

Intellectual Property Law and the Performance of Distributed Problem Solving Networks (DPSN)

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Overview of case studies

This discussion of the role of intellectual property law in Distributed Problem Solving Networks is based on the findings from a set of case studies, which have been created as part of a research project investigating the Performance of Distributed Problem Solving Networks jointly driven by the Oxford Internet Institute (OII) and the McKinsey Technology Initiative (MTI). To avoid repeating the account of the case studies, I will not specifically introduce the projects, but directly enter into the analysis of the IPR related questions connected to each case study.

Table 1: Case studies by industry and IPR regime

| Name of case study | Industry | IPR involved | IPR regime |
|--------------------------|-------------------------|---|--------------------------------|
| Firefox | Software | Copyright | MPL |
| Wikipedia | Encyclopedia publishing | Copyright | GFDL |
| A Swarm of Angels (ASOA) | Film production | Copyright and derivative rights, trademarks | Creative Commons (CC) BY-NC-SA |
| Atlas | Research tools | Copyright, patent, database | Custom made |
| News aggregators | News publishing | Copyright, database | Some CC, some proprietary |
| Sermo | Health information | Copyright | Proprietary |

Paul David identified three different strategies organizations can employ to capture the benefits from DPSN:¹

- Hold monopoly power over a complementary product or service
- Hold monopoly power over a productive asset required
- Drive positive externalities

¹ See Paul David: Distributed Problem-Solving Organizations and the Evolution of Innovation Strategies: A Quick Tour around the Entire Elephant *in* "Open Source Corporate Strategy", A Symposium at the AOM Conference, Philadelphia (2007).

All three strategies can be supported or even be entirely based on IPR, e.g. by claiming database protection for a productive database, filing a patent for a complementary service (for example the MP3 compression technology), or claiming copyright for a piece of software implementing an open standard. The question when designing or using a DPSN for problem solving is therefore not a binary decision to entirely give up or fully claim and exercise IPR protection for all aspects of all assets. As we will see in the following analysis, in each case study the decision on the appropriate strategy was taken jointly with the decision on the asset or the service that will remain under the control of the network and an appropriate means of control to capture the benefits.

Key themes and findings

During the analysis of the different types of Distributed Problem Solving Networks we have identified two different basic strategies of using intellectual property law: Proprietary and Open strategies. Digg, Sermo, and OhMyNews use copyright law to appropriate the contributions of their contributors and/or the created end-products. In Firefox, Wikipedia, and A Swarm of Angels (ASOA) the contributors "own" the end product collectively.

Both strategies are built on intellectual property rights. The "copyleft" rhetoric often used to describe the Open Source paradigm may lead the layperson to think that an "open" collaboration was a space without Intellectual property rights. On the contrary, IPR is in these networks actively used to keep the space of collaboration and the end-products "open", i.e. to avoid appropriation of the end-products by individuals. In the proprietary strategy the contributor assigns her rights to a right-holding organization, e.g. the intermediary like Sermo, Digg, or OhMyNews, which selectively releases the contributions and the created products to the network and the general public. Under "open" strategies, e.g. in Firefox, Wikipedia, ASOA, or Global Voices, copyright remains with the creator, but she is restricted by the terms of the agreement between the collaborators in exercising her right against the other collaborators.

In the proprietary strategy, the degree of access a contributor will have to her contribution and the resulting product after assigning her copyright to the intermediary is determined by the intermediary in view of the contributors' motivation to contribute. The intermediary needs to balance its interest to appropriate as much information as possible and to attract as many collaborators as possible at the same time. Hence the intermediary is restricted in its attempt to fully appropriate the contributions by the utility function of the members of the network. Since Problem Solving Networks are like most networks characterized by high network effects and the individuals face high switching cost, intermediaries will be able to increase the degree of appropriation over time without losing members at the same pace. Members will only leave if the utility they get elsewhere minus the switching cost is higher than the perceived utility they currently get from contributing to a particular problem solving network. Under the "open" paradigm, each contributor has full access to her contribution and the contributions of the other collaborators as well as the end-products and is free to use them.

The degree of access and the permissible uses are clearly regulated in all case studies. Digg, Sermo, OhMyNews, and A Swarm of Angels ask their contributors to accept the terms of use or of membership respectively, before starting to contribute. The concrete terms are set by the intermediaries in Digg, Sermo, and OhMyNews. The Swarm, i.e. the members at ASOA, has decided on the details of the license during the development of the project. One could say that also the terms of the license are peer-produced. In Firefox and Wikipedia, there are strong foundations governing the license. But since there is no formal

"membership" in these two projects, a contributor "joins" the community by contributing something under a specific license to a particular project.

The different degrees of freedom are also reflected in the tools provided to access the end-products. Digg, Sermo, and OhMyNews provide their users with user interfaces, which allow only partial extraction of data from their database. In the Digg case we have seen that Digg could even change which statistics about the activity of their users they provide. The tools used by Firefox and Wikipedia, CVS and Wikis, allow each member to access and modify all individual parts and the end product.

In the case studies we could not observe a connection between the IP regime and the willingness to share. While the "public good motivation", i.e. the decision to contribute something to a shared resource, plays an important role for the contributors of ASOA, OSS, and Wikipedia, in Digg, Sermo, and OhMyNews users seem to be motivated by the utility they get from participating in these communities. Therefore the users of the latter networks do not seem to mind that they do not own the copyright.

From this analysis follow two important conclusions: Both the network and the intermediary derive benefits from the collaboration, and appropriating the contributions and the end products is not the only way of capturing benefits: Digg, Sermo, OhMyNews own the products, but their users derive sufficient benefits to invest their time and effort and contribute to the platforms. In Firefox, Wikipedia, and ASOA the end products are owned collectively by the community. Again, every individual derives sufficient benefits to contribute.

The difference between these two groups is that in the Digg, Sermo, and OhMyNews case, the intermediary also captures significant monetary benefits from offering services like advertising or granting privileged access, while in the Firefox, Wikipedia, and ASOA case, the network itself does not attempt to monetize the created assets. The option to sell licenses for commercial use at ASOA reflects the attempt to raise more capital for further production rather than a strategy to satisfy the demands of the shareholders to get a monetary return on their investment.

The decision to appropriate or to open an informational product is not a binary decision and does not have to cover the whole product as most informational products can be structured. Digg, Sermo, and OhMyNews hold monopoly power over a required productive resource, the database, and thereby control access to the end products of the network, but do not claim copyright for the contributions of the members (Digg) or grant their users a license to publish their contributions elsewhere (Sermo and OhMyNews). The decision on what to appropriate and what to open up is a strategic decision governed by the network's business model, the motivation of the collaborators, and an assumption on what will be the valuable assets of the network in the future. We have seen in the case study on Digg and the discussion of the Sermo community that intermediaries are not totally free to set the rules, but need to balance their interest with the motivation of the collaborators.

Problem Solving Networks do not only rely on the contributions of their members, but also on the interaction with other sources of information, i.e. the flow of material between the network and the outside world. This interaction creates legal risks stemming from the infiltration of the shared space by legally protected material. The material could enjoy legal protection from copyright law, trademark law, patent law, or trade secret protection. Additionally, it may be protected by Database Protection law in the European Union. In the cases analyzed, copyright law played the dominant role.

The legal risk has become particularly apparent in the news aggregator case (Digg, Google News), but also the SCO vs. IBM case has demonstrated the legal risk for Open Source

Software.² All Problem Solving Networks, regardless of the selected strategy - appropriation or open space - need to have appropriate checks in place, which protect the network from the legal risk of being infiltrated with copyrighted (or potentially even more harmful: patented) material. In some instances it is difficult to judge what is legal and what not, because of the fuzzy scope of the copyright law exceptions, in particular in the European Union, as seen in the news aggregator case. Although the primary infringer of copyright law is the individual member, the network may be liable for secondary / contributory infringement if it has not bothered to install appropriate checks or has no process in place to act on receiving notifications of copyright law infringements. Some organisations (for example: Digg, Innocentive,³ Creative Commons⁴) offer and publish therefore a process for copyright owners to raise their concerns about a certain piece published on their web sites. The other organizations seem to rely on the self-control of the communities or have not realized the threat of legal infiltration and the risk of secondary liability for the acts of their members.

Creating alternative IPR regimes

We have also seen that freedom of contract allows the creation of alternative regimes of intellectual property law. Claiming copyright and licensing it under your own terms to the general public is a powerful tool for creators to shape the permissible uses of their work in accordance to their beliefs or business needs. The lack of a unified standard of copyright law across different legislations creates significant transaction cost, in particular when working with licensing arrangements, and creates risks when expanding a Problem Solving Network to different jurisdictions. This is particularly painful in the European Union with its small legal territories, where despite the attempts to harmonize copyright law in practice no common legal standard has been established yet. Organizations like Creative Commons can offer valuable support by providing "translations" of their licenses for several jurisdictions, although so far no cross-border case has been litigated on the grounds of a CC license to see if courts in different jurisdictions really have a similar reading of the translated license.

The case studies analyzed in this project can be grouped according to their use of intellectual property law. The first group of case studies (Digg, OhMyNews, Sermo) uses Intellectual Property Rights supported by technical protection measures to appropriate the products created by the collaboration. In the second group of case studies (Firefox, Wikipedia, ASOA) the collaborators own the end products collectively and appropriate the benefits jointly. The first group of case studies are private ventures, which have raised significant funding from private investors, who expect to get a financial return on their investment. The funding of the second group of case studies has been volunteered or provided without any expectation of a direct financial benefit. Companies participating in Open Source Communities may hope to derive benefits from driving positive externalities, or contributors to ASOA or Wikipedia may hope to build a reputation, which they could monetize in other projects, but these strategies do not rely on the extraction of benefits from the collaboration by appropriation of the created products. Another strategy to monetize open creation is dual licensing. In the ASOA case, the "non-commercial share-alike" CC license, allows the free distribution of the end-product for non-commercial use only. Therefore the ASOA community could decide to sell licenses

² See Pamela Jones: Summary of SCO vs. IBM available at <http://www.groklaw.net/staticpages/index.php?page=20050315132709446> (last visited 10/12/2007).

³ See <http://www.innocentive.com/copyright.php> (last visited 22/11/2007).

⁴ See <http://creativecommons.org/dmca/> (last visited 22/11/2007).

for commercial use to generate additional revenue to fund further production. This strategy is becoming increasingly common in Open Source development.

As different as the goals of the two groups may be, legally they both need to address a similar set of challenges:

- How to create and maintain an open space of collaboration?
- How to guard this space against infection with misappropriated information and other forms of liability?
- How to allocate the end products of the collaboration in view of the motivation of the collaborators?
- How to design and enforce a legal framework that reflects the outcome of these three questions?

Case studies referenced in this paper

- David Bray, Karen Croxson, William Dutton, Benn Konsynski: Sermo: A Community-Based Knowledge Ecosystem, Working paper in progress, Oxford Internet Institute, cited as "Sermo case"
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- Jean-Michel Dalle, Matthijs den Besten, H ela Masmoudi, Paul David: Bug-Patching for Mozilla's Firefox, Working paper in progress, Oxford Internet Institute, cited as "Firefox"
- Wolf Richter, Tobias Escher, David Bray: The Performance of Distributed News Aggregators, Working paper in progress, Oxford Internet Institute, cited as "News aggregator case", containing the embedded case studies "Digg", "Global Voices", and "OhMyNews"
- Philipp Tuertscher: The ATLAS Collaboration – A Distributed Problem-Solving Network in Big Science, Working paper in progress, Oxford Internet Institute, cited as "Atlas case"

All the papers and case studies are available on the project website at: <http://www.oii.ox.ac.uk/research/project.cfm?id=45>