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BIG INNOVATION CENTRE

Service Innovation Platform

Open business models and intellectual property

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Service Innovation Platform

Open Business Models and Intellectual Property

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Executive summary

This report considers three critical research questions for service innovation platforms in relation to the emergence and growth of open business models and the role of IPRs and IP in this:

- When service firms use IPRs – and other forms of IP – as a strategic tool in open business models, what are the strategic benefits they seek?

- When service firms use IPRs – and other forms of IP – as a strategic tool in open business models, what are the obstacles they encounter?

- What elements and mechanisms in the existing regulatory and business practice domain promote successful use of open business models and what could be possible new elements and mechanisms to improve the existing regime?

Researching service innovation platforms of all sizes, located within the United Kingdom, the report shows how firms' open business models are stimulated by strong use of both proprietary intellectual property (IP) (mainly copyrights for creative services, but also patents for information and communication technology (ICT) firms) and soft IP (open source, creative commons and the like), as well as no formal IPR protection, in order to reach a broad range of strategic objectives related to financial gain, competitive advantage, strategic networks and innovation. Larger firms tend to use more formal intellectual property rights (IPR) for value creation compared to smaller firms, which use more soft IP protection, and the difference is especially apparent when seeking financial reward from inventions and innovations.

Evidence obtained from eight interviews carried out in the United Kingdom with six creative service businesses, a social networking IT firm, a fast moving consumer goods firm, plus 39 ICT firms that were surveyed, illustrates how networking with suppliers and users, formal partnerships, and community interactions are fabulous co-creation innovation methodologies and strategies for market growth, positioning and financial reward. In particular, creative commons or open source licensing or even formal copyright are used for this purpose, but in the case of a fast moving consumer goods firm, patents can also stimulate such dynamics. Some policy implications will now be briefed.

'Open business model'-stimulus recommendations include:

- Policies for *entrepreneurial finance* should not merely prioritise the enforcement of formal IPR to underpin the rise, growth and sustainability of open business models.

- *Innovation* policy needs to recognise the benefits of less proprietary knowledge sharing open business models. It needs to ensure stronger enforcement of open source and creative commons licences, and the safeguarding of technological solutions or creative expressions with no patents or copyright. Government's research and innovation strategies can also include initiatives to ensure open access to their own data.

- IP policy should recognise that softer forms of IP protection are important instruments to strengthen the *strategic networking* and *community element* of service innovation platforms. Methodologies here include everything from alternatives to no registered IP protection, to copyright limitations and exceptions, strengthening of open source and creative commons, compulsory licensing for patents and copyright, and more.

- *Competitiveness* policies need to recognise that it is a misconception to think that there is a clear link between the degree of IPR protection and market positioning.

- Businesses need to experiment with alternative open business models and IP in order to obtain evidence about their usefulness and what business model characteristics are associated with successful performance. Technology service platforms such as innovation centres or intellectual property offices should ensure coordination and the sharing of information between open business model experimental initiatives.

- Overall, policies aiming to help firms with value creation processes from IPR and IP need to be flexible and neutral to embrace the variety of IPR and IP strategic instruments used for this purpose. IPR and IP policy also needs to be flexible or neutral to embrace the variety of firm types, to develop their own individual IP strategies and to allow them to experiment with alternative business models.

When addressing the obstacles firms encounter in open business models, especially in relation to the sharing of information, ideas and creative expressions, results indicate that, especially in markets for IP and IPR, there is a heavy concentration of creative service firms, ICT firms and others reporting problems relating to assessing the degree of the novelty of the IP and/or IPR. For the ICT sector this is especially true for patents, which is ironic as the rationale for patents is often argued on the ground that they increase transparency in the market place for ideas and technology. Firms therefore also find problems in accessing the value of IP and IPR, and in negotiating the price when they are traded. In turn, it is reported that this hampers collaborations and the establishment of joint ventures.

Problems in relation to trust (opportunistic behaviour, free-riding and similar) were especially reported in open source communities.

Other recommendations:

- Patent regulation must enforce a larger suitable inventive step for patent protection, so the novelty criteria are clear. It is difficult to assess what can be done to enforce

proper exposition of originality in copyright and other forms of IP (open source, creative commons, etc), but some kind of self-implemented industry criteria must be enforced.

- IP policies need to recognise, accommodate and institutionally enforce the productive role of open-source solutions. Business practices also need to implement integrity into open source communities.

- IPR policies designed for analogue business models can come into conflict with digital ones (eg in relation to format shifting in the publishing world). To ensure a smooth process, limitations to copyright owners are currently being proposed by the UK government or via user rights as in the USA.

The key lesson learned is that the use of formal IPR (patents, copyright), co-creation, user-driven innovation, joint ventures, creative commons, open source, and the exploitation of technology and creative expressions with no registered IPR protection are all enablers of open business models.

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Chapter 1 Introduction

The scope and scale of business innovation, as well as product and service innovation, and the value that can be created from these, have grown due to factors such as an increased openness to markets, the sharing of information and knowledge, complementarities within networks, and collective entrepreneurship. An open business model is no longer an option, but a necessity.

But what does an open business model mean in the context of innovation? The nature of innovation is changing. It is becoming increasingly open, with a multitude of agents participating in the same knowledge, creative, development and commercialisation spheres, which tend to be collaborative, multi-disciplinary and global. The term 'open innovation' has been coined to encapsulate this evolution.[1] By open innovation we mean innovation processes of firms and individuals that take place in an industrial sector or the technological domain, or in interaction with other firms and individuals and/or other private or public organisations, often within a network. In this context, IP and IPR users have also become IP and IPR contributors in an open innovation dialogue.

The essence of an open business model is to create value in an open innovation dialogue and to capture the value created. The external companies will only participate if there is a net value created (eg innovation, financial reward, competitive positioning, and enhanced strategic networks). Open business models enable and provide conditions to facilitate such external participation to promote open innovation.

In particular, knowledge intensive business services have experienced an emergence of open business models and open innovation to their innovative spheres. This is because these service sectors are already heavy adopters of information and communication technology (ICT) and microelectronics in their efforts to increase the quality and productivity of their services. These are the very same technologies that make possible the worldwide availability and distribution of scientific data, information and ideas, etc. However, to reap the benefits of such new open business evolution, innovation and practices in firms and industries must adapt.

And what does an open business model mean in the context of IPR management? IPRs (conventionally associated with monopolistic market structures) and open innovation are not innovation strategies that are necessarily contradictory in terms. Rather, the movement towards open innovation services can be supported and even underpinned by the formal IPR system in many different ways, using both proprietary IP, soft IP and ideas and expressions

[1] Chesborough, H (2007) Business model innovation: it's not just about technology anymore; Strategy & Leadership, Vol. 35 No. 6, pp 12-17

with non-registered IPR protection strategies (see definition box 1).

That is, the essence of open innovation is knowledge sharing; sometimes this knowledge is protected by a formal IPR that is shared via the market place, and sometimes the knowledge is more freely available. However, this does not imply that formal IPR cannot be (or are not sometimes) strategically used as weapons to destroy an open innovation process, and also the dynamics of open source communities are not always in the community spirit but can include opportunistic behaviour (see section 3).

In this report we analyse examples of the role and interaction of IP and IPR in open business models. The study showcases how IP and IPR play their part in creating service innovation platforms and how firms (large and small) manage their IP and IPR when practising open business models. This report will be looking at specific activities like co-creation, user-driven innovation, joint ventures, creative commons, open source, patents, copyright, and the use of no formal IPR protection to understand the depth and dynamics of open business models.

In this context, we consider three critical research questions for service innovation:

- When service firms use IPRs – and other forms of IP – as a strategic tool in open business models, what are the strategic benefits they seek?

- When service firms use IPRs – and other forms of IP – as a strategic tool in open business models, what are the obstacles they encounter?

- What elements and mechanisms in the existing regulatory and business practice domain promote successful use of open business models and what could be possible new elements and mechanisms to improve the existing regime?

Box 1: Definitions of restrictions to rights

IPR and IP	Rights and restrictions
Proprietary IP	The terms 'proprietary', 'soft IP' and even 'non proprietary IP' have become popular especially in relation to software.[2] Proprietary software is software with restrictions on using, sharing, copying and modifying it, as enforced by the proprietor; such restrictions are achieved by legal means (via patent and copyright law) and/or technical means (eg by releasing machine-readable binaries to users and withholding the human-readable source code). In soft IP protected software some of those restrictions are relaxed, and they are all relaxed in 'non-proprietary IP'. The terms are also used more broadly to refer to protection modes applied to a variety of IP, not limited to software (see soft IP below). In this report the terms refer to the restrictions to rights regarding inventions and innovations within creative services, some fast moving consumer goods, and information and communication technology.

[2] For use of soft IP, see for example 'Global Innovation Outlook report. Building an IP Market Place' published by IBM in 2006.

Soft IP	The most common soft IP is the open source software development method. It can be compared to what used to be called free software, freeware, shareware, and the like. The models are concerned with users' freedom to run, copy, distribute, study, change and improve the software. The open source licensing strategy often takes the form of a 'GNU General Public License (GPL)'. Whereas intellectual property rights law, in its current form, provides the right to exclude anyone from using, modifying and redistributing copies of an author's work as well as a right to withhold the source code, a GPL transfers these rights to the community in order to ensure access. This ensures that every person who receives a copy of a work has the same rights to study, use, modify, and also redistribute both the work, and derived versions of the work. Such licences also require that the same licence terms apply to all redistributed versions of the work. Therefore, open source changes the terms from 'All Rights Reserved' to 'Some Rights Reserved': the rights that are not reserved move into the 'public domain' or a 'community of restricted rights'. Relaxing some of the restrictions of the intellectual property rights system is also becoming common in sectors other than software, and it is usually linked to an open innovation strategy of firms. Examples include 'creative commons' in the creative industries; 'Wikipedia' and 'wiki' in publishing; open source in media ('open journalism' such as weblogs, message boards, and open documents; 'open source movie production'; 'open source documentaries'; 'open source filmmaking'); open source in education and scientific research (eg Science Commons); and open source health care and medicine, such as the Tropical Disease Initiative, and the not-for-profit 'virtual pharmas' such as the Institute for One World Health and the Drugs for Neglected Diseases initiative. Regulation pushing for soft IP also sometimes refers to formal IPR that are made weaker in terms of compulsory licensing, IPR with more narrow scope or spanning a shorter time period of protection. The case studies and survey in this report address soft IP from a business model perspective (open source or creative commons), as described just above. However, the two argue the same point – that finding means of sharing knowledge adds value to the business model.
Ideas and expressions with no registered IPR protection	Many firms also exchange ideas and expressions with no registered IPR protection. A reason could be that the patent system is too resource-demanding in terms of application costs, search costs in order to avoid duplication of inventions, and enforcement costs regarding possible court cases. Or, the technological solution may not be at the forefront from a technical point of view (so it does not satisfy the novelty criteria for patent protection), but still be very productive technology and therefore traded in the market. The reason could also be that the technology is difficult to understand and imitate, or that it is so client-based that it has no wider interest for other firms. Finally, it could be due to the fact that the product life-cycle is so short that it makes sense to launch the unprotected technology or creative expression on the market. The latter would indicate that it does not matter whether the technology or expression is protected (that is, the inventor or innovator faces first-mover advantage), or simply that the patent system for technology is too slow compared to the short product life-cycle that many firms face. However, many stakeholders (such as the Free Software and Open Source communities and the Foundation for Free Information Infrastructure) do not advocate putting totally non-protected technology into the public domain, because they believe that this would allow uncooperative individuals and firms to convert openly-developed inventions into proprietary technology; many firms still do. Indeed, this is even a reported problem for soft IP (cf freeriding within open source communities – see section 3), potentially breaking down trust in such communities. Of course, ideas and expressions can also be protected via memorandums of understanding and other forms of non-IPR based contracts.

1.1 Evidence base

The service sector evidence base underpinning the research is partly informed via interviews and partly by database research.

The interviews are mainly in the creative service sectors involved with publishing books, newspapers, music, and games. The organisations include the national library of the UK (the British Library), two book publishing companies (Bloomsbury Academic Publishing – represented by serial entrepreneur Frances Pinter – and Pearson), a news publishing organisation (the Guardian Media Group), the largest music publishing firm in the world (Universal Music Group) and a novel computer gaming publishing firm (YoYo Games).

All these organisations are well known for the opportunities for and challenges to their business models in the digital age and through the emergence of the internet. A social media analytics firm (Trampoline Systems) is also included to reflect the rise of social networking as a business opportunity. Finally, a major and diversified fast moving consumer goods (FMCG) firm (Unilever) was included to cover more traditional retail as a contrast. An overview of the eight firms is listed in table 1.

The database research is derived from questionnaire results in the ICT sector (mainly hardware and software). The firms were selected to balance the diversity of SMEs and large firms. They also represent an industry where IP and IPR play a crucial role in terms of open business models and open innovation. Historically, it was the first industry that introduced the use of soft IP (such as open source and freeware) into its commercial business model.

The data underpinning this part of the research was collected (in 2008) as part of a Work Package ('An IPR Regime in Support of a Knowledge Based Economy') under the EU 6th Framework Programme which was entitled 'U-KNOW (Understanding the Relationship between Knowledge and Competitiveness in the Enlarged EU)' (2005-2009).

Table 1: Firms interviewed: mainly creative services, a social networking firm, and an FMCG business

Interviewed firm	Business	Size distribution SME: <250 employees Large: ≥ 250 employees
British Library	National Library	Large
Bloomsbury Academic	Publishing house	SME
Guardian Media Group	Daily news	Large
Pearson Publishing	Publishing house	Large
Trampoline Systems	Social media analytics	SME
Unilever	Fast moving consumer goods	Large
Universal Music Group	Music labels	Large
YoYo Games	Video games	SME

Our set of surveyed anonymous ICT firms includes 32 SMEs (9 micro firms, 6 small firms and 17 medium-sized firms) and 7 large firms. They are presented in table 2 in relation to their size distribution, where size relates to number of employees.[3] The firms are grouped in the same categories as they would have been if they had been classified on the basis of employees and turnover (Micro: less than 1 million pounds; Small: between 1 and 10 million pounds; Medium: between 10 and 50 million pounds; Large: more than 50 million pounds), with one exception (one company would be medium in terms of turnover and large in terms

[3] The data used in this report has been applied in the development of the UK entry to an OECD report published as: Andersen and Rossi (2011) '*United Kingdom: Intellectual Asset Management Strategies for Diverse Innovations. Entry for UK to international OECD report on Intellectual Assets and Innovation The SME Dimension*', published by the OECD.

of employees and we have classified it as medium-sized). Compared to the full population (which constitutes 960 in the UK), the surveyed firms are under-represented in the small size category (10-49 employees) of numbers of employees. Micro-, medium- and large-sized firms are more in line with the sample distribution.

Table 2: Database research based upon questionnaire: Information and communication technology sector

Size (employees)	**Firms analysed** *(remain anonymous)*	***Full population size distribution***
	Total: 39	*Total: 960*
	Size distribution of interviewed firms (%)	*Size distribution of population (%)*
Micro: fewer than 10	23	*17*
Small: between 10 and 49	15	*31*
Medium: between 50 and 250	44	*38*
Large: more than 250	18	*14*

1.2 Business model openness and IPR and IP activity

Each interviewed firm (listed in table 1) was asked to comment on which aspects of their business model are sourced from outside their organisation (ie from external firms or from users) and which aspects are sourced internally. It is of course debatable whether we can classify the internal sourcing of knowledge as open innovation. Of course, the different sourcing options may not be exclusive but complementary.

In general, innovation in areas closer to markets is sourced with interaction outside of the organisation (other businesses, users or both). This includes the development of new products and services, marketing, and strategies for dealing with customer relationships. When resources and processes are sourced from external firms, organisations and users, this does not necessarily imply that the organisation does not have resources to carry out the innovation activity without them. However they prefer to source from external partners for strategic reasons (see section 2 on incentives to open innovation).

However, the core aspects of the firms' business models – ie those that form the integral part of business related activities – were mainly sourced internally. This was true for all interviewed organisations regarding their basic research and development (R&D) activity, as well as for nearly all parties with respect to the firms' internal operational processes, revenue streams, and value propositions (except for Trampoline Systems and YoYo games, which source their strategies in interaction with external engagement).

As the database research from the surveyed ICT firms is based upon secondary data (EU 6th

framework, see section 1.1), this type of open business model information is unfortunately not available for these firms. Here, the focus is entirely on IP management in relation to knowledge sharing, which is merely one aspect of a business model.

In the context of this report, open innovation relates to *knowledge exchange between organisations* via the market place, mainly in the form of patents, copyright, open source solutions, and market exchanges of technology or other forms of IP with no registered IPR protection (knowledge here could be protected with other legal contracts, such as a consultancy contract or a memorandum of understanding). Table 3 lists the reported dominant IPR or IP used for open innovation business models regarding our eight interviewed firms, and this does not imply that other forms of protection are not used.

Table 3: Dominant IPR or IP markets used for open innovation business models: mainly creative services

Interviewed firm	Patents	Copyright	Trademark	Soft IP: Open Source / creative commons or similar	Unprotected
British Library	N/A	Yes	Yes	In process	No
Frances Pinter & Bloomsbury Academic	N/A	Yes	Yes	Yes	No
Guardian Media Group	N/A	Yes	Yes	Yes	No
Pearson	In process	Yes	Yes	Experimenting	No
Trampoline Systems	N/A	In process	In process	Yes	Yes
Unilever	Yes	Yes	Yes	Experimenting	No
Universal Music	N/A	Yes	Yes	No	No
YoYo Games	N/A	Yes	Yes	Yes	No

It shows that for creative services patents are not key – the exception being Pearson, which is considering developing patents for their publishing software feeding into their business methods. Also, for the FMCG firm, Unilever, patents are key to their open innovation strategies (see section 2.1 for explanation of the strategies). Copyrights are key to most of the businesses, and the new economy social media firm, Trampoline Systems, which started without formal IPR, is in the process of implementing the use of exclusive copyrights and trademarks into their business model. Pearson and Unilever are also experimenting with implementing open source solutions into their business model. All but one firm do not opt for no IP protection whatsoever as a dominant strategy.

With respect to the ICT sector evidence, table 4 below reports the activity of firms in particular IPR and IP market places according to total and to size. Furthermore, of the 39 respondents, 10 (25.6%) do not exchange any of the forms of IP considered, and this is in line with the findings from the academic literature (see Andersen and Rossi, 2011, previous footnote). Furthermore, 12 of the respondents (30.8%) only exchange soft IP (open source) and non-patented innovations, and 17 firms (43.6%) are engaged in exchanging some form of proprietary IP (either copyright or patents or both) and in particular 14 of these firms

(35.9%) exchange patents.

Overall, greater shares of medium-sized and large firms exchange patents, and large firms are in general very active in all surveyed IP and IPR market places. This is probably because of greater availability of resources, which means they are able to trade patents, open source, and non-patented innovations with great intensity. Micro and small firms particularly exchange non-patented innovations, and about two thirds of all small firms are active in open source communities. While no official data on the size of the UK open source community is available, evidence from UNU-MERIT (2006) suggests that Europe (particularly Northern European and Scandinavian countries) is the leading region in terms of active open source developers, and leads in terms of global open source project leaders.

Table 4: ICT firms' market exchange of different types of IPR and IP

	Total	Micro	Small	Medium	Large
	%	%	%	%	%
Patents	35.9	20.0	20.0	35.3	71.4
Copyright	23.1	30.0	20.0	17.6	28.6
Non-patented IP	48.7	60.0	60.0	29.4	71.4
Soft IP: open source	35.9	30.0	60.0	29.4	42.9

Note: Results are 'shaded' when 40% or more of firms in a category exchange certain IP. Source: Andersen and Rossi (OECD 2011)

The next section will consider the core in the open innovation context in relation to the strategic incentives firms are seeking from exchanging various forms of IPR and IP.

Chapter 2 Strategic incentives to engage in open business models

As we consider open innovation *the* mechanism by which firms innovate and grow from sharing their knowledge and IP and IPR, this project adopts a knowledge sharing approach. A range of variables on the strategic benefits from sharing knowledge and IP and IPR was developed[4] and data was collected under the EU 6th framework programme U-KNOW (2005-2008) – see section 1.3. Firms and individuals here engage in open innovation for a variety of reasons, such as interdependency in knowledge bases, or a belief that this will produce better quality new innovations, market entry or financial reward, but there are also many other incentives, as listed in table 5.

Table 5: Incentives to engage in open innovation and strategic benefits from IP and IPR

Strategic benefits	Incentives
Networks, collaboration and community building	• Building informal relationships with industry networks • Increasing ability to enter collaborative agreements • Giving something to the community
Competitiveness and positioning	• Increasing market share • Professional recognition or brand recognition • Competitive signaling
Innovation	• Being able to use the best inventions, innovations, creative expressions • Setting common standards/making or using compatible technology or creative expressions • Innovation methodology: developing better technology or creative expressions • Benefitting from user or supplier involvement
Financial gain	• Direct income from market transaction • Cost cutting • Increasing ability to raise venture capital

[4] The strategic incentive classification was used in a related study (although not sorted by firm size and applied differently): Andersen, Rosli, Rossi, Yangsap (2012) *'Intellectual Property (IP) Governance in ICT Firms: Strategic Value Seeking through Proprietary and Non-Proprietary IP Transactions'*. International Journal of Intellectual Property Management (IJIPM) Vol. 5, No. 1 pp 19-38

2.1 Intellectual property use and strategic benefits from knowledge sharing in open innovation models

Frances Pinter (serial entrepreneur) on Bloomsbury Academic:

"Bloomsbury Academic would have had a harder time making its mark in academic publishing if it had not been for its adoption of creative commons non-commercial licences. In a traditional publishing house, it is very difficult to shift strategies from the conventional business models to something like an open business model. Bloomsbury Academic took the risk of breaking into an unknown territory, and is reaping the rewards. This certainly has pushed the boundaries of publishing..."

Bloomsbury Publishing Plc (famously known for the Harry Potter series) wanted to add academic publishing to its business portfolio, providing something different to its trade publishing. Frances Pinter (a serial entrepreneur whose ventures include Pinter Publishers) suggested that the basis of Bloomsbury Academic publishing should be monographs, a subset of academic publishing that typically comprises high level, narrow, specialist, small audience, and high price books sold mainly to libraries. The text of the monographs was made available online on the Bloomsbury Academic interactive platform, via their website, using the creative commons non-commercial licence in plain web format.

The ability to read monographs at no cost was a major benefit to the English language reading academic community. Commercially, the text from these monographs was enhanced and they were sold as eBooks, both individually and as parts of bundles of other eBooks, to libraries. While the authors were able to reach out to a wider audience as the monographs were freely available, the plain text format was a less than optimal format, thus encouraging the reader to buy them in eBook or print format.

In this way, the increased visibility of the academic books from the Bloomsbury Academic publishing platform opened up and facilitated gaining market share amongst academic book publishing (cf competitiveness and positioning), which in turn attracted academic authors to publish their monographs with Bloomsbury Academic who were able to provide this increased networking opportunity. The entire open business model was innovative, particularly in stimulating interaction between producers of academic material and its users. The financial gain was vital for business success. The creative commons non-commercial licencing in the new business model allowed direct income from market transactions.

Simon Juden, Head of Public Policy, Pearson Publishing:

"We open an amount of our content up through APIs so that other people can innovate around content that we own, while our authors' rights in that content remain protected – allowing others to develop products that would not otherwise have been possible."

Other publishers are still at the experimental phase of various elements of open innovation – for example, Pearson Publishing is working with the developer community and others around co-creation, with a variety of models for sharing revenue. However, for firms like Pearson Publishing and Universal Music (the latter described below), the network- (or joint venture-) driven open business model (combining core competencies) has yet to define its matching financial model.

Simon Bell, Head of Strategic Partnerships and Licensing, British Library:

"There are great opportunities for organisations for making their content truly open and freely available.

At the British Library we want people to be able to not only read and access, but also reuse with no restrictions as much material as possible (whilst of course operating within the copyright regime). When people commercialise such open material, it potentially opens up opportunities for small and medium sized firms."

The British Library is among the top libraries in the world in terms of number of volumes (such as books, manuscripts, journals, photos and the like). The library holds more than 150 million objects, and is in the process of digitising significant parts of its contents and archives. The British Library is also exploring the possibility of making this digitised content available to the wider public.

Some content is available for free and some sits behind a pay wall where the revenue largely falls to the publisher who has invested the time, effort and money in building the online institutional platform that is making the material available – however, with a time limit of a number of years after which it potentially falls into the public domain. Overall, the British Library is using the digital revolution to increase its user base via building relationships with publishers engaged with digitisation and making content available. This open business model is innovative and both sides (the publisher and library) derive benefits.

Paul Smernicki, Director of Digital, Universal Music Group:

"In terms of services, it is important to bring more collaboration, as it is very important for the competition and the customers. More collaboration through open platforms brings different content together that is of vital importance to the music industry – imagine iTunes or Spotify being launched without Sony or BMI content. It becomes a very bad consumer experience."

Compared to in the publishing industry, copyright still plays a significant role among the major players in the music business. For Universal Music (the largest record label in the world, with a market exceeding 25% of the global share) open business models have been established mainly in relation to business collaborations spurred by professional or brand recognition of Universal Music (often related to competitive signaling). A number of artists sign with this record label due to heritage and culture – for example, a band will sign with Universal Music irrespective of the copyright deal if their influence or mentor (eg Bob Dylan) has had their contract with Universal Music (cf competitiveness and positioning). This is a unique way of collaborating and community building in an environment of celebrity culture.

At the same time, Universal Music is experimenting with open business models – eg business models in which artists sign rights to run their own businesses with their own music (eg concerts or other activities) if they share their revenue with the label they are signed with (Universal in this case). Other experimental models being explored include the sourcing of new artists via online music platforms on the internet and the like. Here, the open business models are about using the copyright to enter collaborative agreements, especially with artists (cf network building) and for financial gain (direct income from users of the copyright).

Matt McAlister, Director of Digital Strategy, Guardian Media Group:

"We have created a platform where we have opened our database going back 11 years consisting of about 2 million articles which is all open and freely available to third parties for their use to develop applications and websites. About 5,000 developers have registered with us and around 1,000 applications like widgets, entire websites, plugins etc are there in the market using our database. This community is only growing. […] We have created our app with Facebook, which we have built incredibly quickly, and it is extremely powerful. There was a rapid decline of young busy people reading newspapers. Our open platform app has bought back news into peoples' hands through smartphones and tablets. We already have 6 million users. The numbers are only increasing."

This process of using open innovation community building as a strategy for innovation, competitiveness positioning and financial reward can also be seen in a very distinct manner in Guardian Media Group, which is a leading news media house in the UK. For example, Guardian Media Group's database dates back 11 years and consists of about 2 million articles, and this is all open and freely available through their Application Programming Interface (API) platform to third parties for their use to develop applications and websites. It is not only direct users who can utilise the database; external businesses such as developers, app developers, mobile developers, etc can use the database and develop products and services using Guardian Media Group resources and assets because of the platform. About 5,000 developers have registered with the Guardian and around 1,000 applications such as widgets, plugins and entire websites are there in the market using the database.

The new open platform of old archives by the Guardian Media Group has enabled them to innovate with external firms and third parties. The Guardian is now experiencing a domino effect of innovation, where Guardian Media Group has initiated the process, but now they find external firms surprising them with new applications based on their open platforms. As more users try the Guardian Media Group database, the footprint of the Guardian becomes broader in the digital world. That is, this network and collaboration with third parties has enabled the Guardian to lead in the news app market. For example, when the Guardian decided to create an app for Facebook using open platform, the Guardian was able to tap into a new segment of news readers, ie the youth market, through its Facebook app. The readership has increased tenfold and is still growing. This also positioned the Guardian very strategically in the market among the top apps for news. The Guardian's news app on Facebook is an example of leveraging the Guardian's initiatives into positive financial outcomes. Commercial users of the free Guardian news archives are obliged to acknowledge the Guardian source, which sometimes results in income to the Guardian Media Group. To exploit this type of open business model, the Guardian continues operating with the use of copyright.

Sandy Duncan, CEO of YoYo Games:

"Our business model is quite simple: 90% of the content comes from the community that we have created. We share the revenue with the developers and we publish the games. We would like to see GameMaker become the industry standard; however, this is something for the future".

One of the most innovative gaming companies is YoYo Games, which is both the inventor and owner of GameMaker. GameMaker is an application that allows users to easily develop computer games without the requirement of prior computer programming experience. In addition, YoYo Games provides free hosting for user-created games. Initially, YoYo Games was concentrating on the development of the game without realising the value of the platform: GameMaker. However, they realised that the tool itself could be commercialised. This is how they flipped completely from developing games into providing the institutional platform for users making or developing games on the same tool. So the journey was from product developer to game-making tool provider, community builder and game publisher. Thus, YoYo Games has achieved competitive advantage and market positioning by creating the most widely used platform for creating games. This platform communicates across platforms, in the sense that the developer can develop a game in GameMaker (free or paid) and can publish it across iOS, Mac, Android and HTML5.

No-one in the sector saw this coming, but the open business model of YoYo Games acted as the catalyst for innovation in the gaming industry. Thus, using open innovation as a means for developing better technology and creative expression through user or supplier involvement is an objective of the business model. Also, there are financial benefits through this freeware community. Their platform, GameMaker, allows users to create games and publish them, using a shared revenue model. Although the users (now turned developers) have a choice to publish the games wherever they like, they partner with YoYo Games for their approach to a user-driven mode of shared revenue. This is often for long-term co-creation opportunities and brand recognition.

Charles Armstrong, CEO of Trampoline Systems:

"The appeal of a business like Trampoline Systems is that the Open Business Model is in the DNA of our business. Our core business elements, eg R&D, marketing and customer relationships are based on open business practices. The users and customers test our products and feed back improvements and issues, thus saving a huge effort to do it in our labs. We fix the issues which are reported, thus creating a symbiotic relationship with customers. The marketing is done entirely through the community of users and it is quite successful.

So we have created a business though the open business model that was not possible through the traditional models. Our software is open source, which helps free us from legal hassles and fees, and the key products that are procured are shared without legal obligations […] The best way to benefit using an open business model is to demonstrate that it can be successful, e.g. establishing Trampoline Systems and making it work at bigger scale, and then secondly, documenting it so that other people can see the process. This can also be complemented by providing tools that help other people do something similar."

Trampoline Systems is another firm that runs its entire business on a community-driven model. It is based in East London's Tech City (the destination for digital, creative and high technology companies in the East London area, and the UK's 'popular' equivalent to Silicon Valley). Trampoline Systems has developed an open business model that sources social networking sites (such as Twitter and others) for information, repackages it, and sells it as bespoke client-based services. The advantage of having an open source business in this context is the creation of a community with multiple stakeholders in which they analyse business communications to map collaborations and relationships, and to understand and report on critical performance factors. The model is based on no protected IP as the service or product life cycle is very short lived. The entire business model is based on networks and community building, the business model is innovative (enabling users to develop and make better sense of the information available in public spaces), each product is a new client-based innovation, and there is direct income from each market transaction.

Paul Quinlan, R&D Programme Director, Tea-based beverages, Unilever:

"We used to simply contract research from universities or third-party suppliers. However, we now have moved to working in partnerships and are able to co-create innovations where intellectual property is shared rather than just owned by one party."

Another example of open innovation through co-creation and joint venture has been seen in the fast moving consumer goods industry. For example, the largest joint venture that Unilever has is with Pepsi, and it involves the making of Lipton Tea and Ice Tea. It has generated large revenue for both companies. This is a good example of models of business-to-business partnerships in an open innovation process. What is particularly interesting is that these firms are business competitors in markets for drinks, but they also complement each other (Unilever specialises in hot drinks and Pepsi in cold drinks). However, Unilever and Pepsi collaborated only for one product (Lipton Tea, including the ice tea) to capitalise on their core competencies.

Unilever has now moved from simply outsourcing or contracting research to third-party suppliers or universities to actually working with partnerships in order to be able to co-create inventions, innovations and markets. The view is that for Unilever to grow in new markets it must collaborate outside its immediate network. Unilever's open approach towards innovation has already nourished its product and process innovation. The number of products coming out as a result of this innovation methodology has increased compared to traditional business models. In this vein, intellectual property is governed in a shared mode rather than just owned by one party. Here, the process of using open innovation in formal networks as a strategy for innovation, competitive positioning and financial reward is well recognised.

With respect to ICT firms, the results of our anonymous surveyed firms are listed in table 6. It shows that, overall, all categories of benefits (financial gain, competitive advantage, innovation, strategic relationships) are generally important for all IP and IPR market places for ICT firms. This challenges the longstanding mainstream view that patents or copyright are stronger strategic tools for value creation.

Table 6: Strategic benefits that ICT firms pursue from engagement in different forms of IP (for Total and SMEs)

IP market place considered	Firms considered	Financial gain	Competitive advantage	Innovation	Strategic relationships
	Total (SME)	% firms	% firms	% firms	% firms
Patents	14 (SME 9)	64.3 (SME 55.6)	57.1 (SME 66.7)	78.6 (SME 77.8)	42.9 (SME 44.4)
Copyright	9 (SME 7)	55.6 SME (42.9)	44.4 (SME 42.9)	44.4 (SME 42.9)	22.2 (SME 28.6)
Non-patented IP	19 (SME 14)	42.1 (SME 57.1)	47.4 (SME 50.0)	73.7 (SME 71.4)	52.6 (SME 50.0)
Soft IP (open source)	14 (SME 11)	50 (SME 63.6)	57.1 (SME 54.5)	92.9 (SME 90.9)	64.3 (SME 63.6)

In particular the results show that, overall, financial reward is especially pursued in relation to proprietary IP (patents and copyright), but that if we consider only the SME category the picture is the opposite. Here, non-patented IP and open source are the dominant strategies for seeking financial reward. Overall, although patent strategies are used to gain direct income from market transactions, so are strategies related to non-patented technology. Also, there are other financial transactions for SMEs related to cost cutting (eg via savings on royalties and patent administration) where the use of open source is regarded as a superior strategy to patents (see graph 1).

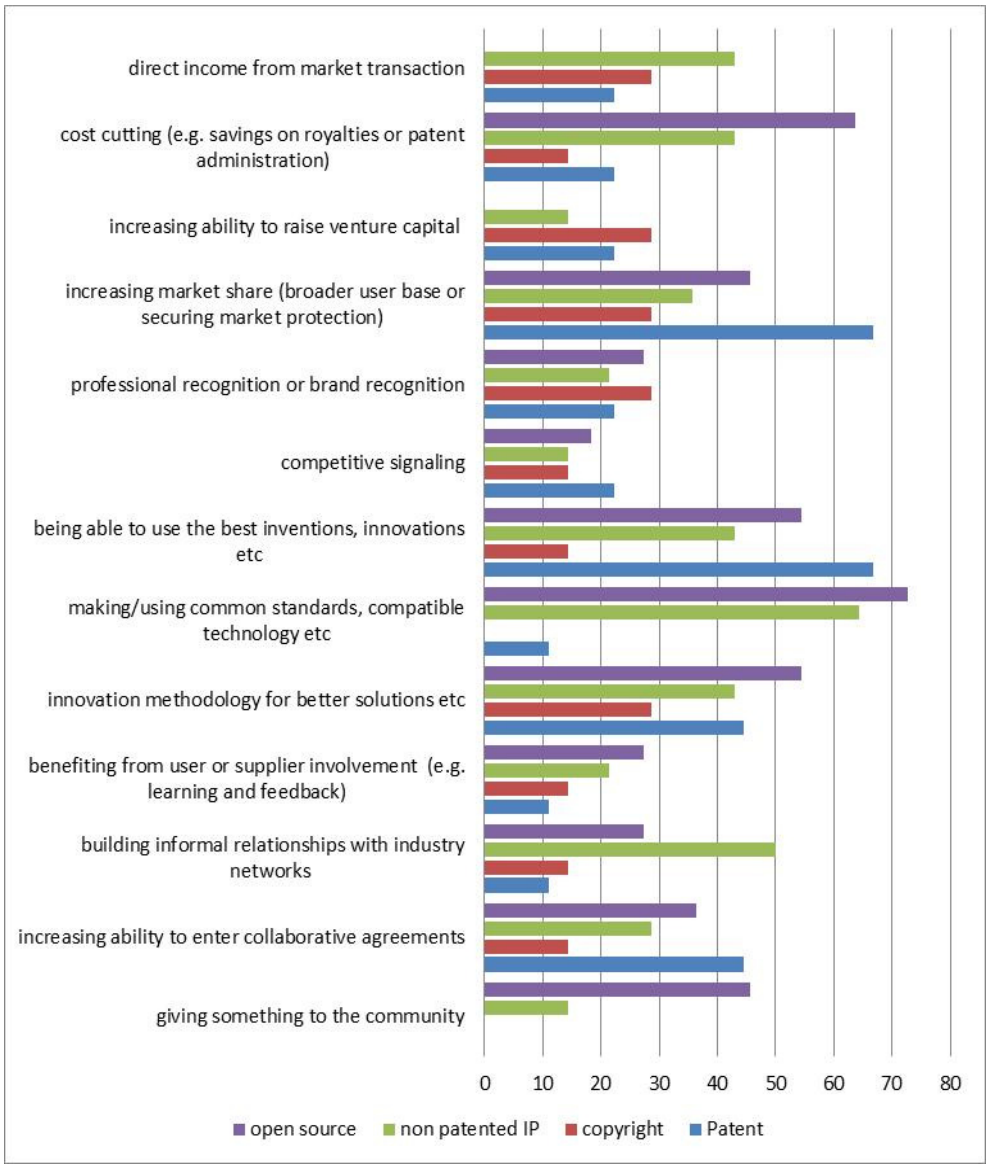
All forms of IP are in general used for innovation purposes by firms of all sizes (see table 6), but there is a very strong preference for SMEs to engage in open source communities when they innovate. As can be seen in graph 1, this is especially true in relation to SMEs gaining access to the best inventions, innovations and creative expressions; but there are also benefits gained from open source and patented technology as enhanced innovation methodologies, both for developing better technology solutions and for participating in standard-setting or for making use of common standards.

The use of soft IP (open source) and the exploitation of non-patented technology seems to be the means by which firms seek to build strategic relationships, and copyright is not a major strategy for this relatively, as illustrated in table 6. For SMEs, as illustrated in graph 1, both patents and soft IP are used for entering formal collaborative agreements (eg joint ventures, strategic alliances and so on), and informal relationships with industry networks are most intensively pursued through non-patented IP. Finally, almost half of SMEs pursuing open source also had the vision of giving something to the community.

Benefits related to competitive advantage are equally important strategies for all forms of IP (table 6), except for SMEs' heavy use of open source to increase market share in terms of building a broader user base or simply to secure market positioning (see graph 1).

Graph 1 shows the percentage (%) share of SMEs for each IPR and IP category that chose each of 13 possible benefits.

Graph 1: Percentage (%) of ICT SMEs seeking certain strategic benefits from the exchange of different forms of IP, calculated for each IP or IPR market place



The variety of objectives for which firms protect their innovations suggests that greater diversification within the IPR and IP system may be beneficial to firms. To this end, a recent report commissioned by the UK government (the Hargreaves review on IP and growth, entitled 'Digital Opportunity', May 2011) also commented on policy implications to take into account the need for more flexibility in the system, plus the need for more interaction between producers and users of IPR and IP for innovation purposes, which would suggest less exclusive rights to owners and holders of formal IP.

Chapter 3 Obstacles to value creation in open business models

Although open business models have created many opportunities for business in the information age of knowledge sharing, we need to acknowledge that there are institutional factors affecting their implementation, and which corporate practices for value creation and supporting policies must acknowledge.

A range of variables on the obstacles to value creation from sharing IPR and IP, here addressed in open business models, was developed mainly from a wiki-forum that one of the authors (Andersen) participated in, and which was led by IBM (the output was published by IBM as a Global Innovation Outlook report 'Building an IP Market Place' in 2006) and by reviewing the literature within institutional economics. Data was collected under the EU 6th framework programme U-KNOW (2005-08).[5] Firms and individuals here experienced a potential range of obstacles when engaging in markets for IP and IPR, as listed in table 7.

Table 7: Obstacles experienced when exchanging IP and IPR in the market place

Obstacles	IPR and IP market failures
IP and IPR market research	• Difficulty in locating the owners of IP and IPR • Difficulty in locating the users of IP and IPR • Difficulty in finding the best IP and IPR
Transparency	• Difficulty in assessing the degree of novelty of the IP and IPR • The description or drawing in the IP documents is not clear • Difficulty in assessing the economic value of the IP and IPR
Contract negotiation	• Difficulty in negotiating a price for the IP and IPR • Difficulty in negotiating the terms (not related to price) of the contract • Excessive cost of enforcing the contract • Problems (not related to cost) with enforcing the contract • Trust issues
Regulation and corporate practices	• Regulations allow too exclusive rights • International IP and IPR regulations do not fit the needs of different local markets • Differences in practices of firms

[5] The obstacle classification in relation to IPR and IP markets has been used in a related study (although not sorted by firm size and applied differently): (i) Andersen, Rosli, Rossi, Yangsap (2012) 'Are there institutional failures in intellectual property marketplaces? Evidence from information and communication technology firms', International Journal of Management (IJM), *in press.*

3.1 Intellectual property use and obstacles to knowledge sharing in open innovation models

IP and IPR market search seems to be an issue. There is, for example, a challenge in locating the rights holders from the enormous archive that is the British Library. Copyright and ownership issues might occur for material where the rights holder cannot be traced, ie orphan works. This is notably a problem relating to twentieth-century content where copyright is an issue, and the British Library estimates that up to 40% of its twentieth-century content is orphaned. This results in what the British Library describes as a "digital black hole". In this case, the need and the demand for digital versions are there, but responsible organisations are unable to meet that demand without potentially falling foul of the law.

Guardian Media Group (GMG) faces considerable IPR challenges. Most of its content is acquired for editorial products and in the process has to adhere to the principles of the Scott Trust, owner of GMG. Furthermore, given the breadth of its coverage and the (worsening) economics of newspaper publishing, it has a huge (and growing) dependency on a network of external suppliers, who aggressively protect their IPR. As a result of these circumstances, GMG 'owns' very little of what it publishes (with the major exception of staff content) and this reduces its flexibility to adapt to open business models and/or retrofit content to commercial applications. Although considerable strides have been made in formalising content acquisition processes and introducing technology solutions to tag content with rights metadata, very little information survives concerning pre-2002 archive content and therefore utilisation of this content presents increased risk to GMG.

Unilever faces the problem of becoming a victim of its own success. Its portfolio of IP and IPR has become so large scale that a major challenge is to find the right or best IP and IPR from its own portfolio. This is not an uncommon problem among larger firms.

However, search processes in the IP and IPR market place is not the only source of problems. Realising the full commercial potential of IP or an IPR requires understanding its novelty, being able to assess the economic value of IP and IPR, and hence the price. This problem was reported by firms including Universal Music Group, Guardian Media Group, Trampoline Systems, YoYo Games, Pearson Publishing, and Bloomsbury Academic, and it was also a repeated problem reported by the ICT firms surveyed. At Bloomsbury Academic the risks were perceived to be particularly high due to the uncertainty of the performance of the open business model for academic publishing, which it provided for free online under the creative commons non-commercial licence. Unilever explained how the acquired IP and IPR could easily turn out not to be as valuable as it was first perceived to be. The interviewed firms further explained how this transparency problem can hinder collaborations with external organisations. For example, Unilever reported that being able to assess the novelty of its IP is critical to the joint venture. Also, YoYo Games, which is expanding and which faces issues of assessing the value of its IP and IPR, reported that this problem becomes even more challenging when working with large firms for larger deals.

When valuing and enforcing IP, the challenges in the digital era are that users who have

grown up with the internet expect that all content is freely available on the open web, and that they are able to do whatever they like with it (reuse, data mining and more). Also, the perception is that if it is not available on the web, it does not exist. So the issues are twofold for the British Library. Firstly, the upfront investment in making content available online: digitisation is expensive. Secondly, the challenge from operating within a copyright regime designed for the analogue age where reformatting and format shifting (from paper to digital) is not allowed. The core of the problem is simply the impossibility of mass digitisation of twentieth-century content without a solution to the issues around out-of-commerce and orphan works.

These two models can come into conflict, and would require more flexibility in the IPR regime to ensure a smooth process (eg limitations to copyright owners that are currently being proposed by the UK government or via user rights as in the USA). Along similar lines, the Guardian Media Group faces problems with making all of their archives available. The major issue here concerns opening the archives stored prior to their Application Programming Interface (API) – which was brought in in 2001 – to the public, and because of copyright law changes prior to 2001.

Furthermore, settling IPR and IP practices is not straightforward. For example, Trampoline Systems is in the process of changing their open business model as they need to include exclusive copyrights, but they face a challenge in deciding what IP to protect and what IP to keep open.

Pearson Publishing, which operates within the copyright regime, faces challenges from infringement, both in terms of counterfeit books being sold in local markets and in terms of digital piracy. Pearson Publishing states that an issue in addressing those challenges is the lack of joined-up regulation across various territories. Universal Music and the Guardian report different corporate practices across the international economy, and how this may discourage firms to pursue the open innovation journey.

With respect to ICT firms, both large ICT firms and SMEs report relatively more obstacles to patents. Table 8 illustrates that markets for patents seem to have among the highest concentration of obstacles experienced (compared to other IP protection tools) in relation to market transparency and negotiation. This is especially in relation to identifying the degree of novelty or originality of the invention. It follows that it is also difficult to access the value and the price of the invention. Although these three obstacles in the IP market place are most intensively reported for patents, they are also important problems reported for the other three markets studied (see graph 2 for SMEs, but there is not a significant difference in the results between SMEs and large firms).

Open source communities also have major trust issues related to enforcement, especially opportunistic behaviour and free-riding in open source communities where participants do not behave in accordance with the spirit of such a community. Finally, a search issue with respect to finding the best IP (possibly due to the number of solutions out there of varying quality) is a problem especially entering open source communities. This calls for better

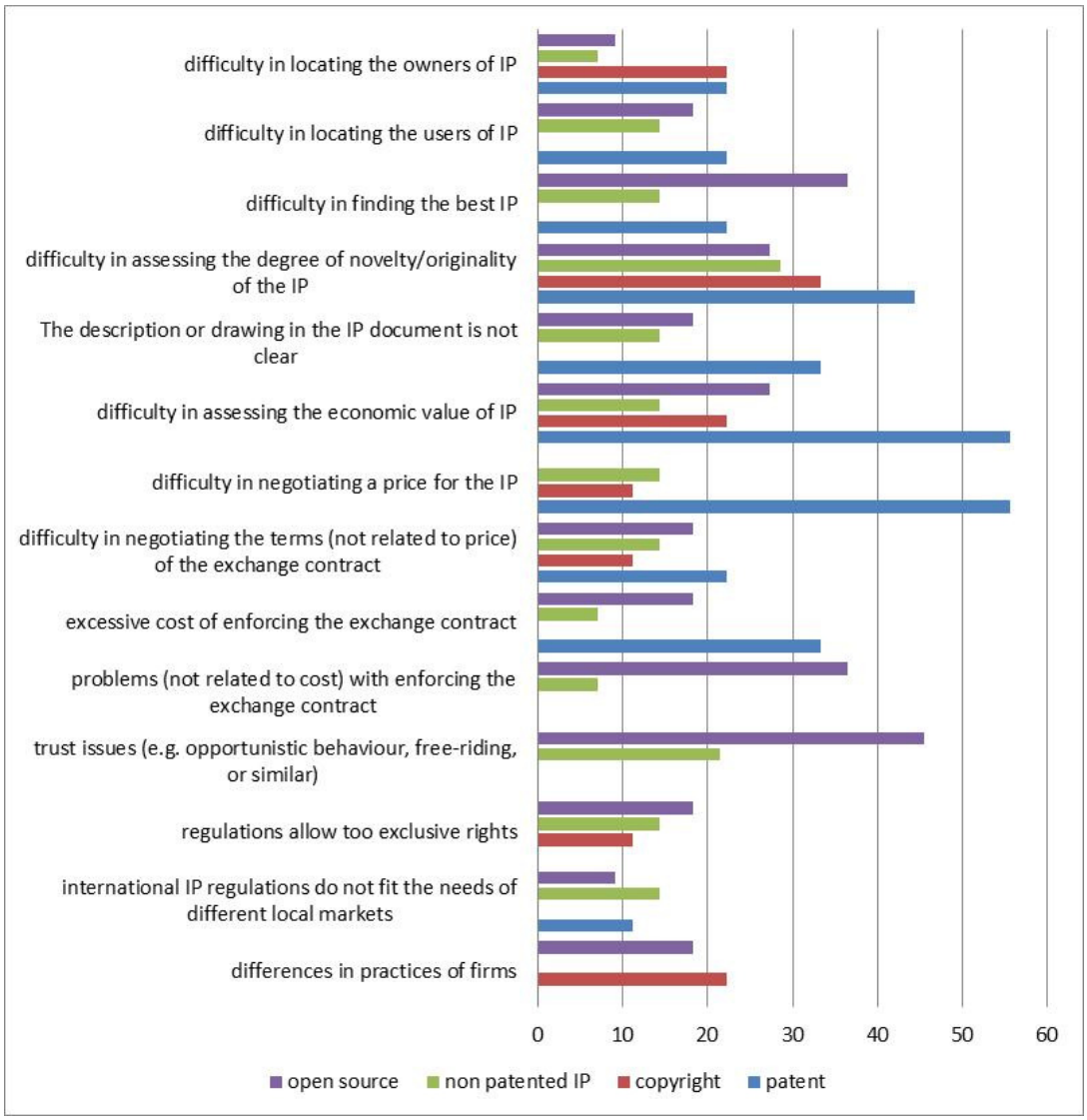
enforcement and institutional underpinning of open source communities for more effective value creation in open innovation platforms (see table 8 and graph 2).

Table 8: Obstacles encountered when exchanging different forms of IP (for Total and SMEs)

IP market place considered	Firms considered	Search	Transparency	Negotiation	Enforcement	Regulation and practices
	Total (SME)	% firms	% firms	% firms	% firms	% firms
Patents	14 (SME 9)	35.7 (SME 44.4)	64.3 (SME 66.7)	64.3 (SME 66.7)	35.7 (SME 33.3)	14.3 (SME 11.1)
Copyright	9 (SME 7)	22.2 (SME 22.2)	33.3 (SME 33.3)	33.3 (SME 22.2)	11.1 (SME 11.1)	33.3 (SME 33.3)
Non-patented IP	19 (SME 14)	21.1 (SME 28.6)	31.6 (SME 35.7)	15.8 (SME 21.4)	21.1 (SME 28.6)	15.8 (SME 21.4)
Soft IP (open source)	14 (SME 11)	50 (SME 54.5)	42.9 (SME 63.4)	14.3 (SME 18.2)	71.4 (SME 72.7)	28.6 (SME 27.3)

Graph 2 reports (for patents, copyright, open source and technology with no patent protection) the percentages of SMEs that encounter each type of obstacle broadly mentioned in table 8. It shows that although all IP and IPR markets are not free of problems, there are only a few cases where there is a concentration of more than a third of firms in a certain IP or IPR market that report a specific problem (they are described just above). This suggests that problems tend to be concentrated in certain specific areas for policy to focus on.

Graph 2: Percentage (%) of SMEs encountering specific obstacles when exchanging different forms of IP, calculated for each IP or IPR market place



Chapter 4 Key findings, including implications for IP and IPR policy

Value creation in open business models

Researching mainly creative services (books, music, games, and news media publishing) and ICT firms of all sizes, we see how firms' open business models are stimulated by strong use of both proprietary IP (mainly copyrights for creative services, but also patents for ICT firms) and soft IP (open source, creative commons and the like), as well as no formal IPR protection, in order to reach a broad range of strategic objectives related to financial gain, competitive advantage, strategic relationships, and innovation. Larger firms tend to use more formal IPR compared to smaller firms, which use more soft IP protection.

Interviewed creative service firms and the ICT firms surveyed illustrate how networking with suppliers and users, formal partnerships and community interaction are fabulous co-creation innovation methodologies and strategies for market growth, positioning and financial reward. In particular creative commons, open source licensing or even formal copyright are used for this purpose, but in the case of a fast moving consumer goods firm patents can also stimulate such dynamics. Some policy implications will now be briefly set out:

- Policies for *entrepreneurial finance* should not focus merely on, or prioritise, the enforcement of formal IPRs to underpin the rise, growth and sustainability of open business models.

Creative services and ICT firms have high incentives to use both soft IP and formal rights as a strategy, especially to raise direct financial income. However, open source and creative commons are used intensively (especially by ICT firms) for cost cutting (for example, as an inexpensive way of gaining access to knowledge or for royalty savings) and to increase market share (by broadening the user base).

- *Innovation* policy needs to recognise the benefits of less proprietary knowledge sharing open business models. It needs to ensure stronger enforcement of open source and creative commons licences, and the safeguarding of technological solutions or creative expressions with no patents or copyright. Government's research and innovation strategies can also include initiatives to ensure open access to their own data (examples include the recent Open Data Institute initiative of the UK).

Both creative services and ICT firms report that soft IP are strongly used as a strategy for innovation, especially in relation to innovation methodologies, access to information and standards setting.

- IP policy should recognise that softer forms of IP protection are important instruments to strengthen the *strategic networking and community* element of

service innovation platforms. Methodologies here include everything from alternatives to no registered IPR protection, to copyright limitations and exceptions, strengthening of open source and creative commons, compulsory licensing for patents and copyright, and more.

Building both formal and informal strategic relationships, as well as community interaction, are reported to be important strategies of creative services and ICT sector firms when using open source, creative commons licences and innovations with no patent protection. Furthermore, when patents are used (as in the case of ICT firms and the interviewed fast moving consumer goods firm) it is important to enter formal collaborative agreements such as joint ventures and strategic alliances, reflecting another well-documented part of our innovation system.

- *Competitiveness* policies need to recognise that it is a misconception to think that there is a clear link between the degree of IPR protection and market positioning.

From a strategic management or market positioning perspective, competitive advantage for creative services was especially obtained via innovation business models through co-creation with suppliers or users. Firms in the ICT industry also report that open source communities are used to increase their market share, but so are patents.

The experimental economy needs encouragement: OK to fail

- Businesses need to experiment with alternative business models in order to obtain evidence about their usefulness and what business model characteristics are associated with successful performance.

- Technology service platforms, such as innovation centres or intellectual property offices, should ensure coordination and the sharing of information between open business model experimental initiatives.

Flexible IPR and IP policies to embrace variety

- Overall, IPR and IP policies aiming to help firms with the value of creation processes from IP need to be flexible and neutral to embrace the variety of IPRs and IP instruments used for this purpose.

- IPR and IP policy also needs to be flexible or neutral to embrace the variety of firm types, to develop their own individual IP strategies and to allow them to experiment with alternative business models.

- Secondly, there is a challenge from operating within a copyright regime designed for the analogue age where reformatting and format shifting (from paper to digital) is not allowed. The core of the problem is simply the impossibility of mass digitisation of twentieth-century content without a solution to the issues around out-of-commerce and orphan works.

- IPR policies designed for analogue business models can come into conflict with digital ones (eg in relation to format shifting). To ensure a smooth process, limitations to copyright owners are currently being proposed by the UK government or via user rights as in the USA.

Obstacles experienced in open business models

Obstacles are experienced in all IP markets (related to IP market search, market transparency, contract negotiation, and regulation and practices) that hamper the effective use of formal IPRs and soft IP for strategic value creation purposes.

Especially in markets for IP and IPR, there is a heavy concentration of creative service firms and firms in the ICT sector reporting problems relating to assessing the degree of novelty of the IP or IPR. For the ICT sector, this is especially true for patents. Firms therefore also find problems in accessing the value of IP and IPR, and in negotiating the price when they are traded. In turn, it is reported that this hampers collaborations and the establishment of joint ventures.

- Patent policies must enforce a larger suitable inventive step for patent protection, so the novelty criteria are clear. It is difficult to assess what can be done to enforce proper exposition of originality in copyright and other forms of IP (open source, creative commons, etc), but some kind of self-implemented industry criteria must be enforced.

Problems in relation to trust (opportunistic behaviour, free-riding and similar) were especially reported in open source communities. Given the strategic benefits ICT firms report from using these softer and less formal means of IP protection, it is important that policy also supports the enforcement of such forms of IP.

- IP policies need to recognise, accommodate and institutionally enforce the productive role of open-source solutions. Business practices also need to implement integrity in open source communities.

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