

1. Introduction

1.1. *Why is NESTA responding and who does it represent?*

NESTA's mission is to transform the UK's capacity for innovation. We welcome this review, and agree that intellectual property (IP) is crucial to UK innovation and knowledge-based industries on which we are increasingly reliant for our competitiveness in the global market.

Our response is shaped by our expertise and experience in entrepreneurship and early-stage firms, the creative industries, and evolving forms of innovation. We have drawn from our extensive relationships across the technology and innovation community, including venture capital firms, business angels, universities, technology transfer programmes, technology and investor networks, government agencies, and public bodies.

Small businesses are the backbone of the UK economy. Entrepreneurs and early-stage firms serve as a wellspring of innovation within the UK. The pressure they put on existing businesses drives competition and efficiency – which brings lower prices, innovation and greater choice for consumers. Firms with fewer than 50 employees represent over 99% of the UK's businesses, 46% of employment, and 37% of revenue. New businesses are the single greatest source of new jobs in the UK.

NESTA supports UK entrepreneurship as the largest single provider of seed financing in the UK, with investments in over 200 firms to date. We combine the provision of risk capital with access to specialist mentors, other potential investors and a wide range of sector networks which, together, give investees a much better chance of realising the commercial potential of their idea.

As the Review documentation acknowledges, the creative industries are of significant importance to the UK. NESTA has conducted extensive research into the creative industries, with our latest report focusing on the challenges and opportunities around commercial growth¹. Furthermore, we are a significant developer of programmes oriented towards the growth of the creative industries. Our Creative Pioneer Programme is creating the next generation of entrepreneurs, and has already succeeded in helping 50 innovative businesses to get off the ground in just two years.

1.2. *How has NESTA garnered views for its response?*

Our response is based on input from individuals and organisations representing NESTA's investments and awardees, and the perspective garnered from our several years of programmatic work across disciplines, including regional pilots. As part of the consultation process, NESTA held a series of roundtable discussions with a representative sample of our stakeholders, augmented by research and additional interviews to inform our recommendations.

1.3. *Response outline*

This response will address several issues associated with the impact of IP on three areas of particular focus for NESTA:

¹ *Creating Growth: How the UK can develop world-class creative businesses*, April 2005. ADD WEBLINK.

- Entrepreneurship and early-stage innovative firms
 - ? IP as strategy - Education and awareness amongst entrepreneurs and early-stage investors
 - ? Facilitating access to international markets
- Creative Industries
 - ? Educational outreach and support services for creative businesses
 - ? Exploitation of IP and new technologies
- Changing nature of innovation
 - ? Open and distributed innovation
 - ? Patent trolls and predatory licensing

For each of the above, this response discusses the issue and its relevance to enterprise development and innovation in the UK, and provides specific recommendations based upon NESTA's research and programmatic experience.

1.4. Principal recommendation

Our interest and experience in entrepreneurship, the creative industries, and innovation, have led us to conclude that the primary issues related to IP in these areas **lie less with specific IP legislation, but rather with the related support structures of IP education and the ability of businesses to strategically develop and exploit IP for commercial growth**. This is particularly the case given the rapid developments in business models, the rise of new global markets and competitors, the availability of new technologies for exploitation, and the continuous drive towards an economy with a greater reliance on knowledge and creativity.

Accordingly, most of our recommendations focus on strengthening the endeavours of the Patent Office and the wider business support community in their continual adaptation to modern demands, and their ability to help UK businesses harness the opportunities of greater collaboration, enabling technologies, and the emergence of ideas from all corners. In particular, we would like to see a real shift in such organisations from an emphasis on IP **tactics** (i.e. regulations and procedures) to supporting firms in IP **strategy** (i.e. incorporating the development and exploitation of IP into the fabric of business, both large and small). Only through such a shift will UK entrepreneurs and innovators receive the type of support that they need to fulfil their potential.

2. IP Impact on Entrepreneurship and Early-Stage Innovative Firms

2.1. *IP as strategy - Education and awareness amongst entrepreneurs and early-stage investors*

In the case of technology-based and creative start-ups, IP can frequently serve as the primary tangible asset of the business. Accordingly, the possession of defensible and verifiable IP can play a critical role in an early-stage firm's access to capital.

This concept is not lost on most start-ups, many of whom rightly apply for IP protection for core technology and ideas, but fail to progress their IP activity beyond this minimal level. Despite IP being core to their business, they approach IP tactically rather than strategically; in other words, they fail to assess fully the limitations, protections, product and market potential, and future development of their IP.

A start-up's IP strategy should include a continuous assessment of their intellectual output for potential IP, just as they continually assess their products and markets. It often turns out that the most valuable component of a firm's patent portfolio is not the one which was originally anticipated to be so.

Furthermore, start-ups need to recognise the interconnectedness of technology in their approach to IP. Discussion of IP within their business plan should include an assessment of competitors' IP, potential conflicts, required licensing of 3rd party technology, and potential license opportunities of the firm's own IP. Any license agreements (both of the firm's technology, as well as of other firms' technology) should be rigorously developed and managed, and include details regarding what IP is covered within the license, as well as what products are covered by that IP. Failure to do so can result in a misjudgement of market and product potential, if not costly lawsuits downstream.

For example, NESTA received an application for investment from a firm which had what it believed to be a key breakthrough in the construction of a device in the energy sector. In assessing the value of its IP, the firm and an external agent included the entire potential market for the device as their starting point. Upon further analysis, NESTA determined that the firm's IP covered only a particular geometry and method of fabrication for the device - and did not therefore necessarily control the complete chain of IP that would be needed to create and sell a product. The materials used, further processing methods, and the application areas all turned out to have prior art, the majority of which was covered by other 'live' IP. Even alternative methods of manufacture were patented elsewhere.

Accordingly, the investment proposition was highly compromised - the applicant had to 'prove' that other methods of manufacture were non-viable or accept a discount of their IP value, as well as discount the value of IP for the three other factors in the value-chain. On the basis of the information available and other risk factors, the discounted value of the IP was a hundred times less than the applicant's assessment of its value.

Just as start-ups may fail to consider their IP in a comprehensive and strategic manner, venture capitalists and other early-stage investors may similarly underestimate IP in the investment process. For some, IP due diligence may involve no more than ensuring that a prospective investment's IP is indeed owned by the company.

Despite its critical role, IP is frequently a secondary concern for investors. This is often due to investors focusing their analysis on those areas in which they are expert, namely a prospect firm's product(s), its market(s), and its management. Certainly, these latter elements are paramount in evaluating a potential investment; however, many firm's business plans, and therefore the value of external investment, can be made or broken by the completeness of the IP strategy.

Early-stage investors should seek more than a simple 'does it exist?' or numerical valuation of the IP portfolio. Rather, they should conduct a thorough qualitative analysis as to how the firm's IP relates to its products and business plan, and any potential for IP issues or disputes related to third parties. If they have engaged external IP professionals to conduct the IP due diligence, they should provide full product and market information to the IP professional, so that the firm's IP portfolio and filings can be fully rationalised against their product plan, and vice versa. Core technology is only one of many that may be used by the firm in its products. Thus patent searches must focus not only on the firm's IP, but on all technologies required in its products.

RECOMMENDATIONS

- Business support organisations and the Patent Office have a crucial role in providing education and information to entrepreneurs and investors on the importance of IP strategy. The Patent Office should enhance their efforts in this area, engaging strongly with the UK's wider business support network, including the Business Link network in England and their analogues in the devolved administrations. Such entities should integrate offerings of IP-related services and advice, including signposting to relevant experts versed both in IP strategy as well as IP law. These services must extend beyond simple IP processes and procedures to address IP in a strategic manner and in a language and context relevant to businesses.
- The Patent Office provides a wealth of information to support inventors, and efforts have been made to simplify the language for ease of understanding. These efforts should be extended, and the information and support should be framed in the terms and context of business – not necessarily in the terms of the patent process or legislation.
- This 'framing' should also be applied to the Patent Office website and other information sources, which some of our investees have found challenging to navigate and interpret. Information should be positioned in a manner which connects directly with the questions asked and challenges faced by inventors and firms. Indeed, we see this more business-friendly approach as crucial in helping businesses develop and evolve their IP strategy.

2.2. *Facilitating access to international markets*

Firms seeking to achieve scale require global reach and ambition. Given the limited size of the home market, rapid access to international markets is vital. Such firms already face major logistical, cultural and language issues in reaching across borders, and the diverse IP costs and processes across Europe can further inhibit the launch and growth of innovative firms. Establishing a pan-European IP regime is important to developing long-term innovation capacity in the UK. Similar issues exist in terms of harmonising with other international markets including the US, India and China.

Considerable costs can be incurred in obtaining patent protection throughout the European Community. The EC has managed to establish an EC-wide design mark and trade mark; however, despite years of debate and

consultation, the EC has not yet established a Community Patent. Accordingly, an inventor must file an application with the European Patent Office (EPO, a non-EU body) and, upon its granting, must then pay for translation and filing costs for each EU country in which they are seeking protection within a set period under national law, frequently just three months from the EPO granting. The costs for this can become quite high, and are frequently out of line with the size of the new markets. Additionally, disputes must be litigated separately in each member state, perhaps with different results.

RECOMMENDATIONS

- The Patent Office should ensure that those businesses looking towards international markets have the information they need. This should be connected with the provision of business support for exporters provided by the Business Link network and their equivalents in the devolved administrations, UKTI, and business organisations providing export advice such as the Chambers of Commerce.
- There should be an approach to harmonise translation and application costs across the European Union. The burdensome and prohibitive costs of translation charges (even if they are subsidised) potentially can hinder smaller businesses particularly as they look to develop new markets or indeed their exporting strategy. European countries should investigate opportunities to reduce costs through leveraging a common infrastructure, expert staff, and application and review processes.
- Notwithstanding the scale of the political issues involved, the development of an EC patent should be a long-term goal to help firms access international markets. However, we concur with the Patent Office that a pragmatic approach must be taken in the interim. The government should therefore investigate potential approaches to further subsidise inventors (particularly entrepreneurs or early-stage firms), directly or via tax relief, for the costs of translation and filing for protection in a select number of target countries – both in the EU and elsewhere. Alternatively, the Patent Office could offer this service for those who are granted UK patents.

3. IP Impact on Creative Industries

3.1. *Educational outreach and support services for creative businesses*

As the Review papers acknowledge, the creative industries are of significant importance to the UK, generating 8% of GVA in 2003. In 2004, there were an estimated 113,000 creative companies, with total employment exceeding 1.8 million. The UK CI exported £11.6 billion, roughly 4.1% of all goods and services exported. [DCMS figures]

However, the size and success of our creative industries have an important implication for the UK. We are now more exposed than other countries to commercial under-performance in the creative industries. Consequently, we need to ensure that the UK environment for the growth of creative businesses is as positive and dynamic as possible.

The creative industries provide a major source for economic growth in the UK, but such growth is dependent on the commercialisation of creative content, services, and experience. This requires a flexible and clearly understood IP framework which is adaptable to the fast-changing nature of content development and distribution, and the technologies that enable this.

Moreover, creative firms need actively to adopt business strategy and requisite business skills, so that they are able fully to capture value from their creative output (i.e. intellectual property). In a survey commissioned by NESTA of small creative businesses, only 35 per cent of respondents indicated having established specific financial goals for the future, and less than two thirds of these included such goals in a formal business plan or strategy. More than half of the businesses surveyed lack any senior managers with formal training in business skills. In a recent session of NESTA's Creative Pioneer Programme, attended by 25 of the UK's top young creative entrepreneurs, not a single individual was familiar with Microsoft Excel.

Given such challenges regarding even general business knowledge, it comes as little surprise that creative firms may frequently also lack an understanding of how IP can and should be used within their business. For example, when questioned about his exposure to IP issues in his Master's programme at the Royal College of Arts, a recent graduate and entrepreneur noted having received only a single lecture on IP, which itself was focused more on procedure than strategy, and which left the vast majority of attendees more confused than when they had entered the session.

The importance of the creative industries to UK's economy is no longer in doubt. Furthermore, much discussion has been given to the UK's need to compete globally in these sectors by focusing its talents on high value-added firms with innovative business models. As these are the very elements within the creative industries which are particularly dependent on effective exploitation and protection of intellectual property, this presents important questions as to how such enterprises can be best supported, and the issues described above addressed. In particular, these concern the most effective models for providing affordable access to IP advice, and how IP advice can be better integrated into mainstream business support, alongside finance, management and other business practices.

RECOMMENDATIONS

It is critical that creative entrepreneurs are able to exercise informed choice about how their content is used, understanding both how to protect and commercialise rights to that content. The recommendations in 2.1 and 2.2

apply equally to creative businesses, which in many ways are similar to those in other parts of the economy. This section and 3.2 set out some further thoughts that have a particular relevance for the creative industries.

- Creative businesses need a support structure with content and advice relevant to them and the challenges they face. This should include advice and support regarding the strategic development, protection, and commercialisation of their IP. The Patent Office and Business Link partners have started to engage in this work, but there is scope for extending and refining this work.
- As part of an overall focus on IP for small businesses, the government should launch a campaign around the creation and exploitation of IP within the creative industries, linking outreach and education efforts across DCMS, the Patent Office, DTI and related entities, and fronted by new role models within the creative sectors.
- Enterprise education for young people is an important way of encouraging informed choice in IP use. Enterprise-oriented curricula in schools and HEIs should include a focus on the exploitation of ideas and IP. This is particularly critical for those disciplines reliant on creativity and intellectual property, including the creative sectors. This not only helps creators to determine their needs with regards to IP protection, but can also educate consumers and deter piracy.

3.2. *Exploitation of IP and new technologies*

The retention and exploitation of IP can enable businesses to generate a wide range of different and scalable revenue streams. In one survey commissioned by NESTA, the most commonly identified barrier to growth for creative businesses was difficulty in accessing customers. Throughout the creative industries, the primary route to the marketplace can be dominated by a few large "gatekeepers", including retailers, publishers, and distributors. In several cases these gatekeepers operate across sectors, and many are foreign-owned. This structure can impose severe challenges on creative businesses, particularly start-ups and SMES, in terms of accessing and developing their routes to customers and markets. Success frequently depends on securing an agreement with a gatekeeper, who can hold much of the leverage in a deal, resulting in many transactions which may disproportionately favour the gatekeeper over the creator.

For example, in a recent NESTA report on commercial challenges within the Creative Industries, it was noted that more than 80% of music sales in Europe are controlled by the four major music labels. The eight largest book retailers have just under two thirds of the UK's overall book market. Within the film industry, six distributors account for 87% of the UK's box office share.

However, some creative businesses are managing to overcome the dominance of gatekeepers through innovative new approaches and business models. Digital and other technologies are enabling new methods for creative businesses to collaborate, develop, market, and distribute their products and services, and there are opportunities for such models to be adopted more widely. As an example, the small UK games developer Introversion Software has recently begun using Steam, an online distribution system developed by an American games studio, to sell its game directly to end-users, many of whom would otherwise been unaware of the firm's products.

To ensure that the UK continues to innovate there may be better ways of making some content public in order to encourage innovators to add and exploit that content. Creative Commons and the Adelphi Charter provide a middle ground between the extremes of copyright-control and the uncontrolled

exploitation of IP. They focus on using a range of copyright licences, freely available for public use, which allows creators to fine-tune control over their work, thereby enabling as wide a distribution as possible. The UK needs to be a frontrunner in terms of such innovative IP reform in order to enable our creative industries to maintain an international lead.

RECOMMENDATIONS

The lines between sectors in the creative industries are becoming increasingly blurred in some areas. Ideas are exploited across a range of platforms – film, TV, books, games and so forth. The IP regime, and the wider regulatory environment, needs to respond better to multi-platform issues. The current Review should take account of industry convergence, noting how value is captured, markets structured, wealth created, and content used.

- The government should look at support for new distribution mechanisms, particularly regarding the use of networked technologies to access markets and enable corrections in industry structural disadvantages. The government should ensure that such a review gives due weight to the needs of small content creation firms rather than just the well-resourced gatekeepers.
- We anticipate that several of the loudest voices on these issues will likely come from larger firms, including the major gatekeepers described above. We recommend that the government, as part of its review, ensure that it considers the perspective of small creative businesses, perhaps through an audit of IP processes and challenges specifically encountered by small firms which lack the powerful in-house counsel prevalent in their larger brethren.
- The government should investigate a scheme to subsidise small firms, including those in the creative industries, in obtaining IP advice, particularly with regards the strategic use of IP. Alternatively, the government could support the establishment of IP advisory programmes, delivered by key trade bodies or local organisations which have strong historical connections within the creative sectors. Such programmes could also help extend the nascent growth of strategic IP advisory services (separate from legal advice) which are being seen in technology sectors, to other IP-intensive industries.
- There is significant room for further developments of synergy between firms across creative sectors (e.g. developing a film or book series from the storyline and characters of top-selling games). We would recommend that the government's knowledge transfer network programme be extended to include the creative industries, so that IP might be more fully exploited across these sectors.
- The government should investigate supporting the establishment of an IP insurance scheme which could be used by small firms to help finance the often costly process of defending their IP. This could be piloted within the creative industries, whereby HM Treasury might engage key trade bodies and insurers, using limited government guarantees to stimulate development of private insurance schemes.

4. IP Impact on Changing Nature of Innovation

4.1. *Open and distributed innovation*

In earlier generations, the common perceptions of the invention process were simple ones – the lone inventor in the garage tinkering on a better mousetrap, or a small team of researchers working away in the skunkworks lab of a company. The ownership of the resulting IP was similarly straightforward. However, the days of the in-house lab as a primary source of innovation are increasingly behind us. New, more complex, models of innovation are emerging, particularly those involving collaborative innovation across multiple actors.

Even within a closed network, innovation can now involve multiple participants, particularly as firms collaborate across the value chain to develop new products, business models and business processes. For example, Nokia works actively with the developer open source community on several projects and provides developers with help and support to start developing mobile applications, the latest device specifications, tools and Software Development Kits, documents and technologies. Nokia is encouraging developers to take advantage of the potential for open-source mobile applications, driving innovation in the development of leading-edge open-source mobile solutions, and in doing so, increasing the overall market for Nokia's products.

New technologies are also enabling new forms of networks for innovation – open, collaborative and geographically dispersed teams of innovators who pool their resources towards a common goal. Such efforts can lead to group innovations, as seen in the rise of large open-source developments (e.g. the Apache web server software which dominates the internet) or collaborative outputs (e.g. Wikipedia – an on line encyclopaedia open to anyone to edit and contribute).

These new forms of innovation have produced related issues regarding IP. In particular, collaborative efforts create questions of IP ownership and rights to use and commercialise. Furthermore, the rise of open-source innovations can create confusion as to what specifically end-users can do, how they should attribute rights, what steps should be taken to license others' technology and issue licenses for their own, and where royalties might need to be paid or collected.

RECOMMENDATIONS

- The Patent Office needs to ensure that its information and awareness efforts acknowledge and adapt to the changing nature of innovation. In particular, specific IP-related advice could be provided around a number of scenarios that modern businesses and innovators are facing. Advice should specifically address some of the common issues that may arise around IP ownership, use, and commercialisation.
- The Patent Office and other IP professionals continually recommend that separate parties come to agreement on IP ownership at the beginning of an inventing or innovation relationship. To support this, the Patent Office and business support services could draft and provide variety of stock contracts which could account for a number of common scenarios or relationships.

4.2. *Patent trolls and predatory licensing*

Accentus is an Oxfordshire firm which actively develops IP and technologies for commercialisation, exclusively through licensing. NESTA supports and encourages such innovative business models, particularly those that effectively

take on the challenges of globalisation by leveraging the high-value capabilities within the UK.

However, some firms have warped such innovative models, taking advantage of the high cost of invalidating a patent and the complexity of the international patent system to seek revenues solely through predatory licensing and patent litigation. Instead of actively developing a technology for commercialisation, these "patent trolls" acquire or register patents purely for the purpose of seeking out potential infringers and proposing license agreements. Where the patent troll is unable to achieve a licensing agreement, it threatens, or executes, infringement litigation. To avoid litigation, companies often choose to settle by purchasing a license. They may do so even if the patent were likely to be invalidated upon trial, simply due to the economics of the situation.

In the United States the costs of patent litigation have been estimated at \$2m per party per case. Europe provides for an "opposition proceeding" which is less expensive, typically about €40,000 in legal fees, but slow. It is not uncommon for 10 years to elapse between when a patent application is first filed to when the issued patent finally clears an opposition proceeding. The notice of opposition must be filed in writing at the EPO within nine months from the publication of the mention of the grant of the European patent, along with the payment of an opposition fee. Opposition divisions of the EPO are then responsible for the opposition procedure. The length of the process, despite its (relatively) low cost, opens the door for trolls in Europe. In Europe, only about 5 - 10% of all issued patents are opposed, but of these, about one third are revoked, one third are amended and one third fully upheld.

While one objective of IP is to reward innovators through the provision of limited monopolies, when firms severely restrict access to IP through deterrent licensing, it can impede further innovation by other actors. It is like building a fence around a wellspring, and permanently barring the door.

RECOMMENDATIONS

Patent trolls are aided in their pursuits through three major factors: (1) it is frequently easier to get a patent issued than to get one invalidated due to the higher standard required for the latter, (2) the high cost of challenging a patent, and (3) the relatively low investment required of the troll to amass a patent portfolio. The government should investigate options to address all three of these, including

- Reducing the number of inappropriate patents granted through an increase in patent review staff, and enhanced investments in training, recruitment and retention of specialist staff.
- Allowing for non-binding public (or selected external expertise) consultation and commenting on patent applications, leveraging external audiences through simple online technologies for collaborative review and feedback.
- Encouraging the EPO to reduce the length of time for examining patent oppositions, and providing similar low-cost mechanisms for challenging patents in the UK
- Encouraging the establishment of patent defence insurance to protect those innovative firms which have successfully developed products and markets, only to subsequently be threatened with litigation by trolls.
- Investigating the use of fines or other mechanisms to impose a cost on firms which repeatedly litigate on patents which are later invalidated.

The UK's IP regime should promote innovative enterprises – not innovative lawyers.