Patent Collaboration: Licensing, Patent Pools, Patent Commons, Open Source and Communities of Innovation

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Abstract
Patent pools and other models of patent collaboration are a growing feature of the patent landscape internationally. Patent collaboration can be a means of overcoming patent thicket problems, avoiding costly patent infringement litigation, reducing transaction costs and promoting efficiency and innovation. Patent co-operation is also used, commonly as a result of some form of regulatory intervention, where there are urgent issues of strong public concern. Access to medicines and climate change are examples. However, patent collaboration can raise competition law issues.

This article reviews the models for collaboration internationally, considers specific examples and considers the application of competition law and possible competition law barriers to collaboration in the New Zealand context. It argues that patent collaboration can now be used as a possible approach to promoting innovation in appropriate industries in New Zealand.

II. Models for Collaboration: Licensing, Patent Pools, Patent Commons, Open Source and Other Communities of Innovation

There are a number of models for collaboration by patent owners wishing to share their patented technology, as a means to foster innovation. In patent law, such collaboration is a response to concerns about the shortcomings of the patent system, and in particular to problems caused by patent thickets or patent gridlock, with the patent thickets in the biotechnology industries being one example. Patent pools are one model of patent co-operation, but there are a number of other approaches. Patent sharing is generally for the purpose of increasing opportunities for innovation, but a number of patent collaborations also have a wider public interest purpose, for example to promote innovation in public health or technologies to combat climate change. In this context, regulatory intervention can provide the impetus for collaboration.

In the past, competition authorities took an unfavourable view of patent pools, and collaborations, but this view has changed, so that co-operative models are not necessarily viewed as anti-competitive internationally. It is likely that New Zealand regulators will take a similar approach.

This article reviews the models for collaboration internationally, considers specific examples and considers the application of competition law and possible competition law barriers to collaboration in the New Zealand context. It concludes that patent collaboration can now be seen as a possible approach to promoting innovation in appropriate industries in New Zealand.

Acknowledgement: This research is part of a wider project sponsored by the Ministry for Business Innovation and Employment. The authors would like to acknowledge the support of the Ministry in sponsoring this research.

The Patents Act 1953 is in the process of reform with a new Patents Bill before Parliament.
thicker". In these situations, each company requires to use other companies' patented invention in order to produce and further innovate, so that there are multiple patents and multiple potential licensees, and the need for large-scale cross-licensing, which can be impractical and inefficient. It is these circumstances that led to the development of other approaches to collaboration, such as patent pools and patent commons.

**Patent Pools and Patent Commons**

Patent Pools are mechanisms whereby patent owners share their patented technologies. At their simplest, patent pools are based on an agreement by two or more patent owners to share and cross-license their patents. Generally agreements to pool patents are made between competing companies, where each of the companies holds patents necessary to the production of a particular product. Patents may be complementary or blocking. Pooled patents are available to members of the patent pool, and, in the case of open pools, non-members can enter into standard licensing agreements.

Patent pools are typically established in these circumstances to overcome "patent thicket" problems, also referred to as "anticommons" problems, where a gridlock in innovation is caused by the sheer number of patents involved and the difficulties of negotiating licences for this patent "thicket". In these circumstances patent pools can be an efficiency-enhancing alternative to numerous complex licensing agreements, and, potentially, to costly patent litigation. Patent thickets are common in high-technology industries where there are potentially hundreds of overlapping patents involved in producing a product. A patent pool puts in place a pool license as a substitute for a property rule requiring individual bargaining for each individual transaction. Benefits claimed for patent pools are increased efficiency through reduced transaction costs, clearing blocking positions, and integrating complementary technologies. In these situations, patent sharing through a patent pool can be more about the short-term goal of avoiding litigation, rather than about promoting future innovation in the long term. There can nevertheless be benefits in facilitating and promoting research and development.

Patent pools are one of a number of collaborative models. Patent pools in the sense of a cross-licensing scheme are one of a number of collaborative models. Similar to patent pools are patent commons, which are broader in purpose than patent pools, and not limited to cross-licensing agreements between competitors. Patent pools are typically focussed on obtaining licenses to produce products. Patent commons take more various forms, generally accept submissions of patents more widely, and in some cases are established not to facilitate licensing so much as to promote future innovation in areas of public concern, or for philanthropic purposes.

**Patent Pools and Patent Commons: Specific Examples**

Patent pools are not new, although they are experiencing a recent resurgence. Early examples of patent pools include in the United States the sewing machine patent pool, the Singer machine combination of 1856. Also in the United States, the Manufacturers Aircraft Association (MAA) was formed in 1917. The MAA was a private corporation established after government intervention to encourage production of airplanes in World War I. Two companies, ("the Wright company" and "the Curtiss company") held major patents on aircraft technology, and the cost of licensing made airplane manufacture very expensive. The companies were initially reluctant, seeking higher royalties, but after government pressure they eventually agreed. The MAA established a patent pool by entering an agreement with each manufacturer under which each agreed to cross-license their patents on an essentially royalty-free basis. This led to increased airplane manufacture. However, the MAA was eventually dismantled in 1975 in accordance with a consent decree after antitrust regulators alleged antitrust violations. The MAA was not a purely private initiative to enhance efficiency, it was a cross-licensing system imposed by government at the time.

More recently, in the 1990s a patent pool was established for the hundreds of patents covering the technology associated with the MPEG-2 standard format for encoding digital video and audio signals. The standard was almost unusable.
because of the patent thicket surrounding it, in which different firms between them held hundreds of patents. The solution was the MPEG patent pool, established in 1997, when patentees licensed 27 essential patents to the pool to be licensed by a single administrator, the MPEG-LA. The MPEG-LA has since used this model for patent pools in other industries facing similar issues.27

Patent pools have also been used in recent years in contexts that raise issues broader than economic efficiency and reduced transaction costs. These pools are not simply about lowering the cost of the resulting product, but also have broader policy goals, and are often the result of direct intervention by policy-makers. For example, there are a number of examples of patent pools established in order to encourage innovation in medicine and public health, and there is growing interest in using patent pools for technologies useful in combating climate change.

An example of a patent pool established to reduce patent thicket problems in order to promote public health is the Medicines Patent Pool (MPP). The MPP was established in 2010 after having been proposed by civil society groups some years earlier, and after suggestions from the World Health Organisation. The MPP is a public policy response to the HIV crisis in the developing world, and its focus is on increasing access to HIV medicines in developing countries. Industry support was initially weak, and there is still little evidence of widespread industry support. Government ministers and officials from the United States and the United Kingdom encouraged the initiative. UNITAID, the International Drug Purchase Facility hosted by the World Health Organisation, is providing the funding for the Pool under a five-year Memorandum of Understanding. The MPP “pools” multiple patents related to HIV medicines in one place, which are then licensed out by the MPP to cut down on transaction costs for all parties involved. This facilitates generic manufacture of patented drugs. An additional focus is on facilitating the development of new products such as fixed-dose combination drugs for treating HIV, in which two or more newer medicines are contained in one pill, involving working of a number of different patents, and of adapted medicines like those that can be used in hot climates without refrigeration, and HIV medicines for children. Under the MPP model, patentees license drug developers in exchange for royalties on product sales. It is too early to judge the success of the MPP initiative, but it is an interesting example of a patent pool established to facilitate production of essential drugs and to facilitate on-going innovation in an area of urgent need.

In the area of climate change there are also efforts to find appropriate collaborative structures to share technologies in order to develop and disseminate innovations that may assist in overcoming the challenges posed to the global community by climate change. The urgency of the need to combat climate change is seen here as a driver for collaboration and/or direct regulatory intervention such as compulsory licensing of patents. Concerns about the need to disseminate expensive technologies to developing countries are also a factor. A variety of collaborative approaches have been proposed for climate change technologies, including patent pools, patent commons and open source initiatives.

One example of a patent pool dealing with climate change technologies is the Eco-Patent Commons. This variant of a patent pool was launched in January 2008 by IBM, Nokia, Pitney Bowes and Sony in partnership with the World Business Council for Sustainable Development. The concept is that “anyone who wants to bring environmental benefits to market can use these patents to protect the environment and enable collaboration between businesses that foster new innovations”. The patent pool is open to all, including universities, research centres and similar. One hundred eco-friendly patents have been pledged by thirteen companies in a variety of industries: Bosch, Dow, DuPont, Fuji-Xerox, Hitachi, HP, IBM, Nokia, Pitney Bowes, Ricoh, Sony, Taisei and Xerox. The number of patents each business wishes to

16. See Richard J Gilbert, above, n 6 at 5. See also J Clark, J Piccolo, B Stanton and K Tyson, Patent Pools: A Solution to the Problem of Access in Biotechnology Patents? (December 5, 2000) 13. The MPEG patent pool only accepted essential patents, in the sense that the patent had to be infringed by the defined technology. See http://www.uspto.gov/web/offices/pac/dapp/oppa/patentpool.pdf.
21. Ibid at 125.
22. See explanation at http://www.medicinespatentpool.org/what-we-do/how-it-works/.
23. Mattioli, above, n 5 at 121–125
25. Ibid at 2–3.
pledge to the Commons is left to its discretion. The patents pledged should provide environmental benefits such as energy conservation or efficiency and pollution prevention. Patents included in the Eco-Patent Commons are: ...

...subject to a covenant, or pledge, not to assert the patent against implementers environmentally beneficial use of the pledged patent(s). That is, subject to defensive actions..., the patent holders shall not assert their pledged patents against an implementer’s infringing machines, manufactures, processes, or compositions of matter that alone, or when in a larger product or service, achieve environmentally beneficial results.

Under this model patents are therefore freely available for environmentally beneficial use, without royalties.

Another example of a patent collaboration in the climate change area is the Green Xchange, which aims to “accelerate and scale sustainability-innovation through sharing intellectual property assets”. Green Xchange is structured differently from the Eco-Patent Commons. The Green Xchange provides a standardized patent license structure, so that patentees can control what levels and to whom their patents are available. It offers three standard license options, therefore reducing negotiation and transaction costs. It also aims to facilitate asset exchange and collaboration.

Patent pools as generally understood are therefore only one of a number of collaborative models currently being discussed and trialled as responses to global crises such as access to essential medicines and the threat of climate change. In these cases, the perceived urgent need for innovation is spurring collaborative efforts.

Open Source Model of Collaboration

Another model of collaboration is open source, based on the open source software model, but used to refer to a shared technological platform for innovation. The open-source movement of the 1980s onward originated the concept of a common platform, leading to projects such as the Linux operating system. The threat of patent infringement litigation led a group of Linux based software companies to agree not to sue one another for patent infringement. This led to the creation of the intellectual property company Open Invention Network in 2005. According to the Open Invention Network website, the company “acquires patents and makes them available royalty-free to any company, institution or individual that agrees not to assert its patents against the Linux System”. Patents owned by the Open Invention Network can be used royalty-free by any company, institution or individual that agrees not to assert its patents against the Linux System. It is a system of non-assertion pledges which aims to defend Linux users against patent infringement suits, and thereby encourage firms to invest in Linux and to thereby encourage further innovation. It has industry support including financial backing from companies including IBM, NEC, Novell, Philips, Red Hat and Sony. This system of non-assertion pledges shares important features with the Eco-Patent Commons.

Other Models for Collaboration

There are also other models for collaboration. These include systems for preferential licensing for certain uses or users, such as in developing countries. There are also non-assertion pledges in respect of particular uses or users, or in particular circumstances. One example here is the Patent Commons Project. This project seeks pledges from holders of software patents under which the patentee makes a commitment not to enforce software patents against open source software or standards, and by reserving the right to assert them against people making intellectual property claims against open source software, developers and users.

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30. See website at http://greenxchange.cc/info/about.
31. http://greenxchange.cc/info/about. See also discussion in Carrier, above, n 26 at 528 and in Mattioli, above, n 5 at 145–147.
34. See Michael Mattioli, above, n 5 at 135.
36. Ibid. The Open Invention Network purchases patents for all areas of software useful in protecting the Linux System. The license agreement is at http://www.openinventionnetwork.com/pat_license_agreement.php.
38. See Michael Mattioli, above, n 5 at 136–137. See also the Open Invention Network website http://www.openinventionnetwork.com/about.php.
42. See http://www.patentcommons.org/about/support.php.
There is also always the option of placing patents into the public domain, although it is not clear why a company would pay patent application and maintenance costs in order to place the patent in the public domain.\(^{43}\) There are therefore a variety of approaches to establishing frameworks for collaboration for innovation, or forms of constructed cultural commons.\(^{44}\)

**Impetus for Collaboration**

The above review demonstrates that patent collaborations are established for a variety of reasons. Patentees may themselves establish a patent pool in order to avoid patent thicket problems. Collaborative systems such as non-assertion pledges can be motivated by the desire to find a defence to litigation. Sharing of patents also takes place where there is government intervention or intervention by international officials or policymakers, or civil society groups.\(^{45}\) Regulatory intervention to encourage patent-sharing is a relatively non-intrusive approach to promoting collaboration. A more direct approach could see policy-makers actually fund and establish a patent-sharing regime. Compulsory licensing is also a possible, if unpopular, intervention, but compulsory licensing is restricted under the Trade Related Intellectual Property Rights Agreement Articles, 30–31.\(^{46}\)

A number of recent patent pool initiatives have been in a context of urgent policy need, and patent collaboration has resulted from some form of government and policy-makers intervention. In general, these collaborative efforts are deliberately designed rather than being the product of a process of evolution as a product of property-based market transactions by private actors.\(^{47}\)

Do these patent pools and other collaborative arrangements constructed for reasons of public policy actually work effectively and achieve the policy or philanthropic goals for which they were established? For a number of the examples discussed, it is probably too early to tell. The MPP was established by international organisations outside the industry, and it has public sector support. Whether it will be successful in improving access to and encouraging development of new HIV/AIDS drugs remains to be seen.\(^{48}\) The situation is similar to the Eco-Patent Commons and Green Xchange. In both cases it is too early to measure success. For the Eco-Patents Commons, it will be difficult to measure success at any time, because there is no system for identifying whether licenses are actually being used.\(^{49}\) In both cases, the incentives to companies to contribute patents are a little unclear. It has been suggested that motivation may be purely philanthropic, or that philanthropy may be mixed with the desire to use the projects as a means to selling complementary goods or to encourage adoption of certain technological standards.\(^{50}\)

### III. Competition Law Issues

Patent pools involve collaboration, and commonly collaboration between competitors. Any collaboration between competitors raises the potential for competitive harm, and therefore raises issues of competition law and policy.

Patent pools that limit competition between competitors will potentially breach the provisions of the New Zealand Commerce Act 1986, particularly s 27 which proscribes contracts, arrangements or understandings that have the purpose, effect or likely effect of substantially lessening competition in a market. There is also the potential for patent pools to breach the s 30 price-fixing provisions, if the agreement is between competitors or potential competitors and if the cross-license provisions have the purpose, effect or likely effect of controlling or maintaining the price of goods.\(^{51}\) There is no New Zealand case law on specific patent pool arrangements and the applicability of the Commerce Act 1986, but guidance can be drawn from other jurisdictions, particularly the United States and Europe.

Patent pools in which competitors’ agreements inhibit competition between substitute products or technologies, whether made and sold by members of the pool or by licensees of the pool, are likely to breach s 27.\(^{52}\) In this situation, firms that would otherwise compete in selling substitute products are instead agreeing not to compete. Patent pools are also likely to contravene if they exclude legitimate competition by those not part of the pool.\(^{53}\) The ability of members to license outside of the pool will then be a factor in determining competition harm. Pool licenses may also contain terms that otherwise limit competition, or limit

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43. See discussion in Mattioli, above, n 5 at 145–147.
44. In Madison, Frischmann and Strandburg, above, n 3 at 659 the authors examine various forms of “constructed cultural commons”, using that term to mean “environments for developing and distributing cultural and scientific knowledge through institutions that support pooling and sharing that knowledge in a managed way”. These environments are designed and managed rather than left to evolve through market transactions grounded solely in property rights.
45. Mattioli, above, n 5. This article examines the theory that patent sharing is a form of market self-correction in which private actors overcome anticommons problems by coordinated private action in the form of patent sharing. The implication of this theory is that the market self-corrects and that there is no need for regulatory intervention. However, Mattioli’s analysis concludes that the reality is much more complex, and that, among other things, these communities cannot be expected to form without government support.
46. See discussion in Mattioli, above, n 5 at 152–153.
47. Madison, Frischmann and Strandburg, above, n 3 at 659.
48. Mattioli, above, n 5 at 125.
49. Mattioli, above, n 5 at 145.
50. Mattioli, above, n 5 at 145.
52. See Gilbert, above, n 6.
competition in other non-patented products. There is also potential for patent pool arrangements to form the basis for cartel behaviour, providing opportunities and mechanisms for members to agree on matters such as price and to allocate products and territories.54

In the United States, patent pools have historically attracted the interest of antitrust authorities, and continue to do so in some circumstances. It is true that a number of early patent pools were established to avoid competition.55 However, more recently United States antitrust authorities have recognised that some patent pools have pro-competitive benefits and can enhance innovation. According to the 1995 Antitrust Guidelines for the Licensing of Intellectual Property,56 cross-licensing and pooling arrangements “may provide procompetitive benefits by integrating complementary technologies, reducing transaction costs, clearing blocking positions, and avoiding costly infringement litigation. By promoting the dissemination of technology, cross-licensing and pooling arrangements are often procompetitive”.57 The United States Department of Justice and the Federal Trade Commission have also expressly recognised the benefits of patent pools in overcoming the problems of patent thickets, and that they may “mitigate royalty stacking and hold-up problems that can occur when multiple patent holders individually demand royalties from a licensee”.58

However, the United States antitrust authorities continue to take the view that cross-licensing and pooling arrangements can have anticompetitive effects in certain circumstances. These include collective price or output restraints as part of the pooling agreement, exclusion of a competitor by pool members who collectively possess market power or exclusion of a competitor from the pool with the effect that they cannot effectively compete in the market for a good incorporating the licensed technologies.59 Pool arrangements may also have anticompetitive effects if the arrangement deters or discourages participants from engaging in research and development and thus retarding innovation, such as an arrangement requiring members to license current and future technology at minimal cost which may reduce incentives to research and development.60 In their 2007 report, the antitrust agencies noted that:61

Pooling arrangements typically warrant greater antitrust scrutiny than do cross-licensing agreements due to the collective pricing of pooled patents, greater possibilities for collusion, and generally a larger number of market participants.

The Agencies concluded as follows:62

- The Agencies will continue to evaluate the competitive effects of cross licenses and patent pools under the framework of the Antitrust-IP Guidelines. Given the cognizable benefits and potential anticompetitive effects associated with both of these licensing practices, the Agencies typically will analyse both types of agreements under the rule of reason.
- Combining complementary patents within a pool is generally procompetitive.
- Including substitute patents in a pool does not make the pool presumptively anticompetitive; competitive effects will be ascertained on a case-by-case basis.
- The competitive significance of a pool’s licensing terms will be analysed on a case-by-case basis considering both their procompetitive benefits and anticompetitive effects.
- The Agencies will not generally assess the reasonableness of royalties set by a pool. The focus of the Agencies’ analysis is on the pool’s formation and whether its structure would likely enable pool participants to impair competition.

This summarises the current views of United States antitrust regulators, and these views are likely to be given weight by the New Zealand Commerce Commission and by the New Zealand courts in any consideration of patent pools in a competition law context. While patent pools are viewed more favourably by competition authorities today than they were before the 1990s, the risk that competition authorities may oppose a patent pool arrangement must be taken into account in devising an appropriate model.

IV. Conclusion

Patent collaboration has become an established feature of the patent landscape, as a means of promoting innovation, and is likely to be more common in the New Zealand context. Patent collaboration has potential benefits. In industries heavily subject to current patent protection, there is the potential to encounter patent thicket problems. A patent pool model can reduce transaction costs, increase efficiency and at least potentially increase the speed of innovation. Patent pools can also reduce the risks of costly patent infringement litigation, which is a benefit to all companies involved, but a particular benefit for small to medium sized businesses which are less able to absorb the costs of litigation. Industries

54. See, Gilbert, above, n 6, giving the example of the case United States v National Lead Company 63 F. sup. 513, 518 (S.D.N.Y. 1945), aff’d, 332 U.S. 319 (1947) at fn 23.
55. Above, n 52. Examples are listed in fn12.
57. Ibid, at [5.5].
60. Ibid at 29.
61. Above, n 58 at 9.
62. Ibid.
such as infrastructure industries that have "commons" characteristics are particularly suited to collaborative initiatives. Similarly, co-operation is appropriate where there are urgent issues of strong public concern. Access to medicines and climate change are both significantly urgent issues requiring a concerted international response. While there are competition law risks in patent collaboration, competition authorities now take a more nuanced approach and recognise that there may be procompetitive effects. Patent collaboration can now be seen as a possible approach to promoting innovation internationally, and as a means of promoting innovation in appropriate industries in New Zealand.