to copy. Physical items, no matter how simple, will require a number of atoms of one element or another to be reconfigured, and this resource will cost money, in terms of raw materials, components or sub-assemblies.

Both physical items and software can be reverse-engineered, (ignoring patents for the moment) and a clean-room non-infringing re-write or re-creation can, in both cases, be produced.

If B wants a piece of software with identical functionality to the Linux kernel, but without pesky GPL restrictions, then there is nothing preventing him from reverse-engineering the Linux kernel, and employing an army of software engineers to create an independent work with the same functionality, based on the functional specification obtained from the reverse-engineering process.

Because B is recreating the ideas, and not the expression, of the Linux kernel, B is not infringing copyright in the Linux kernel[31]. The cost of B achieving this epic task will, clearly, be enormous. The cost to B, however, of obtaining a kernel of identical functionality to the Linux kernel is, obviously, infinitesimal, if B is prepared to live with the restrictions of the GPL and adopt the Linux kernel itself.

Thus there is likely to be a cost differential of several orders of magnitude between choosing to circumvent the GPL by reverse-engineering, and choosing to accept its restrictions. The financial incentive to accept the GPL's restrictions is vast.[32]

Hardware is different. For any piece of hardware, there will already be a cost involved in sourcing the raw materials. Assembling atoms is much more expensive than assembling bits. The cost differential, therefore, is likely to be much smaller in proportion.

31 The author fervently hopes this is still the case.

32 But not completely insurmountable. This is, presumably the metric that Google employed when it decided that it wanted a functionally equivalent piece of software to J2ME (itself licensed under the GPL), and developed Dalvik.

Copyleft relies on this gulf between the cost of replication and the cost of circumvention. Where the cost differential is smaller, the incentive for the replicator to comply with the copyleft licence rather than go to the effort of reverse-engineering, is similarly smaller. It is easy to come up with examples, of course, where reverse-engineering the software is trivial, and reverse-engineering the hardware is difficult, but the general principle remains that a mechanical sub-assembly will frequently be easier to replicate without reference to the underlying design drawings, than a piece of software.

Once the replicator has created its own version of the hardware after the reverse-engineering process, it will then be free and clear to exploit and license that as it sees fit (and less likely to contribute back to the community than it would have been had the original designs been available to it under a non-copyleft licence).

There Can Be Only One

The central premise of copyleft is that distribution of a work and its derivatives has to be on the same outlicence as the one under which it was in-licensed. Thus an app which is based on a GPL2 program can only be out-licensed under GPL2. This means that, unless licensed under GPL2-or-any-later-version (GPL2+), a software project cannot even be licensed out under, or combined with, any GPL3 code, let alone out-licensed under any non-GPL2 licence such as Apache, BSD or the Open Software Licence. Although this is a well understood problem, and some efforts are being made to tackle it (drafting in the EUPL, Mozilla 2.0 and GPL3 aims to ease the situation, with varying degrees of success), fundamentally, copyleft projects are forever stuck in an artificially reduced ecosystem of projects with compatible licences. It is likely that the FSF would enjoy seeing all software copyleft projects (and, probably, all software projects, period) licensed under GPL3+, but for as long as there are incompatible copyleft projects, this is unlikely to happen. For example, it's difficult to see how the Linux kernel, licensed under GPL2, will ever move away from GPL2, given that the consent of all of the many thousands of copyright owners, (or the re-coding of the work of unwilling owners), would be required to a move to another licence, even if it were GPL3. If a copyleft licence needs to exist, ideally, there should be only one: every new copyleft licence creates a new ecosystem which cannot interact with the other ecosystems and much of the benefit of free and open source software is accordingly lost.

A permissive, academic licence does not suffer from this problem, and accordingly the ecosystems are able to intermingle, with the attendant benefit of network effects.

Licences and Community

In F(L)OSS, licences are widely regarded as being a manifesto for a particular community. Thus the GPL presents a mechanism for guaranteeing the freedom of software. It is championed by those who regard proprietary software as immoral, and an unjustifiable enclosure of the commons of human knowledge. The Apache licence is intended to permit the maximum use of software issued under it. Apache proponents believe that open source is a great way to develop software, and that companies seeking to incorporate Apache code into proprietary software will frequently

realise that to get the most value from the code, active engagement with the community is essential, and that this means, in practice, contributing back, whether in terms of code itself, or in terms of bug spotting, documentation, training and so on. Other licences have more subtle nuances (in terms of the way they deal with patents, for example). In each case, the licence reflects the values of the community that uses it. It is too early in the development of open hardware for communities to coalesce in the same way they have for open source software. However, broadly, those who see merit in the approach "we want our designs to be as broadly used as possible, and we don't care if they are used for proprietary purposes" are likely to be attracted to a permissive licence, and those who are more concerned about retaining freedom are more likely to select a copyleft-style licence. If copyleft for hardware turns out to be ineffective, how will this affect freedom-enforcers? There may be scope in a future article to investigate how other mechanisms, such as non-enforceable community norms or application of some form of certification/trademark to compliant designs and hardware, may prove to be effective. It may be dangerous to assume that the world of open source software can be closely mapped onto open hardware.

The Solderpad Licence

Leaving copyleft to one side, open hardware already has a number of barriers which open software does not: replication will always cost a material amount of money; the equipment required to replicate hardware is likely to be much more expensive than the cost of a simple computer and compiler/IDE; the vastly greater length of the test/fix/test cycle for hardware; the necessity of physical space for creating hardware; and difficulty of transporting hardware as opposed to bits; the challenges of collaborating effectively on hardware at a distance; the relative paucity of free and open source tools for CAD, CAM etc; the expense of testing; the complex regulatory regime around hardware certification being just a few. To introduce a number of additional hurdles suggested by copyleft seems foolhardy, unless the benefits are clear.

Unfortunately, the hoped for benefit, of preventing free riders, may not, in the light of the issues discussed above, be beneficial, especially where it may also have the effect of making an already small ecosystem even smaller.

Given the questionable effectiveness of copyleft in hardware, is it not simpler to avoid the issues entirely, and develop a non-copyleft, permissive licence? Having searched for an appropriate non-copyleft licence for hardware, and failed to find one, the author undertook to create one.

There are three ways to approach the drafting of an appropriate permissive licence: take an existing copyleft open hardware licence, and repurpose it as a non-copyleft licence, take an existing permissive open source software licence and redraft it, or draft a new licence from scratch. The author is insufficiently vain to want to create a new hardware licence from scratch[33], and his favoured copyleft hardware licence, the CERN Open Hardware licence, is still subject to revision, so adopting an existing permissive software licence seemed to be a sensible course.

A review of existing permissive software licences suggested that the most well understood and widely adopted licence, which would need minimal revision (since it already had clauses dealing

33 More plausibly, the author is too lazy.

with patents and trade marks, for example) was Apache 2.0.

Since the copyleft issues discussed above are rendered irrelevant, no additional drafting needed to be undertaken to attempt to deal with them. However, there were a few issues which can be useful to address in order to make the licence more appropriate to hardware, and the rationale for these is set out below. A diff of the current version of the licence is appended.

The licence is licensed under itself. Apache 2.0 is also licensed under itself, and since this licence is intended to be compatible with Apache 2.0, it is also capable of being self-licensed. The preamble refers specifically to Apache 2.0 and also allows the licensee to treat any work licensed under it to be licensed under Apache 2.0 in its pure form (the intention being, that it is possible to say that any work licensed under the Solderpad Hardware License is necessarily licensed in accordance with FSF and OSI criteria, as Apache 2.0 has been certified as fulfilling these criteria)[34]. The preamble is also intended to ensure compliance with the Apache 2.0 redistribution criteria in section 4.

Apache 2.0 explicitly deals with patents, trademarks and copyright. The main change in the Solderpad licence has been to extend the rights licensed by incorporating a new definition of "Rights", used typically where reference to copyright alone was used, which is intended to sweep up, alongside copyright, all other relevant rights, such as design rights, semiconductor topography (mask) rights and database rights. A slightly controversial addition to clause 2 (Grant of License) provides that the licence also permits doing "...anything in relation to the Work as if the Rights did not exist" as an additional permission (still subject to the other conditions). The idea is that if the scope of intellectual property is increased from jurisdiction, then this will be picked up in the definition of "Rights", but also related rights will be dealt with in this sweeping up clause.

The other changes are largely for clarity and are not intended to have legal effect. Thus, references to "Source" form now include net lists, board layouts and CAD files. "Object" form now includes intermediate forms such as bytecodes, FPGA bitstreams, artwork and semiconductor topographies.

"Derivative Works", for clarity, do not include any work which physically connects or interoperates with the interfaces of the Work. "Contribution" has been extended to include designs as well as works of authorship.

Similar changes have been made to the Contributor License Agreement.

A Note About the Name

Andrew Back kindly offered to host the modified Apache licence on Solderpad[35], "a place to share, discover and collaborate on electronic projects", and consequently, the name "Solderpad Hardware Licence" was adopted. This was partially to avoid suggesting a premature association with, or approval of the Apache Foundation for the licence, by using a name like "Apache Hardware Licence", and partially to acknowledge Andrew's kind offer to host (as well as useful commentary

34 The author is comfortable that Solderpad Hardware Licence itself is too, but it seems premature to make this assertion if the licence has not been officially approved.

35 Solderpad.com

he gave during the drafting process). However, it is hoped that this is only an interim name. One possibility is that the Apache Foundation itself may consider adoption. The author has been in discussion with several board members about this licence, and it seems to be favourably viewed, but, understandably, there is no desire to formally adopt the licence in a vacuum without it being attached to a specific project under the aegis of Apache, so please contact Apache if you have a possible hardware project in mind! There has been much (too much) discussion about the name of the licence (whether it should have "Hardware" in the title, whether it should be associated with a specific hardware design repository, whether it might put off people wishing to use other repositories), but the name is not fixed.

Conclusion

Open hardware presents challenges which do not map easily on to the challenges of free and open source software. Copyleft is particularly problematic, given that the cost of circumvention for hardware is lower than for software, that no obvious legal mechanism exists to make copyleft consistently applicable, and that the number of opportunities in the development and exploitation lifecycle for hardware for copyleft to impinge are much lower. For this reason, the author proposes that a licence based on the Apache 2.0 licence, which avoids the issues of copyleft, may be more appropriate for open hardware.

Text of the modified Apache License[36]

This license is based closely on the Apache License Version 2.0, but is not approved or endorsed by the Apache Foundation. A copy of the non-modified Apache License 2.0 can be found at http://www.apache.org/licenses/LICENSE-2.0.

As this license is not currently OSI or FSF approved, the Licensor permits any Work licensed under this License, at the option of the Licensee, to be treated as licensed under the Apache License Version 2.0 (which is so approved).

This License is licensed under the terms of this License and in particular clause 7 below (Disclaimer of Warranties) applies in relation to its use.

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the Rights owner or entity authorized by the Rights owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

“Rights” means copyright and any similar right including design right (whether registered or unregistered), semiconductor topography (mask) rights and database rights (but excluding Patents and Trademarks).

"Source" form shall mean the preferred form for making modifications, including but not limited to source code, net lists, board layouts, CAD files, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, the instantiation of a hardware design and conversions to other media types, including intermediate forms such as bytecodes, FPGA bitstreams, artwork and semiconductor topographies (mask works).

36 A diff file comparing this licence with the Apache 2.0 is available at http://www.ifosslr.org/public/69-413-1-SP-1.pdf

"Work" shall mean the work of authorship, whether in Source form or other Object form, made available under the License, as indicated by a Rights notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) or physically connect to or interoperate with the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any design or work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the Rights owner or by an individual or Legal Entity authorized to submit on behalf of the Rights owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the Rights owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

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This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Katz, Andrew (2012) 'Towards a Functional Licence for Open Hardware', *IFOSS L. Rev.,* 4(1), pp 41 - 62
DOI: 10.5033/ifosslr.v4i1.69

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Initial thoughts on Mayo v. Prometheus and software patents

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DOI: 10.5033/ifosslr.v4i1.68

Abstract

In the aftermath of an important decision by the Supreme Court of the United States, the first impressions on the significance of the Mayo Collaborative Services v. Prometheus Laboratories, Inc. over the software patents debate in the United States.[1]

Keywords

Law; information technology; Free and Open Source Software; Software Patent; Supreme Court; Mayo v. Prometheus

The U.S. Supreme Court's recent decision in *Mayo Collaborative Services v. Prometheus Laboratories, Inc*.[2] is an important development in the law of patent eligibility. Although the dispute before the Court did not involve software, it will certainly be cited as a precedent in future software cases, and it may ultimately be used to invalidate many bad software patents. The opinion shows that the Court is increasingly mindful of the risks that patents can hold for innovation.

Supreme Court cases are decided by a majority of nine justices, and it is common for the ideologically diverse Court to issue one or more dissenting or concurring opinions in a case. This can sometimes leave doubt as to a holding's future significance. However, Justice Breyer's opinion in *Mayo* was joined by all the justices. This unanimity on what many viewed as a difficult question makes the decision a particularly strong precedent worth analyzing.

The *Mayo* case concerned the validity of patents of Prometheus relating to diagnostic testing for autoimmune diseases such as Crohn's disease and ulcerative colitis. The patents set forth levels of metabolites in the bloodstream that would indicate whether a particular drug dosage should be increased or decreased.

1 The article takes inspiration from a blog post authored by Rob Tiller which appeared on "Opensource.com" at the following URL: http://opensource.com/law/12/3/prometheus-bound-important-precedent-next-software-patent-case

2 http://www.supremecourt.gov/opinions/11pdf/10-1150.pdf

The Court began by noting that 35 U.S.C. Section 101 sets forth a broad area of patent eligibility, but that there is a judicially created exception that makes "laws of nature, natural phenomena, and abstract ideas" ineligible for patenting. The Court ultimately concluded that the Prometheus patent fell within the laws-of-nature exception.

The Court's interpretation of this exception is significant. The Court characterized the ways in which a drug is metabolized in the body as "entirely natural processes," and found that patents describing such processes "set[] forth a natural law." Although a patent may be granted for a process that applies a law of nature, this is possible only when the process involves something more than "well-understood, routine, conventional activity."

The connection between the biological processes at issue in *Mayo* and software patents is clear from the Court's reliance on three of its earlier cases that involved software – *Diehr*, *Flook*, and *Benson*. According to *Mayo*, these cases concerned patents involving "processes that embodied the equivalent of natural laws." *Diehr*[3] concerned a process for transforming uncured rubber into cured, molded products using the Arrhenius equation. Although the *Diehr* process as a whole was patentable, the Court found that, by itself, "the basic mathematical equation, like a law of nature, was not patentable." In *Flook*,[4] the Court found a formula for computing an alarm limit as part of a process for catalytic conversion of hydrocarbons was a basic mathematical equation that, "like a law of nature," was not patentable.

The *Benson*[5] case involved a process for converting binary-coded decimal numerals into pure binary numbers on a general purpose computer. The *Mayo* opinion describes *Benson* as holding "that simply implementing a mathematical principle on a physical machine, namely a computer, was not a patentable application of that principle." The Court viewed this as tantamount to a "claim that just said 'apply the algorithm.'"

These references and the analogy to laws of nature will be important in future software patent cases. It is also interesting to note the Court's application of the machine-or-transfer test of *Bilski*.[6] In response to the argument that the blood of the individual was transformed in the course of the test, the Court said that the machine-or-transformation test was only "an 'important and useful clue' to patentability" which did not "trump the 'law of nature' exclusion." In other words, the *Bilski* test, even if satisfied, does not allow patenting of laws of nature. The *Mayo* opinion indicates the same ought to be true for mathematical algorithms. In a future case, it may be argued, as some computer scientists hold, that software is nothing more or less than mathematical algorithms.

It also seems noteworthy that the *Mayo* Court outlined a balanced view of the patent system that took account of the risks it can pose for innovation. It wrote, "Patent protection is, after all, a two-edged sword. On the one hand, the promise of exclusive rights provides monetary incentives that lead to creation, invention, and discovery. On the other hand, that very exclusivity can impede the flow of information that might permit, indeed spur, invention, by, for example, raising the price of

3 Diamond v. Diehr, 450 U.S. 175 (1981) http://laws.findlaw.com/us/450/175.html
4 Parker v. Flook, 437 U.S. 584 (1978) http://supreme.justia.com/cases/federal/us/437/584/case.html
5 Gottschalk v. Benson, 409 U.S. 63 (1972) http://laws.findlaw.com/us/409/63.html
6 Bilski Et Al. V. Kappos, Under Secretary Of Commerce For Intellectual Property And Director, Patent And Trademark Office , No. 08-964 (2010) http://www.supremecourt.gov/opinions/09pdf/08-964.pdf

using the patented ideas once created, requiring potential users to conduct costly and time-consuming searches of existing patents and pending patent applications, and requiring the negotiation of complex licensing arrangements." The Court also noted that monopolization of abstract intellectual concepts and other basic tools "through the grant of a patent might tend to impede innovation more than it would tend to promote it."

Conclusion

The stance of the Court on the patent system may not sound surprising to FOSS community members who are knowledgeable about the problems of software patents. But Americans are taught from an early age to venerate the patent system. Many end up with an unshakeable belief that it always fosters progress, and cannot conceive that it sometimes hinders innovation. In *Mayo*, all nine Justices recognized that the reality is more complicated. The Court may not be ready yet to take on the software patent problem, but its practical, empirical approach could be a harbinger of progress to come.

About the author

Rob Tiller *is vice president and assistant general counsel for Red Hat, where he manages patent, trademark, and copyright matters. He is a frequent speaker and writer on open source legal issues. Before coming to Red Hat, he was a partner with the law firm of Helms, Mulliss & Wicker, PLLC, where he specialized in commercial and IP litigation. He is a graduate of the University of Virginia School of Law, and a former clerk for Justice Antonin Scalia of the U.S. Supreme Court, and Judge Stephen Williams of the D.C. Circuit. For non-left-brain activity, he enjoys playing the piano.*

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This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Tiller, Rob (2012) 'Initial thoughts on Mayo v. Prometheus and software patents', *IFOSS L. Rev., 4*(1), pp 63 - 66
DOI: 10.5033/ifosslr.v4i1.68

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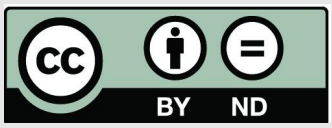

Review of “The IFOSS Law Book”

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DOI: 10.5033/ifosslr.v4i1.71

Abstract
The International Free and Open Source Software Law Book is a collaborative effort to create a coherent publication on legal aspects of FOSS in various jurisdictions. Marcus O'Leary kindly accepted to have his review republished on IFOSS L. Rev.

Keywords
Law; information technology; Free and Open Source Software;

The book has two forms, an "evolving" form based at **http://www.ifosslawbook.org** and a "yearly complete" form that is to be physically published through the Open Source Press, Germany. At present, the book is obtainable only in its "evolving form", where the first introductory chapter for each of the thirteen countries featured has been completed in draft form by the primary author/editor for that country. We are told that chapter authors are carefully selected to ensure a high quality of the initial contribution. It is intended that further countries and chapters be added in time.

The book, as a whole, is governed by a handful of parties who have stewarded the initial release but their intention is to develop a formal governance structure over time. This first chapter deals with the general legal background under which FOSS licences operate in each country and makes fascinating reading. It also includes FOSS cases (if any) that have been decided in each jurisdiction and the remedies which may or may not be available to a party whose rights have been infringed. Also contained are "tasters" of some of the more difficult issues that arise in relation to the operation of FOSS licences: a forerunner of delights to come.

The idea is that members of the broader network review comment and improve the chapter texts as an open reference intended to benefit all. Not only that, but third party legal or technical experts (either in FOSS or in other fields) are also invited to provide feedback on the various chapters and also on the book itself, via the main website.

The book is positioned as a first resource for legal experts, faced with a legal question under a jurisdiction other than their own, who need to gain an understanding of how FOSS licences are treated in that jurisdiction. They can then go on, if need be, to seek further information or local legal advice.

The meat of the book is yet to come. That will lie in the country by country analysis of how specific FOSS licences operate in the various jurisdictions covered. This should provide an invaluable reference to FOSS experts around the world and also as a primer for legal experts with a traditional proprietary licence perspective - although it would be unwise for the latter to "dabble" too deeply as it takes some years to become familiar with the FOSS landscape.

Apart from, in some country chapters, a more rigorous approach to proof reading, there is not much to improve in this publication and, after all, there is a mechanism for doing so built into it.

All I would really like to see at this early stage is a rather tighter country format, so that there is closer correlation of sections and section headings, country by country. I realise that it won’t always be possible to do this and that a certain amount of flexibility has to be maintained but it would make cross-referencing much easier. For example, the US section (which is particularly well-written and almost "bug" free) has a large section on the patent protection of software. In using this book, a US lawyer, in order to see how FOSS may be treated under another jurisdiction, may search for a similarly-named section in other jurisdictions. At the moment he would be hard-pressed to find one.

Also, perhaps over-arching matters such as the "copyleft principle" could be explained in a separate "Glossary" section rather than appearing in each country chapter. Personally, I would also like a date at the end of each chapter and an easier method for downloading all of the chapters (I clipped into Evernote.)

Conclusion

But these are quite small things in the context of the work as a whole and quite easily remediable just by using the mechanisms provided for doing so. In my opinion, this book is a very important addition to the literature on FOSS and its licences around the world and I recommend it wholeheartedly.

About the author

Marcus O'Leary *Is a consultant at Lewis Silkin LL.P, he is a UK and Ireland solicitor in private practice. Lucky enough to have been one of the first IT lawyers in the UK by being in the right place at the right time - particularly in the late 1980s, starting off in-house by being Manager of Legal Affairs at Hewlett Packard (from 1978 to 1983) and then later, in private practice, acting for many of the largest and most successful IT companies in the world. Still enjoys IT work and specialise in IT matters generally but in particular in Cloud Computing, Open Source Software and Software and Business Method Patents.*

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This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

O'Leary, Marcus (2012) 'Review of “The IFOSS Law Book”', IFOSS *L. Rev.,* 4(1), pp. 67 - 70
DOI: 10.5033/ifosslr.v4i1.71

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The CERN Open Hardware Licence

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DOI: 10.5033/ifosslr.v4i1.65

Abstract
The CERN Open Hardware Licence was drafted to provide a framework for the collaborative development of hardware. The rationale behind the approach are set out and a summary of the provisions provided.

Keywords
Law; information technology; open source hardware

Introduction/background

It all started with the White Rabbit. Not any White Rabbit – a timing system initially developed for experimental physics facilities able to synchronize ~1000 nodes with sub-nanosecond accuracy over fibre lengths of up to 10km. And with an idea, a realisation, that hardware development need not be done in isolation, by a group of persons or entities with relatively long-standing or established relationships, but may instead gather contributions ranging from the single individual designer sitting in his basement to whole design teams from large organizations. Such cooperative development would have the double benefit of avoiding duplication of efforts while capitalising on the know-how, expertise, and ideas of dozens of contributors. Thus was born the Open Hardware Repository[1] (OHR). The second step to be taken to consolidate the envisaged scheme was to define the rules for sharing and distributing the designs placed on the OHR, and while the goodwill of contributors was driving the effort, it was also felt that a legal framework was to be put in place for contributions made by CERN to the OHR. Javier, the initiator and driver of this effort, contacted the Knowledge Transfer Group (KT) at CERN with well-defined ideas – collaborative development done in an open source manner – and a request for support – implementing this open source approach for electronics designs. KT indeed has the mission to optimise the impact CERN has on society, through, in particular, the dissemination of its technologies and know-how. In this regard, one of the goals underlying the framework was being able to track dissemination of the CERN electronics designs while ensuring recognition of their

1 http://www.ohwr.org

origin.

Main issues considered

If the aim was to do open source hardware development, then why not simply use an existing open source software or documentation licence? These options were of course carefully considered. Two of them were rapidly dismissed - a software or a documentation licence, albeit open source, did not sufficiently acknowledge the fact that tangible products were to be manufactured on the basis of the licensed documentation. This, incidentally, is one of the main difficulties with open hardware.[2] How adequate or useful is copyright licensing for this type of work? Copyright protects the expression of an idea, not the idea itself. Whether copyright subsists in the type of design drawings at hand is in itself a point to argue. Furthermore, does copyright protection extend to the transformation of a 2D work into its 3D form?[3,4] Nonetheless, assuming copyright does subsist, the approach was taken that a licence to the documentation[5] could well be the basis on which to form a contractual relationship between the licensor and the recipient wishing to either modify the design or manufacture products based thereon.

Also, one of the objectives CERN wished to attain through this framework was to track the actual ambit of dissemination of its designs. A mechanism to obtain information about the products manufactured on the basis of the documentation was hence on the wish list of licence features. Another item also on the wish list was a recognition of CERN's status as an Intergovernmental Organization for dispute settlement purposes. These two features did not appear in the existing open hardware licences, and thus was taken the opportunity to draft a licence which took into account these elements.

Persistence

One of the first choices that had to be made when initially drafting the CERN OHL was whether to make it copyleft. Considering CERN's rationale behind engaging in the open hardware approach, it was a thoroughly discussed question. On the one hand, while not wanting to be restrictive for the licensee, allowing redistribution under possibly 'proprietary' terms did not seem consistent with the goal of tracking dissemination. It was also felt fair that, should someone modify and distribute the documentation, the original licensor could benefit the same way that the licensee did, by obtaining the same licence conditions for the modifications as initially applied to the original work. There would therefore be some return for the original licensor. On the other hand, commercial considerations were also taken into account. Hardware is fundamentally different from software in

2 See John R. Ackermann, "Towards Open Source Hardware", University of Dayton Law Review, Volume 34:2 Winter 2009 p. 183, available at http://www.tapr.org/Ackermann_Open_Source_Hardware_Article_2009.pdf (accessed January 31, 2012)

3 See for instance in the UK the Copyright, Designs and Patents Act 1988: although it would be an infringement of the copyright in an artistic work to make a copy in three dimensions of a two-dimensional work (s.17(3)), s.51 provides that copyright in a design document is not infringed by making an article from it.

4 See S Bradshaw, A Bowyer and P Haufe, "The Intellectual Property Implications of Low-Cost 3D Printing", (2010) 7:1*SCRIPTed* 5, available at http://www.law.ed.ac.uk/ahrc/script-ed/vol7-1/bradshaw.asp (accessed January 31, 2012)

5 Documentation is defined as: "schematic diagrams, designs, circuit or circuit board layouts, mechanical drawings, flow charts and descriptive text, and other explanatory material that is explicitly stated as being made available under the conditions of this Licence."

that tangible goods are the ultimate outcome of the documentation – a manufacturer will necessarily enter the game at some point in time. Unlike software which can be distributed virtually cost-free, hardware requires very real investments for manufacture and distribution of the products concerned. Could a copyleft licence discourage companies from manufacturing and commercialising open hardware? Consultation with a few potential manufacturers of products based on documentation licensed as open hardware indicated that they were willing to engage with this scheme. Furthermore, should companies not wish to use copylefted documentation for manufacturing products, they could always approach the licensor(s) to request different conditions. Dual licensing could be an option – even though in practice only achievable in the event the number of licensors concerned is limited (except where elements of the design are licensed under very liberal, academic-style licences). This option could bring another kind of return, whether financial or otherwise.

Another important factor to take into account for this decision was the question of compatibility of this licence with other (types of) licences. This is an issue which is being discussed in particular in the context of v.1.2 of the CERN OHL.

Recognition

As mentioned, it is important for CERN that it is able to demonstrate its impact on society, and the extent of dissemination of its work and technologies is one type of information helping achieve this goal. Thus, receiving information on the number of products manufactured using CERN open hardware documentation appeared on the wish list of elements to include in the licence agreement. Nonetheless, CERN did not want to scare companies – the purpose was not to obtain sensitive data or impose reporting obligations. It was also rapidly pointed out that this could not be formulated as a hard requirement or it would fail the 'desert island' test. What remains is hence an invitation for manufacturers to inform the licensors having expressed interest in receiving this information about the type, quantity, and dates of production of products based on the documentation. The requirement to maintain all copyright notices on the documentation fulfils its wish to ensure the proper acknowledgement of its contribution.

The CERN OHL v.1.1[6]

Throughout the drafting process, one of the concerns for the CERN OHL was to keep it as user-friendly as possible, not foregoing legal soundness in a framework where many uncertainties remain.

The licence agreement thus contains a very short definitions clause, and the definitions themselves were made as concise as possible, while making the CERN OHL applicable to all kinds of hardware documentation. The CERN OHL applies to the documentation only and does not purport to cover accompanying software. It does however extend to patents held by the licensor which may be necessary to make use of the documentation. The rights granted under this licence agreement relate to the documentation itself, and to the manufacture of products based thereon.

6 Available at http://www.ohwr.org/licenses/cern-ohl/v1.1

One recurring element in the licence agreement concerns proper acknowledgement of licensor(s) through copyright and trademark notices, as well as maintaining of the disclaimer of warranties. This has to be complied with when redistributing the Documentation, modified or not. In case modifications were made, that fact has also to be recorded, together with the details thereof, the modifications licensed under the same conditions, and notification sent to the licensor whose documentation was modified, as well as to others who expressed a wish to be notified.

Article 4 deals with manufacture of products based on the documentation and imposes the same obligations concerning acknowledgement and disclaimer of warranties as apply to the documentation itself. It furthermore invites the licensee manufacturer to inform the licensor who has indicated its wish to receive information about the production.

Article 5 contains rather standard warranty and liability clauses, and article 6 contains the boilerplate provisions. One particularity is the dispute settlement clause which has been drafted with the aim of safeguarding privileges and immunities of Intergovernmental Organizations.

Conclusion

Today the CERN OHL is the licence used in 19 projects hosted on the Open Hardware Repository. CERN OHL - licensed products are present in company catalogues. Hardware development projects hosted on the Open Hardware Repository are seeing active involvement by companies to develop or produce open hardware; other proofs that 'commercial' and 'open' is a winning combination. The CERN OHL is an attempt at enabling this combination, and is also evolving – we are currently discussing v.1.2 to integrate comments and feedback received from the community, users and experts in the field alike, since releasing v.1.1.

CERN OPEN HARDWARE LICENCE v1.1

Preamble

Through this CERN Open Hardware Licence ("CERN OHL") version 1.1, the Organization wishes to disseminate its hardware designs (as published on http://www.ohwr.org/) as widely as possible, and generally to foster collaboration among public research hardware designers.

The CERN OHL is copyright of CERN. Anyone is welcome to use the CERN OHL, in unmodified form only, for the distribution of his own Open Hardware designs. Any other right is reserved.

1. Definitions

In this Licence, the following terms have the following meanings:

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This paper was published in the International Free and Open Source Software Law Review, Volume 4, Issue 1 (March 2012). It originally appeared online at http://www.ifosslr.org.

This article should be cited as follows:

Ayass, Myriam; Serrano, Javier, (2012) 'The CERN Open Hardware Licence', *IFOSS L. Rev.,* 4(1), pp 71 - 78
DOI: 10.5033/ifosslr.v4i1.65

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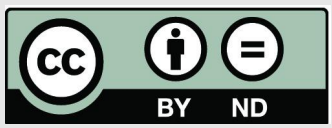

Volume 04 } Issue 01 } March 2012

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