10 Things to Know About The Intersection of Blockchain Technology, Open Source Software, and Patents

By: Jim Gatto

On their own, blockchain[1] technology, open source software, and patents each present legal issues that are often complex and frequently misunderstood. When combined, the complexity and misunderstandings of these three topics are magnified. This paper will address how this trio may work together and the potential legal and business ramifications resulting therefrom.

This set of issues is important now because blockchain technology is on the verge of mainstream commercialization and much of it relies on open source software. As with any technology where there is rapid innovation, the number of patents being filed and obtained is increasing. The interplay between patents and open source is often confused. The recent changes to the scope of patentable subject matter under U. S. patent laws have created uncertainty over what is patentable. This is particularly true with respect to blockchain-based inventions and how innovations in this space are disrupting business processes.

This paper will address some of the common issues and (misunderstandings) with these topics, both individually and in combination.

1. Overview of Open Source License Risks

The enterprise use of open source software has become ubiquitous. Nearly every major organization uses open source software. Surprisingly, not all organizations have sufficiently developed open source legal policies to ensure that their open source use does not cause more harm than good.

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[1] For simplicity, this paper will refer to blockchain, but the principles apply to other distributed ledger technology as well.

One of the greatest potential legal risks with open source software is the impact it can have on proprietary software. Certain open source licenses require that if other software includes, is derived from, or is combined with open source code covered by that license, then when that software is distributed, it must be licensed under the terms of the open source license. This is referred to as the "tainting" of proprietary software. This often means that licensees can copy, modify, and redistribute that software for free and the source code for that software must be made available to permit the exercise of those rights. This means that if the software developer wanted to be able to license the software under a proprietary license, it cannot. This can significantly impact the value of the software and the business itself. Yet, despite this risk, many companies do not effectively manage their developer's use of open source software.

2. Misconceptions About Patenting Open Source Software

Open source licenses are primarily copyright licenses that grant licensees the rights to copy, modify, and distribute computer code. However, there are significant patent issues that can arise with these licenses.

We often hear people express the belief that open source software cannot be patented. This is not true. There is no such prohibition. Any software that meets the requirements for patentability can be patented, regardless of how it may be licensed.

3. Patent License Grants Triggered by Open Source Licenses

Many open source licenses include patent grant provisions that require the licensee to grant an express patent license to others. These provisions vary based on a number of parameters. These parameters may include:

- What triggers a license grant (trigger conditions)—for example, if the licensee modifies, redistributes or contributes to the open source software?
- To whom is a license granted—just downstream users or upstream developers as well?
- What patents are licensed—presently owned patents or future acquired ones as well, patents that cover the licensors contributions only or future modifications by downstream users as well?

Many organizations are surprised to learn that under some open source licenses they must grant (sometimes broad) patent licenses to patents they own now and those they acquire in the future. Some are surprised that the scope of the patent license is not just patents that cover what the organization contributed but to downstream modifications by other users as well.

In addition to express patent licenses grants, it can be argued that at least some open source licenses trigger implied patent licenses. This issue is largely unresolved, but at least one court has indicated that open source licenses can trigger implied licenses.[2]

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[2] In a case involving GPL-licensed code, the court suggested, in ruling on a preliminary motion, that the GPL's "right to use" license grant triggered an implied license at least under the right to "use" under patent law. See Ximpleware, Corp. v. Versata Software, Inc. The court did not opine on the full scope of such an implied license.

If patents are important to your business, it is critical to ensure that you understand the scope of the express and/or implied patent licenses you may be granting by using and contributing to certain open source software.

4. Potential Implications of Asserting Patent Claims Against Open Source Users

Certain open source licenses seek to deter licensees from asserting patent infringement claims relating to the use of open source. These licenses impose a penalty against licensees who make such claims. The penalty against such licensees varies by license, but can include loss of patent licenses granted to the licensee, loss of licensee's rights to use the open source software, and/or other loss of rights.

One thing that has surprised some people is the scope of these penalties. For example, some of these provisions are triggered even if the licensee brings a counterclaim for patent infringement. Under some licenses, the penalty includes licensee's loss of all rights, including the right to use the open source software and any patent licenses that were granted.

For more information on these and other patent issues with open source, see our paper on Patent Issues with Open Source Software.

5. Open Source Issues with Nodes and Clouds

Most open source license legal issues arise upon "distribution" of the software. Generally, providing network access to software (e.g., via a SaaS or cloud model) is not deemed a distribution, because the user does not get a copy of the program or rights to copy, modify, or redistribute it. Thus, the good news for entities that have proprietary software that is accessed via a network is that many of the potentially problematic issues (tainting, patent license grants, etc.) that can arise from use of open source software are non-issues under most open source licenses, including the General Public License (GPL). This means that you can run programs in the cloud that include or are derived from GPL programs and not subject your proprietary code to the terms of the GPL.

However, there are some open source licenses that can trigger these problematic issues when software is accessed via a network, even if it is not distributed to others. Many organizations know that the Affero GPL triggers such legal obligations if you provide network access to covered software. However, the Affero GPL is not the only license that may have open source legal implications when providing network access. Some of the other licenses that can raise issues include, but are not limited to:

- GNU Affero General Public License
- Open Software License 3.0 (OSL-3.0)
- Honest Public License (HPL)
- European Union Public License (EUPL)
- Apple Public Source License
- Academic Free License
- Various Creative Commons Licenses

When using open source software in network accessed deployments, it is imperative to review each of the licenses that govern the open source components to ensure that there are no unforeseen consequences. This likely will apply to at least some software that runs on blockchain nodes. For example, if open source code is combined with "proprietary" software that is run on a node, users who access this software over a network may have a right to the source code as may the node operators to whom you distribute copies.

6. Patenting Blockchain Technology

Blockchain technology is as patentable as any other technology. Despite the recent *Alice* decision, which redefined the scope of patentable subject matter, many blockchain patents have been granted and the rate of filing is increasing. As such, many of the technical innovations in this space are being patented. For more information on patenting blockchain technology, see our papers on [Drafting Effective Blockchain Patents](#), [Patent Strategies for Cryptocurrencies and Blockchain Technology](#), and [Recent Blockchain Patents of Note](#).

7. Considerations for Open Source Licensing of Blockchain Technology

Many blockchain-based applications are licensed under open source licenses. Given the distributed nature of many public blockchains, the prevalence of open source licensing makes sense. However, open source licensing will not necessarily be the best option for all aspects of blockchain technology and blockchain-based applications.

One thing that helped the internet achieve worldwide adoption was the open source nature of some of the underlying technology and protocols. So, too, will blockchain adoption benefit from some of the underlying technology and protocols being open source.

One ramification of open source code is that others can easily modify and fork the code. In some cases this is beneficial. In other cases, it leads to fragmentation and may not be as beneficial.

For certain private blockchain uses, proprietary software may be preferred. Also, it is likely that many blockchain-based applications that leverage the underlying (open source) infrastructure may be distributed under proprietary licenses.

In short, there will be some situations where it will be beneficial to use open source licensing and for others proprietary licensing will be preferable. These are business decisions that will need to be made on a case-by-case basis based on business and legal principles.

8. Choice of Open Source License for Blockchain Technology and Applications

Assuming a decision is made to distribute particular blockchain software under an open source license, the questions then becomes which one? There are hundreds of different versions of open source licenses. The decision regarding which to use also involves careful consideration of the business and legal issues. We have a checklist of issues we address with clients facing this decision. Some of the initial choices to make are:

- Restrictive or Permissive License—do you want to ensure the software and improvements remain open source or should licensees be permitted to use the software in proprietary software?
- Patent Grant—do you want to grant a patent license to downstream users and/or require them to grant patent licenses upon further distribution?
- Scope of Patent Grant—if you include a patent grant provision, what are the trigger conditions for causing a licensee to grant a patent license, who gets the license, and what is the scope of the patents to be included?

Based on these and other choices, an appropriate license can be selected.

9. The Need for Open Source Policies

Each organization using or distributing software under open source licenses should create and enforce written open source policies. These policies should include processes for approving and managing the use and/or distribution of open source software. They should take into account the potential ramifications of open source licensing on the organization's patent portfolio, if applicable.

For more information on this, see our paper on Open Source Policies — Why You Need Them And What They Should Include

10. Conclusion

The foregoing is just the tip of the iceberg with respect to the business and legal issues that can arise with the use of blockchain technology, open source software, and patents. As companies increase the commercial exploitation of blockchain and distributed ledger technology, they would be well served to carefully consider these issues as a whole. Such consideration should involve consultation with individuals knowledgeable of the range of issues as well as the business and legal ramifications that can arise.

Sheppard Mullin's Blockchain Technology and Digital Currency team helps clients develop innovative and comprehensive legal strategies to take advantage of what may be the most disruptive and transformative technology since the Internet. We focus on advising clients on how to meet their business objectives, without incurring unnecessary legal risk. Our team includes attorneys with diverse legal backgrounds who collectively understand the vast array of legal issues with and ramifications of blockchain technology and digital currencies. More Information

Sheppard Mullin attorneys are at the forefront of the emerging legal issues arising from and risk management necessitated by the rapid increase in the use of open source software. We work with business, technical and legal personnel to provide comprehensive advice regarding all aspects of use and distribution of open source software and contribution to open source projects. Our team includes software programmers, leading IP practitioners and experienced software licensing professionals and we have analyzed hundreds of open source licenses on behalf of clients. Through this extensive experience we have developed a library of knowledge about open source licenses that cover over 93% of the open source components in use today. More Information

Sheppard Mullin offers a complete patent practice, including patent prosecution, licensing and related transactional matters, as well as client counseling. Our patent prosecutors have experience in a range of technologies, including pharmaceuticals, software, biologics, electronics, industrial manufacturing, polymers, diagnostics and interdisciplinary technologies such as personalized medicine and medical devices. More Information

For further details on blockchain and digital currency, please contact:

James G. Gatto
Leader, Blockchain Technology and Digital Currency Team
202.747.1945
jgatto@sheppardmullin.com