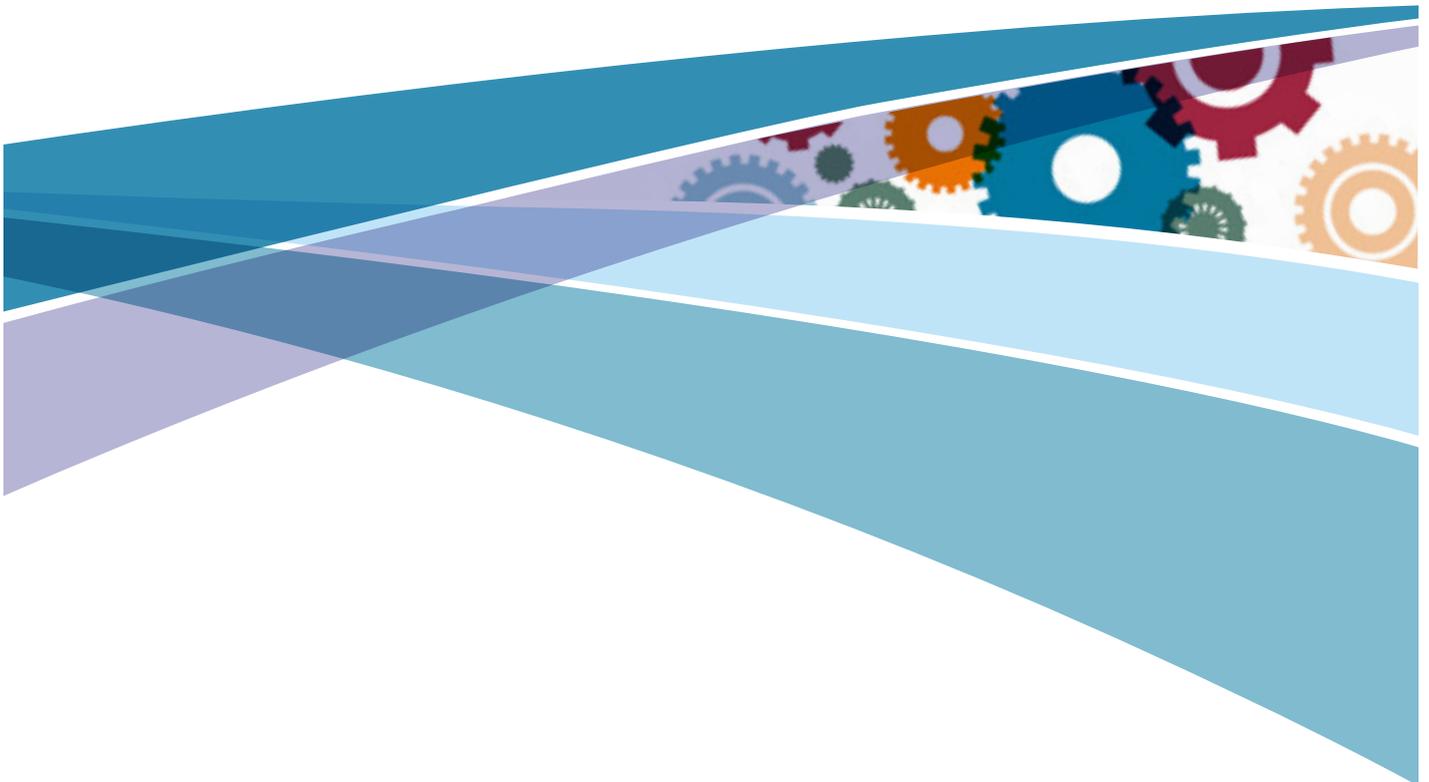




Intellectual
Property
Office

Measuring Infringement of Intellectual Property Rights



Research commissioned by the Intellectual Property Office, and carried out by:

Dennis Collopy, Vanessa Bastian, Tim Drye, Florian Koempel, Davis Lewis, Peter Jenner

This is an independent report commissioned by the Intellectual Property Office (IPO). Findings and opinions are those of the researchers, not necessarily the views of the IPO or the Government.

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1. Executive Summary

This study was commissioned by the Intellectual Property Office (IPO) with a stated aim of providing a robust overview of existing methods used to measure infringement of intellectual property rights (IPR) as well as recommend suitable methodologies, especially those capable of being adopted across different IP rights. This report summarises the outcomes of a four-month review of methodologies currently used to identify the scale of infringement in the four main areas of IPR: copyright, trademark, patent, and design rights. It includes recommendations for future methodologies to improve rigour and robustness and is split into two parts:

1. The main report summarises our findings and recommendations starting with a section on the background to our review, framed around concerns amongst policy makers about the quality of data generated by most IP right infringement research. The main report includes our methodological approach followed by a summary of the research outcomes and finally by our recommendations.
2. The second part of the report is divided into appended sections containing our detailed findings. This includes recommendations for best practice on statistics and estimating IPR infringement. The review then covers the three main sources of our information: a comprehensive and systematic review of industry and government (so-called 'grey') literature along with appropriate relevant academic literature; structured interviews with trade body representatives in the different areas; and a series of interviews with industry experts within the area of online IP infringement. The study covers research carried out mainly during the past ten years although some goes back to the turn of the Millennium. Whilst we recognise the importance of keeping up with most recent efforts, especially given the fast-changing markets IPR operate in, there are also useful insights available from work carried out over a decade ago.

The review is wide-ranging in scope and overall our findings evidence a lack of appreciation among those producing research for the high-level principles of measurement and assessment of scale. To date, the approaches adopted by industry seem more designed for internal consumption and are usually contingent on particular technologies and/or sector perspectives. Typically, there is a lack of transparency in the methodologies and data used to form the basis of claims, making much of this an unreliable basis for policy formulation.

The research approaches we found are characterised by a number of features that can be summarised as a preference for reactive approaches that look to establish snapshots of an important issue at the time of investigation. Most studies are ad hoc in nature and on the whole we found a lack of sustained longitudinal approaches that would develop the appreciation of change. Typically the studies are designed to address specific hypotheses that might serve to support the position of the particular commissioning body.

To help bring some structure to this area, we propose a framework for the assessment of the volume of infringement in each different area. The underlying aim is to draw out a common approach wherever possible in each area, rather than being drawn initially to the differences in each field.

We advocate on-going survey tracking of the attitudes, perceptions and, where practical, behaviours of both perpetrators and claimants in IP infringement. Clearly, the nature of perpetrators, claimants and enforcement differs within each IPR¹ but in our view the assessment for each IPR should include all of these elements.²

It is important to clarify that the key element of the survey structure is the adoption of a survey sampling methodology and smaller volumes of representative participation. Once selection is given the appropriate priority, a traditional offline survey will have a part to play, but as the opportunity arises, new technological methodologies, particularly for the voluntary monitoring of online behaviour, can add additional detail to the overall assessment of the scale of activity.

This framework can be applied within each of the IP right sectors: copyright, trademarks, patents, and design rights. It may well be that the costs involved with this common approach could be mitigated by a syndicated approach³ to the survey elements. Indeed, a syndicated approach has a number of advantages in addition to cost. It could be designed to reduce any tendency either to hide inappropriate/illegal activity or alternatively exaggerate its volume to fit with the theme of the survey. It also has the scope to allow for monthly assessments of attitudes rather than being vulnerable to unmeasured seasonal impacts.

A significant distinction between the different IPR sectors is whether or not perpetrators and victims are individual consumers, businesses in general or specific sectors. Clearly, online copyright infringement is particularly focused on consumers, whereas patents (and, as we will show, design rights too) are very much about relationships between businesses, notably in particular business sectors. Trademarks are of interest across a broader range of sectors, especially those that provide consumer-based products and services. This enabled us to identify the common threads between the different IP sectors and their 'audiences' and to consider the feasibility of applying methodologies across the different rights.

1 The robustness of this overview can be shown by relating it to other areas such as the number of prosecutions for rape. Whilst comprehensive, this is very susceptible to the expectation that the victim will be treated appropriately and that it is worth making a complaint known to the police. But this attitude is highly susceptible to themes within the media at any given time, including the difficult treatment of a victim witness by a barrister or the successful prosecution of a high-profile case. The same can be said for the impact of current media attention on historic child abuse by high-profile individuals on the level of reporting and prosecution of offences.

2 This approach is also applied in the assessment of the volume of defaulted debt within the UK economy. It is feasible to track, for example, the number of county court judgments implemented on a monthly basis. However, this count will be influenced by the number of those unable to meet their debt repayments, as well as creditors' assessments of whether they will be able to recover a bad debt.

3 The omnibus approach suggested by CEPR in 2000.

To move towards the above long-term goal, taking account of the IP sectorial differences and applying the framework, we can show that each type of IP right infringement could be implemented as follows:

- Online copyright infringement should be assessed by the blended combination of the number of ‘take-down’ notices, omnibus research of the level of compliant and infringed activity by consumers, and a survey of organisations regarding their evidence of infringement notifications prior to enforcement and their assessment of criteria for a challenge. The use of emerging technological tools to measure observable online behaviour should be added to the blend of approaches to provide a more accurate picture.
- Offline copyright ‘piracy’ and counterfeiting (i.e. trademark infringement) should include a multi-tiered but blended approach encompassing data from industry, government and consumers. This could take the form of counting industry and Customs ‘seizures’ along with consumer, producer, distributor and retailer surveys, and mystery shopping.
- Estimates of patent infringement levels are distorted by the effects of patent assertion entity activities and widespread aversion to the high costs of litigation amongst most stakeholders in the market. Levels of actual infringement are best assessed by a combination of surveys of inventors and practitioners, together with quantitative data on the number of court cases. The latter at best represent the ‘tip of the iceberg’ and certainly cannot represent the full range of infringements taking place.
- Assessing levels of design right infringement are less well developed but could follow similar approaches to those for patent infringement, including capturing infringement data from designers. There is potential overlap on industrial designs and patents where a syndicated approach to measuring infringement of both elements could be a way forward. We note the suggested use of Customs data for assessing levels of infringing goods internationally and also the possibility for capturing some industry data from exhibitions and trade fairs.

As in any field of official data measurement, a publicly available count of enforceable and actionable infringements is necessary. OECD and various official bodies note such a count currently does not exist but it is a logical outcome of our proposed framework. Such a count would acknowledge that in each area there is a highly skewed distribution, particularly of the economic impact of infringement, leading to a large proportion of the value being concentrated in a very small proportion of the perpetrators. Comprehensive scoping of the infringement enforcement data can pick up on this tiny segment that escapes sampling methods. However, this cannot be used in isolation, as the actual volume of enforceable infringement is the outcome of an inevitable tension between the levels of underlying infringement by perpetrators and the expectation of enforcement by the claimant.

To address this issue, we advocate systematic, regular, on-going survey tracking of the attitudes, perceptions and, where practical, behaviours of both perpetrators and claimants. Clearly, the nature of the perpetrators, claimants and enforcement differ in each field, but the assessment methodology should include each of these elements. We also propose this regular survey tracking could take the omnibus form recently used within the Ofcom/Kantar online surveys but

it should be more frequent, ideally monthly. In addition to sampling across the audience, there should be a comprehensive transparent count of the major infringements, which will not be sampled. This blended approach could allow for the inclusion of market intelligence data supplied regularly by industry. The entire process should be conducted or overseen by government, to ensure the methodology is rigorous and robust and to enable measurement of the infringement of all IP owners' rights.

2. Introduction and Methodology

2.1 Purpose and Scope

As part of a wider research project at the IPO on infringement and enforcement of IP rights, the primary purpose of this research is to carry out a thorough, in-depth analysis of extant research into intellectual property rights (IPR) infringement, with the specific aim of assessing the viability and rigour of the methods used to calculate the extent and scale of IPR infringement. The secondary focus of this research review is to identify whether a suitable methodology for measuring infringement of design rights, trademarks, copyright and patents, both online and offline, can be developed from the available research methodologies assessed within this review.

The scope of the review specifically addresses the main four IPR, and does not extend to 'trade secrets', even though this is an area of IP law increasingly attracting attention because of the nature of much of the cybercrime apparently impacting IP industries, especially in the United States.⁴

The original call for this review stems from the 2011 'IP Crime Report'.⁵ Its remit was also an aspect of Professor Hargreaves' Review of Intellectual Property, which called into question much of the data provided by various IPR-based industries.⁶ We have not been given access to the Hargreaves team's analyses of the industry-generated data and this required us to look at much of those materials with fresh eyes. As a result, we have included a number of research reports included in the Hargreaves Review's supporting documents. We believe this wider scoping of the available research adds to a greater understanding of how and why the IPR-based industries measure the impact of infringement on their businesses.

Another distinct and unique aspect of this study is an overview of how IPR-based industries measure IPR infringement, both from the top down (by reviewing available research literature) and from the bottom up, by talking directly with the various industry trade bodies responsible for generating bespoke research, either executed internally or commissioned.

4 This is very clearly a key issue for the US's IP Commission in its May 2013 report.

5 Intellectual Property Office, IP Crime Report 2011/2, May 2012.

6 Professor Ian Hargreaves, A Review of Intellectual Property & Growth, May 2011.

As a result, this review aims to go far beyond a desktop review of literature, to capture more accurately the different ways in which IP-dependent industries measure the impacts of infringement upon their businesses. In the main, the industries we interacted with came from the copyright content sector, although we also spoke to national bodies such as the Anti-Counterfeiting Group (ACG) in relation to trademarks and to Anti Copying In Design (ACID) in relation to design rights. With patents we were unable to secure meaningful dialogue on a UK industry-wide level.

The detailed content of the Literature Review within the accompanying appendices will, we believe, show the true breadth of research within the field of IPR infringement.

From the methodologies emerging from the literature, and those brought to our attention through the appropriate trade bodies, a number of technological developments became apparent that we believe could lead to a more accurate assessment of consumer behaviour. At present, these developments mainly apply to the online measurement of copyright infringement, but they indicate that a number of new opportunities are available.

2.2 Research Process: Our Approach

A core part of our methodological approach was the adoption of grounded theory to enable us to develop a theoretical framework of the general features of a topic while at the same time grounding the account in empirical observations or data (Glaser & Strauss, 1967).

The initial scoping, research and review function was carried out by the three main team members, with the subsequent analysis function expanded to include three other members (specialists in economics, consumer research and statistics) within the wider research team of six people.

Technology-Based Research Experts

As recommended by the IPO, we expanded the project's research methodology beyond the standard literature review to gain greater insight into how industry measures IP rights. However, to provide another level of insight for our recommendations for future methodologies, especially with so much IP infringement moving to the online space, we reached out to a number of experts in the field. The experts were not just from the content industries but also included contributions from technology firms such as BitTorrent Inc.

Assessment Process

The primary aim of our study was to assess existing research, draw comparisons between UK and international research and identify good and best practice amongst research. This then allowed an analysis of the emerging methodologies and an assessment of the most viable ones for each of the four IPR under review.

Having segmented the literature and research on the basis of whoever paid for it, we also needed a method to assess the quality of what we reviewed, taking account of the key principles we recognise, including the IPO's own three-point criteria of replicability, transparency and

clarity. We also assessed whether the research contained other key elements within the methodology, such as a statistical process involving repetitive, consistent, systematic elements, and for surveys whether quota and random sampling were used to achieve reliability and validity.

It is readily apparent that much of the reviewed research contained no methodological description and such research was generally treated as being inadequate for our purposes. There were research reports that contained some or most, but rarely all, of the elements we advocate for recommended research methods and our recommendations for methodologies for each of the different IP rights.

2.3 Research Focus

The initial segments of the research review involved several stages to ensure that we had captured as much as possible of the representative and relevant research within the field of IPR infringement measurement.

Given the IPO's three-point test for research, we felt it desirable to highlight the transparency of funding for all the research under review, as well as its methodologies. We decided to identify the sources of funding for the research and aimed to tabulate this by separating the literature into the four IP rights: copyright, trademarks, patents and design rights. However, as our review progressed, we felt the literature had to be segmented differently to better represent the emerging pattern of research. This meant we re-classified the research heading within the Literature Review as follows: counterfeiting and piracy (trademarks and offline copyright infringement); online copyright infringement; patent infringement; and design rights enforcement.

We then divided each IPR infringement category into further sub-groups based on the source of funding. The literature for each sub-group is shown in the Literature Review in the Appendices under each specific IP right.

- a. **Industry Infringement Research** - This covered research generated or commissioned by an IP industry stakeholder group. In the case of copyright industries, this was normally a trade association or collection society. In some of the larger copyright industries, considerable volumes of research are created internally. Market research and/or consultancy firms were usually commissioned to produce most of the research. Typically, industry does not have the breadth of coverage, resources and/or training to go beyond the commissioning of market research consumer surveys. This research is usually a response to particular issues, generating representative small samples, but is mainly reliant on the interpretation of consumer attitudes and perceptions.
 - b. **Government Infringement Research** - This covers research generated or commissioned by government departments, or agencies such as the IPO, as well as quasi-non-governmental organisations such as the World Intellectual Property Organization (WIPO) and OECD. Much of the commissioned research involves either commercial research/consultancy firms or academics specialising in the field, mostly from a legal or economics background. Typically, this type of research is predisposed to the use of objective comprehensive public infringement and enforcement data, which have the perceived advantage of being open to scrutiny and complete in their coverage.
-

However, little recognition is given to the impact of the costs of litigation and the difficulty in obtaining actionable evidence and consequent distortions to these comprehensive metrics.

- c. **Academic Research** - Although a considerable volume of research carried out by academics within the IPR field is commissioned and funded by industry or government, there is also a large body of research carried out by academics supported by their own resources or grants from research councils or charitable foundations. We have excluded from this category any academic research funded by any organisation perceived to have a vested interest in the outcome of the research findings. For example, academic research funded by either the content or technology industries was considered by us to be industry research rather than academic research. Typically, academic research has a tendency to look for novel methodologies and for the identification of underlying theories, which can lead to a lack of continuity and methods that do not have the potential to scale.

3. Research Outcomes

3.1 The Problem of Divergent Methods and Non-Transparency

We believe different stakeholders in the field of IP infringement assessment have an in-built bias towards different methodologies, presenting policy makers with a distinct challenge. Within the frequent debates on copyright policy,⁷ the need for and lack of effective, robust, accurate data has become increasingly apparent. Crucially, it became clear to us that the divergence of methodologies (many not readily discernible) and approaches used in the myriad pieces of research are at least partly responsible for the vacuum in quality and acceptable data.

This research review's stated aim to scope the measurement of the infringement of the four main IP rights, including online and offline, criminal and civil, has proven the most challenging aspect of the work. Measurement of online copyright infringement alone required quite divergent methodologies. This led us to advocate a unifying framework for assessment and demonstrate where this framework has so far been partially adopted within the different fields of IP rights. This can also be used to assess where and if new innovations in methodology can contribute. We located several very insightful pieces of research that offer the potential for transferability across different IPR.

One typical source of confusion we saw within this area was the conflation of the measurement of scale and the economic costs of infringement. Our review was required to focus on the measurement rather than the costs of IP enforcement, so we had to attempt to dis-entangle these aspects.

⁷ As illustrated by the Culture, Media & Sport House of Commons Select Committee's 'Support for the Creative Industries' hearings in 2012/3.

Nevertheless, our review undertakes a robust review of current methodologies (both domestic and international) used to estimate levels of IP infringement and to provide recommendations for other potential methodologies and identify any potential transferability of methodologies between IP rights and different markets.

3.2 Inconsistency Between Approaches

Even at the level of presentation, there was little attempt to clarify the consistency of different approaches with each other. A lot of effort is required to align different research projects and the way in which their apparently different conclusions are presented. This is symptomatic of a lack of confidence in different approaches, with little effort generally made to demonstrate consistency. For example, in the November 2012 Ofcom/Kantar Media research,⁸ the headline figure for those estimated to have downloaded or streamed illegally was 8%. This figure differed a great deal from the 39% headline figures within the University of Hertfordshire's 2011 survey,⁹ but the differences could be at least partially explained by comparing the different respondent panels for each survey.¹⁰ A superficial comparison between two survey's primary conclusions suggests conflicting findings, but closer scrutiny suggests the findings are, in fact, quite similar. This illustrates why the alignment of sample sizes, population segmentation and demographics must be carefully considered.

More challenging was the question of offline infringement, as illustrated by the British Video Association's (BVA) typology¹¹ distinguishing three different types of piracy¹² and eight different types of 'content theft'.¹³

When reviewing offline copyright infringement research, we had to consider similar approaches to those proposed for patent infringements, including taking account of both civil and criminal infringement cases to establish appropriate benchmarks for the levels of infringement.

Considerable attention was paid to the perceived value of claims made by divergent industry sectors on the value and scale of IP rights infringement, its impact and the costs of enforcement. Given what we show as gaps in acceptable data, we believe it is essential that future research involves the industries to obtain, as well as to critically and independently analyse, crucial industry data. We believe this is the best way to address the problems of the ideological motivation of the research undertaken by both academia and industry. Our review applies a plausible and, wherever possible, measured assessment of any bias inherent in the process.

8 OCI Tracker Benchmark Study Q3 2012.

9 University of Hertfordshire (D. Bahanovich and D. Collopy) 2011 'Music Experience and Behaviour in Young People'.

10 The Ofcom/Kantar survey covered all those aged 12+, whereas the University of Hertfordshire survey was restricted to those aged between 14 and 25.

11 <http://www.fact-uk.org.uk>

12 Online piracy, hard good piracy and source piracy.

13 'Digital recorder/camcorder theft' to 'peer-to-peer', 'illegal streaming', 'optical disc theft', 'theatrical print theft', 'screener theft', 'signal theft' and 'illegal public performance'.

3.3 Variety of Methodologies

Defining what is being researched and how is also important. In addition to the obvious complexities of IP rights, there seem to be no industry-wide research data glossaries or dictionaries. Our review needed clear definitions to enable viable and robust comparisons between different methodologies, especially within survey-based research. In data-gathering exercises that rely on human interpretation and analysis, it is difficult to replicate findings if divergent terms are used within industry-wide terminology, and this is exemplified within software and games. Yet only the Envisional research¹⁴ addressed this problem when comparing different types of research.¹⁵

In terms of ‘building the evidence base in the UK’, it was assumed that if the full range of IP rights had to be considered, the review needed to take into account all available surveys, regardless of provenance, in order to compile a coherent and complete record of all research undertaken in this field.

The Ofcom/Kantar studies highlight the different types of online copyright infringement in descending order of scale, and whilst this covers a range of copyright-protected content required under their review, it is by no means complete.¹⁶ It was felt that infringement of copyright content should be the initial primary focus of our review, given the current debate on copyright and IPR and the absence of reliable data as the impact assessments accompanying ‘Modernising Copyright’¹⁷ recognise.

In terms of identifying clear methodologies, the 2012 Ofcom/Kantar study acknowledges the key elements of the best methodologies were “representativeness, honesty of responses, and consumer understanding of the issue and terminology”. Ofcom/Kantar acknowledge these drivers were only addressed within their methodology “to some extent”. Even with many positive attributes to their methodology, they recognise an online sample cannot be considered representative in isolation. Indeed, they argue that a single methodological approach to the project is insufficient and that a mixed methodology is more likely to generate accurate and representative results (p.87). Other recent research of quality suggests no single research method can be applied successfully, even within a single area of IP rights such as copyright, let alone across the full range.

This insight provided a signpost to the development of a multi-tiered approach involving different techniques. The search for new methodologies ended up including a hybrid approach involving various existing methods, even though we were aware that only quantitative data is ultimately of value to government and policymakers.

14 Envisional (2011) An estimate of Infringing Use of the Internet. <http://www.mppaa.org/Resources/8aaaecf5-961e-4eda-8c21-9f4f53e08f19.pdf> and http://documents.envisional.com/docs/Envisional-Internet_Usage-Jan2011.pdf

15 The Ofcom/Kantar research refers to a variety of entertainment types that needed further clarification and explanation.

16 Computer software, films, music, TV programmes and video games. The Kantar study does not mention copyrighted photographs, lyrics, images, logos or designs that are frequently infringed online.

17 20th December 2012 <http://www.ipso.gov.uk/response-2011-copyright-final.pdf>

There were pieces of research that contained useful information on their methodology, and some offered insights into the challenges involved. However, many others were distinguished by the absence of much more than a superficial description of methodology - an issue that seems to apply especially to industry-commissioned research. There may be compelling reasons for this, but the absence of a suitable level of disclosure hampered our efforts to conduct a thorough review of such research methodologies.

There is a demonstrable need to establish a benchmark for statistically valid data that can support an evidence-based approach to policy in copyright (and IP rights) enforcement, as promulgated by both Hargreaves and Patry (p.49). However, there is also a clear need to “quantifiably measure our success (or lack thereof) in achieving the intended purposes.”¹⁸

3.4 Identifying Credible Research Outcomes

As articulated in the IPO’s ‘Good Evidence Guide’,¹⁹ all research intended to influence government policy should be clear, verifiable and peer reviewed. Our review examined existing research methodologies to see if they explicitly state all the key assumptions, even if they may seem apparently obvious. Often, there is an apparent lack of appreciation for the nature of the methods used, and it is unusual to find any articulation of the strengths and weaknesses of the particular methodology. In addition, it is rare to see attempts at confirming that different approaches are producing consistent results, even if a particular party subsequently wants to apply this to their own area of concern. We also found a lack of full disclosure of estimates and calculations that might allow for independent verification. Our review highlights issues of transparency, and we found source data is rarely made available for peer review and independent verification. This is usually attributed to commercial interests that can justify the lack of clarity in the models and calculations used to derive and/or weight estimates.

Typically, when one method is advocated, there is a failure to acknowledge the weaknesses of the proposed method or the strengths of the alternative. For example, advocates of new methods using behavioural measurements could accuse the most frequently used consumer-survey approach of a tendency towards under-reporting of piracy, a phenomenon identified in the 2012 American Assembly/Columbia University report ‘Copy Culture’²⁰ (which, in turn, referenced the Kantar/Ofcom 2010 study on file sharing²¹ (pp.9-10)). This criticism of the standard survey approach was echoed at the IPO/Bournemouth University symposium ‘What Constitutes Evidence for Copyright Policy?’ in November 2012,²² where there was strong support among attendees for research based on observable behaviour, not least as a means of alleviating bias and skewed results. This debate regarding the merits of surveys and observed behaviour appears, however, to miss the primary issue, namely that initially it is key to understand

18 Valkonen S. & White L. (2007), An Economic Model for the Incentive/Access Paradigm of Propertization, 29 Hastings Communications and Entertainment Law Journal, 359, 363 (Spring 2007) p.50

19 IPO (2013) Guide to Evidence for Policy Update 2013 <http://www.ipo.gov.uk/consult-2011-copyright-evidence.pdf>

20 Karaganis J & Renkema L. (2013) Copy Culture in the US and Germany. The American Assembly, Columbia University <http://piracy.americanassembly.org>

21 Ofcom/Kantar (2010) Illegal File-sharing Pilot survey Report. <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/filessharing/kantar.pdf>

22 Kretschmer, M. and Towse, R. (eds) (2013) What Constitutes Evidence for Copyright Policy? Digital proceedings of ESRC symposium www.copyrightevidence.org/create/esrc_evidence_symposium

and control for the bias that arises from those individuals that participate in any measurement study. Well-designed consumer surveys can be very good at using methodologies for representative sampling because the inherent high costs of each individual participant force them to work with small groups, and this component of representative participation should not be lost. Whilst it may be appropriate to modify the content and context within survey design, and include research based on observation, it will only play a significant part in more rigorous and robust methods to measure IP infringement if they maintain an initial rigorous process of sample selection.

3.5 Identifying a Coherent Vocabulary

Very many common terms are used in different ways, notably including phrases like IP rights and survey design. As part of the review process, we noted the wide variation of meaning within the terms used across research methodologies. In fact, one of the major criticisms of all the research reviewed is that none of the methodologies provided a clear definition of the meaning of terms, concepts, usage, origin and relationship. The omission of such clear definitions prevents consistency, comparability between annual surveys or across research of the same kind, and the ability to reproduce the same results. This applies to the field or audience researched, the analysis of data, and the final evaluation of the research.

Making sense of it all depends on clearly defined terminologies, controlled vocabularies and, especially in the online world, information science ontology. Knowledge and information for subsequent retrieval and analysis needs to be organised using pre-defined authorised terms used in a consistent manner by all parties involved. In short, controlled vocabularies reduce the ambiguity inherent in normal human languages where the same concept can be given different names and ensure consistency.

The only research to pick up on this general weakness of methodologies used in the reviewed research was the NBC-Universal-commissioned project conducted by Envisional.²³ Envisional included a critical evaluation and comparison of similar research projects and, using the example of the term 'video', demonstrated clearly that each of the four papers it reviewed had a different understanding of this specific category of entertainment type. "The categorisation issue is one of the largest problems with comparing the four studies... each study uses a slightly different method of identifying this traffic and sometimes includes the content in a different broad category which also comprises other items." (p.27).

Does the term 'video' include progressive video downloads or content such as audio consumed as it is downloaded or streamed, or video or television programming viewed on a computer or on-demand? This ambiguity can also be observed when talking about measurement of other categories, such as peer-to-peer (p2p), or different types of protocols.

23 Envisional (2011) An estimate of Infringing Use of the Internet. <http://www.mppa.org/Resources/8aaaecf5-961e-4eda-8c21-9f4f53e08f19.pdf> and http://documents.envisional.com/docs/Envisional-Internet_Usage-Jan2011.pdf

This lack of clear definition and categorisation also applies across survey research, particularly in ensuring all consumers surveyed fully understand the meaning of and concepts behind the question. When asked about their consumption habits, do they all fully understand the nuances between different forms of consumption and types of offerings? Segmentation depends on a clearly defined group of consumers but far too often on classifications that are too abstract for the reader. This can make it harder to relate back to other studies, such as the segmentations provided by the Ofcom/Kantar deep-dive study.²⁴

An explanation, definition and clear outline of the terms and their meaning used adds the missing link to any methodology and should be best practice in any project reliant on information sharing and analysis. Of course, it is recognised that the detailed explanations of professionally nuanced meanings and differentiations have very little resonance with the necessarily typical participants in consumer surveys. It is much more realistic to seek to estimate the scale of infringement based upon commonplace understanding of vocabulary used by consumers, and to use this within a general omnibus survey that is regularly repeated. This will give a consistent way to estimate the scale and trends in infringement and detect changes. The search for explanations and remedies should then be explored separately.

The availability of shared vocabulary allows for a sound data evaluation and representation. To make use of the knowledge requires a system of categories to represent various entities, ideas, and events, as well as their properties and relations. However, it is important that this process of developing a system of categories does not lose sight of the vocabulary used by typical consumers.

A practical problem with our research review has been that much of the literature available uses the term 'IP rights' in different ways. Some, like Rand,²⁵ use it almost exclusively to refer to copyright and trademark infringement. Others, like Bentley,²⁶ use the term IP to describe almost everything other than copyright - something that various Australian IP reports also do. For our purposes, we have used the term IP rights in what we believe is its most frequently understood meaning - namely intellectual property rights encompassing patents, trademarks, design rights and copyright. We have not included infringement of trade secrets or confidentiality as part of our review, even though these are also widely considered as IP rights.²⁷

A more challenging aspect of our review when assessing literature for analysis was the significant number of important pieces of research that covered various different rights, and this was especially true of so-called counterfeiting research. This kind of research appears mainly to have been generated by both industry and government sources and was a clear attempt, as indeed is this entire review, to highlight common threads and themes across the different IPR. Most commonly, the cross-IP right elements within these research reports relate to assessing the impact on both trademarks and copyright.

24 Ofcom /Kantar 2013 'Deep Dive' <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/online-copyright/deep-dive.pdf> and <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/online-copyright/w2/report-wave-2.pdf>

25 Rand Corporation (2012) 'Measuring IPR Infringements in the Internal Market - Development of a New Approach to Estimating the Impact of Infringements on Sales' http://www.rand.org/pubs/technical_reports/TR1279.html

26 Weatherall K., Webster E. & Bentley L. (2009) "IP Enforcement in the UK and Beyond: A Literature Review", SABIP Report (Number EC001

27 Although we could also argue such rights are more about contractual relationships.

Whilst this typology proved very helpful in analysing research into copyright infringement (which formed the bulk of the literature), it was less helpful when segmenting research for the other three IP fields, where the variety of research sources and literature was substantially smaller and, in some cases, also lower quality.

It was recognised early on that in the field of patents there is little industry-wide research, even though legal professional bodies such as AILIP generate a certain body of studies. This meant that government or academia generated almost all the research for patent infringement and enforcement we were able to review.

Trademark research differs yet again, with considerable research available at the government level, with some content/brand industry research generated but with the research emphasis framed around the broader problem of counterfeiting and piracy.

Design was notably the area in which we found it most difficult to locate appropriate research but despite this, and perhaps because of the nature of this review, we were able to consider research methodologies from other IPR that could provide future solutions. These methods derived to some degree from copyright and, more prominently, from patent literature. We had access to research produced specifically by a design rights trade body called ACID, which produced a body of case studies and member surveys to support much of its findings.

3.6 Distinctive Features of Copyright and Trademark Enforcement

Online Copyright Industry Research

The bulk of the research reviewed within the copyright sector was not of a standard suitable for use in policy making, especially within markets challenged by wide-scale infringement of IP rights such as music and film. A large proportion of the research reviewed was not accompanied by any methodology and even where one was included, it was rarely suitably in-depth or capable of meaningful scrutiny. Within this section, we were able to recognise a select number of outstanding pieces of research that met the standard we believe is essential. The Envisional Research for NBC-Universal in 2011²⁸ and the BSA Software Analysis²⁹ were, we felt, methodologically very sound, the latter additionally so because it was a consistently run piece of research with an evolving and improving methodology that by 2012 had become robust.

Consistency of approach was an aspect of methodology that became an important part of our considerations, and we noted a small number of research surveys are conducted regularly. This regularity of research was most closely associated with industry bodies that have chosen to invest significantly in large-scale surveys.

We noted that the majority of research in this field is survey based and that the biggest research firms were commissioned to carry out annual surveys. These year-on-year surveys are 'deep dives' carried out over short time periods rather than providing longitudinal studies. We also identified associated methodologies were often enhanced and changed over time, making comparisons between individual studies difficult. The underlying belief appeared to be that the

28 Envisional (2011) An estimate of Infringing Use of the Internet. <http://www.mpaa.org/Resources/8aaaecf5-961e-4eda-8c21-9f4f53e08f19.pdf> and http://documents.envisional.com/docs/Envisional-Internet_Usage-Jan2011.pdf

29 BSA (Business Software Alliance) 2012 Shadow Market http://globalstudy.bsa.org/2011/downloads/study_pdf/2011_BSA_Piracy_Study-Standard.pdf

latest survey should use the best possible and most appropriate methodology at the time, but this can lead to problems when making comparisons. Elsewhere, ad-hoc research is also a common feature, either driven by budget constraints or more likely commissioned to support very specific internal company processes and strategies.

All the survey-based research showed similar characteristics. In general, the annual surveys are conducted by one of the larger, reputable research firms and the methodology is generally comparable because the surveys' methodological fundamentals remain basically the same. However, it is questionable whether the surveys can be replicable and verifiable. This is because the subject matter, time frame and respondents (or their behaviour) might well have changed. In addition, the circumstances, motives, timing and, most importantly, the understanding, interpretation and analysis of the data are very specific to individuals. What this means is that the same survey can create different results if repeated at different times. What surveys can produce for industry are snapshots to provide insight regarding behaviours, motivations, moods and trends.

Data mining in the online world is a new and very competitive market where methodology has become highly commercially sensitive and valuable. Therefore, by its very nature, it is not replicable. The most comprehensive review of such methodologies and competing approaches was contained within the NBC-Universal-commissioned study by Envisional. The technological approach to understanding and measuring online IP infringement is a very attractive one, albeit still in its infancy. It is still not widely seen as a reliable source of information and is costly at present. Data mining will be critical for any future solution to improve monitoring of the scale and scope of IP infringement.

We identified six main methodologies within the industry literature to identify the scale and value of infringement in different entertainment sectors:

1. Literature review and collation of secondary data sets, e.g. Unifab³⁰
2. Agent-based model, e.g. Sandtable
3. Online surveys, e.g. Wiggin and UK Music³¹
4. Bundled-survey approach, e.g. Ofcom/Kantar³²
5. Mixed approach of data mining (IDC) and survey-based (Ipsos) research, e.g. BSA³³
6. Data mining and use of various technologies to observe actual behaviour across all forms of online entertainment consumption, e.g. NBC-Universal Envisional

30 UniFab 2010 L'impact de la contrefaçon vu par les entreprises en France <http://www.unifab.com/images/rapportunifabavril2010.pdf>

31 Wiggins/Entertainment Media Research (2012) 2012 Digital Entertainment Survey www.entertainmentmediaresearch.com] and Uk Music / University of Hertfordshire (D. Bahanovich and D. Collopy) 2009 Music Experience and Behaviour in Young People

32 Ofcom/Kantar (2012) Online Copyright Infringement Tracker Wave 2 (Covering period Aug-Oct 2012) Overview and key findings <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/online-copyright/w2/report-wave-2.pdf>

33 http://portal.bsa.org/globalpiracy2011/downloads/study_pdf/2011_BSA_Piracy_Study--Standard.pdf and www.bsa.org/country/NewsandEvents/NewsArchives/global/05112010-globalpiracystudy.aspx.

Online Copyright - Government and Academic Research

There is a considerable amount of literature and research on the infringement of copyright in music and films. However, none of the academic or government papers reviewed provided a comprehensive methodology for collecting actual input data³⁴ and the main method for measuring the level of infringement was the use of consumer surveys. Notably, many of these consumer surveys are not directed at the level of infringement but focus on consumer behaviour and its influence and economic impact on the industry. This was the case for most of the academic studies analysed, including many suggesting business models.³⁵

Given the difficulties establishing comprehensive data, it was not surprising that most of the survey-based studies did not use the level of IP infringement as their starting point. Establishing the actual level of infringement seemed to be a by-product of the survey approach. The limitations of the survey-based methodology for estimating levels of file sharing were clearly described in most reviews including, amongst others, those by Oberholzer-Gee et al.³⁶ This highlighted the likelihood of respondents understating their participation in a 'potentially illegal activity' and the understatement levels varied over time based on various other factors. Indeed, Oberholzer et al argued for more of an 'observational' approach, principally involving identifying the 'packets' traversing computer networks.

Given the hidden nature of infringements, both online and offline, any assessment of the actual amount is limited by the data available. As a consequence, assumptions come to play a role in the measurement of the level of IP infringement. However, any such assumptions are rarely clearly stated and outlined within the analysis. Some commentators, such as Waldfoegel et al, also argue that the findings of specific studies cannot be generalised if they are not comparable, and cannot be used for benchmarking purposes.³⁷

Whilst the survey-based approach is the prevailing approach and will continue to be so, an online methodology could include deep-packet inspection, despite it being very resource intensive and subject to data protection and privacy laws. Another promising approach was the use of Internet panels of users who have agreed to be subject to such deep-packet inspection for the specific purpose of measuring IP infringement levels. A hybrid approach (survey and actual 'observed' measurement) to data collection seems likely to lead to the most robust data.

34 E.g. preface of GAO report, Intellectual Property: Observations on Efforts to Quantify the Economic Effects of Counterfeit and Pirated Goods, April 2010 <http://www.gao.gov/new.items/d10423.pdf>

35 Amongst many: Oberholzer-Gee, Felix and Koleman Strumpf (2009): File-Sharing and Copyright, Harvard Business School Working Paper 09-132, 2009 <http://www.hbs.edu/research/pdf/09-132.pdf>; Berlin School of Economics, Germany 2006 Explaining Counterfeit Purchases: A Review and Preview <http://www.amsreview.org/articles/eisend12-2006.pdf>; Andersen, Birgitte and Marion Frenz (2007): The Impact of Music Downloads and P2P File-Sharing on the Purchase of Music: A Study for Industry Canada, 2007 [http://www.ic.gc.ca/eic/site/jppd-dppi.nsf/vwapj/IndustryCanadaPaperMay4_2007_en.pdf/\\$FILE/IndustryCanadaPaperMay4_2007_en.pdf](http://www.ic.gc.ca/eic/site/jppd-dppi.nsf/vwapj/IndustryCanadaPaperMay4_2007_en.pdf/$FILE/IndustryCanadaPaperMay4_2007_en.pdf)

36 See Oberholzer-Gee, Felix and Koleman Strumpf (2009): File-Sharing and Copyright, Harvard Business School Working Paper 09-132, 2009.

37 Rob, R, and Waldfoegel, J. (2007) 'Piracy on the Silver Screen', The Journal of Industrial Economics. Volume LV No.31.

Counterfeiting and Piracy Research

Overall, industry literature was centred on the broader issues of counterfeiting, with little focus on specific goods and brands. This may be a result of counterfeiting literature being commissioned by umbrella trade bodies representing a broad coalition of IP rightsholders or this group of rightsholders adopting the 2000 recommendation by the Centre for Economics and Business Research (CEBR) for an omnibus approach.³⁸ The standard methodologies of relying on measurement of Customs seizures and some ad-hoc surveys were less than ideal. The MarkMonitor Traffic Report³⁹ offered some potential for measuring online infringement, but we have concerns about its methodology being applied across the board, given discernable skews in the sampled behaviour. This model seems more appropriate for individual brand owners than the wide-ranging research carried out within the other counterfeiting literature.

The OECD's comprehensive study in 2008 calculated the number of infringements on the basis of surveys of Customs authorities on seizures of counterfeiting and pirated goods.⁴⁰ However, such seizures can only reflect a fraction of the total actual infringements and, by definition, such a methodology cannot take account of 'undiscovered' infringements. This means that any calculations on the actual number of infringements must be subject to assumptions based on the actual seizures. However, the data collected not only does not apply to online digital piracy but, more crucially, it cannot be reliably used to estimate domestic counterfeiting and piracy within a given territory.

Despite the limitations in its scope, the OECD approach of combining different methodologies to develop a single estimate can provide robust data. The OECD researchers correlated industry and seizure data to provide an estimate of the levels of counterfeit trade at a global level. Nonetheless, the OECD acknowledges its methodology provided only a 'crude' indication of counterfeiting and piracy. One of the key problems is that data had not been systematically collected and evaluated by government or industry and, in many instances, the assessments made by certain parties relied excessively on fragmentary and anecdotal information. Most troubling is that where data is absent or lacking, "unsubstantiated opinions are often treated as facts". A great deal of the other available literature is based on consumer surveys and, as such, focuses on the demand side (such as consumer motivation). The OECD study, however, considered the supply side and, as such, was far less influenced by subjective assessment of behaviour.

38 CEBR (Centre for Economics and Business Research) (2000) 'Counterfeiting: Economical Impact on Four Key Sectors of EU Industry', An econometrics research by CEBR for the Global Anti-Counterfeiting Group, London.

39 MarkMonitor (2011) 'Traffic Report :Online Piracy and Counterfeiting' https://www.markmonitor.com/download/report/MarkMonitor_-_Traffic_Report_110111.pdf

40 OECD The Economic Impact of Counterfeiting and Piracy 2008 www.iccwbo.org/Data/Documents/Bascap/Econ-Impacts-OECD/

Counterfeiting and piracy are areas that are widely covered by studies and surveys, but few studies contain suitably objective and robust methodologies. They all focus on specific aspects such as specific IP goods⁴¹ or specific modes of infringement (online⁴² or offline⁴³) but contain useful methodologies. Most studies we recommend are out of date and of less value in view of the fast changes in IP infringement and consumer behaviour. We suggest a hybrid approach based on hard data obtained from relevant government departments, industry and consumer surveys. The shortcomings of consumer surveys, whilst widely noted, can be addressed in their evaluation. Transparency is key, not merely in relation to the respondents but also on a more granular level within the questionnaire and the assumptions applied.

The Office for Harmonization in the Internal Market (OHIM) European Observatory on Infringement of Intellectual Property Rights undertook the main subsequent study. The approach outlined in its work programme of 2013 took into account experiences over the last few years. It is essential that any national approach at the member state level apply a methodology compatible with the European Observatory's approach to achieve consistency and comparability.⁴⁴

OHIM identified the major issue in the effective enforcement of IP as being a lack of knowledge of the precise scope, scale and impact of IPR infringements. The Observatory criticised the lack of an agreed methodology for collecting and analysing data on counterfeiting and piracy, and summed up the main problems with reviews of this kind - namely that most studies are just 'snapshots' over limited time frames, using different approaches. The task is made worse by the secretive nature of counterfeiting, meaning that comprehensive data for all product sectors is virtually impossible to achieve.

Echoing WIPO's Advisory Committee on Enforcement (ACE) the Observatory calls for a methodology that can work for SMEs without the burden of major administration. Despite proposing a summary framework for quantifying enforcement,⁴⁵ the 2012 Rand report⁴⁶ did not, in our view, supply the kind of expected 'ideal' methodology. Its proposed economic model fell short of expectations and the Commission stated that it would be exploring some of the alternative methodologies.

41 The Impact of Counterfeiting on Governments and Consumers, a report by Frontiers Economics commissioned by BASCAP, May 2009.

42 Andersen, Birgitte and Marion Frenz (2007): The Impact of Music Downloads and P2P File-Sharing on the Purchase of Music: A Study for Industry Canada, 2007.

43 OECD The Economic Impact of Counterfeiting and Piracy, 2008.

44 The Observatory only became operational in September 2012, when it was established by Commission Communication: Enhancing the enforcement of intellectual property rights in the internal market, 2009: http://europa.eu/legislation_summaries/internal_market/businesses/intellectual_property/mi0032_en.htm

45 Enforcement information; consumer surveys; producer or distributor surveys; sampling/mystery shopping; and economic models. Each was considered to have weaknesses.

46 Rand Corporation (2012) 'Measuring IPR Infringements in the Internal Market - Development of a New Approach to Estimating the Impact of Infringements on Sales' http://www.rand.org/pubs/technical_reports/TR1279.html

3.7 Distinctive Features of Patent and Design IP Right Enforcement

Patent Infringement

We found a significant difference in the types of research across the various IPR regimes. If the copyright sector was dominated by industry research projects, within patents the literature was dominated by academic literature, with some by IP professionals alongside some important government research. There was little by way of industry-generated research on levels of infringement, and from discussions with Gene Quinn of the IPwatchdog Blog⁴⁷ this appears to be a result of industry having little incentive to carry out such research. This means there is a concomitant absence of trade bodies carrying out patent infringement research. It seems a small number of large corporate players, such as Google, Microsoft, Amazon and Apple in technology, and a similar range of firms like GSK in the pharma sector dominate each of the main patent market sectors.⁴⁸

The Strategic Advisory Board for Intellectual Property (SABIP) 2009 report⁴⁹ recommends an approach using a mixed methodology based on surveying firms and sampling court cases. It also emphasises developing strong cooperation with industry and law firms to enable increased verification of the findings. Nonetheless, this approach still only captures a small amount of actual infringement activity, i.e. what is actually litigated.

The infringement sources are primarily restricted to court cases and, as such, represent a fraction of the total infringing activity in the market, part of which is dominated by the frivolous actions taken by so-called non-practicing entities (NPEs). By the same token, very many more serious infringing activities are not readily apparent to the observer. Official court-case counts will clearly not include any infringement claims settled with NPEs or amongst big players. Given the importance of standards in technology markets, settlements and licensing are an inevitable by-product of infringement issues between the major players.

Some very important trends were identified within the academic literature, including: that litigated patents have a greater value than non-litigated patents;⁵⁰ that NPEs are responsible for 40% (up from 22% over five years)⁵¹ of patent infringement lawsuits filed in the US; and that excluding the pharmaceuticals and chemistry industries, the costs incurred in litigating patents outweighs the earnings gained from patents.⁵² There was also a claim⁵³ that Internet-related patents were litigated 7.5 to 9.5 times more frequently than non-Internet patents in the software industry.

47 <http://www.ipwatchdog.com>. "For 3 of the last 4 years (2010, 2012, 2013) ...recognized as the top intellectual property law blog according to the ABA (American Bar Association)"

48 We made contact with Intellect but were unable to interview them for this report.

49 Weatherall K., Webster E. & Bently L. (2009) "IP Enforcement in the UK and Beyond: A Literature Review", SABIP Report (Number EC001

50 Helmers C. & McDonagh L. (2012) Patent Litigation in the UK, LSE Law, Society and Economy Working Papers 12/2012.

51 Jeruss, Sara, Feldman, Robin and Walker, Joshua H., The America Invents Act 500: Effects of Patent Monetization Entities on US Litigation (December 1, 2012). 11 Duke Law & Technology Review 357, 2012; UC Hastings Research Paper No. 3.: <http://ssrn.com/abstract=2158455>.

52 *ibid*

53 *ibid*

That patent-reliant and producing industries contribute so little to investigating the scale of infringement of patent rights seems to be an illustration of the dynamics of the market, with wide-scale 'frivolous' litigation activity on the 'Troll'/patent assertion entity (PAE)/NPE side and equally widespread aversion to litigation on the other side. A significant influence on the number of cases making it to court is the cost of litigation and, notably, the 'poor quality' of many patent claims.

There is also recognition in the technology space that infringing a competitor's IP is an inevitable consequence of working and innovating within markets based on essentially homogenous operating standards. This leads to more defensive strategies than apply within, say, the pharmaceutical or chemical industries. The perceived wide-scale aversion to litigation can also be attributed within some sectors such as ICT to corporate strategies, exemplified by Microsoft's willingness during the past decade to more readily license its IP rights in contrast to its highly aggressive and litigious stance on its IP assets over the prior decade. Whilst the recent high-profile litigation between Apple and Samsung suggests otherwise,⁵⁴ there are some⁵⁴ who note the importance of US judicial preferences for compulsory licensing over injunctive relief over the past six years and its potential for inhibiting 'NPE' activities in the US.

That most of this strategic behaviour takes place outside the courtroom means that a great deal of the activity relating to patent infringement occurs behind closed doors and beyond an objective measurement. Despite the thorough analysis and comprehensive framework proposed by Weatherall, Webster and Bentley in their 2009 SABIP report,⁵⁵ its dependency on court cases and related databases as well as practitioners' surveys, means it can, in our view, only possibly capture a fraction of what is happening within the market.

Two of the authors of the SABIP report subsequently developed a promising model for estimating levels of patent infringement. Weatherall and Webster's proposed survey of inventors,⁵⁶ published a year after the SABIP report, is a model we feel offers potential for capturing more insight and information on the levels of infringement within the market. As with the other IP rights, we are not convinced by any one single methodology, but we do recommend this survey model as the initial basis for assessment of patent infringement across the market as a whole, with appropriate cross-referencing of the emerging data with both practitioners and businesses being part of a blended approach to measuring patent infringement.

54 Venkatesan J. (2009) Compulsory Licensing of Non-practicing Patentees After eBay v. MercExchange. Virginia Journal of Law & Technology Spring 2009 University of Virginia vol. 14, no. 26 http://www.vjolt.net/vol14/issue1/v14i1_a26%20-%20Venkatesan.pdf

55 Weatherall K., Webster E. & Bentley L. (2009) 'IP Enforcement in the UK and Beyond: A Literature Review', SABIP Report (Number EC001).

56 Weatherall, Kimberlee G. and Webster, Elizabeth M., Patent Infringement in Australia: Results from a Survey (June 1, 2010). Federal Law Review, Vol. 38, No. 1, pp. 21-70, 2010; University of Queensland TC Beirne School of Law Research Paper No. 10-14. Available at SSRN: <http://ssrn.com/abstract=1648643>

Design Rights

The paucity of relevant research literature in the field made our task much harder than in any other IP sector, and the measurement of infringement of design rights also posed significant difficulties.

Firstly, the legal situation of design rights is complicated given that they touch upon a variety of intellectual property rights. In addition to the registered and unregistered design rights at UK or European level respectively, design rights could also be infringed under other IPR such as copyright, trademark, passing off, and breach of confidence.

Secondly, there is only limited information on infringement procedures in the area of design rights. Few disputes on design rights actually reach court, and most disputes concerning the infringement of design rights are resolved by retrospective settlement and ensuing negotiations on future use(s) of the design. Individual designers are generally unable to afford the costs of legal proceedings, even if supported by their collecting society DACS (Design and Artists Copyright Society).⁵⁷ Notably, many disputes concerning design rights are resolved by the mediation services offered by ACID. These settlements and negotiations take place in a confidential business-to-business environment and, as a consequence, only limited information on the extent and the nature of infringement of design rights is publicly accessible. Thirdly, the majority of infringement of design rights takes place outside the UK.

However, ACID,⁵⁸ the trade organisation in the area of design rights, makes available specific case studies as well as pertinent surveys of its members. Whilst it is difficult to offer robust data on the level of infringement of design rights, the information available provides clear descriptions of the nature of infringements of design rights. Given recent proposals in Carter-Silk and Lewiston's⁵⁹ study for the IPO to improve designers' and SMEs' ability to respond to infringements, we feel that if such proposals are implemented, the levels of discernible infringements of design rights are likely to rise.

Even as we identified the fragmented nature of IP rights used for the protection of designs, we also saw that the nature of most infringements bore striking parallels with patents (which in the US are described as 'design patents'). Fundamentally, we believe almost all such infringement is based on business-to-business activity and rarely, if ever, involves the consumer.

We therefore recommend applying the Weatherall and Webster survey method (as originally conceived for patents) for assessing the level of design-right infringement. A modified methodology, as recommended for patents, with the same caveats about the need to cross-refer the resulting data with business, IP law practitioners and court filings, could well deliver significant results, in particular in relation to registered designs. We suggest testing the survey method using ACID's membership.

57 <http://www.dacs.org.uk/>

58 <http://www.acid.uk.com>

59 'The Development of Design Law Past and Future' 2012 <http://www.ipo.gov.uk/ipresearch-designlaw-201207-sum.pdf>

3.8 Main Features of Trade Body Views

There are clear differences in how the various industries and trade bodies approach research into IP infringement. The different approaches can be assessed in relation to the allocation of resources, both financial and technical. The bulk of industry-generated consumer research takes the form of large-scale surveys, and we found that most industry research is ad hoc by its very nature and rarely purpose built for policy making and lobbying.

The bulk of industry-generated research in relation to counterfeiting and piracy is based around a 'compilation' approach, using data from different sectors.⁶⁰ Whilst this approach has distinct advantages in terms of lobbying, there are also disadvantages, especially if the data is combined with that of other industry sectors using different methodologies. In certain of these umbrella research reports, the data is collated by requesting each sector supply its most recent evidential data. From what we have read, there appears to be little effort to benchmark this data. This may be a reason for the Hargreaves team's dismissal of much of the claims made in the TERA report that contained data of varying provenance and quality. By combining good and poor quality data, the overall impact of both types of data is undermined.

The overall approach to measuring counterfeiting and piracy advocated by the ACG involves estimating levels of infringement using different data sources, including industry (e.g. seizures and take-downs), government (e.g. Customs seizures) and consumer data. This is very much an approach we feel should be embraced to cover this area of infringement, which is one of the main drivers of this study. We also note the availability of industry-generated 'market intelligence', principally from the enforcement agencies such as FACT, and that this data is shared with the IPO. FACT also demonstrated the widest variety of tools for dealing with infringement and came closest to the recommendations we make in this particular area of infringement.

The software, recorded music, motion picture and video trade bodies are responsible for providing the majority of wide-scale online infringement research and, despite criticisms from many commentators, these research reports and their commitment to research quality are in our view of the highest standard amongst the various trade bodies. We also identified a commitment to a wide range of research within this group of trade bodies and a willingness to consider using (if not already doing so) new technological solutions to assess the scale of infringements.

Whilst we did not have sight of the specific consumer research generated by the Recording Industry Association of America (RIAA) or British Phonographic Industry (BPI), we felt the RIAA and Motion Picture Association of America (MPAA) in particular were most prepared to explain their approach to researching infringement. Indeed, each of their methodologies, even when less than perfect - something the RIAA and the International Federation of the Phonographic Industry (IFPI) were willing to concede - still manages to produce data of real value, notably because of their commitment to a consistent long-term approach to measuring online infringement to produce something akin to the longitudinal studies we recommend. The RIAA argued that whatever our reservations about its methodology, the stable and consistent approach it adopted (using NPD) was able to highlight trends over time. This long-term aspect

60 We use the term to distinguish it from the omnibus approach - the latter meaning the measurement of infringement across different sectors and rights using a uniform methodology to accumulate data.

of the research is also evident within the BVA's Ipsos study conducted each year since 2008,⁶¹ and this is widely regarded by the content industries as one of the best and most reliable surveys. It was noted that the UK's BPI preferred to use different firms to conduct its infringement research, and that the IFPI argued that no single study has ever achieved a precise measurement of piracy. The Business Software Alliance (BSA) stood out in terms of its readiness to accept its studies were intended to estimate the value of 'pirated' software, rather than the losses sustained by its members.

The majority of the trade bodies do not systematically measure infringement of their rights in the way the software, film and recorded music sectors do, and the focus of their approach to enforcement is very much more about day-to-day anti-piracy measures, usually using notice and take-down procedures to combat wide-scale infringement. When pressed, most of these bodies indicated that a lack of resources, both financial and human, played a role in shaping their responses to infringements, and this is exemplified by the books, journals and printed music sectors. We had a distinct sense that most wish they could do more, but that the cost of meeting the scale of infringement was beyond their budgets. However, there is evidence that the Publishers Association's (PA) Copyright Infringement Portal was successful in identifying much of the infringing content online, and that this was leading to increased cooperation amongst players in similar related sectors.

The fourth approach adopted by ACID and DACS involves the use of member surveys (and case studies) to secure feedback and information on infringement from individual designers and creators. Whilst there are problems ensuring such member surveys are fully representative of the entirety of the creators within the national market, they nonetheless show the benefits of trade bodies adopting a proactive approach to securing information from those least able to combat and resist wide-scale infringement of their rights.

The final approach adopted by UK Interactive Entertainment (UKIE) was, in our view, the least satisfactory, as it appeared to be a potpourri of data taken from very different sources with little evidence of correlation to provide a snapshot of piracy within the UK and EU markets.

It is worth noting some significant insights from one of our meetings with members of the Alliance for Intellectual Property. One trade body argued that much industry research data is originally commissioned for intra-industry, and sometimes purely intra-company, use. As such, some of the research data used by certain industries may not have been intended for use within the larger lobbying submissions such as TERA and Oxford Economics.

We put the case for long-term studies of the assessment of infringement and the same commentator pointed out that much recent industry research is intended to examine issues resulting from fast-changing market conditions, rather than to inform policy making. This, it was argued, was why so much industry research appears to be ad hoc rather than longitudinal. Such research is born out of a need to examine an issue at a particular point in time in response to changing market conditions. This insight bears out some of the comments we have made within the Literature Review about the evolution of strategies amongst certain content industries.

61 British Video Association Ipsos MORI (2009, 2010, 2011, 2012) and <http://www.fact-uk.org.uk/resources/> and <http://www.bva.org.uk/copyright-and-ip>

Some, such as the recorded music industry, have changed their emphasis on consumer survey findings to increasingly argue for greater support for methods for inhibiting piracy, such as blocking piracy-linked websites and their funding by undermining their advertising. Overall, we believe almost all of the industries affected by IP infringement focus on day-to-day enforcement rather than attempting to measure the scale of infringement over time.

We feel such long-term studies have value to policy making but question whether all of the various industries impacted by IP infringement will ever be capable of delivering the data in the form and with the kind of precision demanded by policy makers. In our view, the kind of omnibus approach adopted by the Office of Communications (Ofcom) is one that should be maintained and expanded to go beyond the issue of online infringement. We also feel that consistent, regular systematic research measuring infringement, both offline and online, can be best achieved by government agencies, provided it is done with industry's cooperation and involvement. Such a programme of research can ensure an even-handed approach to measuring infringement to the benefit of all of the stakeholders within the market. Finally, we must add a note of concern about the reluctance of law-enforcement agencies to share counterfeiting and piracy information with other authorities.⁶²

Industry's Motives for Research

Industry research is not always about lobbying - it is also about investment decisions, which may explain the often confidential/secretive nature of crucial data - something that surprises other researchers (notably including Rand). A lot of research commissioned by trade bodies is designed to enable members to react to infringement and some trade bodies (e.g. PA) provide anti-piracy tools, but there is little evidence the data from this is captured in a systematic fashion and made available to government.

a) Resource Issues

1. **Financial** There are few in the creative industries able to afford sustained, systematic measurement, and it appears this is only viable on a pan-sector basis or in music, software and film at a pan-industry level.
2. **Lack of Suitably Qualified/Trained Staff** In some sectors this is more evident and there appears to be a reliance on 'millennials' or 'digital natives' to navigate the organisation's way through the digital space.
3. **Industry Instinct is Act Quickly** This is arguably one of the main resource issues. Most of the industries we met operate in fast-changing markets and this demands a much greater emphasis on day-to-day anti-piracy measures and a belief they cannot wait for government to act to stem the tide.

62 http://ec.europa.eu/internal_market/ipenforcement/docs/study_information_en.pdf

b) Dissatisfaction with Legal Remedies

The primary tool and focus of anti-piracy efforts amongst industry is notice and take-down. However, there is also a clear sense that most feel they are swimming against the tide of wide-scale infringement, as exemplified by the RIAA's Josh Friedlander, who described the process as one where "we are using a bucket to deal with an ocean of illegal downloading."⁶³ There are many other vocal opponents of the traffic in 'free content', but it is the Directors Guild of America's (DGA) Andrew Keen in his article 'Losing Independence' who argued most vociferously that it is the low and mid-range films that are suffering most. He believes the major studios are best placed to deal with modern, complex technologies and networks, leaving the independents struggling to cope as the "independent moviemakers have neither the resources nor the technological expertise to even understand what they are fighting."⁶⁴

The increasing numbers of take-down notices being demanded of Google (at the time of writing with "Half-a-Million Infringing Urls" a day or 16.3 million a month take-down notices⁶⁵) has raised the issue of how effective the Digital Millennium Copyright Act (DMCA) and similar national provisions really are. Google is clearly concerned about coping with the demands made of it by content owners and is resisting efforts to increase the DMCA caps from 10,000 to 40,000 a day. Yet it is equally clear that content owners are struggling to see a return on the enormous scale of their take-down notices, given the ease with which content removed can almost certainly be 'reseeded' under different links. It is equally clear that Google accounts for a small proportion of Torrent searches.

3.9 Online Infringement Research Experts' Views

We managed to consider various new and appropriate technologies for measuring online behaviours. We also spoke with several online technological experts whose views we believe have value to the field of infringement measurement. The information highlighted some positive developments, but these must be contrasted by the caveats expressed about the limits of even the most innovative solutions to measuring and observing infringement of IP rights online.

The first expert we met with was Musicmetric (MM), whose product tracks artists and genres across social network sites and has started to track audio and audio-visual content by sound recording using different identification tags. New research commissioned by Spotify (and covered in our Literature Review) uses MM data on BitTorrent activities. This data is not based on swarms but actual downloads, the underlying assumption being that all content on BitTorrent is copyright infringing.⁶⁶ MM adopts a 'mixed approach', using information available on social networking sites. The main benefit of its approach is the long-term view of tracking artists/sound recordings as opposed to the snapshots used by industry to issue take-downs. MM has its own proprietary distributed data-collection infrastructure, utilising hundreds of servers to

63 http://www.riaa.com/blog.php?content_selector=riaa-news-blog&blog_selector=One-Year-&news_month_filter=5&news_year_filter=2013&searchterms=bucket%20in%20an%20ocean%20of%20&terminclude=&termexact=

64 <http://www.dga.org/Craft/DGAQ/All-Articles/1101-Spring-2011/Internet-Theft-Losing-Independence.aspx>

65 Google Is Now Removing Half-a-Million Infringing Urls... a Day <http://www.digitalmusicnews.com/permalink/2013/20130701google>

66 They are aware however some content is distributed under Open Commons licences that are non-infringing.

reliably collect large quantities of data from the Internet. MM tracks individual BitTorrent files by directly monitoring activity in BitTorrent swarms hour by hour, allowing the volume of activity to be measured and segmented geographically at the country and city level. The MM approach suggests real potential for using smart online technologies to measure online infringement

We also considered a tool produced by Nielsen, one of the most active and successful firms in the world of analytics and metrics. This tool, called Nielsen Digital Media Manager (NDMM), uses “digital watermarking and fingerprinting” and aims to provide a “more reliable way to track content.

Given its reputation, and in some sectors notoriety, we met with BitTorrent Inc (BTI), whose protocol has been such a significant component feature of online infringement over the past decade. BTI argues that it is not a piracy firm, despite its tool having 170 million monthly users, but the company has recently begun working more closely with music creators and representatives to make BTI technology work as a viable legal tool for efficient distribution across online networks. Of interest to us was the data provided by BitTorrent for the calendar year 2012. This data showed that it was clearly able to distinguish between different types of content. It says, however, that it cannot track what users of BTI do with the Torrents, as there is no single server - something that is inherent in the architecture of its system. BTI believes the future Internet will be asymmetric and decentralised, but with content-centric networks to allow content industries to interact with consumers. This indicates the measurement of such files is going to become even more complex.

County Analytics (CA) highlighted the different approaches to measuring piracy and, after reminding us of some highly effective tools for measuring offline piracy, it pointed to Nielsen, whose panel is considered to be the best and most effective model as it is based around large-scale panels run across various countries. However, he questioned whether Big Champagne⁶⁷ is capable of identifying the content of the BitTorrent files it is tracking.

CA referred to Virgin Media's 2009 trial service with the UK's BPI that called for traffic analysis as a requirement of a proposed new music service. This service would have meant Virgin - or any Internet service provider (ISP) - analysing the 'local loop'. CA also mentioned that BTI had run an advert targeting services to monitor user behaviour using DPI. CA identified the main emerging problem in online behaviour - namely stream ripping where users can simply convert streams into mp3s. There is competition to supply services to content owners in 'crawling the web' and this includes Detechnet, now owned by MarkMonitor and part of Thomson Reuters. Other firms like BayTSP, now known as Irdeto,⁶⁸ use spidering. CA is convinced that it is possible to apply technological solutions to the measurement of infringement across software/music/films and games.

67 Big Champagne is regarded by many in the field as one of the first companies to develop ways of measuring and tracking illicit use of media online and have contributed data and metrics to some important studies including Chris Anderson's 2008 [“The Long Tail: Why the Future Business is Selling Less of More”](#) and the 2009 article by Will Page in the PRS For Music Economic Insight 14 “The Long tail of p2p”.

68 www.irdeto.com

CA explained that the forms of piracy include: physical, home copying, hosted content, links / deep links, peer-to-peer and UseNet. The means of identification of piracy will then comprise: target identification, content verification, container labelling, manual identification, metadata, digital hash, signed metadata, fingerprinting and watermarking. Overall, CA summarised the best piracy identification approaches by recommending a layered approach, noting that faster but less reliable techniques are generally used initially with identification, then confirmed by slower and more expensive or more inconvenient technologies.

Big Champagne (BC) was one of the very first services to offer bespoke measurement and analysis of Internet traffic, notably of Torrents. It is now part of Live Nation and is very much focused on specific metrics and analytics within music and entertainment industries. Nonetheless, the relevance of BC to the measurement of Torrents is articulated in the highly regarded work, 'The Long-Tail of p2p', which was co-authored with Will Page in 2009.⁶⁹

We spoke with Choruss/Onehouse's Jim Griffin. The Choruss team successfully built a new model for sharing music with flat-fee access to unlimited music downloads for college students. However, Jim Griffin provided a much-needed reality check when he identified the problems of measuring IPR infringement online as illustrated by the Tor Project, which is "free software and an open network that helps... defend against a form of network surveillance that threatens personal freedom and privacy, confidential business activities and relationships, and state security known as traffic analysis."⁷⁰ This and the related Silk Road ('an online black market in the Deep Web') are examples of the myriad ways in which those attempting to use illicit goods online can operate outside the margins of normal traffic analysis and evade scrutiny. This is a cautionary reminder of the frailties of even the most compelling solution in this area - something enforcement agencies like FAST are only too familiar with.

69 <http://www.prsformusic.com/creators/news/research/Documents/The%20long%20tail%20of%20P2P%20v9.pdf>

70 <https://www.torproject.org/about/overview.html.en>

4. Recommendations

4.1 A blended Approach to the Assessment of IP Infringement

Due to the difficulties in obtaining comprehensive data, the problems of assumptions and the perceived limited value to government policy of evidence presented by industry, many of the IP right-based sectors - notably the creative industries - concern themselves more with practical measures for enforcing their rights.

Nevertheless, we recommend an outreach program to industry to establish the usefulness of investing in systematic data collection. We identified a resource issue within a large number of industry trade bodies as the task of systematically measuring piracy and counterfeiting, notably in the copyright area, is very expensive and beyond the pocket of all but a small number of well-funded trade bodies. We recommend that government, with the involvement and support of industry, should conduct a wide-ranging and regular survey covering all types of protected content impacted by both offline and online infringement of IP rights. This is plainly the most effective means for government to provide the kind of data needed to support and inform policy decisions.

We have criticised the conflation of measurement of scale and the impact of IP infringement within industry research. However, we should also note that industry sometimes describes the way that piracy happens in a specific sector without focusing on measuring or estimating the scale or actual impact. This approach is designed to enable policy makers to understand how piracy appears in different creative sectors and is an embedded part of industry's anti-piracy work.

In order to help progress towards a unified approach to the assessment of IP infringement, we recommend the adoption of a common framework, which can be used to guide the implementation of the assessment in each of the four areas of IP rights, and can be extended where applicable to different markets.

The blended approach should initially accept the broad appeal of the adoption of a common frame of reference in each field, based upon an externally available source of the number of actual enforcements. This has the benefit of being openly available to all stakeholders and will typically be accessible throughout an annual cycle of activity. However, this use of the number of enforcements should also recognise its limitations. It is also inevitably dependent on victims' perception of both the cost of enforcement to the benefit of success, as well as their ability to acquire sufficient evidence to have confidence in securing a successful outcome. Both these factors are dependent largely on changing consumer attitudes that are susceptible to measurement via consumer surveys. It is useful to note that the survey is not being used here to directly assess volume, but rather to assess the plaintiff's attitude involved in the assessment of potential litigation for infringement, and the perpetrator's perception of the risk of detection. This modified perspective on the use of surveys can lead to a change in the design and formulation of survey content. It also suggests that the survey should ideally be conducted in the context of a general monthly lifestyle omnibus survey. Survey selection methods can also be

utilised in the adoption of the newly advocated assessment of infringement behaviours. Surveys, particularly of the more qualitative kind, can then be used to interpret the different types of behaviours tracked appropriately. It is important that the characteristics of each element of this method are respected, as there is potential to be tempted to see the opportunities of the recently developed tracking methods as a substitution of the survey methods, because considerable volumes of measurement can be obtained for the equivalent cost of a small but representative survey. It is, however, a better balance to keep a small panel of participants that can be surveyed and then tracked, with the surveyed volumes reduced to stay within the budget constraints that are prevalent at the time.

It is important to note that we advocate that it is essential to provide this framework in a stable format - it is this very stability that allows changes in attitude, behaviour and scale to be robustly monitored. It is also crucial that should this process be adopted, the underlying data be made openly available, enabling different stakeholders to both confirm the outcomes but also to utilise the same source data to investigate and demonstrate their own areas of interest while also validating their own perspective. Providing a common framework of source data, for different stakeholders to separately assess, offers the opportunity for policy debate to progress beyond criticism of the supporting evidence and techniques and to focus on the issues at hand. Should the data be captured over a sustained period of time, it will further allow stakeholders to retrospectively apply new approaches and demonstrate if these illuminate new insights.

4.2 External Comparison with the Assessment of the Number of Rape Crimes

To demonstrate the potential of the proposed framework, it is useful to see how it is already utilised in accessible fields like the reporting and assessment of the volume of general crime, or more specifically rape. In this instance, there is the opportunity to track the officially released figures on both the levels of reported rape and the levels of convictions. However, it is well reported in the media that levels of reported rape are very susceptible to changes in the perception of victims. When there has been a high-profile successful conviction that has been appropriately handled by the authorities, reports will tend to rise. However, if there is attention in the media on the severity of cross-examination by a forceful defence barrister, reports of rape can decline. These external reported and convicted crimes have to be balanced against the outcome of the UK-wide population representative crime survey that helps to identify the exposure to rape that has been experienced by the representative sample of the population and can utilise conventional, well-documented techniques to weight these results and therefore scale them up to cover the whole population. These weighted estimates can then be used to monitor for changes and track trends over time.

4.3 Application of the Framework to IP Rights

In the application of the proposed framework, two aspects stand out as the distinguishing factors of the various IP rights: the audiences that relate to them both in terms of breach and harm; and the costs, relative benefits and other barriers that mitigate against successful litigation. These two characteristics are the drivers for the different approaches advocated; where possible it is advantageous to maintain commonality of source data, even if alternative weights are

applied for different applications. This is particularly the case in terms of cost - where different audiences overlap there is scope for the development of syndicated investigation. The more wide ranging the scope of individual elements, the easier it will be to lobby other overarching bodies such as the Office for National Statistics (ONS) that this field deserves to be part of currently run studies of both consumer and business attitudes and experience. There is a certain amount of 'chicken and egg' to overcome first, in that the sector itself will first need to robustly demonstrate its importance to the UK economy as a whole, prior to being able to advocate the inclusion of its key metrics within such ubiquitous studies, but it is recommended that this should be the long-term goal as a focus for establishing a sustainable, consistent and robust framework.

4.3.1 Online Copyright Infringement

Most of the industry research we reviewed relies on online surveys, but Kantar/Ofcom notably used a combination of online and offline research. The minimum requirement for both offline and online should be a combination of qualitative and quantitative research to provide a statistically and empirically robust data set. We also believe a longitudinal study with a consistent and robust approach is the best methodology for establishing trends. The best industry research reviewed went beyond a combined approach and adopted a hybrid approach of more than two different methodologies and sources of data/information to draw conclusions.

In all survey-based research, there should be complete transparency to enable conclusions to be replicable. Overall, we recommend the adoption of a hybrid approach, as it is evident that no single method is capable of providing sufficient rigour and robustness within the data. We noted that most consumer surveys under review aimed to measure the impact of infringement, which we felt was at odds with assessing the level of infringement. We suggest it is preferable to separately establish the level of infringement before assessing the impact. Within the online surveys, we felt greater effort should be made to include behavioural specialists to interpret the responses by consumers that are often based on personal (subjective) assessment of their behaviour.

If the basis of our recommended infringement-measurement methodology is a hybrid method, we suggest this include the use of consumer surveys and a more detailed inspection of consumer behaviour online. The current costs of such deep packet inspection (DPI) may decrease as technology develops, but such an approach must take heed of data protection and privacy laws. We noted one existing highly effective IP infringement-measurement tool that uses voluntary 'spyware' within large-scale consumer panels on an international basis. Such a tool in highlighting observed behaviour is more insightful and reliable. Online measurements of IP infringement should include the use of spidering and crawling technologies

There are now several very large panels of Internet users who have agreed to be subject to DPI for the specific purpose of measuring the level of their IP infringement. One drawback with this approach is the impact such prior authorisation has on the observed user's behaviour when they are very aware their Internet usage is being monitored.⁷¹ We also note that there are efforts to develop a proprietary 'p2p content tracking system' to track Torrents systematically, and there does appear to be competition amongst the new technology firms and services aimed at

71 Often referred to as the Hawthorne effect.

content owners to match data acquired via crawling search engines and RSS feeds for Torrent titles with individual users accessing the Torrents.

Even so, there must be concern about relying on online tracking and ‘crawling’ technologies, not least because of the emergence of Tor and illicit ‘Deep Web’ markets such as Silk Road. BitTorrent Inc also confirmed the problems of relying on ‘DPI’ to track Torrent content, as it is currently unable to reliably identify the content of each Torrent bundle, relying instead on file names to come up with heuristic information. Through our experts, we identified the divergent nature of much of the online research tools, with some services tracking online based on BitTorrent activities based on actual downloads but not swarms. We suggest distinguishing between the long-term view of tracking artists/sound recordings and the snapshot approach, as these fulfil different objectives but both can provide a fuller picture of what is happening online.

It seems currently the most useful external validated number is a report based on the levels of ‘take-down’ notices. These have the advantage of occurring earlier in the process than full litigation, which, as it results in a lower cost, is less of a deterrent to the pursuit by a victim. This assessment of an overall measure can be used alongside a consumer survey similar to the current Ofcom/Kantar reporting to indicate the appropriate ways to weight outcomes. This framework could then be adapted to include a longitudinal panel of participants who are representatively selected and agree to the monitoring of their online behaviour.

The primacy of selection prior to voluntary monitoring should be noted. At all times there should be a suspicion of technologies, methods and surveys that rely on implicitly or explicitly and self- or practitioner-selected participants. Included in this implicit self-selection is the reliance on data generated from early adopters of new technologies.

4.3.2 Offline Copyright and Trademark Infringement

There are some traditional methods employed routinely in the world of physical manufacture that can help identify counterfeiting and piracy sources - methods in fact that are routinely used not just by IP enforcement agencies but also by Customs officials around the world. The OECD’s comprehensive study in 2008⁷² calculated the number of infringements on the basis of surveys of Customs authorities’ seizures of counterfeit and pirated goods. However, such seizures only reflect a fraction of the actual infringements taking place. By its nature, such a methodology cannot take into account all infringements, and any calculations of the actual number of infringements are subject to assumptions based on the actual seizures. The data do not extend to domestic counterfeiting and piracy within one territory.

Riccardo Sciaudone’s review⁷³ of Vrins and Schneider identifies the reason why Customs seizures became such an integral source of data on compliance and enforcement. He notes that whilst Customs authorities cannot adjudge the actual infringement of IP rights, they are nonetheless well positioned to block infringing goods from entering the internal market. He adds

72 OECD, 2008, ‘The Economic Impact of Counterfeiting and Piracy’, OECD: Paris <http://www.oecd.org/sti/ind/theeconomicimpactofcounterfeitingandpiracy.htm> and http://www.oecd-ilibrary.org/trade/the-economic-impact-of-counterfeiting-and-piracy_9789264045521-en

73 <http://script-ed.org/?p=1093>

that the advent of the Trade Related Aspects of Intellectual Property Rights (TRIPs) agreement introduced specific international obligations on the part of individual states to enable the intervention of national Customs authorities in preventing counterfeiting and piracy.⁷⁴

This standard approach of using measurements of Customs seizures, together with some ad-hoc surveys in the broad-based counterfeiting and offline piracy research, was less than ideal, and we considered several methods beyond this approach.

The MarkMonitor Traffic Report⁷⁵ offered some potential for measuring online infringement, despite our significant concerns about its methodology being applied across the board. Indeed, it seems more appropriate for individual brand owners than the wide-ranging research carried out within other counterfeiting literature. This model, whilst not perfect, is one we feel can be developed into the basis of a robust approach to measuring infringement. In the offline world, it is even more difficult to establish the level of infringement, given that there is no way to accurately monitor or 'observe' behaviour in addition to consumer surveys or mystery shoppers.

There is a distinct need to produce composite data from industry, government and consumer sources to assemble a broader picture of counterfeiting, rather than relying on a single methodology. Even though each method has weaknesses, we accept the broad recommendations of Rand (2012)⁷⁶ on at least four of the five approaches⁷⁷ to gathering enforcement information as the basis of a hybrid methodology for measuring counterfeiting.

In relation to industry and consumer surveys, we feel the acknowledged shortcomings of the surveys can be addressed in their evaluation, with transparency the key issue.

The major issue in the effective enforcement of IP has been the lack of knowledge of the precise scope, scale and impact of IPR infringements. Part of this gap is a result of the majority of studies being conducted as snapshots, over limited time frames and using different approaches. This can be addressed by adopting the CEBR 2000 proposal for omnibus surveys as well as systematic, regular, frequent and long-term studies.

At this stage, it has to be recognised that a lot of counterfeiting and physical piracy once detected does not lead to any litigious activity. Often, the process will be normalised by various commercial means to regularise the behaviour through retrospective licencing. Cognisance of this fact, that much infringing behaviour remains hidden from public view, leads to the need for different methods of weighting between survey and public data, although it would be hoped that both the consumer and business research selection of survey participants could be harmonised. It is, however, thought that continuing to anchor survey results to public records

74 This refers to Section 4 (Special requirements related to border measures) of Part III (Enforcement of Intellectual Property Rights) of the TRIPs agreement implemented into EU legislation by Regulation No. 1383/2003 and its implementing Regulation 1891/2004. The latter establishes the conditions under which national Customs authorities can intervene where there are goods suspected of infringing IPRs.

75 https://www.markmonitor.com/download/report/MarkMonitor_-_Traffic_Report_110111.pdf

76 Rand Corporation (2009) 'Film Piracy, Organized Crime, and Terrorism', Rand Safety and Justice Program and the Global Risk and Security Center http://www.rand.org/content/dam/rand/pubs/monographs/2009/RAND_MG742.pdf

77 Consumer surveys, producer or distributor surveys, sampling/mystery shopping and economic models.

provides a level of credibility amongst stakeholders and broadens the scope of application. Utilisation of the public records is particularly relevant when it comes to the derivation of models of economic impact. The financial value of incidents tends to be highly skewed, with a high proportion of the overall value being focused within a small number of cases. It is this small number of high-value cases that become part of the public record but which are missed by the wide-ranging sampling techniques used for surveying. The nature of the skew in the value distributions will lead to different applications of alternative economic models. In addition, whilst ideally built upon common source data, different assumptions will be made about the proportion of infringing behaviour that substitutes for real economic activity, rather than acts as a stimulus.

4.3.3. Patents and Design Rights

Patent Infringement

Despite the clarity of Weatherall, Webster and Bentley's 2009 study for SABIP⁷⁸ it is the subsequent Weatherall and Webster authored research, which includes a survey of inventors⁷⁹ that offers far greater scope for capturing the real level of patent infringement within the market. We recommend this approach, subject to cross-referencing of data with practitioners and businesses operating in the market, to achieve a blended approach to measuring infringement of patent rights.

Design Rights Infringement

Given that the nature of the infringements in this sector bore striking parallels with patents, and that almost all such infringement is based on business-to-business activity, we started to see the patents sector as a probable source for tools and methodologies that might work. We noted that ACID, the UK design trade body, already adopts a survey-of-designers approach to capture the detail of infringements from its members, and this approach coincided with our discovery of Weatherall and Webster's model for conducting a survey-of-inventors model for patents. We must emphasise that the same caveats about cross-referencing the data with business and IP law practitioners must apply. It is arguable that this may be one of the easiest of our recommendations to implement.

Each of these two IPR infringement types could be covered together within a blended approach to infringement, as it is anticipated that they offer scope for overlap in delivery and monitoring. Firstly, they demonstrate similar characteristics in the processes leading to litigation, thus generating the identification of the tiny peak of very high value behaviour within the public domain. But again, this represents a high proportion of the economic value. Where these two rights together differ from the other IPR under review is that they are pre-dominantly features of exchange between businesses, and further that the origination of IP rights is focused within particular industry sectors. For this reason, the survey sampling methodology must be efficiently focused around segments of inventors/designers, as explored in the literature and those sectors of business where infringements are likely to occur.

78 Weatherall K., Webster E. & Bentley L. (2009) 'IP Enforcement in the UK and Beyond: A Literature Review', SABIP Report (Number EC001).

79 Weatherall, Kimberlee G. and Webster, Elizabeth M., Patent Infringement in Australia: Results from a Survey (June 1, 2010). Federal Law Review, Vol. 38, No. 1, pp. 21-70, 2010; University of Queensland TC Beirne School of Law Research Paper No. 10-14. Available at SSRN: <http://ssrn.com/abstract=1648643> ?

4.4 Conclusion

Future research into the measurement of IPR infringement should be framed around the following essential criteria:

- i. **Research Funding** It is of utmost importance that any research provides full disclosure on who commissioned the research.
 - ii. **Validity** To improve the general validity of the input data on the level of infringement research should be carried out by trusted third parties who are independent of vested interests.
 - iii. **Comparability/benchmarking** In order to assess the level of counterfeiting and piracy to justify policy, it is key to apply transparent and comparable methodologies to enable benchmarking. Benchmarking might also provide a solution to the difficulties of establishing comprehensive input data, if it is based on transparent and comparable parameters of studies using a robust snapshot with the same methodologies.
 - iv. **Standards** The team recommends a minimum set of standards to improve the quantitative and qualitative methods used by industry. Overall, any quantitative methodology must be designed to ensure validity and reliability by allowing for replicability. New quantitative surveys should be piloted, and care must be taken to ensure sample sizes involved are large enough to provide a valid representative sample. Greater care also needs to be taken with constructing appropriate qualitative surveys by the use of 'hermeneutics'.
 - v. **Repetition** Any recommended methodology must include a repetitive aspect. It is only by conducting a sequence of on-going evaluations of the statistics that it becomes possible to provide a robust and pragmatic assessment of the three core statistical characteristics of random uncertainty, likely bias and statistical independence. Any resilient statistical process should consist of repetitive, consistent and systematic elements that pragmatically illuminate the degree to which a procedure maintains statistical independence, minimises procedural bias and controls random variation within a credible range.
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In summary, there is clear scope for developing methodologies for measuring copyright and trademark infringement around a blended/hybrid approach including surveys and behavioural analysis. The MarkMonitor approach⁸⁰ provided a suitable level of scrutiny on the behavioural aspects of brand infringement, somewhat akin to our efforts to track online copyright infringement. We see links between some of the recommended measurement tools across different IPR, not least because much of the wide-scale copyright and trademark infringement is by nature essentially a business-to-consumer (B2C) proposition, an aspect of the infringement that shapes the kind of methodology required to assess the scale of the problem.

In contrast, the infringement of patents and design rights is really a business-to-business (B2B) issue, and there is greater scope for linking methodologies across these two rights, even if we do not feel one single methodology can apply across all four of the IPR under review. This distinction between B2B and B2C allows for the development and design of appropriate sampling frameworks. These frameworks should embrace a blended approach to provide a sample from the instigator's point, e.g. designers and inventors, as well as one from recipients.

80 https://www.markmonitor.com/download/report/MarkMonitor_-_Traffic_Report_110111.pdf

5. Appendices

5.1 Appendix 1 Statistics and Estimating IPR Infringement

5.2 Appendix 2 Literature Review

5.3 Appendix 3 Trade Bodies' Views on IPR Infringement Research

5.4 Appendix 4 Trade Bodies' Questionnaire Responses

5.5 Appendix 5 Research Experts' Views on Online Measurement of IPR Infringement

5.6 Appendix 6 Bibliography and Sources

APPENDIX 1 STATISTICS AND ESTIMATING IPR INFRINGEMENT

The review and desk research of the existing range of literature concerning the scope and extent of IP infringement has indicated that the area is currently being served with methods that are providing little more than anecdotal information. This is not unusual, and reflects the rapid changes that are taking place without the time to establish robust methodologies that can reliably monitor changes in behaviour.

In this period of rapid change, that information is most likely to be disseminated by interested parties who have a strong agenda, and who are likely to focus on data that is readily to hand. As a result, what is often missing in this type of environment is the study consideration of some profound statistical insights that are necessary for any resilient quantitative assessment to be made.

The statistical perspectives that should be addressed when moving to a more robust framework can be summarised by the appreciation and consideration of three characteristics of all data. These characteristics are the nature of both random and biased statistical uncertainty and the nature and scope of statistical independence between different data items. These features are closely inter-related, and determine how much any particular study, data representation or estimate can be assumed to be a reflection of the reality it purports to represent. Let's consider each of these aspects in turn.

1.1. Key Statistical Principles

1.1.1. Random Uncertainty

This characteristic is both the easiest one to address and also the one that is given some attention at times within studies. Where it is addressed, this is usually by following conventional methods that assume a random, independent and normal distribution of fluctuations around a population mean. These assumptions allow a suite of statistical tools to be brought to bear. The prime output of these assumptions is the prediction that the scale of the fluctuations will reduce, like the square root of the number of independent respondents within the study. For example, a sample of 1,000 respondents will have fluctuations of the order of 60 or so respondents, whereas a sample of 10,000 respondents will have fluctuations of 200 or so. This indicates that the way to increase confidence in a prediction and to control its uncertainty is to increase the size of the study. For typical items that constitute a significant proportion of a study, sample sizes of around 1,000 account for variations of approximately 3%. The square root growth in fluctuations has the consequence that there is a diminishing return for increased size of the study. The most important learning from this perspective is that the overall proportion of the study population has no bearing on the accuracy of the estimate. Often people ask if a 10% sample is sufficient for statistical significance; these assumptions demonstrate that the proportion of the population is relevant to significance. What has to be the priority in all studies is to focus on the methods of sampling, particularly with a view to managing the other key statistical aspects that follow.

1.1.2. Likely Bias

A study should demonstrate an appreciation of the likely bias within any particular study. It is naive to assume that this does not exist, and mistaken to focus on increased volume to reduce its impact. Indeed, study methods should seek to design a study that has sufficient volume to reduce the random variation to a point where it is comparable to the likely methodological bias, and then focus attention on reducing or mitigating the bias. Statistical bias arises from a wide variety of sources. Typically, these are effects that can be thought to impact the whole of a sample in a particular direction. These can be environmental and/or procedural. For example, environment effects can occur when sample studies are conducted during a particular time of the year – such studies will be unable to assess the seasonal characteristics present in the behaviour studied. Procedural effects can, for example, include bias driven by the order of questions posed in a survey – this can lead to expectations about anticipated answers or a participant's conscious expectation that reporting in a diary, for example, will be worthwhile when a study is monitoring activity figures.

1.1.3. Statistical Independence

This the hardest feature to assess and also control for. It also has a pervasive influence on the estimates that might be used to provide theoretical estimates of uncertainty when looking to address random variation. Analytically, independence is demonstrated by monitoring the auto-correlation between different data points in a study. This means that data points that in some way are 'near' to each other are more likely to be similar to each other than other parts of the study. This may be due to physical or temporal location, but nowadays when a study is looking at human behaviour, the connections can also be mediated via digital means, media broadcast or travel. This means that independence is difficult to deal with at a theoretical level, and also has the effect of introducing doubt around the validity of the assumptions used to assess the nature of random fluctuations.

1.1.4. Examples of the Impact of the Statistical Principles

To provide an example of the interplay between these different factors, it is useful to look at the development of the assessment of UK crime statistics. Historically, the focus had been on monitoring the level of apparently objective measures of recorded arrests and convictions. These have the benefit of feeling like they at least are comprehensive and do not 'suffer' from any random fluctuations due to sampling. They can also be monitored each month to assess the level of inter-dependence, as it is well understood that certain crimes will take place in particular locations and at certain times of the year. This means that random uncertainty appears to be reduced to a minimum, only recording errors that are likely to be challenged by interested parties and whose independence can be analytically monitored. However, these recorded figures cannot provide any indication of the variable levels of bias that occur throughout a period. For example, the levels of arrest and/or conviction for rape are known to be strongly connected with how a victim perceives they will be treated. Much of that crime can therefore be removed from the figures due to non-reporting, and changes in the figures can easily be due to changes in the perception of the police's attitude to the victim, without any underlying change to the levels of crime. To mitigate these effects, there has been an increasing reliance on the results of the UK Crime Survey. This study conducts representative interviews with the population to understand people's experience of crime, and whether or not this crime is subsequently

reported. This approach introduces a level of sampling error that is governed by the size of the sampling study, but being able to quantify some of the on-going effects due to changing reporting levels compensates for this.

A similar effect can be shown by reviewing the output of the British Population Survey’s on-going tracking of monthly levels of consumer levels of downloading and streaming music, as indicated in Chart 1. This on-going weekly tracking study has included the opportunity to assess the behaviour of respondents who voluntarily participate in online research studies, alongside those that have been pre-selected through a defined sampling process for participation in a residential-based face-to-face interview. This chart is used to assess the impact of all three statistical characteristics and how they can be addressed pragmatically through a process of repeated consistent monitoring. Reviewing the chart, it can be seen that the maximum and minimum value for the online survey are further apart than those for the off-line survey. These different ranges are attributable to the smaller sample size of online participants and the proportion measured being nearer 50%. It is also straightforward to visually confirm that there is a significant difference in the levels of downloading/streaming of those participating in different surveys. This is a systematic bias, due to the procedure of using an online survey that allows for self-selection as the basis for conclusions. Independence is harder to assess, but can be characterised by features appearing in a sequence of data. For example the ‘humps’ within the online data may be due to a lack of independence in this population. These may be due to a demand for a particular genre of music at that particular time, for example.

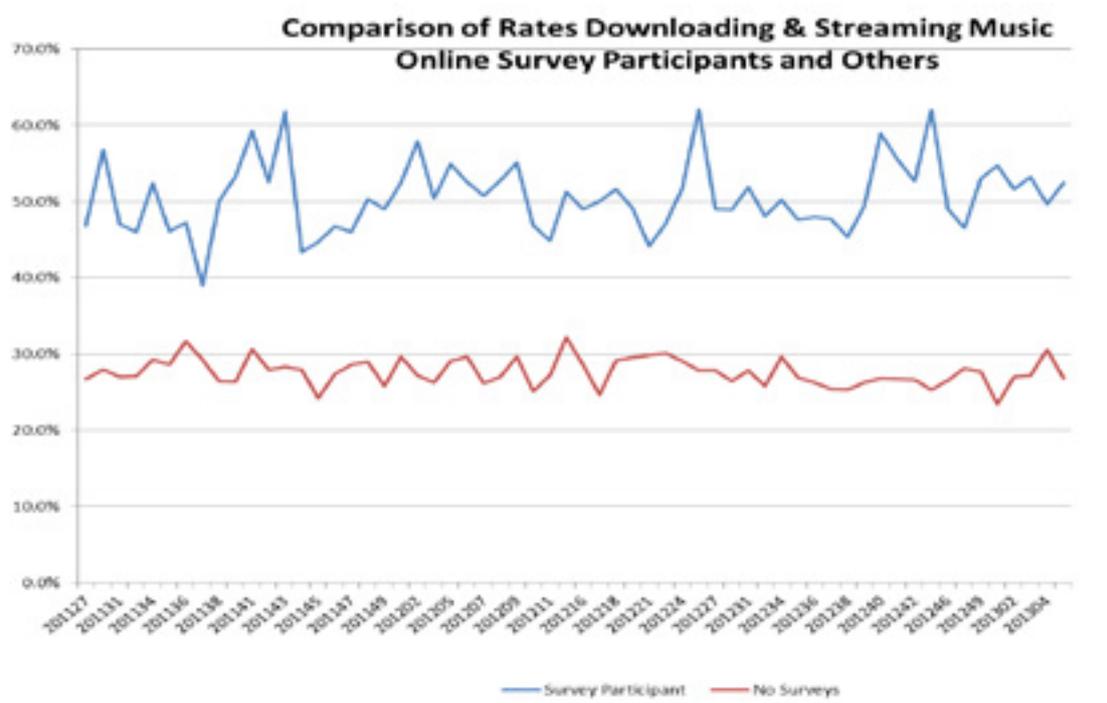


Chart 1: Rates of downloading and streaming music as published by the monthly tracking of the British Population Survey.

1.1.5 A Process for Respecting the Statistical Principles

Once these three statistical principles are understood, it is worth identifying ways to make these considerations transparent and provide a methodological framework that can mitigate their impact and act as a method of assessing external studies.

The previous example of the comparison between online and offline behaviour using online and offline studies illustrates a proposed way ahead. It is advocated that any long-term robust methodology will include a number of characteristics.

Firstly, it is a key principle that any method includes a repetitive aspect. It is only by conducting a sequence of on-going evaluations of the statistics that it becomes possible to get a robust and pragmatic assessment of all three statistical characteristics. There are a variety of theoretical ways of making estimates, from the common assumptions of normality and independence to intricate studies of data modelling. Whilst these can all help with an understanding of the underlying processes that can give rise to a variety of patterns, they all have to make assumptions that are impossible to be definitive about. In studies that examine human behaviour, it is inevitable that some characteristics will violate the assumptions and lead to some non-linear effects that are outside the scope of a purely analytical approach. Typically, non-linear influences make fluctuations in behaviour more extreme than classically anticipated, and the signs of this typically appear by fluctuations having a power law distribution, rather than an exponential one. When the assumption of exponential distributions holds, it becomes sufficient to ignore the impact of wide fluctuations. Once this is not the case, wide fluctuations can have significant effects that on-going monitoring helps to observe.

Secondly, any study should consist of a blended approach that combines both a stream of recorded information, a sampled method and some on-going data modelling. Each of these elements provides a perspective that will ensure that it is more likely that deviations from any or all of the assumptions in the process of study are not being violated. Recorded information helps to monitor whether there are changes in the environment. This, for example, could be a change in consumer perception. Repeated sampling helps to get to the source of the issue and provides an opportunity to allow random errors to grow, whilst making the bias and interdependence less critical. Data modelling can provide re-assurance that the underlying processes about assumptions of behaviour are not fundamentally changing with time. Conversely, it can provide an early indication within the noisy sampling data that these trends might be taking place.

In summary, any resilient statistical process should consist of **repetitive, consistent** and **systematic elements** that pragmatically illuminate the degree to which a procedure maintains statistical independence, minimises procedural bias and controls random variation within a credible range.

1.2 Best Practice in Consumer Surveys

During our review, we came across a wide range of different research, notably within the copyright infringement sector, and our decision to distinguish between industry and government research was intended to highlight any inconsistencies in research findings based on who commissioned the research. Whilst there is little evidence of commissioning firms overtly

influencing the research findings, we did find a variety of different methods employed by different research firms, notably when it came down to measuring consumer behaviour and attitudes. This variation in methods has prompted us to identify the core principles of effective, rigorous, robust consumer research. These principles are embedded within our review of survey-based research, as well as our recommendations for future methodologies for measuring IPR infringement. Such consumer research is more often termed 'market' research and essentially falls into two main camps: quantitative methods and qualitative methods.

1.2.1 Quantitative Methods

These are characterised by surveys that measure expressed attitudes, opinions, accounts of behaviour, etc. by interviewing sufficiently large samples of people. What underlines quantitative methodology is the attempt to measure samples of people in sufficient numbers and with sufficiently well designed instruments so as to be able to extrapolate responses to a wider population.

Underpinning the success of this process, and hence 'best practice', is the need for the research sample to be as representative as possible of the wider population to which one wishes to extrapolate the survey findings. This is where statistical understanding comes into play. Statistics are really about one thing - probability. The fascinating aspect of sampling in relation to accurate reflection of the wider population (as described in the previous section) is that the total numbers required in a sample are not directly proportionate to the size of the parent population. Rather, the level of uncertainty scales like the square root of the sample size. So, assuming independence, in the UK with a population of approximately 60 million people we need to ask around 1,100 people whether they prefer party X or party Y to achieve a level of statistical error of around +/- 2%. This will continue to be the case even if we were to ask a million people. In the US, where the population is around 300 million, we would only need to ask around 1,500 people to achieve the same level of statistical error/accuracy.

Therefore, as a starting point to best practice, we need to use statistics to relate the representativeness of the sample measured to the total population to which the data is being extrapolated. If we conduct a survey of 1,100 people in the UK and 1,500 people in the US (using either random or quota sampling methods, described below) statistics will reassure us that the percentage of preferences expressed, say, for brand X over brand Y will not differ by more than +/- 2% in the respective territories for the total population. If, however, we then want to drill down within the data to sub-groups such as geographical regions, best practice will ensure that statistics report on the widening statistical error which results from the smaller numbers within the sub-group.

Best practice in quantitative research/survey design needs to ensure that the methodology takes fully into account the critical issues of reliability and validity. 'Reliability' concerns the notion of consistency in the findings, i.e. the chances that, were we to repeat the exact method with the same survey instrument being applied via the same sampling structure and technique, we would arrive at the same findings. 'Validity' simply poses the critical question of whether we are measuring what we are attempting to measure.

In summary, the best practices for maximising the reliability and validity of survey methodology

would be: the need to understand and adhere to the statistical principles of sampling; the need to pilot a new survey instrument; and, where possible, correlate the findings against comparable measures, i.e. use qualitative methods to explore the sense participants make of the questions.

1.2.2 Sample Accuracy

The two distinct tools used to maximise sample accuracy are random sampling and quota sampling. 'Random sampling' is the adherence to a rigid interviewee-contacts structure, which has been randomly generated in order to obviate any potential bias that may arise from targeted samples. This, for example, could involve interviewing every fifth household in a randomly generated list of streets. 'Quota sampling' is where pre-determined numbers are assigned to all sub-groups within the overall sample, designed to be reflective of the wider population to which the findings are to be extrapolated – so, X% males, X% females, X% in each of a number of age groups, geographical regions, social grades, etc. Best practice in quota sampling will use interlocking quotas. For example, 10% of the total sample could be 18- to 24-year-old women who live in the Northeast and belong to the C2 socio-economic grade.

Related to the above, best practice in sampling also dictates an understanding of issues such as skewed distribution and random error, already covered in detail in the preceding section. A final comment with regard to best practice in survey methods is that, both from the point of view of cost and efficiency, a great proportion of consumer surveys are now conducted online. People completing online surveys are certainly not wholly reflective of the total population and can behave in quite different ways. Therefore, an understanding of the differences between online and offline samples is critical before attempting to extrapolate data collected online to the total online and offline population.

1.2.3 Qualitative Methods

These are principally characterised by face-to-face interviews, focus groups, etc. They involve talking to and moderating discussions between relatively small numbers of people (by comparison to quantitative methods) but in greater depth and in an open way as opposed to necessarily covering pre-determined questions. Qualitative samples are generally recruited against a number of subjective criteria, with the client and practitioner making certain (hopefully, informed) assumptions as to what constitutes the target group in which they are interested. Best practice in qualitative research should ensure that rigid quality control measures are put in place in the recruitment of respondents. For example, respondents taking part in focus groups should not be previously known to one another, they should not regularly take part in such research (avoiding the 'professional' respondent), and they should not be briefed as to the specifics of the discussion or recruitment criteria prior to the session taking place, etc.

The way in which validity is established in qualitative research is through a process of 'hermeneutics'. Essentially, the interviewer or focus group moderator will enter the first interview or focus group with a number of subjective assumptions as to what response they will get to the various topics and issues they have drawn up for discussion. By the end of the first session, some of these assumptions may start to be confirmed; while others may be challenged and further (previously unconsidered) elements may have been brought in by the respondent(s). As the interviewer/moderator works through successive interviews/group discussions, his/her understanding of the topics begins to be clearer, to the point at which further interviews/group

discussions are returning a diminishing amount of new perspective and core issues are being repeatedly emphasised. At this point, the hermeneutic circle becomes closed, and the research findings are deemed to be valid, in that they confidently predict what further discussion would return. In terms of best practice, it is important that all groups/interviews are analysed sequentially (the paper trail) and preferably by the same small number of interviewers/moderators who were directly involved in the subjective experience of the research.

1.2.4 Conclusion

Without commenting on specific research agencies, concern is felt within the commercial sector that corners are often cut in methodological rigour as a result of meeting client demands regarding cost and timings. Considerable doubt is expressed whether a high proportion of new quantitative surveys are piloted and sample sizes involved can often be too small to return anything more than face validity (meaning 'it looks right'). The establishment of qualitative validity also appears to be little understood or adhered to in a number of agencies, whereby the processes of data collection, analysis and reporting are often fragmented across a number of executives at different levels and too few quality controls are put in place at the critical stage of recruitment.

APPENDIX 2 LITERATURE REVIEW

The primary aim of our study was to assess existing research, draw comparisons between UK and international research and identify good and best practice amongst the research. It was felt this would allow for an analysis of the emerging methodologies and an assessment of the most viable ones for each of the four IPR under review. A significant challenge in meeting this primary aim was organising the literature as it became clear in the benchmarking process that to assess a wide range of available methodologies we had to look beyond standard research reports and examine other literature reviews of extant relevant research to capture the range of available alternatives. This means a substantial part of the analysis within this section is a discussion of methodologies recommended by others, and this is particularly important to our review given the substantial number of research reports we found that contain little if anything by way of an explicit methodological description. Such research is generally treated as being inadequate for the purposes of this review.

We started by separating the literature into the four IP rights: copyright, trademarks, patents and design rights. However, as the review progressed, we felt the literature had to be segmented differently to better represent the emerging pattern of research. This meant re-classifying the research heading within the Literature Review as follows: trademarks and offline copyright infringement (counterfeiting and piracy); online copyright infringement; patent infringement; and design rights infringement.

Given the IPO's three-point test for research, we felt it appropriate to highlight the transparency of funding for all the research under review, as well as its methodologies. We decided to identify the sources of funding for the research and divide each IPR infringement category into further sub-groups based on the source of funding. We also wanted to test the hypothesis that different stakeholders within each IPR grouping tend to prefer different methodologies. The literature for each sub-group is shown in this appendix under each specific IP right:

- a. **Industry Infringement Research** This covered research generated or commissioned by an IP industry stakeholder group.
- b. **Government Infringement Research** This covers research generated or commissioned by government departments, or agencies such as the IPO, as well as quasi-non-governmental organisations such as WIPO and OECD.
- c. **Academic Research** This excludes the considerable amount of commissioned research carried out by academics but funded by industry or government. It represents the body of research carried out by academics supported by their own resources or grants from research councils or charitable foundations.

The research shown in this Literature Review is listed in alphabetic order rather than in any order of priority or preference. Within the online copyright field, we chose to further segment the research by industry sectors to highlight the different approaches between them.

2.1 TRADEMARKS AND OFFLINE COPYRIGHT INFRINGEMENT (COUNTERFEITING AND PIRACY)

2.1.1 INDUSTRY RESEARCH

AAIPT We examined a number of documents produced by and for AAIPT (Alliance Against Intellectual Property Theft) including the report produced for it by Oxford Economics (2009) on the ‘Economic impact of legislative reform to reduce audio-visual piracy.’⁸¹ The report had little to do with measuring IP infringement, relying on the 2008 Ipsos survey for the headline figure of £531 million losses, and was more about assessing the economic impact of proposed anti-piracy measures.

The earlier ‘Proving the Connection’ report⁸² aimed to provide evidence of the links between counterfeiting/piracy and organised crime, using data drawn from industry representatives and member organisations. The report was part-funded by four of the core AAIPT members – the ACG, BVA, BSA and Film Distributors’ Association (FDA) - and used a 1999 figure of £6.4 billion lost to the UK economy through counterfeiting and piracy. It acknowledged that the links between IP theft and organised crime were anecdotal, but argued that evidence came to light as part of the enforcement of IPR, even if “none of it was being systematically documented.” This was AAIPT’s first attempt to publish findings, which are mainly presented by way of case studies. However, it is striking how much of the information is over a decade old and there is no reference to how it measured infringement of IPR.

More recent reports produced by AAIPT include the 2013 ‘Impact of IP Theft’⁸³ report, which also listed the levels of losses as a result of piracy and was designed to draw attention to the wide-scale occurrence of piracy. There was no methodology supplied to support the claimed losses, and the list itself appeared entirely based on its members’ own submissions. The lack of currency in certain key data provided was striking, with some based on 2008 data. Another

81 <http://www.allianceagainstiptheft.co.uk/downloads/reports/Great%20Expectations-%20Economic%20impact%20.pdf>

82 <http://www.allianceagainstiptheft.co.uk/downloads/reports/Proving-the-Connection.pdf>

83 http://www.allianceagainstiptheft.co.uk/impact_of_ip_theft.html

recent document produced by AAIPT was the 2013 'Facts and Figures'⁸⁴, which provided the headline figures for the UK creative industries. Data included information on gaming, the audio-visual sector, publishing, sport, music and design, and the report cited one of several Business Action to Stop Counterfeiting and Piracy (BASCAP) estimates that counterfeiting and piracy cost G20 governments and consumers over \$125 billion every year. There was no attempt made to define a methodology on how to measure IPR infringement.

ACG The Anti-Counterfeiting Group (ACG) produced a report in 2003 entitled 'Why you should care about counterfeiting'⁸⁵ but it was difficult to accept the report's findings as an indication of the current situation. It did however demonstrate the ACG's approach to research, which included a consumer survey on attitudes to counterfeits or 'fakes'. We noticed a willingness to offer more than a single approach, with the 1,000-person Ipsos MORI survey results mixed in with case studies on a range of counterfeit goods. The report's claims of £10 billion lost to UK businesses as a result of counterfeiting, as well as data on percentage losses within pharmaceuticals, clothing and footwear, toys and sports, were based on the Global Anti-Counterfeiting Network (GACG) 2000 CEBR Report (see below), funded by industry.⁸⁶ No attempt was made to explain the methodology other than a reliance on the fact it was carried out by Ipsos MORI and not ACG.

We reviewed the ACG/British Brands Group 2011 submission to the Hargreaves Review's 'Independent Review of IP and Growth - a Response from the Brand Perspective.'⁸⁷ This report confirmed the value and importance of protecting brands' trademarks and the six means of protecting a brand from trademark and design rights to copyright and patents and trade secrets. There were supported claims similar to those made by AAIPT on the economic value of brands to the UK economy, as well as a section devoted to misleading 'parasitic branding'. However, the key parts for our purposes were the sections on 'Brands, Counterfeits and the Enforcement Regime'⁸⁸ and 'Evidence' and 'Enforcement'. The ACG's research sources were clearly identified and drew on both industry and government research. Apart from "results from an independent consumer survey", which underpin some very substantial claims but which we were unable to see, the report cited a wide range of well-known and easily accessed research sources on which to base its claims, including research from BASCAP and the International Chamber of Commerce's (ICC) Commission on IP, OECD and World Economic Forum (WEF), most of which are covered elsewhere in this report. Tellingly, the report referred to a new BASCAP report that "draws out the additional impacts, which were left un-quantified in the OECD report, introducing methodologies for estimating the magnitude of these additional cost categories."

The most recent publication from ACG was the 2012 'IP Rights Enforcement Initiatives – a UK Perspective'⁸⁹ written by its CEO Ruth Orchard. In her review of relevant policy impacting IPR enforcement and summarising UK and EU perspectives, Orchard noted the shortage of 'hard evidence' and acknowledged the creation of the EU Observatory within OHIM. She also highlighted the problem of arriving at a common methodology to gather evidence to "establish the economic impact of IP crime" and "place a value on the importance of effective IP rights

84 http://www.allianceagainstiptheft.co.uk/facts_figures.htm

85 www.a-cg.com

86 This is covered later on in the Literature Review.

87 <http://www.britishbrandsgroup.org.uk/upload/File/IP%20Review%20brand%20submission%202011.pdf>

88 pp.17-43

89 Anti-counterfeiting 2012 – A Global Guide. www.WorldTrademarkReview.com

enforcement". For our purposes, her review was of limited value as again its focus was on measuring the economic impact of counterfeiting and not the scale. Orchard was critical of both the EU Observatory/Rand Report approach to establishing the impact of IP crime and also that of the OECD, noting that the latter could not achieve this goal and that its study was "confined to cross-border trade" – "the most measurable aspect of counterfeiting and piracy it could find."

AGMA The 2006 Alliance for Gray Market and Counterfeit Abatement's (AGMA) 'Technology Products (AGMA) World' report's claim that "in 2006 up to 10% of technology products sold worldwide were counterfeit, which amounted to US\$100 billion of sales revenues" is cited within the IPO's IP Crime Report 2010,⁹⁰ and this reference is repeated in the Hargreaves Review's supporting documents.⁹¹ The claim originated from AGMA's 2005 white paper produced by KPMG, entitled 'Managing the Risks of Counterfeiting in the Information Technology Industry'.⁹² The claims made within this section are based on "interviews conducted with electronics industry executives", conservative estimates and elsewhere ICC estimates. There was no attempt to show a methodology and it is hard to see the claim being generated by research. It seems to be based on speculation and conjecture rather than hard facts.

BASCAP/ICC We reviewed two types of research from BASCAP/ICC. The first, entitled 'The Impact of Counterfeiting on Governments and Consumers',⁹³ was conducted by Frontier Economics. The report's focus was an estimation of the costs of counterfeiting to governments and consumers using a combination of publicly available data and assumptions. The publicly available data were from reputable sources such as national governments and the OECD, and were supplemented where necessary with data and analysis from industry associations and businesses. The methodology used for assessing the costs was based on conservative assumptions in order to achieve more credibility. This particular research has a limited scope, although we note Frontier Economics described in detail the assumptions used for its estimation. It also suggests applying the methodology to other sectors as well as to other countries. A good indicator of the viability of this research is contained in its description of its input data, which were based on "assumptions about counterfeiting rates on the evidence that is available. However, for some industries this information is sparse and varies from report to report. The information that is available can be difficult to translate into volume and value measures that allow the effect on industry turnover to be accurately assessed."⁹⁴

The methodology applied in this report and similar research⁹⁵ has been clearly and transparently outlined; more specifically, Frontier Economics describes the assumptions used and the justification for them. However, as far as the raw data on IP infringements are concerned, it relies on the work by the OECD in 2008,⁹⁶ based on data from 2005. In ICC/BASCAP's (2009

90 <http://www.ipo.gov.uk/ipcreport09.pdf>

91 <http://www.ipo.gov.uk/ipreview-doc-ff.pdf>.

92 http://www.agmaglobal.org/cms/uploads/whitePapers/KPMG-AGMA_ManagingRiskWhitePaper_V5.pdf

93 <http://www.iccwbo.org/Data/Documents/Bascap/Economic-Impacts/The-Impact-of-Counterfeiting-on-Governments-and-Consumers/>

94 p.51

95 Estimating the global economic and social impacts of counterfeiting and piracy, February 2011 (<http://www.iccwbo.org/Data/Documents/Bascap/Global-Impacts-Study-Full-Report/>)

96 OECD, 2008, 'The Economic Impact of Counterfeiting and Piracy', OECD: Paris <http://www.oecd.org/sti/ind/theeconomicimpactofcounterfeitingandpiracy.htm> and http://www.oecd-ilibrary.org/trade/the-economic-impact-of-counterfeiting-and-piracy_9789264045521-en

'Research Report on Consumer Attitudes & Perceptions of Counterfeiting and Piracy',⁹⁷ the authors summarise an extensive body of research conducted over an 18-month period to better understand consumer attitudes and behaviours towards counterfeiting and piracy. It focuses on the demand side and is a comprehensive mixture of literature review and primary research to identify the dominant drivers and common patterns behind counterfeit purchases.⁹⁸ The report contains notable comments on consumer reviews, which are relevant to us when analysing, and valuing surveys based on qualitative (focus group) and quantitative (of around 1,000 consumers) surveys.⁹⁹ It notes that the majority of the research and campaigns focused more on affluent markets and less on the developing world.

GACG/CEBR The 2000 Centre for Economics and Business Research (CEBR) study 'Counterfeiting: Economical Impact on Four Key Sectors of EU Industry',¹⁰⁰ was an important piece of research for our review as it was the oldest research we found that sought to get to grips with the issue of measuring IPR infringement. This econometrics research was carried out for the Global Anti-Counterfeiting Group, London. It is an interesting piece of research to review given that two years after this, CEBR conducted research¹⁰¹ for the EC on defining methods for collecting, analysing and comparing counterfeiting and piracy data in the EU. However, the study was not helpful for our study as its primary goal was to assess the economic impact of counterfeiting within four particular industries: clothing and footwear; pharmaceuticals; toys and sports equipment; and perfume and toiletries. The data cited within the summary were not referenced and appeared based on 'estimates' rather than any robust assessment of the cost of counterfeit goods. We noted that CEBR advocates the use of survey data.¹⁰² The only time CEBR attempted to estimate the "proportion" of counterfeits in each of the four markets, it had to acknowledge the estimate was based on ACG and AIM data and admitted that "these estimates are notoriously difficult to calculate due to the unobserved nature of the problem and, due to their source, they should be regarded as upper estimates."¹⁰³

INTA We reviewed its 2012 'Unreal Campaign Research Findings'¹⁰⁴ study, which introduced a new focus to IPR research by examining how social networking sites deal with infringement. It did not provide evidence of the amounts of infringement but was an important piece of research in relation to activities on social networking sites. It suggests the actual measurement of the level of IP infringement on social networking sites could be estimated by looking at the number of take-down notices the various social networking sites receive.

MARQUES We reviewed the 2011 'Response to the European Commission's Report on the Enforcement of Intellectual Property Rights' from Marques, Lowe and Varricchio, because of its acknowledgment that, in representing the interests of 750 European trademark owners as well as trademark and design law practitioners across industry lines worldwide, there are "significant inconsistencies between Member States on a number of aspects of evidence gathering."

97 <http://www.iccwbo.org/Data/Documents/Bascap/Consumer-Perceptions/Consumer-Research-Report/>

98 Detailed list in Table 21 on p.61

99 p.31 onwards

100 http://ec.europa.eu/internal_market/indprop/docs/piracy/final-report-cebr_en.pdf

101 CEBR (Centre for Economics and Business Research) for EC (2002) 'Counting Counterfeits: Defining a Method to Collect, Analyse and Compare Data on Counterfeiting and Piracy in the Single Market'.

102 p.11

103 p.15

104 <http://www.inta.org/Advocacy/Pages/UnrealCampaign.aspx>

MARKMONITOR The MarkMonitor (MM) 2011 'Traffic Report: Online Piracy and Counterfeiting'¹⁰⁵ is held in high regard by the content industry trade bodies and their enforcement arms such as FACT and FAST. Based on our review, we consider this to be the best available industry-generated methodology in the online counterfeiting and piracy field, but it is not without limitations.

The methodology was applied to industries most affected by online counterfeiting and digital piracy. It chose major brands from each industry and ran automated scans for those brands using its patented technology. The study examined 22 brands in the digital content category (movies/TV shows, music and software/videogames) and the physical goods category (handbags, sports apparel, pharmaceuticals and luxury items, footwear, and apparel.) MM acknowledged some of the potential problems of its methodology by pointing out that "traffic measurements can vary greatly depending on methodology. Some traffic measurement sources depend on technology, others depend on some type of user panel or community, and a third category uses a hybrid approach. Each approach has advantages and disadvantages, which, as a result, allow publicly available traffic data to vary, based upon the measurement source."¹⁰⁶

The methodology appeared to offer an appropriate method for assessing levels of counterfeiting as well as copyright infringement. It was difficult to assess, based on the description provided, and overall it appeared that this was most suited to the individual protection of a brand. At present, the methodology does not appear designed to assess/monitor the overall volume of infringement. Even though the technology could form the basis for the investigation, the system itself would need further development to provide a representative, reliable and valid sampling scheme. The description of identification and trawling of the web to identify counterfeit/digital piracy locations seems reasonable, but there must be reservations about the scales quoted. Particular difficulties arise primarily from the highly skewed nature of this type of Internet behaviour and, as a result, doubt must be expressed about the quoted scale of volumes. In highly skewed situations, quoting an average and then scaling this across a year through simple multiplication is very unreliable. There was also no apparent indication of the length of the studies conducted from which the estimates were scaled. Unfortunately, the sampling methods proposed are highly likely to identify the peaks of the skewed distributions. They are also more likely to track the concentrated levels of behaviour.

It is therefore proposed that a 'density'-based sampling scheme is used to generate a scheme for working within sectors. In a given sector, there is likely to be a distortion towards infringement of the high-value niches by less valuable volume. As such, one would tend to select a sampling scheme based upon a function of unit price and volume sold in a particular sector. It would be worth identifying a scaling variable of price/volume that links to levels of counterfeiting/piracy. If such a set of relationships could be identified, this could form the basis for a density-sampling scheme to facilitate an efficient estimate with the potential to be both valid and reliable. In principle, the technology on offer from MarkMonitor may facilitate measurement but it has not provided a representative sampling scheme.

105 https://www.markmonitor.com/download/report/MarkMonitor_-_Traffic_Report_110111.pdf

106 *ibid* p.6

MICROSOFT/YOUGOV We looked at the ‘Microsoft Counterfeit software survey’, which was an online survey carried out in mid-December 2006 by YouGov with a sample of 2,009 participants. The figures were weighted to be representative of all adults (aged 18+) resident in Great Britain. Whilst we did not have access to more than an executive summary of the research, the basic methodology adopted by YouGov seems sound, although we have concerns about relying on a single method to calculate the scale of counterfeiting and piracy. At best, this research represents a snapshot approach (it was conducted over two days). Its main findings draw attention to consumer attitudes to counterfeit goods, and the research identified a clear hierarchy of counterfeited goods with movies (including DVDs) followed by music, then fashion accessories and finally software.

UNIFAB The 2010 report ‘L’impact de la contrefaçon vu par les entreprises en France’¹⁰⁷ was conducted by UniFab (the French association of manufacturing unions) supported by France’s Ministry of Economics. It aimed to evaluate the impact of counterfeiting on French companies. Whilst comprehensive, the study is in fact more of an extensive literature review based on third-party figures and international literature, with an extensive analysis of official government statistics, trade association publications and other available surveys to provide a detailed picture of counterfeiting by region and by industry.

None of the figures or literature quoted was more recent than 2009. The annexed questionnaire and responses from companies, all of which we assume are UniFab members, are not accompanied by a methodology, nor any indication of how many participated, when/how they took part, or who conducted the survey. It synthesises the information to provide a strategy for those affected by counterfeiting, and any proprietary data could not be readily verified or replicated.

2.1.2. GOVERNMENT RESEARCH

EC/CEBR The Centre for Economics and Business Research (CEBR) carried out the ‘Counting Counterfeits: Defining a Method to Collect, Analyse and Compare Data on Counterfeiting and Piracy in the Single Market’¹⁰⁸ study for the European Commission (EC) in 2002, two years after carrying out a similar exercise for GACG. The study contains an extensive review of research methods for measuring counterfeiting and piracy across 19 product groups, and is largely based on consultation with 100 European organisations to make methodological recommendations for each of 19 product groups. Of value to our review is CEBR’s recommendation that research should focus on consumption measures first, in addition to geographic coverage and units of measurement. It opposed a reliance on seizure, arrests or conviction data and suggests seven of the product areas could be covered by a single omnibus survey.

As with its earlier research, CEBR ranks country/product in terms of the likelihood of piracy and provides a formula for extrapolation to calculate the percentage piracy by country/product. Whilst there is no attempt made to directly measure volumes of piracy, using only percentages of a given product group, its conclusion includes strategies for methodologies across product areas and across territories. We note that Rand (2012: 52) describes CEBR’s approach as a ‘design’ rather than ‘estimation’ exercise, but we consider it nonetheless relevant to this review because CEBR evaluates the various alternatives and identifies their respective merits.

107 <http://www.unifab.com/images/rapportunifabavril2010.pdf>

108 http://ec.europa.eu/internal_market/indprop/docs/piracy/final-report-cebr_en.pdf

The study recommends four different approaches: a retailer survey; a consumer survey; a targeted expert survey with a consumer survey; and finally a comprehensive expert survey with a consumer survey. Of value, particularly when compared with Rand's later recommendations, is CEBR's method for estimating counterfeiting and piracy levels in any member state for any product when direct measurements are not available.¹⁰⁹ Its approach allowed for estimation of missing data, meaning partial datasets can be completed with some degree of confidence. CEBR postulates a general model of counterfeiting to be translated with data into a mathematical model using multi-variant regression techniques. Once the model has been estimated mathematically, it can be used to predict robustly the level of counterfeiting in a certain product in a certain country.¹¹⁰

CEBR criticises industry's methodologies for a lack of transparency, with some openly admitting to guesswork and many based on underlying datasets that are either partial or are not collected systematically. Those with underlying data are usually reliant on seizure counts that are notoriously difficult to gross-up to overall estimates of counterfeit activity.¹¹¹ One industry methodology from BSA is however considered "an established methodology for creating estimates for counterfeiting in their sector based upon robust original research. Their methodology appears to have remained consistent over time permitting comparisons between countries and over time."¹¹² But CEBR is critical of a KPMG report on French businesses, noting that "there would be nothing preventing the companies from overstating their losses through counterfeiting for lobbying purposes."¹¹³

CEBR lists the different measures of counterfeiting and piracy (C&P) activity, noting it can be production or consumption based, with the international dimension adding further complexity. It also shows that C&P activity can be measured in three different ways: by volume, by value or by people-based measures. It then lists C&P activity measurement opportunities: material inputs, manufacture, distribution, purchase, use, and disposal. The recommended C&P measurement technique involves the use of three main sources of data, namely: counts of seizures and convictions; sample surveys of counterfeiting activity and mystery shopping; and expert evidence. Despite voicing concerns about relying on seizure counts, it is clear they have a part to play in estimating overall levels of C&P but only as part of a mixed or blended approach.

109 *ibid* p.21

110 *ibid*

111 *ibid* p.25

112 *ibid* p.26

113 *ibid* p.29

There is also a strong emphasis on sample surveys to support CEBR's blended or 'multi-methodological' approach with a particular focus on specific groups of people likely to be involved. CEBR argues that consumer surveys are the best approach to measure counterfeiting and piracy of software, books, films, sound recordings and games. We were impressed with CEBR's proposed 'good practice' for surveys, which bears out much of what we recommend in our Appendix 1.¹¹⁴

EC The Directorate General (DG) for Trade of the European Commission's (EC) 2013 'Report on the protection and enforcement of intellectual property rights in third countries'¹¹⁵ involved a new survey of the protection and enforcement of intellectual property rights (IPRs) outside the EU in 2010, following similar surveys in 2008 and 2006. The principal objective of the survey was to identify third countries in which the state of IPR protection and enforcement caused the greatest level of concern. Serious deficiencies have been identified in some countries. The report is of value to our review because of the acknowledgement that in assessing the 'troubling' levels of infringement, evident from the annual statistics on detentions at EU borders of goods suspected of infringing IP rights, these are exacerbated because they can only show a fraction of all infringements (e.g. they do not include Internet-based infringements, nor infringing goods that have evaded Customs controls). An upward trend is clearly evident from these annual statistics. In 2011, there was an increase of 15% compared to 2010, but such an increase can be largely explained by the growth in the e-commerce market and that such goods tend to be shipped as individual packages by air, express and postal traffic. The genuine value of the more than 114 million detained articles was estimated to be over €1.2 billion.

The report uses a variety of information and data, including the responses received to a questionnaire seeking specific information about the protection and enforcement of the various IP rights, infringements suffered, measures undertaken against them, and reactions from national authorities to requests for enforcement or assistance. Invitations to take part in the survey were sent to rightsholders, associations, EU delegations and embassies of EU member states. More than 400 replies were received, covering about 80 countries. Most of the respondents were businesses (about 60%), while replies were also received from other organisations, especially associations representing rightsholders (e.g. industrial federations or royalty-collecting societies (18%). The vast majority of the respondents (90%) were based in the EU, or represented EU interests in the country concerned.

For this review, we note the results of the survey were only one element on which the Commission services based their analysis and that other sources of input played a significant role in their assessment, including: information received from EU delegations and commercial representations; data on suspect goods detained by Customs at EU borders;¹¹⁶ data on actions

114 CEBR proposes conducting qualitative research first, ensuring the anonymity of respondents is demonstrable to it and then sampling at least 1,000 for a consumer survey. We note that its recommendation for using Omnibus surveys that are cost effective, even if not always very serious, as well as using face-to-face interviews, represent the most flexible method, even though they are more costly. It recognises there is a trade-off between cost and robustness and argues it is better to spend on a bigger sample than on a more expensive method. CEBR acknowledges that fieldwork and tabulation aren't the only costs and that it is worth spending time and money developing and testing the questionnaire.

115 <http://ec.europa.eu/trade/policy/accessing-markets/intellectual-property/enforcement/>

116 http://ec.europa.eu/taxation_customs/resources/documents/customs/customs_controls/counterfeit_piracy/statistic_p.4

against IPR infringement published by various governments; and reports and assessments made by other relevant bodies and organisations (e.g. the OECD). Other sources of information encompassed information made public through the WTO's Trade Policy Reviews as well as assessments carried out by the Directorate General for Trade's Market Access teams, assessments of IPR systems by the Commission services, and other information regarding bilateral trade relations between the EU and third countries. What this report illustrates is the need for multiple approaches to collating data to provide the best estimates of counterfeit and piracy activity in any country or region, rather than relying on any single dataset.

GAO The US Government Accountability Office (GAO) 2010 'Intellectual Property: Observations on Efforts to Quantify the Economic Effects of Counterfeit and Pirated Goods'¹¹⁷ study was of limited value to our review. It contained a useful critique of the most relevant studies and literature on counterfeiting and piracy but did not add anything new to the discussion, apart from affirming in its conclusion that it is next to impossible to provide comprehensive data on IPR infringement levels and that no single approach can be used to quantify impacts.

This study is a literature review accompanied by interviews with mainly US officials to provide a narrative of efforts to estimate the economic impact of piracy. Even though the review made no attempt to directly measure volumes of piracy, it illustrates the dangers of using assumptions to come up with IPR infringement figures. The authors refer¹¹⁸ to their structured interviews with subject-matter experts to obtain their views in an effort to quantify the economic impacts of counterfeiting and piracy and methodological approaches, the range of impacts of counterfeits and piracy, and insights on counterfeiting activities and markets. It is difficult to see how such robust statements can be based on experts' views.

The report recognised the limitations of a survey-based approach, identifying its advantages in terms of taking account of consumer behaviour but acknowledging the lack of intensity and the problem of identifying bias. Its conclusion reaffirmed the view that a lack of data hinders efforts to quantify impacts of counterfeiting and piracy. It argues that assumptions are used to compensate for lack of data and that widely cited estimates by US agencies cannot be substantiated.

HARGREAVES REVIEW Given the review's call for improving the quality of evidence used to support claims of levels of IPR infringement, we spent time examining the 'Supporting Document CC Data on the Prevalence and Impact of Piracy and Counterfeiting'.¹¹⁹ The review voiced concern about the methodologies employed to justify claimed losses. Apart from the substitution argument, the underlying argument was that the methodologies employed in arriving at many of the estimates have simply not been (sufficiently, if at all) explained.

We have taken account of some of the concerns voiced in this report, especially where it was noted that the UK levels of piracy presented were almost double that of the other nations, and ten times French figures, yet according to the authors the underlying data was not available or verifiable. Whilst they accepted they could control for the substitution-rate problem in the film and TV sectors, they were highly critical of the software data used by TERA, noting no empirical

117 <http://www.gao.gov/new.items/d10423.pdf>

118 *ibid* p. 30

119 <http://www.ipo.gov.uk/ipreview/ipreview-documents.htm> and <http://www.ipo.gov.uk/ipreview-doc-ff.pdf>

evidence or calculation was presented to support the assertions of quantity or value, and that there is no indication of whether this is due to physical or online infringement. The summary conclusion was that TERA could only present verifiable evidence for between 34% and 37% of the UK piracy losses claimed, with the biggest claimed losses for software considered wholly unverifiable. We raised these concerns with the source of TERA's software data, BSA, and its rebuttal of this criticism is contained within the relevant parts of Appendices 3 and 4.

INTERPOL We examined the role of Interpol in measuring IPR infringement, given the value it places on sharing information via databases.¹²⁰ As is the case in the various IP crime reports, Interpol makes much of the involvement of organised crime in IP crime, using 'trafficking in illicit goods' as the generic term. This term includes counterfeiting (trademark infringements), piracy (copyright infringements), smuggling of legitimate products and tax evasion.¹²¹ The cornerstone of Interpol's approach to measuring IPR infringement is the information available from its dedicated 'Database on International Intellectual Property Crime' (DIIP), which centralises information on trafficking illicit goods to assist investigators with transnational cases. The database was developed as a depository for private-sector industry information on transnational and organised criminal networks involved in trafficking illicit goods. It neither competes with established public-sector databases on illicit trade, nor duplicates existing illicit trade data-collection mechanisms. Interpol does not disclose specific information contained in the DIIP, although participating industries receive feedback in the form of referrals if the same transnational organised criminals are targeting two or more industries. Bearing in mind comments from certain trade bodies (see Appendices 4 and 5) about the perceived lack of data from law enforcement agencies, we must question whether the criteria for such referrals could be simplified. The fact that Interpol uses data from industry for its database also chimes with one of our recommendations for further developing industry and government agency cooperation in measuring, as well as contesting, IPR infringement.

IPO 'The Intellectual Property (IP) Crime Report for 2011-12'¹²² contained a number of important statements that inform this report and its gestation and feature a number of factual reports on initiatives to tackle IP crime in the UK. It defines IP crime as counterfeiting and piracy¹²³ and summarises the challenge to the authors of this report: "enforcement of IP rights is a complex matter, with so many products and services involved" and "assessing the scale of IP crime is difficult. There are various perspectives, studies and data available."¹²⁴

120 <http://www.interpol.int/Crime-areas/Trafficking-in-illicit-goods-and-counterfeiting/Databases>

121 <http://www.interpol.int/Crime-areas/Trafficking-in-illicit-goods-and-counterfeiting/Trafficking-in-illicit-goods-and-counterfeiting>

122 <http://www.ipc.gov.uk/ipcreport11.pdf> and <http://www.ipc.gov.uk/ipcreport10.pdf>

123 *ibid* p.4

124 *ibid* p.2

The report identifies the issue of physical IP crime impacting various goods, from pharmaceuticals to clothing, machinery and automotive parts, personal care items and electrical goods. It comments on the difficulties in quantifying the scale of IP crime and concludes that despite the existence of various studies, there is “as yet no single measurement.”¹²⁵ The report also points to the 2012 Rand Report aimed at devising solutions to the problem of measurement of IP crime and infringement. It notes that the European Observatory at the OHIM was also conducting a project assessing the scale of IP crime. The purpose of this project is therefore explicitly laid out as to “evaluate current methods used to estimate IP infringement and to recommend suitable methodologies and ideally a single one that can be applied across the full gamut of the main intellectual property rights (IPR).”¹²⁶

IPCO The 2012 report from the Italian Patent and Counterfeit Office (IPCO), ‘Counterfeiting in Figures: Italy’s fight against counterfeiting, 2008-2011’,¹²⁷ proposed a new methodology in this study. It was conducted in July 2012 by IPerico (integrated database on anti-counterfeiting activities) in conjunction with Nexen Business Consultants. The focus of the study was on improving the method for estimating the value of seized goods, rather than our focus, namely the quantity of infringing goods, and thus has little significance for our study. The authors clearly state that “the information and analyses contained in this document... may not therefore be considered a direct measurement of the phenomenon with a certifiable statistical value.” The report flagged the variability of data for 2007-2012 for certain products, with very discernable fluctuations in seizures for certain categories. This supports our findings elsewhere about the inadvisability of relying on seizure data to support estimates of IPR infringement levels.

NBAC Its 2012 ‘Surveys on Consumers’ Awareness and Attitudes in Relation to Counterfeiting in Hungary’¹²⁸ involved an annual consumer survey of 1,000 people but no further detail was offered by way of its underlying methodology. Also, its objective was to measure consumer attitudes to piracy rather than any kind of attempt to directly measure volumes of piracy.

OECD Given the high regard shown by other reviewers for the OECD’s work in this field, we devoted considerable time to reviewing the two relevant reports it has produced, especially its 2008 ‘The Economic Impact of Counterfeiting and Piracy’.¹²⁹ Alongside the CEBR 2002 study, this report was beneficial to better understand the challenges of developing a viable, robust and cost-effective methodology for measuring IPR Infringement. The report was part of a three-phase project, investigating the economic impact of counterfeiting and piracy and estimating the magnitude of pirated goods in international trade. It constituted the most comprehensive research on the impact of counterfeiting and piracy, covering a variety of IPR infringements including copyright and design rights, even though some findings must be considered out of date because the data used is from 2005. The methodology used to arrive at the headline figure of \$200 billion, which only applied to physical infringement, was based around surveys of Customs authorities’ seizures of counterfeiting and pirated goods.¹³⁰ The data collected did not extend to digital piracy nor to domestic counterfeiting or piracy within a single territory.

125 *ibid* p.6

126 *ibid* p.7

127 <http://www.uibm.gov.it/iperico/home/iperico2012EN.pdf>

128 www.wipo.int/edocs/mdocs/enforcement/en/wipo.../wipo_ace_8_4.doc

129 http://www.keepeek.com/Digital-Asset-Management/oecd/trade/the-economic-impact-of-counterfeiting-and-piracy_9789264045521-en#page1 and <http://www.oecd.org/industry/ind/38707619.pdf> (Executive Summary)

130 Notably the research itself clearly spells out the shortcomings (in particular on p.59) and the limitations with respect to scope and magnitude (p.60).

The report contained a number of recommendations we consider useful for developing a new methodology. The OECD suggested insights could be gained through an examination of various types of information, including data on enforcement and information developed through surveys of governments, Customs authorities and consumer surveys.¹³¹ It acknowledges the limitations of this approach, such as the low level of detection by Customs authorities and the subjective element of consumer surveys. In analysing industries' efforts to assess counterfeiting and piracy levels, and in describing individual sector approaches, it concludes that more transparency is required to enable the assessment of the robustness of the data presented.¹³²

The OECD notes the exceptional position of the copyright-based sectors: "The software, music and film industries have invested considerable time and effort in developing frameworks for evaluating the magnitude, scope and effects of piracy, using surveys, investigative work and inferential analyses as bases. Greater transparency and debate is needed on their methodologies".¹³³ It also acknowledges that "in many cases, assessments rely excessively on fragmentary and anecdotal information; where data are lacking, unsubstantiated opinions are often treated as facts." To develop a suitable methodology, it is therefore desirable that any future research ensures fragmentary and anecdotal information is treated as such, and that any data resulting from such sources is accompanied by clear and transparent explanations about the methodology applied.

The OECD's proposed methodology comprised a multiple approach involving a country/economy survey, an industry questionnaire and customs survey. The report concluded that, whilst more should be done to measure the extent of piracy, each industry is unique and research techniques need to be tailored to each sector. No rigorous quantitative analysis had been done to measure over-arching magnitudes, and the overall degree to which products were being counterfeited and pirated was unknown. Most importantly, there were no "methodologies that could be employed to develop an acceptable overall estimate."¹³⁴ The authors highlighted that work carried out in individual sectors has yielded a clearer picture for the sectors concerned but that a "refinement of the measurement techniques used and expansion of efforts into other product areas could eventually help to develop a more complete picture of the overall situation."¹³⁵ The authors recommend sourcing additional information from standardised surveys of consumers, rightsholders and governments along with targeted sampling and economic experiments to examine consumer motivations for purchasing counterfeit goods.¹³⁶

The other OECD report we reviewed was its 2009 'Tangible Products World' study, which employed the same approach as the 2008 report using data apportioned on a country-by-country basis and then, sector-by-sector. Its objective was to update the 2008 OECD reports and concludes that piracy is generally increasing. As with the 2008 report, there is no attempt made to measure the volumes; instead, it measures proportions and values of trade.

131 This appears to be what the EC carried out in its 2013 study on IPR infringement in 'third' countries.

132 http://www.keepeek.com/Digital-Asset-Management/oecd/trade/the-economic-impact-of-counterfeiting-and-piracy_9789264045521-en#page1 p.77

133 http://www.keepeek.com/Digital-Asset-Management/oecd/trade/the-economic-impact-of-counterfeiting-and-piracy_9789264045521-en#page1 p.78

134 OECD 2008 p.73

135 *ibid*

136 http://www.keepeek.com/Digital-Asset-Management/oecd/trade/the-economic-impact-of-counterfeiting-and-piracy_9789264045521-en#page1 Chapter 6 'Improving Information & Analysis' [pp.173-180] provides a full summary of potential methodologies.

OHIM We examined the 2010 study conducted by OHIM, 'Results of Eurobarometer Studies in the Area of Intellectual Property Rights Presentation at the First Joint Plenary Meeting of the EU Observatory on Counterfeiting and Piracy (DG Market)'.¹³⁷ This sought to assess the awareness, perception and impacts of Internal Market Policies in the area of counterfeiting and piracy. The researchers undertook both a quantitative (a representative survey based on 27,000 telephone interviews) and qualitative (80 focus group discussions) study. However, the research focused entirely on the demand side and did not add to our findings.

The OHIM's 2013 'European Observatory on Infringements of Intellectual Property Rights - Work Programme'¹³⁸ openly acknowledged the problems involved with systematically estimating and analysing the scope and scale of counterfeiting and piracy in the EU and argued that a significant problem lay in the lack of knowledge of the precise scope, scale and impact of IPR infringements. It noted that many studies suffered because of a lack of agreed methodology for collecting and analysing data on counterfeiting and piracy. Furthermore, studies had often been 'snapshots' of limited phases of time, employing different approaches. Additionally, due to the secretive nature of counterfeiting, obtaining comprehensive data for all product sectors had been virtually impossible. This succinct summation of the problem echoes what we have seen elsewhere. The challenges for measuring IPR infringement are not just the absence of an agreed methodology but also the time frame of the studies and dealing with the inherent secretive and non-transparent nature of counterfeiting.

OHIM noted that the European Commission (DG Market) commissioned Rand in 2010 to provide a methodology and a report on the scope, scale and impact of counterfeiting and piracy in the EU. This was to be delivered in summer 2012 and the EC was to make use of available sources and methods, including the Rand methodology, to bring together functional data to help authorities understand the problems and trends associated with IPR infringements. We discuss the Rand report below.

RAND The 2012 report from Rand Corporation entitled 'Measuring IPR Infringements in the Internal Market - Development of a New Approach to Estimating the Impact of Infringements on Sales' was widely anticipated by the EC, OHIM and WIPO. Rand's Stijn Hoorens and Srikanth Kadiyala delivered their 'New Methodology for Measuring IPR Infringements in the Internal Market - towards a feasible, robust and objective system for monitoring trends in IPR infringements' in Alicante on 27th September 2012.¹³⁹ Their presentation¹⁴⁰ identified five approaches to quantification along with their relative merits and weaknesses: i) enforcement information: it was unclear if measuring enforcement or infringement quantities; ii) consumer survey - these were straightforward but expensive and with significant measurement issues including under-reporting and deception; iii) producer or distributor surveys - these were only relevant to large-scale infringements in stable markets; iv) sampling/mystery shopping - this was

137 http://www.oepm.es/cs/OEPMSite/contenidos/ponen/ObservatoryPiracy/Awareness_Perception_Impacts_Internal_Market_Policies.pdf

138 https://oami.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/resources/about/work_programme_2013_en.pdf

139 http://ec.europa.eu/internal_market/iprenforcement/observatory/ and http://ec.europa.eu/internal_market/iprenforcement/docs/ipr_infringement-report_en.pdf

140 http://oami.europa.eu/ows/rw/resource/documents/observatory/meetings/meeting_27-09-2012/rand%20alicante%2027-09

suitable for certain products but was expensive; and v) economic models¹⁴¹ - predictive and data reliant/based on assumptions.

Within its study, Rand proposed a 'market-based approach' based around the economic theory of the firm to quantify data. This market-based approach used "unexpected deviations from sales forecasts to estimate IPR infringements." The model devised by Rand relied on forecasts from firms at appropriate times to then calculate the difference between the real and forecast quantities sold, looking for any 'observable' factors¹⁴² to explain the difference, before arriving at the 'unexplained' difference. This 'unexplained' difference then provided a benchmark from which to calculate IPR infringements after a second-stage correlation with any known factors¹⁴³ that might 'drive' or influence IPR, leading to a regression analysis of the IPR infringements. The authors recognised the limits of their proposed model, including the 'high-level' nature of the second-stage variables, dependency on "quality and availability of projections" and reliability of the benchmarks. In addition, they noted that not all firms forecast in the same way and that much of the forecast data is commercially sensitive (an issue that occurs elsewhere in terms of finding industry-wide solutions) as well as time consuming to assemble.¹⁴⁴

Despite aiming to build on OECD's earlier suggestions to improve IPR infringement measurement, it is hard to envisage the Rand model methodology meeting industry expectations and needs. The core problem we foresee in this model is that it ignores the unpredictable nature of most media industry products and the fact that most industry forecasts already take into account (subject to many other variables¹⁴⁵) the impact of piracy. Even if the Rand approach proved to be effective and were adopted, it would be limited to measuring drops in sales only, without taking account of the impact of piracy on the value of legal sales. There seems to be no way for the model to recognise the variances in different product life cycles, not least in rapid growth markets requiring high levels of investment.

Given the need to measure counterfeiting of physical goods, with many being traded online, and recognising that OECD's 2008 recommendations need to be developed, the data set required to calculate infringement needs to be refined and expanded. Not least, it should include data from the three sources – consumers, the industry and government itself. Elsewhere, we have identified the need for multiple approaches to capture levels of infringement, and we also argue for a mixed approach to assessing infringements such as online copyright infringement and patent infringement. Of all the IPR areas under review, the offline counterfeiting world appears the most contested, and the most challenging to estimate. We recommend a hybrid data set is

141 The use of these was one of the recommendations made by OECD to provide additional sources of information for measuring IPR infringement levels.

142 At stage one there is a complex list of variables include technological base, GDP changes and competition issues.

143 This second stage includes even more complex variables in the entire model, encompassing factors like 'Customs burden', 'rule of law', 'corruption' and 'government effectiveness' as well as tourism.

144 This conflicts with WIPO's Advisory Committee on Enforcement stated desire to see a methodology that must be "pragmatic and not give rise to additional administrative burden" in the December 2011 paper 'Work on counterfeiting and piracy concerning the development of a methodology to measure the socio-economic impact of counterfeiting and piracy' www.wipo.int/edocs/mdocs/enforcement/en/wipo_ace.../wipo_ace_7_6.doc

145 Not least macro and market environment issues, including exchange rates as well as competition and marketing costs along with supply chain issues and even force majeure. There is also an implied substitution of all products, which in fact can vary according to the brand, or the media product.

employed, using data from government (seizures, court cases, penalties and criminal proceeds recoveries) along with industry (take-down notices, results of investigations,¹⁴⁶ assessment of industry's own counterfeiting measurement tools) and finally from consumers (through frequent and consistent surveying using the principles advocated in our Recommendations). The latter should go well beyond what, say, Microsoft was attempting in 2006, by employing both a quantitative and qualitative approach using appropriate quota and random sampling. The benefit of this tri-partite approach is to ensure both industry and government are fully engaged in the process of measurement, and to avoid an onerous burden of responsibility being placed on either side. It also has a greater chance of succeeding in this most difficult area.

SABIP The 2010 'Changing Attitudes and Behaviour in the 'Non-Internet' Digital World and their Implications for Intellectual Property'¹⁴⁷ report conducted for SABIP by BOP Consulting, focused on offline behaviour and identified significant differences between offline and online infringement. The report usefully examined the different methodologies employed within academic and industry research, highlighting this as the chief reason for the polarised debate. It identifies 'grey' literature as being the most robust and reliable to assess offline copyright infringement.¹⁴⁸ Grey literature, mainly commissioned by industry and government, primarily takes the form of surveys, backed up with other usage figures where available. The main focus, it is argued, within such literature is on consumer behaviour, together with the attitudes that consumers articulate in relation to these behaviours. In contrast, academic studies focus more on trying to identify the underlying, ultimate causes of both attitudes and behaviours. The report contains a call for an "urgent need to draw together the insights from these two quite different strands in an integrated approach."

The report is essentially a literature review covering a number of studies, some of which are covered within our own review, including 'Digital and Physical Piracy in GB' (Ipsos MORI 2007)¹⁴⁹, 'Music Experience and Behaviour in Young People 2009'¹⁵⁰, Entertainment Media Research/Wiggin's 2008 'Digital Entertainment Survey', Ipsos MORI/BPI's 2006 'Research into CD Piracy and CRIA Consumer Study of Radio Music.' Given the age of the sources and the research, the findings are of limited value here, but the observation about the different values and merits of grey literature and academic studies were useful to us, especially when benchmarking the literature within our review.

US ITC The International Trade Commission's 2010 study 'China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy',¹⁵¹ described various forms of IPR infringements in China. The scope of the report is wide, covering copyright, trademark, and patent infringement. However, it did not come up with any comprehensive new data. The authors argue the starting point for quantitative analysis of IPR infringement should be the economic effects of strong IP protections. Their description of piracy, whilst interesting, is anecdotal in nature and, as such, irrelevant for the

146 As suggested by Fact, they share market intelligence with the IPO already.

147 <http://www.ipo.gov.uk/pro-ipresearch/ipresearch-policy/ipresearch-policy-infringe.htm>

148 *ibid* p.3

149 Noted studies cannot be compared because of timing differences and different sampling techniques.

150 Raises issues on methodology – firstly that there could be bias as it will favour those with greater ICT knowledge and, secondly, that it is "not clear whether the survey has been controlled – either in the sampling or in the weighting of the results – to ensure it is representative" (p.22).

151 <http://www.usitc.gov/publications/332/pub4199.pdf>

assessment of the level of IP infringement. There were some elements of the report worth considering here, notably the comments from one industry representative who estimates that a large share (80%) of music piracy in China was digital and that demand for unauthorised physical copies was being displaced by the availability of pirated music online. Similarly, the movie industry reported the majority of its enforcement efforts in China were now focused on websites that distribute pirated content.

US CC The US's Chamber of Commerce commissioned the Gallup Organization in 2007 to carry out a nationwide survey, 'Counterfeiting in the United States: Consumer Behaviours and Attitudes'.¹⁵² The study of US consumer attitudes and behaviours related to counterfeiting and was a follow-up to studies completed in 2005 and 2006. It tried to cover the extent of counterfeit purchases in the previous 12 months along with information on people who buy counterfeit items. Apart from some figures on estimated revenues lost from counterfeiting and tax revenues lost by the US government from counterfeit goods, the survey's focus was very much on consumer attitudes and perceptions to counterfeiting, the laws to curb counterfeiting and the anti-counterfeiting messaging. The findings were interview based and subject to the same concerns as any consumer-facing research. The methodology for obtaining the data was described, although the nature of the questions was not. It is an illustration of how methodologies based on consumer surveys can play a considerable role in determining data for IPR infringement levels. The findings were transparent and comparable, building on the benchmark in 2005, but overall this was about consumer attitudes rather than scales of counterfeiting and piracy.

WIPO In 2011, WIPO's Advisory Committee on Enforcement (ACE) announced its 'Work on counterfeiting and piracy concerning the development of a methodology to measure the socio-economic impact of counterfeiting and piracy'.¹⁵³ This set out the general terms of reference for the 2012 Rand study, including three criteria relevant to our review: identifying and comparing existing studies and methodologies concerning counterfeiting and piracy from different sectors and public authorities; proposing a methodology to estimate the size of counterfeiting and piracy markets for future application; testing the methodology through quantification of the scope of counterfeiting and piracy for particular sectors.¹⁵⁴ As seen within other government literature in this field, ACE acknowledges the absence of consensus on methodology¹⁵⁵ as well as pointing to the "chronic" lack of available data that would continue unless stakeholders were willing to engage.¹⁵⁶ It also argues for a credible methodology but one that has to be "pragmatic and not give rise to additional administrative burden."¹⁵⁷ This burden is exacerbated by the reluctance of industry to disclose sensitive commercial data because of concerns about "revealing the scale of the problem to investors and or competitors."¹⁵⁸ This note of caution bears out comments made by Rand in its 2012 Alicante presentation, and its report, as well as reactions from both commentators and trade bodies. In fact, it highlights the fundamental issue with wrestling with large-scale counterfeiting and piracy on the level proposed by WIPO and the

152 <http://www.theglobalipcenter.com/sites/default/files/reports/documents/uschambergallupconsumerperceptions.pdf> <http://dev.theglobalipcenter.com/wp-content/uploads/2013/01/uschambergallupconsumerperceptions.pdf>

153 www.wipo.int/edocs/mdocs/enforcement/en/wipo_ace.../wipo_ace_7_6.doc

154 *ibid* p.2

155 *ibid*

156 *ibid*

157 *ibid* p.4

158 *ibid* p.3

OHIM. IPR-dependent industries, whilst constantly pressuring governments to improve enforcement activities, are, it seems, not always able or willing to fully cooperate with certain proposed methods to improve the ways in which such enforcement takes place.

WIPO also carried out various surveys between 2007 and 2012, including the 2012 ‘Consumer Attitudes on Counterfeiting & Piracy and Awareness Raising’¹⁵⁹ and the 2007 study conducted by Gallup, ‘Global Consumer Awareness, Attitudes, and Opinions on Counterfeiting and Piracy.’¹⁶⁰ These were the largest surveys ever conducted to understand consumer attitudes and behaviours towards counterfeiting and piracy, involving 64,579 interviews across 51 countries over a period of 18 months. The methodology involved national phone or in-home surveys in almost all countries, and the total sample was intended to represent the views of consumers whose economies accounted for 64% of the world’s GDP. Whilst not entirely relevant for our immediate purposes, its main conclusion confirmed that while there are patterns that exist globally in counterfeiting and piracy, each market is different and requires a tailored strategy. What must be asked now is why the surveys were not continued and why they were not held more frequently.

2.1.3. ACADEMIC RESEARCH

BERLIN SCHOOL OF ECONOMICS Its 2006 study, ‘Explaining Counterfeit Purchases: A Review and Preview’¹⁶¹, involved an initial focus group based survey and a second survey using in-depth interviews. The two groups had a convenience sample of social sciences students, between the ages of 20 and 40, from a German university. The study examined consumer motivation and was not relevant for our purposes. Also, in common with many academic studies, its survey base was too small to be representative and to enable any meaningful conclusions, not least about methodology.

COUNTER PROJECT This 2010 report by Penz & Hofmann was part of the 2010 FP7 funded ‘COUNTER’ project, carried out by a consortium of EU universities, including Vienna’s University of Economics and Business Administration and others from the UK, Sweden, Italy and Slovenia. This part of the project involved a desktop review of anti-counterfeiting initiatives aimed at answering why counterfeiting rates differ “over countries”. Its list of 677 initiatives and organisations included 481 national, 48 European and 148 international entities. The entities listed included 211 general associations, 20 film associations, 69 music associations, 44 collecting societies (all what we describe as trade bodies), 60 individual companies, 58 companies protecting IPR (including law firms), 67 consumer protection bodies and 62 government bodies.¹⁶² The most significant outcome from the WU D29 report¹⁶³ was highlighting the different levels of counterfeiting and piracy found in Eastern (high levels) and Western (low levels) European countries. However, it concedes that it only interviewed 55 people from 46 of the 677 identified entities, which made it impossible for us to consider this to be robust research.

159 http://www.wipo.int/export/sites/www/dcea/en/meetings/2012/lithuania/WIPO_Subregional_Conference_on_the_Enforcement_of_IPR/files/Consumer_Attitudes.pdf

160 www.wipo.int/export/sites/www/enforcement/en/global_congress/docs/christopher_stewart.ppt

161 <http://www.amsreview.org/articles/eisend12-2006.pdf>

162 Penz E. & Hofmann E. (2010) Counter: Counterfeiting and Piracy Research - Deliverable 28: Review of Anti-Counterfeiting Initiatives and Organisations in Europe, pp.14-15

163 Penz E. & Hofmann E. (2010) Counter: Counterfeiting and Piracy Research - Deliverable D29: Report on Current Best Practice and Recommendations.

SCHNEIDER & VRINS Their chapter on ‘The magnitude and the economic and social consequences of counterfeiting and piracy’ was published in their 2012 book on IPR enforcement,¹⁶⁴ and is an extensive review that includes a careful delineation of ‘counterfeiting’ and ‘piracy’. They note that the two terms apply not only to flagrant infringements, but include infringements of intellectual property rights in the broad sense of the term, pointing also to the evident dichotomy between infringements of industrial property rights (‘counterfeiting’) and those of literary or artistic property (‘piracy’). The authors highlight other additions to the vocabulary of IPR infringements such as “parallel imported (‘grey’) goods, factory over-runs and look-alikes (parasitic copies).”

The authors refer to the difficulties of the scale of the counterfeiting and piracy problem, as well as in measuring it, and note the challenges of calculating the size of a problem involving clandestine activities¹⁶⁵ as well as the global nature of the problem.¹⁶⁶ Other difficulties include the information available from Customs about the enforcement of intellectual property rights.¹⁶⁷

On the question of Customs seizures, they argue one of the main advantages of such annual reports is their transparency and neutrality, because they are provided by Customs and not by rightsholders. However, as rightsholders correctly pointed out, Customs cannot check everything, meaning only a tiny percentage of all the goods crossing the EU’s external borders are subject to physical Customs checks, and that the statistics can therefore only show the ‘tip of the iceberg’. They also note that Customs seizure figures do not take account of counterfeit goods manufactured and distributed within the EU. Their argument for continuing to use these figures is that they “reveal trends, thus constituting a valuable source of information for rightsholders and public authorities alike.”¹⁶⁸

WALL AND LARGE The 2010 article ‘Jailhouse Frocks’¹⁶⁹ debated the public interest in “policing counterfeit luxury fashion goods.”¹⁷⁰ Although the study was criticised by the ACG and brand owners,¹⁷¹ it is a useful collection of data sources to estimate the scales of counterfeiting. It cites Blackney (2009),¹⁷² which estimated 20% of European clothing and shoes were counterfeit, the IACC (2005),¹⁷³ for the estimate of counterfeit goods constituting 5-7% of world trade, and the OECD 2008 report, where the value of counterfeit and pirated good was

164 ‘Enforcement of Intellectual Property Rights through Border Measures’, Second Edition Oxford University Press.

165 *ibid* p.7

166 *ibid* p 10

167 *ibid* p.11

168 *ibid*

169 Wall, D.S. and Large, J. (2010) ‘Jailhouse Frocks: Locating the public interest in policing counterfeit luxury fashion goods’, *British Journal of Criminology*, 50(6) Working Paper.

170 *ibid* p.1

171 Letter from ACG and AIM to The Sunday Telegraph 31 August 2010 in response to Telegraph’s August 29 2010 article ‘It’s Ok to buy fake’, which quoted extensively from Wall and Large’s study.

172 Blakeney, M. (2009) ‘International Proposals for the Criminal Enforcement of Intellectual Property Rights: International Concern with Counterfeiting and Piracy’, Queen Mary School of Law Legal Studies Research Paper No. 29/2009, <http://ssrn.com/abstract=1476964>

173 IACC (2005) The negative consequences of international intellectual property theft: economic harm, threats to the public health and safety, and links to organized crime and terrorist organisations, International Anti Counterfeiting Coalition <http://counterfeiting.unicri.it/docs/International%20AntiCounterfeiting%20Coalition.White%20Paper.pdf>

calculated to be more than \$200 billion.¹⁷⁴ For our review, the most interesting statistic came from the Rogers Review (2007)¹⁷⁵, which assessed the 2006 criminal gain from IP crime as £1.3 billion, with almost 75% flowing to organised crime. Wall and Large's report indicated, irrespective of different estimates and methodologies, that trade in counterfeiting was rising inexorably each year, almost certainly the result of digital networked technologies and improvements in industrial capacity enabling counterfeit goods to be traded globally, with globalisation broadening the potential market for such wares.¹⁷⁶ Of value to our review was the sense that understanding the trend may be as important as understanding the scale of the infringement.

2.2. ONLINE COPYRIGHT INFRINGEMENT

2.2.1. INDUSTRY RESEARCH

2.2.1.1 Software

BSA We reviewed the 2011 Business Software Alliance's (BSA) 'Shadow Market'¹⁷⁷ and its 2012 'Global Software Piracy Study, Ninth Edition',¹⁷⁸ because of criticisms levelled at its data within the Hargreaves Review. Despite those criticisms, we considered this to be an impressive piece of peer-reviewed research, with an approach to measuring software piracy levels, both in value and volume terms, which had been well thought through. It quantified volume and value of unlicensed software installed on personal computers in a given year to measure, understand, and evaluate global software piracy.¹⁷⁹ The methodology was well documented and transparent with respect to the survey approach and the calculations, although the tracking technology was less so, probably due to the proprietary and competition-sensitive nature of International Data Corporation's (IDC) business solution. This by its very nature will make it difficult to replicate the results.

The BSA approach had the potential to be extended across other IPRs and was one of the few approaches we saw that combined data-tracking methodology with survey-based research to provide a global picture over time, rather than providing a territorial snapshot. However, we had to question certain aspects of the survey base, the survey period, its global nature, the rotational nature of the survey and the application of currency conversions. There was no segmentation apparent or breakdown of user information, nor information on which age groups were involved in either tracking or surveying. We also question the time period chosen to conduct the research. One of the strengths of the BSA's research was that it did not avoid highlighting its weaknesses and the difficulties in achieving the most accurate picture of the software piracy landscape. The authors freely acknowledged that piracy studies examine illegal or unreported behaviour, making it difficult to obtain perfect estimates and that any methodology introduces a margin of error and the key is to keep that error within an acceptable margin.¹⁸⁰

174 Whilst recognising the sum involved is substantial Wall and Large note the methodology used to arrive at these figures have been challenged by many authors.

175 Rogers, P. (2007) National enforcement priorities for local authority regulatory services (Rogers Review), March, London: Cabinet Office http://archive.cabinetoffice.gov.uk/rogersreview/upload/assets/rogersreview/rogers_review_2007.pdf

176 Wall, D.S. and Large, J. (2010) 'Jailhouse Frocks: Locating the public interest in policing counterfeit luxury fashion goods', British Journal of Criminology, 50(6) Working Paper p.4.

177 http://portal.bsa.org/globalpiracy2011/downloads/study_pdf/2011_BSA_Piracy_Study_--Standard.pdf

178 <http://www.bsa.org/country/NewsandEvents/NewsArchives/global/05112010-globalpiracystudy.aspx>

179 *ibid* p.12

180 *ibid*

2.2.1.2 Film, TV and Video

BVA We reviewed the 2011 British Video Association's (BVA) 'GB Copyright Theft in Film, TV and Video'.¹⁸¹ Carried out by Ipsos Media CT, this is the latest version of a study held in high regard by the content industries. BVA provided its latest data at the time we met them, although the data did not seem publicly available, and the next round of its survey results was not yet ready or publicly available at the time of this review.

The research we saw was quite typical of industry surveys, with very little information on the actual methodology and only two minor references to the objectives of the research. The sample size was large enough to be representative of the UK population, although no ceiling for age groups was given. The 2,606 anonymous in-street interviews with Great Britain-resident adults aged 15 and over were conducted between the 14th November and 10th December 2011. A key positive aspect of BVA's methodology is consistent repetition of the research (which started in 2008) although we will argue that even carrying this out annually creates problems for understanding the nature of IPR infringement across the whole of a year. Increased frequency would appear to be desirable to improve the methodology, but it is clear that this method enables BVA to at least estimate trends in levels of IPR infringement.

BVA also let us see the executive summary of its 2012 'Piracy SIM – An agent-based model of piracy behaviour', which is a collaborative project funded and commissioned by BVA and MPAA using third-party data, and executed by Sandtable. It was a projection/forecasting model based on third-party research data and tested in workshops to determine scenarios. Sandtable developed an "agent-based simulation of film piracy" based on a representative set of attributes and attitudes related to the consumption of legal and illegal film content. Because the underlying methodology used for the model was not presented (the model is Sandtable's proprietary solution) and there were no minutes available from the workshop, the data from the use of this methodology have to be considered unverifiable and/or not replicable. This may present a viable option for internal processes within an industry or trade body but, as a methodology for measuring infringement across IPR, it is too fragile and easy to manipulate to be employed as a viable methodology for our purposes. The very nature of this projection approach, using modelling and simulation, is based on hypothesis, experimentation, simplification and assumptions, as Sandtable itself acknowledges in the document we saw.

MPAA In our dealings with the Motion Picture Association (MPAA), we came across the Envisional 2011 reports on a 'Comprehensive study on the total amount of Internet traffic that infringes on copyright'¹⁸² and 'An Estimate of Infringing Use of the Internet' commissioned by NBC-Universal.¹⁸³ The latter was of great interest for this review, especially with regards to methods for measuring online copyright infringement, as it provided a multi-dimensional approach to analysis and was the first comprehensive study we saw utilising observational data and looking at different usages of digital entertainment based on Internet bandwidth usage. It was at the time the only paper accompanied by an extensive outline of the methodology used, and it also covered other methods and studies of data tracking. It provided a clear analysis of those, providing constructive criticism and highlighting weaknesses, even in the association's own proprietary approach and conclusions. The methodology was very clearly defined and all

181 www.bva.org.uk/.../IPSOS_GB_ImpactCopyrightTheft-Nov_2011_1.pdf

182 <http://www.envisional.com/index.html>

183 http://documents.envisional.com/docs/Envisional-Internet_Usage-Jan2011.pdf and <http://www.mpaa.org/policy/industry>

estimates, assumptions and limitations were highlighted. It was self-critical and used methods from other research to provide an analysis of the best approaches to get a reliable data set. Given the quality of the methodology and approach, it is hard to argue with Envisional's own conclusion that "even given the limitations of the data available, Envisional believes that the estimates produced in this report are more accurate than any that have been published before." The report, according to its authors, allowed "for the first time, the organisations which can help shape the ways in which users interact and obtain content to understand how much of the Internet is devoted to the distribution and consumption of infringing material."

2.2.1.3. Music

BLOOM The 2013 'Bloom FM Survey' was published during our review and was in our view an illustration of the problems of relying only on surveys to estimate levels of online piracy. No attempt appeared to have been made to qualify or explain the methodology involved, other than the statement from Bloom.fm CEO Oleg Fomenko "that the survey involved a 'representative sample' of the British population, not just Bloom.fm users."¹⁸⁴ It also shared its data with Music Ally, which took issue with the headline findings of 49% piracy rates by arguing they are "much higher than other recent estimates for the scale of UK music filesharing." Music Ally noted that the earlier BPI claim of 7 million Brits using at least one illegal service a month represented 11.2% of the entire UK population, or around 14% of adults.¹⁸⁵

BPI We were unable to secure full access to the BPI's ad-hoc commissioned research, which is carried out by various firms including Harris Interactive and UKCom Nielsen. There are many publications and articles that rely on data generated by such research, not least the BPI's 2010¹⁸⁶ and 2013¹⁸⁷ 'Digital Music Nation' reports. We cannot provide meaningful commentary on the methodologies employed by the BPI (and IFPI and the RIAA) without access to the actual research and the methods used to estimate levels of IPR infringement. We must repeat concerns expressed earlier in the counterfeiting and piracy sections of this Appendix about the issue of commercial sensitivity within industries as a barrier to cooperation with government agencies when measuring IPR infringement and especially piracy, which we feel has prevented us from gaining access to this essential information. This is all the more surprising given the otherwise high levels of cooperation and willingness of the BPI (as well as the IFPI and RIAA) to engage with us in discussing how to improve methodologies for measuring IPR infringement. In the absence of access to the BPI's proprietary research, we decided to review its response to the Hargreaves Review.¹⁸⁸

This response was notable for its approach and a rounded argument for the UK music industry. It involved many experts and a lot of supporting evidence was provided. However, the stats and figures, whilst mostly well sourced and cited, only provide links to the actual underlying source. Harris Interactive Research is cited often to provide supporting figures but the source document was not available, although there was a note providing a brief overview of which methodology had been used. The use of third-party facts and figures, which are not immediately verifiable,

184 <http://musically.com/2013/07/19/bloom-fm-survey-digs-into-piracy-pricing-and-youtubes-music-popularity/>

185 A figure much closer to Ofcom's assertion that in the third quarter 2012 10% of UK Internet users accessed at least some music illegally.

186 <http://www.bpi.co.uk/assets/files/Digital%20Music%20Nation%202010.pdf>

187 https://www.bpi.co.uk/assets/files/BPI_Digital_Music_Nation_2013.PDF

188 <http://www.ipo.gov.uk/ipreview-c4e-sub-bpi.pdf>

provide the majority of the supporting evidence for BPI's arguments within this report. It often quotes its own publications, which, in turn, did not provide background information on the derivation of the figures. None of these figures could be validated against other sources or examined for replicability, as the source research reports and the methodology employed to arrive at the conclusions were not made available to us.

IFPI As with the BPI, we were not able to access the IFPI's proprietary research and our view of its methods for estimating IPR infringement must also rely on its published reports. The IFPI ensured we were provided with copies of its 'Recording Industry in Numbers' (RIN) reports, along with the more readily available 'Digital Music Reports', so we have been able to see all of its published data between 2009 and 2013.

We note the IFPI approach to piracy measurement between 2009 and 2011 had been to assemble a variety of different research studies across the main markets, and to include data from other industries such as film. At no stage within these studies was there any attempt to qualify the data used from a methodological point of view, although there was usually some indication of the sample sizes used to support the claims. Its approach seems to have changed by 2012 and 2013, with much less emphasis on proving the scale of infringement and more focus on practical enforcement issues. The 2012 RIN focused on international efforts to introduce graduated response initiatives and, by 2013, the focus had moved to demonstrating other measures available to rightsholders, such as website blocking.

The 2011 RIN section 'The Impact Of Digital Piracy On The Creative Industries',¹⁸⁹ used a number of different studies to make the case that "digital piracy is severely affecting growth prospects for a range of creative industries." It identified "numerous studies" that show the scale of digital piracy and its impact on the creative economy and jobs. The report uses data from Frontier Economics (covered earlier in this report) and Australian Sphere Analysis.¹⁹⁰ The section on 'Studies demonstrating the scale of digital piracy around the world' refers to the Envisional report reviewed earlier to provide the estimate of 23.8% of global Internet traffic that is infringing.¹⁹¹ The UK market information is based on the 2010 Harris Interactive survey, which concluded that 29% of Internet users aged 16 to 54 (7.7 million individuals) were engaged in some form of unauthorised music downloading, that p2p use was stable and that use of cyberlockers and other forms of piracy was growing. It also repeats the Harris Interactive estimate that more than 1.2 billion music tracks were illegally downloaded in 2010 in the UK, indicating that 76% of all tracks downloaded were unauthorised. The 2011 RIN report also features two academic studies – one examining the impact of piracy on sales in Sweden¹⁹² and another that finds a small fraction of BitTorrent content publishers are responsible for 67% of published content and 75% of downloads.¹⁹³

189 p.18

190 The Impact of Internet Piracy on the Australian Economy, February 2011.

191 http://documents.envisional.com/docs/Envisional-Internet_Usage-Jan2011.pdf

192 This estimated piracy accounted for 43% of the drop in sales between 2000 and 2008 and supported the claim that piracy is the main cause of the decline in sales.

193 Is Content Publishing in BitTorrent Altruistic or Profit-Driven, December 2010 http://conferences.sigcomm.org/co-next/2010/CoNEXT_papers/11-Cuevas.pdf

By the 2012 RIN, the section entitled 'Increased Momentum in the Fight Against Piracy' indicated a shift in emphasis, with a new focus on a more detailed summary of international enforcement, using research studies to demonstrate the efficacy of the various initiatives and measures, including graduated response (p2p piracy), website blocking (tackling non-p2p forms of piracy) and cooperation from online intermediaries such as payment providers and search engines. It also stated that alongside the preceding measures, industry would continue to expand its notice and take-down activity as well as pursue litigation against infringing services and launch investigations against illegal operators. Most noticeable was the emphasis placed on switching to website blocking, and measures such as graduated response, as well as working with other Internet intermediaries to combat piracy, including payment providers, to remove their services from some infringing websites that sell unlicensed music. The report cited research by the NPD Group that showed the percentage of the Internet population using a p2p file-sharing service to download music fell from a high of 16% in 2007 to just 9% in 2010, when LimeWire ceased operations. The emphasis within the relevant section of the RIN 2013 'Tackling Digital Piracy'¹⁹⁴ had changed again, with a very different presentation of industry actions to deal with piracy. The simple estimates that "one-third of Internet users worldwide (32%) regularly access unlicensed services" was also a significant change in tone from earlier reports and focused on industry securing "greater cooperation from intermediaries - advertisers, ISPs, payment providers and search engines - to tackle piracy." There is a plea for government's role in "helping ensure all participants in the digital marketplace act in a socially responsible manner."

Enforcement by now was seen as ensuring ISPs "block access to unlicensed digital services and educate consumers about the illegality of distributing copyright infringing music online." Data is offered to support the contention that site blocking is effective in reducing traffic to infringing sites. There is a telling statement near the end that "the industry takes action itself to tackle digital piracy, removing millions of infringing links from the Internet. Complaints to law enforcement have helped result in the closures of unlicensed sites." This indicates that industry feels it is handling the burden of enforcement, but looks to government and law enforcement for support as well, and it echoes industry attitudes in the counterfeiting and piracy section of this Appendix.

The IFPI also published 'The Impact of Illegal Downloading on Music Purchases'¹⁹⁵ literature review, prepared by BPI Research & Information. The review summarised 15 studies of different types of methodologies published between 2004 and 2009, with some of the original data set used dating back to 2001. The purpose of the literature review was to examine studies demonstrating the link between lost sales and illegal downloading to show that "the preponderance of academic and market research strongly suggests a negative relationship between illegal p2p file-sharing and music sales."¹⁹⁶ The review covered a mixture of academic papers, government and industry body commissioned research. A variety of quantitative and qualitative methodologies had been applied mainly to local markets, including the 2007 Jupiter Research report, the Center for the Analysis of Property Rights & Innovation in the United States 2006 research conducted by Forrester, and Zentner's study. A summary of the basic methodologies used in each study was provided and a variety of different methodologies were considered, but the paper does not provide sufficient information to make an informed judgement

194 p.35

195 <http://www.ifpi.org/content/library/The-Impact-of-Illegal-Downloading.pdf>

196 *ibid* p.1

on validity and replicability. It is difficult to take IFPI's recommendations forward, given the age of many of the papers and the ways illegal file sharing, downloading and piracy and methods to measure these and analyse consumer behaviour have progressed.

MPA We could find no publicly available literature on research detailing the enforcement of music publishers' rights, either at the trade body level (Music Publishers Association) or at the individual publisher level. The extensive comments provided by MPA staff in the trade bodies' section (Appendices 3 and 4) confirm the MPA itself does not monitor infringement but relies on ad-hoc measures and does not seek to measure overall levels of infringement. Efforts to combat infringement focus on very specific music-publishing products such as printed music and lyrics rather than sound recordings. The MPA relies almost entirely on the BPI and UK Music to understand and measure the sound-recording market. We note however that PRS For Music's Anti-Piracy Unit (APU) carries out measures in relation to infringement and is an important enforcement agency for music publishers.

SPOTIFY Spotify's economist Will Page published a research report 'Adventures in the Netherlands - Spotify, Piracy and the new Dutch experience'¹⁹⁷ in summer 2013. Of value here was his argument for using methods other than sample-based surveys¹⁹⁸ to measure piracy. His statement bears out what we found when discussing methodologies with our panel of research experts (see Appendix 5), notably including Musicmetric - the same firm Spotify used to provide the raw data for its study. Despite acknowledging certain caveats about Musicmetric's data, Page highlights the significant benefits of using it: "Counting IP addresses and BitTorrent files is more accurate than surveying the population."¹⁹⁹

Page's comments also echo his earlier criticisms of reliance on a survey-based approach for measuring copyright infringement at the 'What Constitutes Evidence for Copyright Policy?' symposium²⁰⁰ in November 2012, where he argued the case for estimating levels of piracy by measuring observed behaviour, rather than using sample-based surveys.

RIAA As with the BPI and IFPI, we were not initially able to access the actual research conducted by the RIAA but were able access their public statements on enforcement.²⁰¹ Elsewhere on its site there is little meaningful research information available other than a reference to a "credible study by the Institute for Policy Innovation."²⁰² The lack of information available belied the cooperation we secured from the RIAA's research head, Josh Friedlander (see Trade Bodies, Appendix 3). Notwithstanding this, we felt compelled to write what we could about NPD's research that has been used by the RIAA for most of the past decade. Whilst the reports themselves were not made available to us, we discussed their methodology with the RIAA,

197 <http://press.spotify.com/us/2013/07/17/adventures-in-netherlands/>

198 In its study, Spotify emphasises the risk of double-counting users and/or missing some altogether. Spotify looked for a firm to provide insights and understanding into consumer behaviour globally for the entertainment industry. MusicMetric allowed Spotify to work with its data to develop new insights on piracy (p.6).

199 p.7 but also worth including a reference to the summary on p.8 of the pros and cons of using MusicMetric data.

200 Bournemouth/IPO symposium, Kretschmer, M. and Towse, R. (eds) (2013) What Constitutes Evidence for Copyright Policy? Digital proceedings of ESRC symposium www.copyrightevidence.org/create/esrc_evidence_symposium

201 Such as 'The Evidence of Anti-Piracy's Impact Continues To Mount', April 12, 2012 http://www.riaa.com/blog.php?content_selector=riaa-news-blog&blog_selector=Mount&news_mont.

202 http://riaa.com/physicalpiracy.php?content_selector=piracy_details_street

along with the benefits of using a long-term approach to studying the market and consumer behaviour.

One of the pivotal NPD studies, titled 'Music filesharing declined significantly in 2012'²⁰³ highlighted the problem of assessing the reliability of its methodology. This is all the more frustrating when comparing the opaque nature of NPD's research with that of Compete and Comscore. Compete, for example, publishes a detailed explanation of its methodology on its website²⁰⁴ and clearly identifies a multi-tiered approach to data analysis combining a "multi-source panel, harmonisation algorithms, sophisticated normalisation techniques and metrics that matter." Its clickstream data is collected from a 2 million-member panel of US Internet users (about a 1% sample), using diverse sources. Notably, Nielsen and Comscore also compete fiercely, and this led to both suing the other for patent infringement.²⁰⁵

Yet NPD is quick to take on anyone who challenges its version of the data, as shown in the blog 'Driving Under the Influence',²⁰⁶ where it criticises widespread misinterpretation of its statistics, such as its response to claims made by Columbia University's Joe Karaganis in his 15th November 2012 posting called 'Where do Music Collections Come From?'²⁰⁷ The robust reaction to these claims from recorded music industry groups RIAA and IFPI mostly focused on NPD's annual music survey. Yet this research is not accessible other than in headline form, usually as press releases with a minimal amount of information on the underlying methodology.²⁰⁸ The exchange of views seemed to merely highlight the entrenched views on the issue of the impact of file sharing, meaning even when there is agreement on key findings, there are still some hostile exchanges on problems such as the topic of substitution, with Karaganis posting 'NPD Confidential II: Die, Substitution Studies, Die.'²⁰⁹ Despite our understanding of the importance of keeping commercially sensitive data away from public scrutiny, it is hard not to believe that the reactions to NPD's claims are exacerbated by the confidential nature of the research and its associated methodology.

UK Music UK Music and its predecessor, British Music Rights, conducted very similar surveys in 2008 and 2009 but we reviewed only the 2009 version of the 'Music Experience and Behaviour in Young People' research that was conducted for UK Music by the Music and Entertainment Industries Research Group at the University of Hertfordshire. This survey had a very specific purpose and the findings were restricted to a defined but narrow age group, with a sample below 2,500. The research itself provided interesting findings. However, for the purpose of this brief, it cannot be considered a viable, replicable and verifiable example. We note that UK Music carried out further qualitative research, as part of this study, but this was not fully explained in

203 <https://www.npd.com/wps/portal/npd/!ut/p/a0/04>

204 https://www.compete.com/wp-content/uploads/2013/05/Compete_Data_Methodology.pdf

205 Nielsen and Comscore reach settlement over online measurement patents <http://venturebeat.com/2011/12/21/nielsen-comscore-settlement/>

206 https://www.npdgroupblog.com/driving-under-the-influence/#_Uf5tOL9LHzI. NPD also notes that each year for the last decade it has done a comprehensive study on the state of music in the US. This Annual Music Study is the source for the statistics. The study is well regarded and is used by the major players in the music industry.

207 <http://piracy.americanassembly.org/where-do-music-collections-come-from/>

208 Typically, NPD says the "Information in this press release was derived from NPD's "Annual Music Study 2012," which is based on data from 5,400 consumer surveys, and NPD MusicWatch, which is based on 7,600 surveys. The "Annual Music Study" survey data was weighted to represent U.S. population of Internet users (age 13 and older), while MusicWatch is weighted to U.S. general population (age 13 and older)."

209 <http://piracy.americanassembly.org/npd-confidential-ii-die-substitution-studies-die/#sthash.6ec7IijX.dpuf>.

the Hertfordshire Report reviewed here. The sample was restricted to 14- to 24-year olds - an age group that is important for music consumption but which excludes younger and older consumers. The sample period was not defined, referring only to 2009, and the sourcing of the respondents was vague and differed from the normal recruiting process. It did not say how recruiting was done, or by whom, and the methodology was not very detailed or explicit. We cannot see how it compared with the earlier research carried out for British Music Rights, even though comparative statements are made throughout. At best, the research illustrates the potential benefits of repeated surveying, but we have similar reservations about this as those expressed about the frequency of the Ipsos MORI survey for the BVA.

MUSICALLY We included its 2011 article ‘The Truth is Out There’²¹⁰ in our review, as it articulates the music industry’s need for “accurate data on online piracy” as being essential for both rightsholders and legislators to judge the success of attempts to reduce online piracy. It identifies various sources, citing a large number of “piracy-related data and reports” that appeared in early 2011 and highlight companies such as Big Champagne with the capability to measure p2p activity and provide analytics for rightsholders. However, the article sees a bigger problem in gaining a more in-depth understanding of piracy, both in terms of use and attitudes, and indeed, argues that research in this space has polarised between studies perceived as little more than propaganda for the major rightsholders and that written off by rightsholders as “head-in-the cloud freemium addled hogwash”. Its conclusion was that “the music industry needs accurate data on online piracy” but it recognises that most piracy research is “slammed as lies as soon as it is published” and that getting to the truth remains a challenge.

2.2.1.4 Books

PA As with several other sectors, we could not find suitable, relevant research on infringement of IPR specific to the book industry. The Publishers Association (PA) made us aware of its Copyright Infringement Portal (CIP), which provides a notice and take-down system to its members, but is evident that the PA does not publicise measurement/count the numbers of such take-downs notifications and to whom they were sent. We understand some information was available from BitTorrent data on books being ‘shared’ using its protocol but we could find no systematic measurement of infringement by the industry in this sector. We noted the harmonious relationship and levels of cooperation amongst different industry stakeholders within what can be described as the ‘printed’ music market, with related bodies such as the Professional Publishers Association (PPA), and possibly the MPA, using the PA’s infringement portal. This suggests that a methodology that could include data from the CIP would benefit a number of related sectors that are wrestling with infringement of their IPR.

IFRRO In 2005, IFRRO stated, “Piracy is the biggest single threat to copyright industries. Yearly, it represents billions of Dollars and Euros in financial loss to rights holders.” Its stance on the issue had been articulated clearly in February 1999 in comments from Professor Dr. Ferdinand Melichar and Olav Stokkmo to the then Green paper produced by the EC on ‘Combating Counterfeiting and Piracy in the Single Market’. Even in 1999, it estimated the “potential financial loss” to its members “due to lack of sales of printed works in the Member States” as a minimum of €2 billion, and added that piracy was even more rampant in many of the countries applying for EU membership. Other figures were quoted but the key claim here was based on physical pirate copies - not the emerging market for digital pirated copies. Significantly for our review, we

210 Music Week, 23rd April 2011.

could find no attempt made by IFRRO to quantify the figures claimed, or the methods used to arrive at its estimates.²¹¹ In the absence of any kind of explicit methodology, the claims made must fall into the category of at best anecdotal.

2.2.1.5 Photographs and Images

We also found no evidence of systematic collection of offline or online infringement data relating to the use of photographs or images, and noted that nothing by way of research was available on the DACS site²¹² or on the various other photography-related sites. There are some, like Simon Crofts in his ‘Stolen Photographs’ article on the Editorial Photographers UK (EPUK) site,²¹³ who argue that the levels of damages for UK photographers for copyright infringement are so low that most do not think infringements are worth pursuing. At the same time, “copyright abuse has become systematic and rampant.” Crofts offers an optimistic view on possible technological solutions, including image-recognition tools,²¹⁴ but it is hard to see an industry dominated by freelancers would have the resources to develop a methodology to measure such infringement systematically. Such a methodology is more likely to be developed by the larger firms who make use of the photographs, but there seems little common ground between them and the photographers. This is illustrated by their widespread opposition to the Enterprise and Regulatory Reform Act 2013 leading to “an eruption of alarm and concern among photographers, fuelled by a lack of facts.”²¹⁵ The Association of Photographers’ (AOP) submission to Hargreaves²¹⁶ was the only source we could find for data and it is only in the latter stages of its submission that any statistics are employed about photographers that knew their work had been infringed. Yet no attempt is made to support this data, nor define the methodology used to arrive at it.

2.2.1.6 Gaming and Interactive software

UKIE Despite the absence of an actual body of recent research on IPR infringement, UK Interactive Entertainment (UKIE) provided us with its presentation on ‘Video game Piracy’. This was largely based on industry research information, gathered in 2009 to 2011 and none of which we were able to see first-hand. The presentation seems to have been intended for use by peers within the interactive software industry rather than for policy-making. The data within the report was very detailed and UKIE’s findings bear comparison with those of the BSA, for example. The main problem appears to be that almost all of its findings are based either on unqualified ‘estimates’ or on data supplied from other sources, without any kind of qualification. Key data was supplied for estimates of EU and UK piracy of games, highlighting quite different levels of piracy. It also noted higher levels of piracy the so-called BRIC countries (Brazil, Russia, India and China). We were struck by UKIE’s readiness to accept the explanations for IP infringement from the ‘Media Piracy in Emerging Economies’²¹⁷ report. We were surprised by the way UKIE accumulated its piracy findings using research data from three disparate sources: TorrentFreak, Interactive Software Federation of Europe (ISFE) and European Software

211 [EuropeanGroupcommentre.GreenPaperonPiracyFeb99.pdf](#) available at http://www.ifrro.org/issues_list/518

212 <http://www.dacs.org.uk/knowledge-base>

213 <http://www.epuk.org/Opinion/994/stolen-photographs-what-to-do>

214 Google image search engine. Picscout, TinEye

215 <http://www.epuk.org/News/1032/erra-you-could-not-make-it-up>

216 <http://www.the-aop.org/information/consultations/submission-to-hargreaves-by-the-association-of-photographers>

217 <http://piracy.ssrc.org/the-report/>

Association (ESA). TorrentFreak uses data of dubious quality and reliability given TorrentFreak's own 2011 caveat,²¹⁸ while ISFE estimates on a pan-European and national basis, and ESA's website did not appear to provide any piracy research as such and was merely a conduit for stats from various pieces of consumer research and information on its anti-piracy programme. Whilst it appeared UKIE did not publicise claims of infringement levels, it was evident that it used an approximate valuation of pirated goods in the UK to arrive at estimates, based on data provided by ESA (the cost of UK piracy) combined with estimates from ISFE (the percentage of piracy attributable to digital piracy). It recognised that the totals it arrived at conflict with other statistics "because of the methodological and practical problems in accurately quantifying piracy" but this appeared to be an unsatisfactory method for arriving at estimates of the total levels of infringement. It was further noted that there is little industry-wide systematic data, with many assumptions based around a small number of games and often supplied by one games publisher.

2.2.2. GOVERNMENT RESEARCH

SABIP/CIBER In SABIP's 2009 'Copycats? Digital Consumers in the Online Age',²¹⁹ the report argues that there are two distinct cultures in the digital and physical worlds that need separate analysis as they are evolving differently.²²⁰ In CIBER's review of the evidence base, it argues that university students were the only consumers at the time to have been studied in any depth. It therefore advocates a broadening of the scope of consumer research to secure a more representative sample. In recommending research on downloading behaviour, it argues²²¹ for longitudinal studies, ideally following a group of consumers for three if not five years. It advocates a group of 200 users who would take part in surveys and focus groups twice a year and, crucially, must reflect the "broadest range of online demographics." CIBER's recommendation for longitudinal studies is worthy of being integrated into a methodology, but the sample size would need to be increased to reveal the scale of IPR infringement over time. With the recommended 200 respondents, the value would be limited to measuring changing attitudes, although it could still be used as an indicator for understanding the trend in IPR infringement.

DUTCH MINISTRIES OF EDUCATION, CULTURE AND SCIENCE, ECONOMIC AFFAIRS AND JUSTICE The 2009 study 'Ups and downs: Economic and cultural effects of file sharing on music, film and games',²²² carried out by Dutch research bodies TNO and SEO along with the IvIR Institute at the University of Amsterdam, involved a representative survey of 1,500 Dutch Internet users, who were asked about their behaviour, motives and knowledge in relation to file sharing of music, films and games. The research outlined the methodology applied in the consumer survey, but this rendered the study less useful for this review, given the findings were not transferable. The authors highlight the shortcomings of consumer surveys, noting that respondents "may tend to give answers that they see as socially desirable" - a point they address by ensuring the anonymity of the information at all times and the fact that it was the government that commissioned the study. This gave the appearance of it being a valid survey,

218 "The data for these estimated download numbers is collected by TorrentFreak from several sources, including reports from all public BitTorrent trackers."

219 By Robin Hunt, Peter Williams, Ian Rowlands and David Nicholas (CIBER team, University College London) <http://www.ipo.gov.uk/ipresearch-year-2009.htm>

220 *ibid* p.13

221 *ibid* p.19

222 http://www.ivir.nl/publicaties/vaneijk/Ups_And_Downs_authorized_translation.pdf

based on a questionnaire with clear and openly outlined parameters, but we noted that the questionnaire itself was not made available and this is problematic to us given that the wording of any questionnaire can influence the responses. The findings on substitutionary effects of counterfeiting and piracy were based on assumptions that were applied to data and could not be considered robust. Such positioning, justified or not, rendered the research a priori more vulnerable.²²³ Notwithstanding the study's bias and shortcomings, elements of its methodology were of value.

We also considered a 2010 paper, 'Legal, Economic and Cultural Aspects of File Sharing', from the IVIR Institute. Written for the Dutch Ministry of Economics, it was a discussion with no original research, which concluded that developments need to be monitored on an on-going basis and which made no attempt to directly measure volumes of piracy.

ANDERSEN & FRENZ The 2007 study, 'The Impact of Music Downloads and P2P File-Sharing on the Purchase of Music',²²⁴ was conducted for Industry Canada by Birbeck's Birgitte Andersen and Marion Frenz. The primary objective of their paper was to determine the influence of p2p file sharing and music downloading activities on the purchasing of CDs and paid electronically delivered music. It was based on a quantitative analysis of representative survey data from the Canadian population. The paper analysed Canadian survey data, and the results were representative of the Canadian population aged 15 and older. Whilst the scope of the research was limited to p2p file sharing, the methodology outlined in page 16 was clear and transparent: "The dataset is derived from a large-scale survey of Canadians. It is scaled up using weights to be representative of the Canadian population. The survey was designed and conducted in collaboration between Dr. Andersen, Industry Canada, and Decima Research in 2006. Data were analysed using single equation regression methods and the analysis in this paper was based on direct answers (or micro-data) provided by 2,100 Canadian respondents."

The sampling technique used was quota-based random sampling, stratified by age, gender and regional location, as well as downloading status. This was done because a purely random sampling strategy would not have produced sufficient sample sizes for key segments of interest to this and other studies. The stratification was introduced to allow for sufficiently robust analysis within these segments. The total number of survey responses was 2,100. For a detailed discussion on the sampling and interviewing techniques, see Decima Research (2006). Although the research made no attempt to directly measure market volumes of piracy, in our view it represented very good practice. We suggest it could be improved further by providing access to the actual questions asked in the survey, but the methodology seemed robust and rigorous and is one we consider worth emulating within our proposed methodologies.

EC The 2013 'Digital Music Consumption on the Internet: Evidence from Clickstream Data'²²⁵ study was carried out by the EC's Joint Research Centre Institute for Prospective Technological Studies. Its report was widely attacked by industry following publication,²²⁶ but our review is confined to assessing its methodology and applicability to the measurement of infringement. Its

223 There are examples on p.19 and p.23 of the study that reflect opinions but not facts and, as such, are not relevant for the subject of the study.

224 [http://www.ic.gc.ca/eic/site/ippd-dppi.nsf/vwapj/IndustryCanadaPaperMay4_2007_en.pdf/\\$FILE/IndustryCanadaPaperMay4_2007_en.pdf](http://www.ic.gc.ca/eic/site/ippd-dppi.nsf/vwapj/IndustryCanadaPaperMay4_2007_en.pdf/$FILE/IndustryCanadaPaperMay4_2007_en.pdf)

225 <http://ftp.jrc.es/EURdoc/JRC79605.pdf>

226 Possibly because of its controversial conclusions that illegal music downloading was not a substitute for legal digital music and that online music streaming has a marginal positive effect on music purchase as well as that illegal music downloads have little/no effect on legal digital music sales.

methodology was empirical and, importantly, observational, using ‘online clickstream data’ from a panel of 16,000 European Internet users. We consider this to be a progressive approach to measuring infringement, but its objectives were different to ours as they were assessing the impact of music piracy on legal sales of music and measurement of music sales displacement. Given a focus that is very similar to Andersen and Frenz’s 2007 study above, the notion of applying ‘observational’ techniques to this aspect of the market is compelling. Concern has been voiced about how the ‘observed’ data were analysed, but this approach to measuring online behaviour has much to commend it. We can only use elements of this methodology because it measured only propensity to purchase rather than piracy volumes. A methodology using observed behaviour is one we feel could be further developed, and this is something we explore in Appendices 3 and 5.

NUS We considered the 2012 ‘Student Attitudes towards Intellectual Property’,²²⁷ conducted by the National Union of Students (NUS) and the Intellectual Property Awareness Network (IPAN) and supported by the IPO. This online survey of 2,146 UK further/higher education students was targeted at 50,000 further/higher education students and aimed to capture an understanding of their attitudes to/awareness of/aspirations for IPR, which, it was concluded, could be improved through education. It was not relevant to our review, as there was no attempt to directly measure volumes of piracy. The inclusion in the paper of the questions asked in the survey - something rarely seen in other research considered within our review – was a positive aspect of the study.

OFCOM We examined a number of studies produced by Ofcom and our review started with the 2010 ‘Illegal File-sharing Pilot - Peer Review’²²⁸ and the ‘Illegal File-sharing Pilot survey Report’²²⁹ before moving to the various 2012 reports: ‘Online Copyright Infringement Tracker Wave 2 (Aug-Oct 2012) Overview and key findings’,²³⁰ ‘Online Copyright Infringement Tracker Annex 1 – Individual content types Wave 2 (Aug-Oct 2012)’,²³¹ and ‘UK 2012 online copyright research’.²³²

The most recent 2013 ‘Deep Dive OCI Tracker Benchmark Study’ and ‘Deep Dive’ Analysis Report’, prepared for Ofcom by Kantar Media were designed to “track consumers’ behaviour and attitudes towards both lawful and unlawful access of copyright material using the Internet, relating to six content types.”²³³ The research was based on a traditional survey-based approach and with it came the obvious question of robustness, accuracy and verifiable replicable data sets. Replicability, we would argue, is impossible using a survey, where respondents’ behaviour and attitudes and the final analysis are specific to certain fixed time periods. However, the research used a mixed methodology with data collected using both an online and offline sample, elevating this research above purely online survey approaches. There are aspects of the methodology open to question, not least the viability of Ofcom’s approach to accurately measure the scale of, rather than attitudes to, IPR infringement. Nevertheless, this work was commissioned to provide trends over time and, assuming the methodology remains unchanged, it is a useful approach. The question of the viability of deep dive research needs to be addressed, but the weakness within this research lies in the limited time frame for the study.

227 <http://www.nus.org.uk/PageFiles/12238/IP%20report.pdf>

228 <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/filessharing/peer.pdf>

229 <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/filessharing/kantar.pdf>

230 <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/online-copyright/w2/report-wave-2.pdf>

231 <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/online-copyright/w2/annex1-w2.pdf>

232 <http://consumers.ofcom.org.uk/2012/11/online--copyright--research/>

233 <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/online-copyright/deep-dive.pdf> pg. 7

With regard to the four other studies carried out between 2010 and 2012 by Kantar, they maintained a sturdy research methodology that consistently applied a combination of online, face-to-face and, until 2012, a phone survey as well. As with the 2013 Deep Dive, adopting a mixed approach was welcomed, but for these studies, applying both quantitative and qualitative consumer research methods followed the best practice principles outlined in Appendix 1. Equally, the robustness of the studies was reflected in the sample size used to reflect the UK population. The sample size increased from over 3,000 in 2010 to over 5,000 respondents in 2012. There was no indication in the methodology about the sample accuracy but, notably, the samples included respondents as young as 12 years old. Each of the Ofcom/Kantar surveys aimed to assess the level of illegal file sharing in the UK, and the inclusion of under 14-year olds was unique, allowing for a broader understanding of activity and attitudes of the different population segments than we have seen elsewhere.

No attempt appeared to have been made to directly measure market volumes of piracy, only individual propensity to 'infringe', and the surveys relied on respondents' self-reported file-sharing activity levels. Measuring expressed attitudes, opinions and accounts of behaviour is characteristic of the quantitative research method, but is arguably a weakness when aiming to gain insight into scales of infringement. It was not clear whether there was a visible, statistically robust trend to justify this survey approach, especially without the inclusion of observed behavioural data. However, if this exercise were repeated, it is possible that trends would become apparent.

The 2012 'Online Copyright Infringement Tracker, Wave 2' relied on respondents knowing, reporting and distinguishing between illegal and legal behaviour. The methodology followed best practice, however, in highlighting this deficiency - something that is rarely seen in other studies. It was not clear from the methodology whether respondents were given clear definitions and examples of what constituted 'illegal' vs. 'legal' content in order to allow them to make an informed decision on their own consumption habits. The addition of clearly defined categories and terms within the methodology could have provided additional robustness to the survey where the data were derived purely from surveying a sample of participants at a given moment in time.

2.2.3 ACADEMIC RESEARCH

OBERHOLZER-GEE & STRUMPF Felix Oberholzer-Gee and Koleman Strumpf's 2009 article, 'File-Sharing and Copyright'²³⁴ is arguably one of the most well known academic articles in this field. It analyses whether new technology has undermined the incentives of authors and entertainment companies to create, market and distribute new works. Despite concerns²³⁵ about the way the authors' own views colour their conclusions, the technical approach advocated does have certain value to us in identifying the level of infringement.

234 Harvard Business School Working Paper 09-132, 2009 <http://www.hbs.edu/research/pdf/09-132.pdf>

235 See amongst others the statement on p.3: "Weaker copyright is unambiguously desirable if it does not lessen the incentives of artists and entertainment companies to produce new works."

The authors agreed that in assessing the size of file-sharing activity, measuring the extent of file sharing is challenging, and the survey approach is “flawed because respondents are likely to understate their participation in a potentially illegal activity.” More concerning was the level of understatement that is likely to vary over time based on the “legal climate and peer effects among teens.” They also considered surveys unreliable because “it is difficult to survey a representative population of file sharers and due to recall issues.” They advocate a better approach would involve using technical measures and observed behaviour in identifying the packets traversing computer networks. This recommendation bears out certain other studies including those from industry (see above) and our research experts (Appendix 5).

UNIVERSITY OF HERTFORDSHIRE The 2011 and third iteration of the ‘Music Experience and Behaviour in Young People’ from the Music and Entertainment Industries Research Group at University of Hertfordshire (UH) qualified as academic research because it was commissioned and funded entirely from academic sources, rather than from industry or government. The underlying methodology was largely based on the surveys conducted by UH for industry in 2008 and 2009 and, as such, remains a survey with a very specific purpose, with findings restricted to a defined, narrow age group. The sample is below 2,500, but the same questions remain that we have voiced elsewhere about relying purely on a survey approach. Even though the research provided interesting findings, for the purpose of this review it was not a viable, replicable and verifiable example. It also had the same limitations as the surveys conducted for industry shown under UK Music. These limitations include the sample period, which was not defined and only referred to 2011. Although the sample group may have been representative for the UK, the sourcing of the respondents was not clear and differed from the normal recruiting process. The methodology did not say how it was done or by whom and for which of the three phases specified at the end of the research. The researchers indicated reservations about the methodology, noting that as it had evolved, the findings could not reliably be compared to those of the previous two surveys. The benefit of this admission is to highlight the importance of consistency of methodology over time periods.

ZETNER This 2012 paper, ‘Measuring the Impact of File Sharing on the Movie Industry: An Empirical Analysis Using a Panel of Countries’,²³⁶ recognised the limitations of data required for a comprehensive assessment of the level of IP infringement, without having to rely on assumptions. It advocated using “data on Internet connectedness for each country to supplement the lack of reliable filesharing data.”²³⁷ The approach is then to examine whether theatrical and video commercial movie performances decay more rapidly in countries experiencing faster increases in the adoption of file-sharing technologies. The underlying approach is based on available and accessible data. The correlation between theatrical and video commercial movie performances and the development of file-sharing technologies is meaningful and significant, especially in view of the absence of statistics on the amount of file sharing. This study attempted a novel approach to get around the limitations on input data, and we believe this should be further considered.

236 Working Paper, University of Texas at Dallas, Dallas, Texas. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1792615

237 This echoes part of the 2011 Envisional recommendations.

2.3 PATENT INFRINGEMENT

2.3.1 INDUSTRY RESEARCH

For meaningful independent advice and guidance, we relied on IPkat and IP Watchdog - the latter especially to secure information from the US. The owner of IP Watchdog provided a frank assessment of the motives and strategies that dominate the market, which partly explain the absence of industry-supported research on estimating levels of patent infringement. It seems that only IP practitioners and various patent-specific conferences make any kind of estimation of infringement widely available. It seems likely, however, that certain larger firms do conduct their own research but that the data is not made publicly available, either for competition reasons or because of market 'commercial sensitivities'. The latter issue is an important consideration and one we raised within the counterfeiting and piracy sections of this appendix. However, details of the number of patent-infringement actions currently faced by the major 'tech' firms Amazon, Google, Apple and Microsoft are shown within their annual SEC 10k submissions to the US Securities and Exchange Commission.²³⁸ These disclosures demonstrate the level of potential financial risk involved in maintaining an active patent portfolio, as well as on-going potential threats from claimants in their sector.

Strategies for dealing with patent infringement vary, with certain firms using import bans in 2013 to block rival products in cases involving patents that have been deemed to be essential to creating products based on key technologies overseen by industry standard-setting groups.²³⁹ This use of import bans in the patent markets even led the Obama administration in 2013 to veto "a U.S. trade body's ban on the import and sale of some Apple Inc. iPhones and iPads, a rare move that upends a legal victory for smartphone rival Samsung Electronics Co."

PHELPS & KLINE The 2009 book 'Burning the ships: intellectual property and the transformation of Microsoft'²⁴⁰ identified various patent-enforcement strategies, highlighting the changes that have taken place within the past decade and underlining the problems facing anyone trying to accurately estimate the levels of patent infringement. The book shows how Microsoft drastically altered its stance on IP rights after its very defensive start to the 21st Century when it was "beset by antitrust suits and costly litigation, and viewed by many in the technology industry as monopolist and market bully."²⁴¹ It shows how Microsoft could "survive and succeed in the emerging new era of 'open innovation' where collaboration and cooperation between firms rather than the single-minded competitive warfare, would be the keystones to success."²⁴² This meant that the company had to create a new strategy based around collaboration, rather than competition, with other firms. The Microsoft research arm was created in 1991, at the same time as other companies were starting to claim Microsoft infringed their patents. When Microsoft tried to innovate around another firms' patents because they could not negotiate the license, the holder of the rights would often still find ways to litigate, such as buying similar patents. Microsoft was clearly overwhelmed by the problem of "driving over patent land mines every day"²⁴³ in the midst of the company's greatest expansion. After 1993, Microsoft introduced a

238 <http://www.sec.gov>

239 <http://online.wsj.com/article/SB10001424127887324136204578646192008412934.html#printMod>

240 John Wiley & Sons Inc., NJ

241 *ibid* p.xix

242 *ibid* p.xx

243 *ibid* p.13

non-assertion of patents (NAP) clause into all of its partnership agreements and Original Equipment Manufacturers (OEM) and this defensive strategy and mind-set lasted 10 years.²⁴⁴ The NAP policy poisoned its relationships, and it is only since 2003 that Microsoft has transformed those by encouraging cooperation between those who owned proprietary software and those in the open-source software movement. The Microsoft 'Open Innovation Strategy' enabled them to build an outward-facing IP and licensing culture within the company. Apart from this book, there appears to be nothing else generated by industry experts that sheds light on how industry regards infringement, let alone whether it tries to measure infringement.

2.3.2. GOVERNMENT RESEARCH

IPO/HELMERS & MCDONAGH Their 2012 study, 'Patent Litigation in the UK',²⁴⁵ provided a dataset of cases filed at England and Wales courts between 2000 and 2008. It supplied details of court cases, information on patents in dispute and firm-level data for litigants, and noted the general lack of empirical evidence on patent litigation in the UK, citing Weatherall et al. The authors described how the English and Welsh courts dealt simultaneously with patent validity and infringement, which differed to, say, the German system. This, the authors said, "can have a major impact on the remedies" and "the behaviour of litigating parties."²⁴⁶ The report summarised data from Patents High Court (PHC), Court of Appeal and the House of Lords/Supreme Court, and included a number of very important statements of relevance to our review. The authors noted that the data from court cases only included those cases that actually made it to court, and nothing on the number of cases that were dropped. They estimated the average cost of a patent case going to full hearing at £3 million, and noted that such high costs were due to "specific features of British legal system."²⁴⁷

They further highlight the proportions of different types of litigated rights, with PCC data showing that of the number of cases across the various rights in 2007-2008, the majority were trademarks while patents represented the smallest number. However, the vast majority of cases at the PHC were for patents (255 over the 2000-2008 period).

Their analysis of the data suggested UK patent litigation is a highly internationalised service, with a substantially higher number of foreign rather than domestic claimants and defendants.

The authors also identified other patterns in UK patent litigation and found that most patents protected chemical and pharmaceutical inventions²⁴⁸ and also that most patents were aged between six and ten years, with a few cases involving expired patents. The most important observation was that "litigated patents are more valuable, broader in scope, and also contain more references to other patents, and the non-patent literature, than non-litigated patents."²⁴⁹ They also showed only 43% of filed cases alleged patent infringement, and that around 31% of cases filed sought the revocation of a patent. The value of their study was demonstrating the

244 *ibid* p.14

245 Helmers C. and McDonagh L. (2012) 'Patent Litigation in the UK', LSE Law, Society and Economy Working Papers 12/2012.

246 *ibid* p.8

247 "If a patent case goes for a full hearing at the PHC, the total costs (i.e. the costs of both sides), will on average amount to £3 million, i.e. £1.5 million for each side" (p.22).

248 *ibid* p.26

249 *ibid* p.27

high cost of pursuing litigation for infringement of patent rights and how this is available only to companies of a certain size. It also shows how even with access to such extensive sources on court cases, the data provided cannot represent - indeed can only capture a fraction of - the total levels of infringement within the market.

GAO (US GOVERNMENT ACCOUNTABILITY OFFICE)/US PTO (PATENT AND TRADEMARK OFFICE) JERUSS, FELDMAN AND WALKER Their 2012 study, 'The America Invents Act 500: Effects of Patent Monetization Entities on US Litigation',²⁵⁰ was about the US patent system's villain - 'the non-practicing entity' (NPE) or 'troll', and the decision by Congress to study the effects of their actions on patent litigation. The authors conducted a review over five years of US patent lawsuits, and concluded that the patent monetisation entities did play a role in a large proportion of filed lawsuits. They indicated that the number of lawsuits filed by NPEs had increased from 22% to almost 40% of the cases filed, and concluded that these "patent monetizers" generally settled prior to a summary judgement decision. In identifying the emergence of "patent mass aggregators" - with thousands or even tens of thousands of patents, and showing even product-making companies developing their own versions of non-practicing entities²⁵¹ - they pointed to the lack of hard data on NPEs, their practices and the effects on patent litigation and the patent system more broadly.

The authors took to task the findings of James Bessen and Michael Meurer, who published one of the earliest data analyses in their 2008 book, 'Patent Failure'.²⁵² Bessen and Meurer defined patent trolls to include only individual inventors who do not commercialise or manufacture their inventions, meaning they did not consider groups, aggregators, or other types of entities. In looking only at individuals, Bessen and Meurer had, according to Jeruss et al, concluded that troll behaviour did not have much impact on patent litigation costs.

Jeruss et al do, however, also quote another key finding from Bessen and Meurer, which showed that outside the pharmaceutical and chemistry industries, the costs of litigating patents outweighed the earnings gained from patents, and that the divide between the two was growing. However, Jeruss et al argue that Bessen and Meurer's data "understates the extent to which costs exceeded benefits for several reasons: disputes settled before a lawsuit was filed are not counted, nor are foreign disputes; this comparison ignores the costs of obtaining patents and clearance; and for a variety of reasons, the estimates of worldwide patent profits are biased upwards, while the estimates of litigation costs are biased downwards."

Jeruss also quotes findings from Allison, Tiller, Zyontz, and Bligh's work,²⁵³ which focused on a comparison of Internet-related patents with non-Internet-related patents. This revealed that in the software industry, Internet-related patents were litigated 7.5 to 9.5 times more frequently than non-Internet patents. Allison et al's study also noted that once a lawsuit has been filed, the owners of Internet-related patents were more likely to settle before judgement than owners of

250 Jeruss, Sara, Feldman, Robin and Walker, Joshua H., The America Invents Act 500: Effects of Patent Monetization Entities on US Litigation (December 1, 2012). 11 Duke Law & Technology Review 357, 2012; UC Hastings Research Paper No. 3. <http://ssrn.com/abstract=2158455>.

251 ibid p.359

252 Bessen J. and Meurer M. J. (2008) Patent Failure; How Judges, Bureaucrats and Lawyers Put Innovators at Risk, Princeton University Press.

253 John R Allison et al., Patent Litigation and the Internet, 2012 Stan. Tech. L. Rev. 1, 6 (2012).

non-Internet-related patents. Other scholars have focused on the costs that non-practicing entity litigation imposes on the patent system as a whole.

The methodology employed within their study for the GAO/US PTO study was pre-determined by the GAO, which insisted they produce a random sample of 100 of the patent infringement cases filed each year for a period of five years²⁵⁴. Using Stanford's Lex Machina, the team were able to extract data and documents from the administrative database of the United States federal courts, all 94 United States District Court websites, the International Trade Commission's EDIS website, and the Patent & Trademark Office's website.²⁵⁵

The authors flagged concerns about the methodology adopted, noting that with a total of 500 cases across five years and even though the GAO believed such a sample size would be representative, the sample remained smaller than they would have preferred. They flagged other limitations of the GAO methodology, including the exclusion of cases for which the electronically available information was insufficient. Their study also excluded cases filed as declaratory judgements that occurred after an anticipatory suit to challenge the validity of the patent.

This meant their study focused purely on plaintiffs claiming that their patents had been infringed, and they argued the greatest limitation of this kind of study was that a focus on actual filed lawsuits meant researchers were likely to ignore a great deal of 'patent monetisation' activity. Such activity, although purely anecdotally evidenced, was based around perceived, alleged or actual infringement that never progressed to the point at which the patent holder actually filed an infringement lawsuit. This meant the costs of litigating infringement suits, the uncertainty of the outcome, and the potential for outsized judgement awards could shape infringement activity within the market, and such activity was rarely fully on show, notably because companies frequently capitulated to a patent monetiser's demands, rather than face the ordeal of a trial. "Thus, a study that focuses only on lawsuits filed misses much of the dance."

Ars Technica reported at length on the study,²⁵⁶ noting that evidence about the seriousness of NPE activities was largely anecdotal, and welcoming the hard data the study provided. Equally interesting was the information provided by the USPTO,²⁵⁷ which commissioned the study. The value of this study to our review was in how it confirmed the limits of using a methodology based around counting court cases, because so much of the activity around patent infringement does not even make it to court. It echoes the limits of using Customs seizures to estimate counterfeiting and piracy, as the number of cases filed for patent infringement cannot realistically reflect the total amount of infringement.

SABIP/WEATHERALL, WEBSTER & BENTLY We considered the Strategic Advisory Board for Intellectual Property (SABIP) 2009 study 'IP Enforcement in the UK and Beyond: A Literature Review',²⁵⁸ which was an invaluable review of IPR enforcement and highlighted methodologies founded on surveying firms and sampling court cases. A key insight here was that developing

254 The America Invents Act 500: Effects of Patent Monetization Entities on US Litigation p.364.

255 *ibid* p.365

256 <http://arstechnica.com/tech-policy/2012/10/trolls-filed-40-of-patent-infringement-lawsuits-in-20>

257 http://www.uspto.gov/aia_implementation/aia_studies_reports.jsp#heading-5

258 Weatherall K., Webster E. and Bently L. (2009) 'IP Enforcement in the UK and Beyond: A Literature Review', SABIP Report (Number EC001).

strong cooperation with industry and law firms would help increase verification of the findings. Despite the rigorous efforts to scope the measurement of IPR infringement, we had reservations and concerns (as expressed elsewhere) about any methodology and official data based on 'reported' statistics, especially in relation to counterfeiting. With respect to statistics for patent infringement based on official data, comprising the relatively small number of infringement cases that actually go through the full judicial process, there must be concerns.

Different literature reviews typically segment the different approaches to measuring IPR infringement in different ways. In this study, the authors suggested a number of different approaches for future research encompassing quantitative studies, surveys and data sources. The quantitative studies would include litigation/court filings/judgement counts, an analysis of existing databases, analysis of court judgements and the outcomes of cases. They would then come up with a variety of appropriate surveys, including surveys of businesses, of creators and inventors, and finally of lawyers and advisors. The business survey approach has certain weaknesses in securing a suitable response rate, as one of the main surveys the authors referred to only secured 15% usable survey responses. They also noted that there had been other surveys within particular industries (noting work done in 2000 by Cohen Nelson and Walsh, surveying 1,478 US research and development managers). On the surveys of creators/inventors, the authors refer to the PatVal-EU survey, as well as Japanese, US and Australian inventor surveys. However, the PatVal-EU survey did not consider IP enforcement at all. Weatherall and Webster 2009 (see below) did, even though this was still forthcoming at time of this report. The third level of surveys involved lawyers/legal advisors but they identify the key issue of representativeness. Given that rightsholders (firms or inventors) do not always consult a lawyer when copying is detected, "these surveys will not provide evidence of all cases where an IP rights holder has encountered similar inventions, trademarks, or designs, or copying of their copyright subject matter."²⁵⁹

They also refer to the American Intellectual Property Law Association AIPLA survey 2007, and suggest this is useful for estimating costs of litigation and is reasonably representative of the views of those practicing in this area of law. CJA Consultants ran two surveys in Europe (2003 and 2006) but argued these were not necessarily representative. As part of this final layer of surveys, they recommend using qualitative interview-based research as an alternative or 'adjunct' to other methods, especially to surveys where they can provide a more in-depth, 'rich' picture of how IP works in different sectors, as well as shining a light on motives and causes of 'observed' behaviour - significantly to identify common themes and trends. (This could as easily be achieved through conferences and publications aimed at the profession). The final approach recommended was securing data from Corporate Databases (UK), as well as litigation/court databases including Stanford IP litigation Clearinghouse and integrated databases. This is the approach used later on by Jeruss et al's (see above) work for the GAO/USPTO, especially their use of the Lex Machina tool to measure IP infringement cases, and is pivotal to their analysis of NPE activities within the patents sphere.

This study is a comprehensive review of a range of methods to calculate levels of patent infringement and the key outcome for our review is that almost all of the recommended sources of information could play a part in a multi-tiered approach to capturing data. As we note below, it is the surveying of inventors and creators that holds the greatest potential for providing a more accurate picture of the levels of infringement.

259 *ibid* p.63

US ITC The 2010 International Trade Commission report, 'China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy',²⁶⁰ indicated there were relatively few patent-related administrative or civil actions in China involving US patent holders when compared to larger numbers of actions involving copyrights and trademarks. The reasons for this may include issues such as the limited administrative relief for patent infringement, that patent infringement may be especially technical and 'fact-intensive' and that effective discovery is absent from litigation in China, making litigation for patent infringement more difficult. The ITC suggests the levels of damages available for successful actions are usually low and this may deter industry representatives from bringing suit. It also notes the low number of reported patent cases involving US patent holders in China. The ITC's emphasis is on identifying US data on patent and other IPR infringement claims for alleged infringing products imported into the United States. Of the 103 cases instituted between 2007 and 2009, 47% involved respondents located in China and/or Hong Kong, or involved imports from these locations. The majority of investigations in recent years involving China focused on electronics and electrical products.²⁶¹

2.3.3. ACADEMIC RESEARCH

WEATHERALL & WEBSTER Their 2010 paper 'Patent Infringement in Australia: Results from a Survey'²⁶² provides a unique and, we believe, improved way to measure levels of infringement of patents (and possibly design rights). It builds on part of the work the authors did for SABIP a year earlier (see above) but the findings "partially support anecdotal evidence that a great deal of copying and enforcement activity is occurring outside the court system." Given the expense of litigation for many patent holders, which deters many from taking action, it is our belief that counting the number of court cases can only capture a small amount of the actual infringement going on. Our remit is to investigate ways of measuring actual infringement, instead of measuring merely that which comes to light by virtue of financial resources rather than by right. This paper affirms that belief, and we found this one of the most credible pieces of research within the entire review. We should, however, flag up certain refinements and modifications that we recommend take place.

These would include ensuring the process was not a complete survey of all inventors, but a sample of them, and that this was done over a regular interval, at least quarterly. This tracking helps to generate a pragmatic illustration of the level of variability inherent in the process. The overall measurement of levels must include a sample of IP owners, because those that have paid/acted commercially may have more incentive to be aware of infringements than the inventor. There should be a sample of some organisations that have not submitted requests for IP, as these businesses may currently have taken the decision that the application for a patent, etc. represents a risk to disclosure in itself, and may also have an experience of copying too. This survey would provide a reference to compare with those who have formalised the process, but without requiring a full legal definition. The second-stage telephone survey should also include samples of those who have not indicated any infringements and/or responded to check for any response bias due to outcome, and check if this is also connected with a better understanding of legal infringement. This will help with better error measurement.

260 <http://www.usitc.gov/publications/332/pub4199.pdf>

261 *ibid* pp.6-3

262 Weatherall, Kimberlee G. and Webster, Elizabeth M., Patent Infringement in Australia: Results from a Survey (June 1, 2010). *Federal Law Review*, Vol. 38, No. 1, pp. 21-70, 2010; University of Queensland TC Beirne School of Law Research Paper No. 10-14. Available at SSRN: <http://ssrn.com/abstract=1648643>

The final new element is consideration of the time since application, and the estimated time to any infringement. There is a risk of bias in the results, because those that respond who had a later application have had less time for an infringement to occur and/or for this infringement to be detected. This is further exacerbated because the rate of response is related to the time since application. With this in mind, in the sampling there should be control for the time since application, perhaps in a sequenced approach by sampling on the anniversary of application, at intervals of one, two, four and eight years after application.

The estimates given in the article will be strongly affected by this time bias - it is a recurrent challenge that is properly mitigated using techniques called survival analysis. Without these approaches, it becomes harder to identify differences between different characteristics, particularly because there is an inevitable bias that excludes events that take a longer time to happen. Therefore, for example, fields/sectors that take longer to generate a copy/infringement and bring it to market in some way are biased against those who could justifiably litigate against an infringement.

2.4 DESIGN RIGHTS INFRINGEMENT

2.4.1. INDUSTRY RESEARCH

ACID The research and information from industry on infringement of UK design rights is dominated by the work conducted by trade body Anti-Copying in Design (ACID) and its CEO Dids McDonalds. The ACID submission to the Hargreaves Review (2011)²⁶³ contained pertinent data for the measurement of infringement of design rights. It included relevant information on the behaviour of designers and their reliance on patent or registered design rights. It showed that in 2009, approximately 30,825 registered IPR were granted in the UK (5,428 patents, 2,111 designs and 23,286 trademarks) and that the majority of the UK's 2 million businesses rely not on patents or registered design rights but on unregistered IPR. The small number of designs registered in the UK in 2009 were overshadowed by the total number of 232,000 designers in the UK, confirming that only 0.009% of designers register their rights, with the rest relying on unregistered rights such as unregistered design, copyright and unregistered trademarks. According to ACID submissions, many designers find it too expensive to register their rights, and legal costs deter and inhibit enforcement. This makes the establishment of the actual levels of infringement more difficult, but in many ways more pressing.

ACID's submission to the Designs Consultation 2012 sets out ACID's case for greater protection for designers, and we note the strength of conviction embodied in this submission. Its survey of designers was, unfortunately, slightly less impressive and, despite our support for surveying creators as a key element for improving measurement of actual infringement of design rights, it is equally clear that the number taking the survey (99) was not representative of the total number of UK designers. ACID did, however, manage to get 700 signatures on its petition to the Number 10 website, but this is dwarfed by the total number of UK designers shown in the ACID Submission to the 2011 Consultation on Copyright.²⁶⁴ We suggest that ACID needs support to create a more representative sample for its survey, and that this should be run no less frequently than annually to start the process of systematically capturing data on infringements consistently and at regular intervals.

263 <http://www.ipo.gov.uk/ipreview-c4e-sub-acid.pdf>

264 <http://www.acid.uk.com/acid-submission-copyright-consultation.html>

ACID CEO Dids Macdonald contributed an article ‘Safeguarding Design Assets: A UK Perspective’ to WIPO Magazine February 2012,²⁶⁵ which was a useful summary of the challenges of enforcement of design rights. She notes the “David versus Goliath” nature of the problem impacting small design businesses and the fact that criminal sanctions are not available for unauthorised copying of a design, unlike the situation with copyright infringement. She also notes the vulnerability of design ideas to theft, when dealing with third parties, and also issues with new product launches at exhibitions. ACID maintains a Design Data Bank, with approximately 300,000 copies of members’ designs, to provide independent evidence of a design’s existence on a particular date. This can be used as an audit trail to support an infringement claim, along with the ACID IP Tracker, which monitors delivery of confidential design information across email. More fundamentally, Macdonald highlights the dichotomy within design rights enforcement in assessing the scale of infringement of individual designers’ IPR as opposed to those of corporate owners. This is a key issue driving the need for a cohesive and effective methodology to measure the scale of infringement. It is also why we propose the adoption of Weatherall and Webster’s ‘creators’ survey model (see below and within Patents) subject to the same caveats, to provide a way to capture more reliable information from both companies and designers. There is every reason to believe this survey model can be combined with ACID’s to provide a systemic, frequent and consistent sampling of the community of designers in the UK.

2.4.2 GOVERNMENT RESEARCH

IPO/ROBERT PITKETHLEY We looked at the 2006 ‘UK IP Awareness Survey 2006 Intellectual Property Survey’,²⁶⁶ which outlines a number of measures of IP awareness, which “whilst their content may be subject to debate, can give a valid and reliable measure of the underlying concept of IP awareness for use in directing efforts to promote IP awareness.” It was not irrelevant for the measurement of the level of infringement of design rights.

2.4.3 ACADEMIC RESEARCH

WEATHERALL & WEBSTER Their 2010 study on ‘Patent Infringement in Australia’²⁶⁷ has a compelling approach to measuring patent infringement that we feel could be applied to measuring infringement design rights. As the UK trade body ACID already undertakes a member survey, it is reasonable to believe the adoption of an enhanced ‘creator/inventor’ survey could become the cornerstone of a ‘hybrid’ methodology to capture reliable data on levels of infringement. It is subject to the same methodological concerns expressed within the Patent section about relying solely on this ‘designer’ survey approach, but if those caveats are assuaged, there is every reason to believe this approach will provide an improved and ultimately robust methodology to measure infringement of design rights.

265 http://www.wipo.int/wipo_magazine/en/2012/01/article_0005.html

266 UK IP Awareness Survey 2006 Intellectual Property Survey 2006 Dr Robert Pitkethley <http://www.ipo.gov.uk/ipsurvey.pdf>

267 Weatherall, Kimberlee G. and Webster, Elizabeth M., Patent Infringement in Australia: Results from a Survey (June 1, 2010). Federal Law Review, Vol. 38, No. 1, pp.21-70, 2010; University of Queensland TC Beirne School of Law Research Paper No. 10-14. Available at SSRN: <http://ssrn.com/abstract=1648643>

IPKAT/DESIGN RIGHTS Despite the extensive resources available on design at David Musker's design-focused website,²⁶⁸ there was little indication of research into the scales of infringement and appropriate methodologies to measure them. This was confirmed by Musker's colleague, IPKat founder Jeremy Phillips, who pointed to the most recent cases involving Apple and Samsung as providing the most current information about the state of the science within this branch of IP law. This included information on the 2012 London court decisions that Samsung had not copied Apple's iPad design and which ordered Apple to announce the decision on its UK website and to buy newspaper advertisements.²⁶⁹ Subsequently, the Court of Appeal confirmed that the Samsung Galaxy did not copy Apple's tablet design, reinforcing the earlier decision.²⁷⁰

DUMONT & JANIS Their 2013 paper 'Virtual Designs'²⁷¹ described how industrial design is increasingly moving to the 'virtual world' and introducing challenges to what they describe as the design patent system. The authors note that the US Patent and Trademark Office has granted a substantial number (at least several thousand) of design patents on virtual designs, designs of graphical user interfaces for smartphones, tablets, and other products, and designs of icons or other 'virtual' artefacts. They also report that many other design-patent applications are pending and more US design-patent applications have been filed for virtual designs than for nearly any other type of design subject matter over the past year.

The study undertakes the first comprehensive analysis of design-patent protection for virtual designs and look at the eligibility of virtual designs as design patents - something that has not yet been tested in the courts. Whilst attempting to show that longstanding principles of design-patent jurisprudence could provide an answer to the question, they present the results of their empirical study analysing all issued US design patents on virtual designs and their prosecution histories. They conclude that utility patent metrics for quality and value can be extended to design patents and that these indicate design patents on virtual designs "fare at least as well in quality and value as do design patents on other types of designs."

They also point to identifying issues that are likely to arise in anticipated future litigation over patents on virtual designs. The value of this study to our review is as an indication of the future nature of design (patent) rights and the increased complexities and challenges of identifying infringement of such rights in the virtual world. However, there is no indication of how infringement of such rights should be measured, but any recommended methodology for measuring infringement of design rights should take into account the changing nature of designs to become more future facing if not future proof.

WALTER The 60-year old 'A Ten-Year Survey of Design Patent Litigation'²⁷² appeared to be the only significant study conducted into design-right litigation and, given the way rights are structured in the US, the survey uses a very similar methodology to those we have seen for

268 <http://design-law.wikispaces.com>

269 Hodges, Jeremy (July 26, 2012). 'Apple Gets Stay on Posting Notice Over Samsung Tablet', Bloomberg.

270 <http://www.guardian.co.uk/technology/2012/oct/18/samsung-galaxy-tab-apple-ipad>

271 Du Mont, Jason J. and Janis, Mark D., Virtual Designs (May 16, 2013). Stanford Technology Law Review (2013 Forthcoming); Max Planck Institute for Intellectual Property & Competition Law Research Paper No. 13-13; Indiana Legal Studies Research Paper No. 242. Available at SSRN: <http://ssrn.com/abstract=2265733>

272 Walter R. (1953). A Ten-Year Survey of Design Patent Litigation. Patent Office Society Vol.35 no.6.

patent litigation. The study assesses US levels of infringement of IPR between 1942 and 1951, by counting the number of court cases. However, its value here lies in the assertion that “more than three times as many design patents were found invalid than judged to be good”.²⁷³ Steven Church²⁷⁴ noted design patents from 1942 to 1951 were held valid only 23% of the time. Despite the age of the findings, this suggests that not all designs are capable of being litigated, even if they are infringed - perhaps an aspect worth considering when developing a multi-approach methodology to measure infringement of design rights.

CHEN & LIANG In their 2006 paper, ‘Infringement of Intellectual Property Rights of Industrial Design: Multinationals’ Strategy, Practice, and Concerns in China’,²⁷⁵ Chen and Liang outline how multinationals conduct risk assessments of design-rights infringement when deciding whether to enter the China market or use a local partnership structure, either through merger or acquisition deals. They also use specialised firms to carry out investigations and research in the market to secure insight into potential or current infringement problems. The authors note that multinationals apply “vigorously” for design patents in China, especially as many outsource an increasing amount of design work to Chinese designers and manufacturers. Their infringement strategies include: i) early settlement to ensure the local manufacturer ceases the infringements; ii) offensive invalidation where the firm looks to invalidate the ‘fake’ patents; iii) use of the first level of IPR enforcement in China in ‘administrative actions’; iv) use of civil and criminal suits in a local action for infringement of design rights; and v) use of Customs measures to enable Customs to seize any products infringing their design rights by ensuring they are categorised as “prohibited products” by Customs.

The study suggests that for the purposes of developing methods to estimate levels of infringement of design rights, multinational firms rely on similar methodologies as those used for counting counterfeits in international markets. Despite the imperfections associated with seizure data, Customs seizures are nonetheless an integral part of any enforcement approach and a cornerstone of a multi-level methodology for measuring levels of design-right infringements.

APPENDIX 3 THE TRADE BODIES’ VIEWS ON IPR INFRINGEMENT RESEARCH

3.1 INTRODUCTION: DIFFERENT TYPES OF TRADE BODIES

Umbrella Groups Within this group, there is a distinction between those few whose primary role is lobbying against IP infringement (e.g. Industry Trust and Alliance for IP and Anti-Counterfeiting Group) and the majority of trade bodies with a wider remit (but one that includes opposition to piracy) such as UK Music and UKIE.

273 *ibid* p.389

274 Church S. A. (1997). The Weakening of the Presumption of Validity for Design Patents: Continued Confusion under the Functionality and Matter of Concern Doctrines. *Indiana Law Review*. Vol. 30 No. 2 p.2.

275 Chen Z. & Liang H (2006) Infringement of Intellectual Property Rights of Industrial Design: Multinationals’ Strategy, Practice, and Concerns in China at the 7th International Conference on Computer-Aided Industrial Design and Conceptual Design, 2006. CAIDCD ‘06. p.14 <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=4127052&isnumber=4117910>

Single Sector BPI, MPA, BSA, FAST, BVA, MPAA and ACID.

Enforcement Agencies FACT, FAST and the PA's Piracy Portal and the RIAA and BPI's Anti-Piracy Unit.

Collective Licensing Bodies PPL, PRS for Music and PLS.

There are different types of research approaches employed by the various trade bodies, enforcement agencies and collective licensing bodies.

1. The first type we came across was carried out by industry organisations with sufficient financial resources to conduct regular wide-scale consumer and market research in an effort to calculate the levels of infringement of their IP rights. This category would include the RIAA, BPI, IFPI, MPAA, BSA and BVA. Such bodies also carry out a separate level of market intelligence-based research designed to identify major counterfeiting and piracy offline, along with increasing use of online tools such as web crawlers and deep packet inspection of the major Torrent sites. Finally, they use notice and take-down procedures to try and highlight infringing content, and this is accompanied more recently by use of the Copyright, Designs and Patents Act 1988 to block websites infringing their rights on a significant scale.
2. The second group - which includes the majority of trade bodies and enforcement agencies we have met - are those, which do not survey the market as such, and mainly rely on the notice and take-down procedures as their tool for dealing with wide-scale infringement. This is often accompanied by discussions with certain websites about licensing the use of rights. This second group includes the PA, PPA and the MPA. One of the reasons we believe such trade bodies are unable to carry out wide-reaching market surveys is the question of meeting the considerable costs involved, and a belief that focusing on actual infringement is a better use of available resources.

3.2 SUMMARIES OF DISCUSSIONS WITH TRADE BODIES

ALLIANCE FOR IP (AFIP) and BPI

We met with AFIP and the BPI at the start of our trade body meetings and again at the end. Their advice on other trade bodies to meet was invaluable to our review. We explained the nature of our research and how our project is about understanding the nature of the processes used to measure infringement.

The Alliance was very keen at the outset to stress that it was important to be able to distinguish between civil and criminal infringement, and that we should measure different ways in which IP crime is prosecuted. It considered patents different to the other IPRs covered by AFIP whose focus, given its membership, is on copyright, trademarks and design rights. It emphasised the importance of both digital and physical infringement and the role of Trading Standards in enforcement.

On how best to find evidence and data pertaining to the specific enforcement of rights of its members, a number of suggestions were made:

1. Regarding design rights, we were guided to ACID and also informed that ACID runs a series of membership surveys as well as producing case studies.
2. We were advised to speak to the BVA, whose annual survey with Ipsos is considered the 'standard' amongst Alliance members for its measurement of IPR infringement.
3. The BPI recommended we review its counterfeit report from 2007, as this is most recent one BPI have done. BPI also suggested we refer to the Wiggins annual entertainment survey, which has a strong focus on digital.
4. AfIP mentioned the gaming industry, where it appears that there is little enforcement action taken by industry apart from Sega and Sports Interactive; the latter company developed the 'Football Manager' game and actively seek to protect its rights. An important consideration is that gaming firms have additional levels of protection available from digital rights management (DRM) and technical protection measures (TPM) to protect rights to software and hardware.
5. It was also suggested we talk to the Anti-Counterfeiting Group (ACG), especially in relation to brands and trademarks.

We had a discussion on new methodologies to measure infringement, and both doubted whether there would be a single methodology for the copyright industries, let alone other IP rights-based industries. We mentioned we were possibly looking at other tools, including those provided by new-generation tech firms like Musicmetric. BPI agreed this was a possible next level for measurement.

In relation to the book industry, we mentioned that there is little industry-wide research but that some of larger book publishers do carry out some piracy research, even though they are unable to share their findings with others due to competition law.

It was also recommended we view the latest iteration of the IPO Trading Standards Survey, published in July 2013.

Meeting 2: at BPI, 9th July 2013

The aim of this follow-up meeting was to provide the Alliance group with an update of our research project and preview some of our findings.

The team commented on the lack of suitable, purely academic research on measuring infringement in the copyright part of our review. AFIP asked whether this was because most viable academic research was either government or industry commissioned.

PA pointed out that it has data on identifying infringement but not on the scale of infringement. PA is happy to share its data with us. AFIP noted offline enforcement activities are very dependent on human resources and budget, and much less so on research findings. The Alliance members' resources are very much focused on active enforcement.

We noted that part of future research work should include a study on the effectiveness of enforcement. We are not aware of industry or government data on the impact of enforcement on the IPR infringement problem.

With regard to online infringement measurement, we indicated current methods seem only to achieve a snapshot, rather than an accurate measurement of the real scale of the infringements. This echoes comments from RIAA and the IFPI, with the latter accepting that piracy is here to stay and never can be measured fully. This also seems to bear out distinguished statistician David Spiegelhalter's²⁷⁶ comments about accepting we live in a world of uncertainties.

BSA argued that the patent system in the UK works well, and offered to help find more US industry information on patent-infringement measurements. Some concern was voiced that patents were part of our remit, given the substantial differences in infringement relative to copyright and trademarks. It was also felt that it would have been more effective to concentrate the study's efforts on the demand side of IPR infringement.

ACG pointed to hard data regarding trademarks on the BASCAP website,²⁷⁷ and noted that much of the copyright research we have reviewed is also relevant for trademarks.

PA argued that the amount of ad-hoc research reflects the rapidly changing market and that methodologies have to change to keep pace and address the most urgent and newest market issues. PA noted that the main driver for undertaking research would be the cost/benefits analysis to support business decisions and investment decisions, rather than just for lobbying purposes. This also explains why some research and data remain hard to locate and why trade bodies sometimes do not publish the information.

ACG noted that the pharmaceutical industry is very hesitant to disclose any statistics and that it is difficult to get them engaged. The only information available is via HMRC. Equally, as regards Customs seizure figures, the only available official data is via EU Customs, and any other disclosure of figures would be unlawful. This might change with a new law due to come in, even if it is not clear how and when.

We were informed that with regard to UKIE, gaming data and stats are quite fractured, as the market has changed significantly. There are some day-to-day insights similar to other trade bodies, but the measurement and tracking of on-going IP enforcement is not being done. "The world is changing too quickly."

ANTI COPYING IN DESIGN (ACID)

We had email and telephone contact with the CEO and also tried to meet a lawyer at ACID to discuss the Lucas Films court case over the Star wars helmets.

Whilst unable at the time to meet them in person, we note that ACID has attracted greater support since the Hargreaves Review, which would seem to have been a turning point for designers - a fact reflected by legislative initiatives such as the IP Bill²⁷⁸ and a strengthening of

276 <http://understandinguncertainty.org/node/58>

277 <http://www.iccwbo.org/advocacy-codes-and-rules/bascap/>

278 <http://services.parliament.uk/bills/2013-14/intellectualproperty.html>

the rights of designers by removing Section 52CDPA through the Enterprise and Regulatory Reform Act. ACID was willing to comment on our goal of improving the measurement of design-rights infringement as being a resource (as in cost) issue and pointed to its current member surveys²⁷⁹ and case study approach²⁸⁰ as being what it can afford to do.

ANTI-COUNTERFEITING GROUP (ACG)

Email and meeting at Alliance.

ACG indicated it would not be able to complete our questionnaire on its own and instead recommended we have the questions answered by individual members. This was actually one of the best responses to our review, as it yielded some real insights into the divergent ACG member views on IP infringement and how they measure it. These are contained in Appendix 4.

ACG is keen on a more business-like approach to measuring counterfeiting, but as it is cross sectorial it has unique challenges for assessing the scale of piracy and counterfeiting, whereas the copyright-based content industries generally have a single product to concern themselves with. ACG noted that some brands are able to measure activity in their markets.

Whilst Chinese authorities are becoming more proactive in impounding counterfeits in China before they leave, we have yet to see a significant decline in the availability of fakes in the UK.

The main challenge of measuring counterfeiting is that it is both an offline and online phenomenon, yet it is usually treated as being predominantly being about the offline world. As it is in fact about physical goods, challenges arise with offers online through websites that are designed to look like retail stores, but are dedicated to selling counterfeits, and through offers of counterfeits on platforms like eBay and Amazon Marketplace. It is very hard for consumers to distinguish between fake and real articles online, particularly when sold through popular platforms

BSA | THE SOFTWARE ALLIANCE (BSA)

Email exchange and meeting at the Alliance.

We received BSA's extensive comments on its methodology for its 2011 'Piracy Study'.²⁸¹ Notably, BSA's was the speediest and most complete response to our questions about methodology. BSA also attended the Alliance meeting on 9th July. In the emails, we repeated the concerns expressed about its data within the Hargreaves Review supporting documents, and BSA's response was a robust defence of its study and its methodology. BSA also noted that in 2011 the study methodology was reviewed by two academics from the University of California, Irvine²⁸² who concluded that the methodology was robust, and that the study provided as accurate a measure as possible of a market that is inherently difficult to measure.

279 94 responses to the 2012 ACID Survey and 99 responses to the 2009 survey. <http://www.acid.uk.com/government-ip-design-consultation.html>

280 <http://www.acid.uk.com/acid-case-studies.html>

281 <http://globalstudy.bsa.org/2011/methodology.html>.

282 <http://globalstudy.bsa.org/2011/methodology.html>

In this, BSA noted that the main Hargreaves report cites the BSA 2008 study and the software piracy rate for the UK in the table, but erroneously refers to BSA as the British Software Alliance. In their view, “the issue of substitution rate comes up time and time again, and certainly was the main point of contention in the TERA report... It’s an easy way for sceptics to poke holes in industry data (without having to be able to provide anything more accurate) but it’s somewhat perpetuated by industry’s use of the term “losses” when expressing the value of pirated goods.”

BSA also pointed out that BSA had stopped referring to “losses” several years ago, instead using the term “commercial value of pirated software” in order to reflect that not every pirated software copy is an otherwise purchased copy. The BSA were also at great pains to accurately quantify the “commercial value” by using a blended price reflecting the mix of software costs in that market, including the proportion of retail sales, volume license, OEM, non-profit discounts, etc. and the fact that some legally used software is open source software with no market value but still properly ‘licensed’.

In contrast to BSA’s approach, some studies use retail value-to-value “losses”, whether or not that accurately reflects the price distribution in the market. Yet BSA is regularly accused of implying a 1-1 substitution rate and valuing all pirated software units at retail value. On how their data included in the TERA report was treated by the Hargreaves team, BSA argued that it was perfectly clear to them what assumptions TERA had applied to the BSA data in coming up with its estimates on software, but that Hargreaves document instead chose to assert that it was arbitrary and not explained.

BSA also pointed to the GAO report as another example of an assessment of piracy research that did not include research into the studies itself, but instead repeated publicly available (and many of them outdated) criticisms and relied on well-known sceptics as the basis for its conclusions.

BRITISH VIDEO ASSOCIATION (BVA)

Meeting at BVA’s offices.

The initial focus of our meeting was on BVA’s Ipsos research, which we had heard from the Alliance was the most highly regarded UK- industry generated research.

BVA uses Ipsos Omnibus research to track the financial impact of copyright infringement, but it carries out other research, in house and in conjunction with MPAA and other trade bodies. The BVA has been tracking infringement with Ipsos for eight years, with the survey being undertaken annually, during the November and December ‘high season’ - a period that represents around 20% of annual video sales. In the past two years, dips were attempted but abandoned due to resource issues and costs and have now been taken up by the MPAA itself across several European territories.

The 2008 findings were considered to be unreliable and these it is believed were due to publicity and debates on copyright infringement, which raised public awareness of the problem. As a result, the Ipsos study methodology had to be adapted to remove personal data from respondents, which is normally used for spot-checking in field research. Making the survey

anonymous addresses possible reluctance that respondents might have about talking freely and honestly about their infringing behaviour.

The objective of this type of on-going research is to help inform and support the industry's political position. It also supports the BVA's lobbying activities, especially with Police, local government and Trading Standards, which has resulted in Local Authority run markets signing charters to make them safer environments and prevent under-age and criminal activities/rogue traders engaging in physical piracy. Its work with local authorities, along with a national campaign (The Real Deal), led to a 50% drop-off in illegal activities at markets and car boot sales. Enforcement work is carried out by FACT, the BVA's external anti-piracy body, which is run by former police officers who can also confirm Ipsos' findings of a downward trend in physical piracy.

Other research and education activities have included:

1. Joint Surveys with FDA and BPI and a first wave ACG study by IPSOS into fake fashion brands funded through the Industry Trust (see below).
2. Kantar Worldpanel: This is an on-going consumer tracking study to measure and understand the legitimate market. It uses a GB entertainment panel of 15,000 consumers that is cross-checkable with continuous and ad-hoc availability
3. The Content Map: This is an online portal developed by the BVA and Alliance for IP to signpost legitimate download and streaming services in film & TV, games, sport, ebooks and music.
4. FACT internet enforcement: This work is undertaken directly in conjunction with BVA's and FACT's members and MPAA to remove infringing sites and links, take legal action where necessary, liaise with the advertising community to reduce funding of illegal sites through online ads and feed intelligence to PIPCU to help enforcement against serious and organised crime.
5. Funding in Education: In 2004, the BVA set up the Industry Trust for IP Awareness to undertake consumer copyright education. It has spent over £10 million to change public behaviour and attitudes and discourage illegal activities by inspiring greater use of legal services to reduce the impact of piracy and IP infringement on the industry (see four-point strategy below).
6. Sandtable: Projection and forecast model developed jointly by the Industry Trust with MPAA - provides insight in what the audience does and what influences them as insatiable consumers. A SIM (simulation) produces variable scenarios to predict varying outcomes. An algorithm changes the balance of the four strategic activities (see below) to create variable scenarios to produce different outcomes with the aim of identifying the most effective use of pricing, education, enforcement, etc, to identify the best combination to apply the four-point strategy and ultimately to help decide where the money should be invested.

The long-term BVA strategy is based around enforcement, education, lobbying for legislative

reform and public enforcement as well as technology application to secure content and make it available safely and securely. BVA's Director General also suggested a direct correlation between online viewing and piracy behaviour with broadband speed and penetration.

DESIGN AND ARTISTS COPYRIGHT SOCIETY (DACS)

One team member met with DACS, the rights management organisation for visual artists, representing over 80,000 creative individuals including fine artists, photographers and illustrators from the UK and abroad.

DACS's involvement with enforcement against infringement of the rights of its members means that in practice, once infringement occurs, it helps its members carry out settlement negotiations. Given that de facto none of the infringement proceedings reach court, there is no systematic information available as to the nature or even the extent of IP infringement. The settlements agreed involve a retrospective payment for the infringing use, although future uses can be considered in ensuing negotiations depending on the stipulations of the rights holder.

As part of the submission to the Hargreaves Review of IP, DACS, like several other trade bodies, undertook a one-off member survey²⁸³ (and received over 1800 responses including questions on enforcement) with the findings of the survey forming part of the submission. We were made aware that DACS, in common with certain other trade bodies, can and does survey its members regularly and we believe this has value in providing potential further unique insights and data to add to the approaches we recommend for estimating overall IPR infringement levels in this sector.

We note that a significant percentage of rights holders represented by DACS are photographers, and we sought its opinions on infringement of their rights, as there appears to be no systematic measurement of infringement by DACS (or by trade bodies for photographers like the AOP). We were provided with anecdotal evidence of the ease with which photographers' rights can be flagrantly infringed, but it is clear that the chances of policing online use of their work was limited and that few are able to devote the time and money needed to look out for unlawful uses of their images.

FEDERATION AGAINST COPYRIGHT THEFT (FACT)

Met at FACT.

FACT gathers intelligence and other data to enable the day-to-day enforcement work. None of this intelligence work is made public, but it may be shared with law enforcement partners including police, Trading Standards and the IPO's IP Intelligence Unit.

FACT can show evidence of an increasing move from offline to online sale of counterfeit hard goods, especially on eBay and Amazon Marketplace. It produces information to enable law enforcement to take action. Hard goods are now only a small part of its activities – digital piracy is its main focus.

283 http://www.dacs.org.uk/DACSO/media/DACSDocs/DACS-artists-survey_Feb-2012.pdf

FACT has to follow regulatory guidelines on the gathering and use of intelligence to support both civil and criminal enforcement. FACT has over 40 different strategies to tackle infringement.

On measuring the levels of infringement, it agreed that surveys, by their very nature, could not be as accurate as observed behaviour, which is far more insightful. It also pointed to the diminishing importance of offline enforcement (as in markets and car boot fairs), because the majority of infringing goods are now sold online. The problem for online is the ease with which 'cloned' counterfeited DVDs are priced 'smartly' by counterfeiters - just below the price for legitimate goods but not so far below as to appear fake. These almost perfect copies are sold on eBay and also on apparently legitimate sites, then shipped to customers.

Counterfeiters (usually from China) send the counterfeit goods by post, marked as 'gifts', or they 'drop ship'²⁸⁴ the fakes. This raised the question of how to measure the scale of this activity. FACT liaises with the UK Border Force, which is currently dealing with massive amounts of counterfeit medicines. FACT highlighted the nature of pirate/counterfeit sites, most of which will feature apparently authentic adverts from legitimate brands, with the purpose of 'fooling' the consumer.

FACT's enforcement tactics could involve use of Norwich Pharmacal orders, but the overall key strategy is to disrupt infringing sites. We asked whether there was evidence of different motivations amongst mobile operators to usual ISPs in relation to cooperating with rightsholders to manage piracy. FACT hopes they will engage with it as the landscape for infringement is changing, given consumers are making increasing use of mobile broadband instead of fixed broadband. It admitted that encryption is the biggest hurdle to the monitoring of infringing content,

Finally, it confirmed that evidence/intelligence on counterfeiting and piracy was provided to the IPO. FACT also liaises with the Police IP Crime Unit based in the City of London Police, along with other enforcement bodies as IPO is not an enforcement agency and thus cannot take direct action itself. FACT suggested we also contact the Trading Standards Institute.²⁸⁵ FACT also acknowledged that the content industries, trade bodies and enforcement agencies' ability to share information is subject to the provisions of the Data Protection Act.

FEDERATION AGAINST SOFTWARE THEFT (FAST)

Meeting at Law Society.

FAST was formed in 1984; at which time its main concerns were physical piracy. The main FAST members are large software firms including Microsoft and Adobe, plus a large number of UK law firms.

Although interested in our remit to examine all methodologies used to measure IPR infringement, it is evident that FAST commissions some types of research but offers little information about its actual methodologies. We discussed whether piracy was inbuilt to the software industry, as there is a sense it has always been at high levels, notably because hardware used to be the main driver of the business while software at that time was customarily 'given away' with

284 meaning the 'order' is shipped by another firm, usually the manufacturer.

285 <http://www.tradingstandards.gov.uk>

machines. This has changed over the past decade, but now there are lots of software products capable of doing the same thing, e.g. Linux vs. Microsoft.

We also touched on the on-going paradox of open and closed systems in the software industry - a dynamic that characterises recent competition and conflicts between Google and Apple.²⁸⁶

It was evident that some software firms care more about piracy than others, and also that the most significant levels of piracy they enforce occur in businesses. FAST relies on BSA data for its IP-related policy issues, and when we asked if individual firms also undertake their own anti-piracy research FAST indicated that only Microsoft would do this.

INTERNATIONAL FEDERATION OF PHONOGRAPHIC INDUSTRIES (IFPI)

IFPI noted the challenging nature of our task and commented: “It is an impossible exercise to precisely measure piracy because of the nature of the activity. Over the past 15 years multiple studies tried to address this issue, however none deliver a final and precise assessment. The answer is in the body of work in this area rather than a single study.”

It argued that the combination approach to measuring piracy is the way forward, which fits in with our own original analysis and thinking and what we have heard from experts. We were now describing this as the ‘blended’ approach. IFPI also pointed to emerging capabilities and technological improvements making it easier to adopt the observational approach in conjunction with the standard survey approach. This process has evolved over the past few years and it is now about merging analysis of behaviours with trends in the market.

There are new models and Comscore and Compete now also offer Nielsen’s ‘panel’ model. Each platform offers metrics and observation, although one limitation is that the panel only operates on PC platforms and does not yet include mobile coverage, although both Nielsen and Comscore have mentioned plans to introduce it. The uniqueness of this approach was its origin, which lay in tracking advertising rather than piracy, so it was not developed with piracy in mind. The kind of data generated is still capable of being used in ways not envisaged by these firms.²⁸⁷

IFPI believes that interests are increasingly conjoined amongst the key players in the market, not just amongst the content firms but also the technology firms (and ISPs), as there is now a greater alignment of economic interests.²⁸⁸ They also noted recent demands by the UK government for ISPs to monitor content on their networks, notably pornography.

The trend in music industry research is to focus on new business models such as streaming, as well as continuing to prioritise the understanding of trends in piracy and the impact of enforcement/education. We also discussed a possible greater role for the IPO in providing broad-based but industry-relevant research

286 As described in Luke Dormehl’s ‘The Apple Revolution: Steve Jobs, the Counter Culture and How the Crazy Ones Took Over the World’, which cites (p.477) a ground-breaking 1997 Wired article by Peter Schwartz and Peter Leyden, entitled ‘The Long Boom – a history of the Future 1980-2020’.

287 See related JRC/EC 2013 study and IFPI response.

288 Example is YouTube does not benefit from consumers ‘ripping’ streams from its portal, as they do not provide clicks for ads.

INTELLECT

Intellect is the trade body representing the major technology firms in the UK and an essential voice in research on patents. It also has strong views on copyright infringement, which may bear out the assertion that most tech firms want to see 'open source' frameworks and thus oppose any significant control from content owners. We were unable to meet with Intellect during our review, despite some helpful introductions made late on in the process. We certainly gained the impression that it might be willing to participate in subsequent reviews in relation to various forms of IPR infringement that impact its members.

MUSIC PUBLISHERS ASSOCIATION (MPA)

Meeting at MPA offices.

The MPA focuses its efforts on three aspects of online infringement - lyrics, notation and chords/tabs. A number of MPA members have concluded license deals with some of the major infringing websites in recent years and believe the amount secured from these licensing deals can be seen as some measure of the losses from the infringing websites and piracy of these core music-publishing rights. There are new websites emerging, including LyricFind, which offer a route by which publishers can license their rights. The key is their guarantee that all lyrics made available online will be authorised - an important factor given the volume of inaccurate lyrics on the web.

MPA noted that different types of music are more sensitive to infringement and that some are more price-sensitive than others. In the absence of formal research on the impact of piracy on sheet music, we raised the question of data on print runs over the past decade, and whether these have changed significantly. Such research on the physical printed music sales market might provide some indication of any damage caused by the online availability of illicit content, or whether such activity is additional to the legitimate physical market. In fact, the impetus within music publishing is on licensing wherever possible,²⁸⁹ and this mantra for more than the past 10 years has worked well enough given recent deals with Songster and Ultimate Guitar Tab.

As part of their services for members the MPA send notice and take down / cease and desist letters. In addition, the MPA Board is considering whether it should increase the amount of resource it puts into anti-piracy activity to make it a core function of the organisation and as part of that would consider partnering with other industry organisations

MOTION PICTURE ASSOCIATION OF AMERICA (MPAA)

Skype call.

We mentioned how music and film seem to be the dominant sources for research into infringement and illicit exchange of copyright content. We believe this underscores the issue of whether research is as much about resources (financial and personnel) as policy making and lobbying. We also noted the number of trade bodies that admitted they were unable to devote the resources needed to come up with kind of research provided by MPAA and also noted cross-sectorial support for certain research papers.

289 As espoused by former MPA President Paul Curran.

The MPAA noted there are also efforts being undertaken by industry internally, such as FACT's intelligence that is not for public dissemination. MPAA mentioned the film industry devotes a lot of resources to dealing with the day- to-day issues of managing rights in highly contested environments like the Web.

There are different types of sources for research in this area including consumer surveys and empirical data about website traffic and content consumption. Film and music industries adopt very similar approaches to research by using surveys (e.g. Ipsos), aggregating online website traffic data using data sources by website traffic measurement firms like Alexa, Comscore, Hitwise, Nielsen and Compete, and relying on other data sources such as Movie Labs.²⁹⁰

We mentioned our review of the Net-Names/Envisional research (2011) sponsored by NBC-Universal that we felt was a good example of quality research with clear methods, with some limitations. The report, entitled "Sizing The Piracy Universe"²⁹¹ has since been updated and expanded, published in September 2013.

We discussed the recent Ofcom research and we mentioned positive aspects of its methodology, including its acknowledgement that an online survey, indeed any single methodology, was unlikely to provide the kind of rigorous analysis we are looking for. However, there is also room for more segmentation analysis to provide more meaningful insights, and this appears to be in evidence in the latest iteration of its research.

We mentioned our recent dialogue with BitTorrent Inc (BTI) and how it has announced some very critical data on the 2012 levels of usage of BTI protocol. We discussed different ways to interrogate BitTorrent and how surprising it is that BTI could identify the types of content being 'shared', given its oft-repeated claim that it "cannot track user behaviour." MPAA suggested BTI might monitor the content based on file names (which is what others do). But we believe even this cannot explain how it knows the content of each bundle, begging the question of whether it is using DPI to do so. MPAA recommended we look at an Australian study on DPI.

A discussion then took place about the standard survey approach and we argued that, based on our research to date, we were leaning towards tools that measured 'observed' behaviour as being more robust and representative of consumer behaviour. However, MPAA noted that while survey data has limitations, data provided by online measurement panels (e.g. Nielsen) also must be used carefully; for example, a website visit is not equivalent to having consumed or downloaded the content.²⁹² The MPAA does aim to use and incorporate different methodologies to arrive at findings and we indicated this was something we had noticed in the Kantar/Ofcom study methodology.

290 <http://www.movielabs.com>

291 <http://www.netnames.com/digital-piracy-sizing-piracy-universe>

292 For example, the content industries and others have raised concerns about the methodology used in the February 2013 JRC/EC research based on Nielsen clickstream data, given that it is not structured to provide a causal answer, only a positively biased correlation. There is no natural experiment in the study and the controls used are inadequate (in fact, the more controls are added, the weaker the results, suggesting if the controls were fully adequate, the results would be different). Some further concerns have been raised in the academic paper "Using data in decision-making" (<http://eprints.uwe.ac.uk/21365/>) as well as by IFPI (http://www.ifpi.org/content/library/IFPI-response-JRC-study_March2013.pdf) and HADOPI (<http://www.futureofcopyright.com/home/blog-post/2013/04/19/hadopi-research-challenges-european-commissions-report-on-the-effects-of-music-piracy.html>).

MPAA also recommended we get in touch with the Industry Trust (actual name is Industry Trust For Intellectual Property Awareness)²⁹³ Key partners for IT are FACT and AFIP.

At the end, we discussed Sandtable's project for the MPAA and The Industry Trust, as suggested by the BVA. The Sandtable SIM (or Simulation) used a concept and approach previously used to investigate and model efforts to reduce smoking among young people, with a focus on the socially determined (e.g. peer pressure) aspects of the problem. We mentioned our concerns about its suitability for our review given it is a 'model' for predicting whether consumer behaviour can be affected by outside factors, rather than a tool to measure actual consumer behaviour. However, it provides insights that allow the industry to preview the effect of different approaches.

We discussed the possibility that the kind of robust and rigorous assessment of piracy and counterfeiting we are looking at might best be conducted by a U.K. government agency such as the IPO or OFCOM to counter the belief that data had been skewed by vested interests. Industry's role would then be about feeding into the IPO assessment the kind of market intelligence data it routinely generates for its members (e.g. FACT's data).

THE PUBLISHERS ASSOCIATION (THE PA)

Email exchange and meeting at the Alliance.

Following email contact with the PA, we sent the questionnaire and its response confirmed that essentially the PA does not currently undertake infringement research as such, but gleans the data required from its own anti-piracy tool, which has been operating since 2009. This PA-owned and managed system, Copyright Infringement Portal (CIP), allows member users to identify, report and monitor infringements by searching known infringing sites for content. The PA currently searches for over 54,000 titles and to date has served over 2.7 million "notice and take-downs" and uses the statistical analysis generated.

The PA's comments at the Alliance meeting also highlight the different motives amongst the various trade bodies for undertaking research, and its view was that research was driven as much, if not more, to support business decisions and investment decisions, not just for lobbying. The PA also argued that this is why some industry research and data remain hard to locate and that some research information is necessarily "commercial in confidence" and not to be shared with wider audiences.

PUBLISHERS LICENSING SOCIETY (PLS)

Meeting at PLS.

PLS recommended we speak to PA, given PA's pivotal role within the UK publishing world as it operates a Copyright Piracy Portal. This Portal is effectively a 'notice and take-down' system, first launched seven to eight years ago. The PPA, ALPSP, IPG and the ALCS also use the CIP. This covers the full gamut of printed materials, from books to magazines and journals.

293 <http://www.copyrightaware.co.uk/about-the-industry-trust/who-we-are.asp>

PROFESSIONAL PUBLISHERS ASSOCIATION (PPA)

Meeting at PPA offices.

The Professional Publishers Association (PPA)²⁹⁴ represents more than 200 companies, covering everything from consumer magazine publishers to business-to-business data and information providers and smaller independents. It has overall concerns regarding the classification of the professional publishing sector, which makes it difficult for the scale of unauthorised use to be picked up and assessed alongside unauthorised use of books, music and films within publications such as the IP Crime Report.

The PPA confirmed that the digital market for magazines is developing but noted that the speed of digital availability is category dependent, with consumer-facing magazines such as Heat having little digital penetration (around 14%) whilst business-facing magazines achieve a higher digital uptake (50%).

Piracy is a considerable problem, especially if magazines are published online in pdf format, making them easy to copy. More sophisticated methods, such as embedded audio-visual elements, are more difficult to copy but also more expensive to produce. Some subscription models are app based, which are expensive to produce. Some PPA members offer high-quality multi-media products for online audiences as well as for mobile platforms and in print. One firm, attracts more than 50 million unique visitors a month online, and is one of the world's leading publishers on tablets.

It is clear that individual companies within the professional publishing industry focus their resources on day-to-day enforcement, so there are no comprehensive figures for the level of infringement of relevant to all PPA members, and its evidence of piracy of members' content is based on specific case studies. Recently, PPA has worked in cooperation with FACT to assess levels of piracy on a few selected titles. However, the PPA also has problems defining piracy, especially when it comes to subscribers who distribute additional copies to friends.

We noted that the PPA ran and coordinated a successful pilot with the PA's Copyright Infringement Portal, and that some individual companies have followed up with use of the portal service. Certainly, the PPA is a trade organisation that could collect data on the level of infringements of its members' rights and collate the data, anonymously, to arrive at a defensible figure.

The impact of piracy on PPA members seems to be dependent on the business model and whether the magazine publisher sells individual copies or is operating a subscription system. It is also evident that secondary markets are increasingly important for the sector, and yet there are no figures on the impact of IP infringement on secondary markets, such as providing access to archives of magazines in addition to the sale of the current edition. There is also no data on the availability of magazines in the cloud. This needs to be undertaken before taking any legislative steps.²⁹⁵

294 <http://www.ppa.co.uk/>

295 As suggested by 'Modernising Copyright'.

RECORDING INDUSTRY ASSOCIATION OF AMERICA (RIAA)

Telephone conference call.

The RIAA uses two different approaches to measuring IPR infringement. The results of much of this work are then shared with the IFPI. In relation to online piracy, it uses consumer research and anti-piracy measures. With the latter, the information is not made public but is simply designed to help its members combat piracy.

On consumer research, it uses behavioural methods and survey methods including a recurring annual survey since 2004. With this annual survey, it has a large panel of about 5,000 online US respondents. The panel is asked wide-ranging questions on listening, acquisition, downloading and sharing (such as via hard drives, etc.) of music. The RIAA utilizes research from multiple research firms and the findings are syndicated to all the major label members.

It accepts the limitations of surveys but believes that with a consistent approach over a lengthy time period and combined with data collected from additional sources, clear trends can emerge and noted incidence levels are consistent. Its approach is very much about “do it properly and repeatedly.” Even though RIAA admitted that some aspects of surveys are less than perfect and argued we live in a world of “imperfect information,” it said that surveys still give it a “very good picture” of what is going on. The RIAA acknowledged that its less-than-perfect methodology is used by opponents to dismiss its findings.

It has other approaches, including using Nielsen click-through data, which it uses for monthly ‘monitoring’ studies. The NPD surveys are conducted three to four times a year. The RIAA also uses other survey tools, including measuring attitudes to piracy, which involves a quantitative approach with qualitative questions. Overall, the RIAA conducts three to five surveys each year via NPD and a further six to twelve monitoring studies through Nielsen as well as occasional other studies with other vendors as well on an as-needed basis.

On its anti-piracy measures, the RIAA uses a combination of in-house staff and third-party firms to crawl the Internet, and this provides the broad data it needs. We asked if it could do more regular and in-depth tracking but the primary focus of these measures is on individual tracks and artists and the goal of these efforts is to link the product to the infringing website so they can issue take-down notices as required for enforcement.

It is clear that the RIAA is increasingly working with ISPs and payment providers to combat infringing sites’ ability to operate, and this is especially important for those based outside the US. It is also evident that its research goals are expanding from wanting to understand the consumer to finding out more about tracking uses of music online. The entire meeting was spent discussing online piracy and we did not cover anything about offline infringement.

UK INTERACTIVE ENTERTAINMENT (UKIE)

As recommended by FACT, we made contact with UKIE and we noted that it might have difficulties presenting a unified voice because of the divergent views that individual games developers and larger corporates advocate on piracy. Given current global annual revenues of \$50 billion, which are expected to rise to \$87 billion by 2014, it can lay claim to being the largest entertainment industry in the world. We were unable to gather information from European trade body, the Interactive Software Federation of Europe (ISFE), which claims: “The interactive software industry, representing the publishers of video games, is the fastest growing sector of the European content industry, with consumer spending estimated at €16 billion in 2011, out of a global market of €60 billion.”²⁹⁶ The presentation we were sent by UKIE after the Alliance meeting highlighted a number of important factors that determine its assessments of piracy.

It is happy to accept the explanations for IP infringement proffered in the ‘Media Piracy in Emerging Economies’²⁹⁷ report. The UKIE researchers also base their piracy research information around data from two sources: the TorrentFreak site, even though such data is of dubious quality and reliability given TorrentFreak’s own 2011 caveat;²⁹⁸ and ISFE, which conducts infringement estimates on a pan-European and national basis (37% piracy in the UK). Its associated trade body ESA²⁹⁹ does not appear to provide any piracy research as such, but is merely a conduit for stats from various pieces of consumer research and information on its anti-piracy programme.

APPENDIX 4 TRADE BODY QUESTIONNAIRE RESPONSES

4.1 ANTI COUNTERFEITING GROUP (ACG) MEMBERS

ACG member 1

1. **Does your organisation currently measure infringements of your rights?** *There is no definitive measure as the level of infringement is so great and across so many platforms and sales arenas that it is acknowledged that the concept of finding an accurate measurement is futile.*
2. **If so, how does your organisation measure such infringement, e.g. seizure statistics, market research, case studies, annual cost of enforcement?** *We measure elements of successful enforcement rather than infringement: seizures, web take-downs, marketplace take-downs, arrests, costs.*
3. **Do you think your methods can be improved? If so, how?** *It is more efficient to concentrate on reduction of infringements. The cost of action is acknowledged to be less than the cost to the business of not taking action. The measurement methods could be improved, but would serve no purpose but to more accurately estimate what we already know.*
4. **What challenges have you faced devising your methods in the past?** *The level and scale of infringement is too great to understand and accurately forecast the level of infringements.*

296 <http://www.isfe.eu/about-isfe>.

297 <http://piracy.ssrc.org/the-report/>

298 “The data for these estimated download numbers is collected by TorrentFreak from several sources, including reports from all public BitTorrent trackers.”

299 <http://www.theesa.com/about/related.asp>

5. **What is your budget for this aspect of your business?** *In the UK, we budget £100,000 to brand protection but we also tap into the >\$10 million budget that we have for global brand protection.*
6. **How often and at what intervals do you benchmark your results?** *Annually for executive review and quarterly for internal team review.*
7. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *Not cost effectively or accurately by our internal team. It may be possible with the assistance of third-party organisations inputting all data, including law enforcement data.*

ACG member 2

1. **Does your organisation currently measure infringements of your rights?** *Yes, for counterfeit goods only.*
2. **If so, how does your organisation measure such infringement, e.g. seizure statistics, market research, case studies, annual cost of enforcement?** *Seizure statistics and annual cost of enforcement.*
3. **Do you think your methods can be improved? If so, how?** *Satisfactory for our current requirements.*
4. **What challenges have you faced devising your methods in the past?** *Biggest challenge is obtaining seizure quantities from law enforcement.*
5. **What is your budget for this aspect of your business?** *Zero.*
6. **How often and at what intervals do you benchmark your results?** *Monthly figures are produced, which are compared year-on-year.*
7. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?**

ACG member 3

1. **Does your organisation currently measure infringements of your rights?** *To a certain extent, yes. By value and numbers of seizures and by numbers of, for example, eBay pages removed, and webpages taken down.*
 2. **If so, how does your organisation measure such infringement, e.g. seizure statistics, market research, case studies, annual cost of enforcement?** *Statistics.*
 3. **Do you think your methods can be improved? If so, how?** *I am sure they can, but with limited resources this works for us.*
 4. **What challenges have you faced devising your methods in the past?** *Details of seizures are often very sketchy, often with no quantity. Sometimes, seizures are not notified to us until after a court case – when our brand seizure has been minimal compared with others and so statements are not requested from us.*
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5. **What is your budget for this aspect of your business?** *There is no specific budget for measuring infringements to our IPR.*
6. **How often and at what intervals do you benchmark your results?** *We record figures monthly and benchmark annually.*
7. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *It is a near-impossible task with so many sources of counterfeit products to be monitored globally. We break down by region but even then with eBay, Facebook, and YouTube as being international sites, as well as all the usual UK markets, etc.*

ACG member 4

1. **Does your organisation currently measure infringements of your (members') rights?**
Yes.
 2. **If so, how does your organisation measure such infringement, e.g. member surveys, consumer surveys, market research, case studies?** *We use seizure stats from Customs, other law enforcement, together with our own court actions and Internet take-downs, etc. We use various graphs and calculations to work out the cost of seizure per item. We also do market surveys in each country where we think we have a problem.*
 3. **Do you think your research process can be improved? If so, how?** *Probably, but if we knew how to we would probably be doing it. We are always looking for improvement and would welcome suggestions.*
 4. **What challenges have you faced undertaking research in the past?** *Getting accurate figures from law enforcement and in a timely manner. Being able to use the information from law enforcement – particularly Customs. Getting accurate and timely invoices for destruction of goods – often one year after seizure. We still get asked to examine goods six months from date of seizure.*
 5. **What is your budget per research project and does it vary from project to project?**
Confidential but approximately \$13 million.
 6. **How often and at what intervals do you conduct your research?** *Every quarter.*
 7. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *No. In addition to complete goods, labels, buttons and other embellishments are often found and it is difficult to say that these items would have been on counterfeit items or not. Also, when doing a seizure, there is no way of knowing how many items the 'factory/wholesaler' has supplied.*
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ACG member 5

1. **Does your organisation currently measure infringements of your rights?** *Yes.*
 2. **If so, how does your organisation measure such infringement, e.g. seizure statistics, market research, case studies, annual cost of enforcement?** *We monitor Torrent sites for illegal downloads of our software, and auction sites and forums for illegal sales. Weekly statistics are produced on the amount of website content or links removed, and we also record all reports we receive from email and phone reports. Because our product is a vehicle service and repair product, there are safety implications in using counterfeit information in this area, so we also conduct business inspections along with law enforcement to remove illegal copies.*
 3. **Do you think your methods can be improved? If so, how?** *Yes. More resources available to Trading Standards and greater education about the seriousness and threat of IP infringement to businesses.*
 4. **What challenges have you faced devising your methods in the past?** *Finding the correct mix of online and on-the-ground services and getting an understanding of the problems faced.*
 5. **What is your budget for this aspect of your business?** *Between £40,000 and £50,000 per year.*
 6. **How often and at what intervals do you benchmark your results?** *Annually, unless a particular new threat or issue comes to light.*
 7. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *So far, all measurement is done by us and not by Trading Standards. It seems the brand owner does this rather than enforcement. There should be ways in which operations or reports are measured by the local authority concerned, as it appears they will enforce only if driven to do so. The concerns of local businesses or the consumer in this area are not really given enough attention. Our work to enforce our product provides us with some statistical information, although we can't cover all businesses in a particular area, but at least we understand the scale of the problem. Therefore, it should be that each authority should know how many businesses repair and service cars (in our case) and how many of these are regularly inspected and given a clean bill of health. Only then will you be able to measure the scale of the problem.*
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4.2 BUSINESS SOFTWARE ALLIANCE (BSA)

1. Does your organisation currently measure infringements of your (members') rights?

Since 2003 we have conducted the annual 'BSA Global Software Piracy Study', which estimates the PC software piracy rates in 110+ countries and the market value of pirated software in each of those countries. The study is conducted with IDC, and recently included Ipsos Public Affairs for an expanded market survey component. At a simplistic level, the study looks at the total PC software units installed in a single year and compares that to the PC software units that were legally licensed/paid for in that year. The difference is the number of units of pirated software. The ratio of pirated software units to total software units installed in the market is the piracy rate. There is a full description/explanation of the methodology on our website here. Just to note, the Piracy Study does not just measure infringement of BSA member companies' software - it looks at all PC software. And in several markets, this study has been expanded at country level to determine the piracy rates by region – France being the most recent. I should also mention that we are in the process of reviewing the 'Global Software Piracy Study' for 2014 to determine whether we should continue it as is, or expand it to cover a broader segment of the software market beyond PC software.

BSA has also done other piracy-related research, often looking at the economic impact of licensed software and the economic losses from pirated software. However, the 'Global Software Piracy Study' is the only global study that quantifies infringement. A few other examples:

'BSA Piracy Impact Study': Also conducted with IDC, this study uses IDC market data to estimate the additional IT spending, jobs, and tax revenues that would result from reducing PC software piracy by X% in approximately 60 countries.

'Competitive Advantage: The Economic Benefits of Properly Licensed Software': Macroeconomic analysis that compares the GDP contribution of properly licensed software to the GDP contribution of pirated software; conducted with INSEAD eLab.

2. If so, how does your organisation measure such infringement, e.g. member surveys, consumer surveys, market research, case studies? *The 'Global Software Piracy*

Study' is a combination of annual market survey (consumer and enterprise), proxy modelling (for those countries that are not surveyed), in-market analyst intelligence, and proprietary market research on software revenues, PC shipments, etc. from IDC. In 2011, for the first time, as part of the survey conducted by Ipsos Public Affairs, we actually asked respondents whether they had ever installed pirated software on their PCs, which was an interesting additional element to the overall data delivered in the report.

In individual countries, BSA often uses survey techniques to capture data on piracy-related attitudes and behaviours for PR purposes. See 'UK Survey of SMEs' conducted by Vanson Bourne and related infographic.

3. Do you think your research process can be improved? If so, how?

In 2011, we had the study methodology reviewed by two academics at the University of Irvine, California, and asked for recommendations on improving the study. They indicated that the methodology was robust and the study provided as accurate a measure as possible of a market that is not easy to measure. The one improvement they suggested was that rather than calculating specific piracy rates for those countries where we do not survey users in that year (and instead use proxy measures to estimate software installed in that year) we should provide ranges to be more accurate. This isn't something we have incorporated at this stage, but is among the considerations as we review the study. You can review their written response on our website.

In addition, the study has been criticised for using proprietary data from IDC among the inputs, which means that the inputs are not fully transparent to those who want to investigate the study findings further. Unfortunately, that's the nature of the methodology and not something we can fix without a complete overhaul.

We are looking at ways to improve the study by expanding the software segments it covers beyond PC software, including cloud piracy, mobile devices, online vs. offline piracy, etc. That kind of breadth would make the study more marketable as a PR tool.

4. What challenges have you faced undertaking research in the past?

- a. *Finding accurate, comparable data across different markets (comparing apples to apples).*
- b. *IPR critics, who reject the notion of piracy, define infringement differently, etc.*
- c. *Cost.*

5. What is your budget per research project and does it vary from project to project?

We don't disclose the budget for the 'Global Piracy Study', which has historically been a relatively consistent annual cost, but there are certainly other research projects for which the costs vary.

6. How often and at what intervals do you conduct your research?

The Global Software Piracy Study has been conducted annually (which works best). The Piracy Impact Study was bi-annual, and a more difficult sell. The most recent study conducted with INSEAD is a one-off and doesn't lend itself to time series data.

7. Which company(ies) did you work with most successfully to get the research completed?

- a. *IDC is good for highly customised technology-oriented research.*
 - b. *INSEAD is a new partner for us and brings a high degree of credibility as a research*
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partner, although its approach is very academic and so has required significant work to create a product that is digestible for a more general public.

8. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?**
 - a. *Perhaps a comparison of enforcement regimes to infringement across markets in order to identify the enforcement measures that are most effective in deterring piracy.*
 - b. *We've also often thought it would be useful to have a case-study approach looking at countries/markets where piracy has been reduced significantly and identifying the drivers (government, law enforcement, industry, economic, etc.).*
 - c. *More academic research into the infringement of IP rights would be useful to balance/reinforce the vast reams of industry-sponsored research that exists.*

IFPI

1. **Does your organisation currently measure infringements of your (members') rights?** *IFPI relies on various indicators to understand piracy trends and how it affects our members. We look at the audience for pirate services (a selected list including music-focused services) across over 20 countries on a monthly basis, conduct consumer research to better understand drivers and behaviour of pirates and look at the supply side via information from our anti-piracy teams. Academic research in this area is also part of the assessment.*
 2. **If so, how does your organisation measure such infringement, e.g. member surveys, consumer surveys, market research, case studies?** *See above.*
 3. **Do you think your research process can be improved? If so, how?** *We are always trying to improve the data sources. For example, including mobile activity is certainly something we are considering, but dependent on third-party data to become available.*
 4. **What challenges have you faced undertaking research in the past?** *Consumer research is now mostly used to track behaviour, rather than incidence. Academics are studying how to adjust survey results in order to more accurately measure piracy; there are a few papers out there on this subject waiting to be peer reviewed.*
 5. **What is your budget per research project and does it vary from project to project?** *Varies.*
 6. **How often and at what intervals do you conduct your research?** *As often as possible and depends by country.*
 7. **Which company(ies) did you work with most successfully to get the research completed?** *We work with companies such as Ipsos, Comscore, Nielsen and others.*
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4.3 MUSIC PUBLISHERS ASSOCIATION

1. **Does your organisation currently measure infringements of your (members') rights?** *No, not in a scientific way; we just have a list of websites. We are aware there is much of it out there and are trying to contain it.*
2. **If so, how does your organisation measure such infringement, e.g. member surveys, consumer surveys, market research, case studies?** *We don't. MPA US puts together some figures of the cost of piracy of sheet music by (I believe) estimating the number of works infringed and putting a price on this, per work. This was pretty unscientific though.*
3. **Do you think your research process can be improved? If so, how?** *Yes, certainly.*
4. **What challenges have you faced undertaking research in the past?** *Tracking all works made available illegally.*
5. **What is your budget per research project and does it vary from project to project?** *We don't have a research budget.*
6. **How often and at what intervals do you conduct your research?** *We haven't conducted formal research.*
7. **Which company(ies) did you work with most successfully to get the research completed?** *None.*
8. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *It would be useful if there were some benchmark figure(s) for the cost to rights owners for each illegally downloaded work. The Gowers Review's assertion that one download = one lost sale is discredited. Obviously it would vary case to case but if there were some credible examples, we could base our estimates of the financial damage of printed music piracy on these. There is also technology available to track copyright infringements of works online, which we could make use of. Ideally, we would want to demonstrate whether, following our actions, copyright infringement has increased, decreased or remained the same.*

4.4. PUBLISHERS ASSOCIATION

1. **Does your organisation currently measure infringements of your (members') rights?** *Yes – we have our own system, the Copyright Infringement Portal (CIP), which allows users to report infringements. In addition, it searches the most infringing pirate websites for our members' content. We currently search for over 54,000 titles.*
 2. **If so, how does your organisation measure such infringement, e.g. member surveys, consumer surveys, market research, case studies?** *We measure using CIP. For example, so far in June to date we have served over 128,000 cease-and-desist notices and use the statistical analysis generated. We do not undertake research or surveys.*
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3. **Do you think your research process can be improved? If so, how?** *We do not undertake research.*
4. **What challenges have you faced undertaking research in the past?** *See our response to Question 3.*
5. **What is your budget per research project and does it vary from project to project?** *See our response to Question 3.*
6. **How often and at what intervals do you conduct your research?** *See our response to Question 3.*
7. **Which company(ies) did you work with most successfully to get the research completed?** *See our response to Question 3.*
8. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *See our responses to Questions 1 and 2. We use our own bespoke system. I am happy to give you a demonstration of how it works.*

4.5 UKIE

1. **Does your organisation currently measure infringements of your (members') rights?** *We do not measure IP infringements apart from on an ad-hoc and seldom basis. Even then, research is usually secondary in nature and is difficult to source. An example of the type of reports that we put have compiled is attached. We traditionally had an IP crime unit team that would look into piracy and IP infringement. They would be field-based and work on various cases related to mostly physical IP infringement. We are now moving more towards office-based work that deals mostly with digital IP, as that's where infringement is most rampant in the industry. There isn't any research off the back of this, just documentation of cases.*
 2. **If so, how does your organisation measure such infringement, e.g. member surveys, consumer surveys, market research, case studies?** *We usually try to source industry data from various sources such as research agencies and market intelligence specialists. Unfortunately, we do not have a huge research budget and therefore have to rely on desk research into IP issues.*
 3. **Do you think your research process can be improved? If so, how?** *Yes – we need to be able to do it.*
 4. **What challenges have you faced undertaking research in the past?** *The biggest challenge for us is getting access to accurate data – something, which is in short supply within this industry and probably among many creative industries. ISFE, the European trade body for games, was looking into including some piracy questions on its Gametrack consumer study. However, this was cancelled. The problem with consumer studies into IP is that respondents will unlikely be particularly forthright into illegal activities!*
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5. **What is your budget per research project and does it vary from project to project?**
We have a very small budget for any type of research, let alone into IP. This is one of the reasons why doing research into this area has been challenging.
6. **How often and at what intervals do you conduct your research?** *N/A.*
7. **Which company(ies) did you work with most successfully to get the research completed?** *N/A.*
8. **Can you think of any ways in which the measurement of infringement of IP rights can be improved?** *The ideal way of performing this research would really be to gather IP infringement data from the publishers and developers themselves, as they would have the best handle on the issues that they were facing. They would also have metric data, especially mobile games that would allow them to get a grasp on what illegal IP activities are occurring. Doing social media tracking of illegal links could potentially be a good way of looking into IP infringement.*

APPENDIX 5 IPR INFRINGEMENT – RESEARCH EXPERTS’ VIEWS ON ONLINE MEASUREMENT

5.1. MUSICMETRIC AND JEREMY SILVER

Executive Chairman Jeremy Silver leads Semetric and Musicmetric is the product we believe could have some relevance to our search for new methods for measuring IP Infringement. At present, the product is based on tracking artists and genres across social network sites. More products are in the pipeline and Musicmetric has started to track audio and audio-visual content by sound recording using different identification tags: ISRC is just one of many.

New research commissioned by Spotify and due to be published shortly is based on BitTorrent activities - not swarms but actual downloads based on the assumption that all content on BitTorrent is infringing copyright.³⁰⁰ This illustrates how even when direct measurement of behaviour is possible, this does not eliminate the need for attitudinal assessment, for example to assess the proportions of all BitTorrent downloads that infringe. The Musicmetric methodology, as disclosed during the meeting, is a ‘mixed approach’, based on how open and what information is available on social networking sites. For example, it uses Twitter API and user location. No ISP information is used. Facebook is not split out by location. Third-party tools are also used and the BitTorrent tracker is a proprietary solution rather than using PublicBT tracker. The research goes back about three years, of which probably the last two years are the most reliable and comparable as technology and scale/scope progresses.

Musicmetric was able to confirm that it has started to collect data across entertainment types in the BitTorrent universe. While the collection of data can be done easily across entertainment types, the analysis of those is not as coherent. Making sense of the data depends widely on usage, definitions and consistency, which were discussed in the meeting using the example of software and games.

300 For example, some content is distributed under Open Commons licences that therefore do not infringe.

Jeremy Silver mentioned that measurement of infringement is not what Musicmetric has been doing so far but that this is something it has considered moving into. A challenge he sees for his product and for our project is finding the appropriate definitions for infringement, which can vary across IPRs and entertainment types. He recognised that patents and trademarks are more likely to be B2B, while copyright infringement that we are investigating is more B2C-orientated. Jeremy Silver was astounded when we suggested there could be a single methodology for measuring all four main IP rights

The primary difference between the Musicmetric approach and the work the anti-piracy department at BPI/IFPI undertakes is the objectives that drive the long-term view of tracking artists/sound recordings vs. the snapshot needed to issue take-downs. Netdetective is most likely used to identify content infringements for piracy headlines (momentary deep dives rather than long-term tracking).

Parts of the Musicmetric methodology are commercially sensitive, an issue we also faced with other firms in the same space. Musicmetric (Semetric) confirmed, however, that it uses its own proprietary distributed data-collection infrastructure to utilise hundreds of servers to reliably collect large quantities of data from the Internet. The raw data collected is processed using Hadopi to detect anomalies and aggregate data (e.g. to find total fans across networks for an artists and to create charts) and is then made available via an API.

BitTorrent summary: Semetric tracks individual BitTorrent files by directly monitoring activity in BitTorrent swarms hour by hour. This allows the volume of activity to be measured, and segmented geographically at the country and city level. Activity surrounding individual Torrents is aggregated to the release group and artist level to give a measure of regional popularity and demand for artists over time.

We also noted that there is real competition within this research sector from Next Big Sound,³⁰¹ Bluefin Labs³⁰² and several others³⁰³. We also noted another potential avenue to future investigation would be checking infringement and enforcement methods in countries where bandwidth is more advanced than in the UK or other territories/regions.

5.2 NIELSEN

The information we have is based on what we have learnt from our own research and from our talks with the IFPI, BPI and RIAA. This tool was created in partnership with Digimarc³⁰⁴ and is called Nielsen Digital Media Manager (NDMM). NDMM uses “digital watermarking and fingerprinting to establish an industry-wide rules-based solution to copyright security and to assure copyright compliance.” NDMM also aims to provide a “more reliable way to track content, the service will help clients realise the value of their digital content, promote the expansion of Internet-distributed media and facilitate a number of revenue streams, including ad-pairing, e-commerce, royalty reporting and others.”³⁰⁵

301 (<https://www.nextbigsound.com>)

302 (<https://bluefinlabs.com>).

303 <http://scaneye.net> and http://www.maxmind.com/en/geoip_demo

304 http://www.digimarc.com/docs/technology-resources/dmrc_wp_dwmvsfingerprinting.pdf

305 O’Neil J Nielsen wants role as Online Video cop, (Dec 5, 2007 10:11 AM CST) Newser <http://www.newser.com/story/13367/nielsen-wants-role-as-online-video-cop.html>. Nielsen and Digimarc launch service to identify and manage internet distribution of media content T

5.3 BITTORRENT INC

Given the significant role BitTorrent plays within the infringement of copyright content, it was felt we should speak to one of the biggest firms supporting this technology. We met with BTI's Vice President of Marketing to ask for input on the viability of some possible future technological solutions.

BitTorrent is a protocol and not a service as such. BitTorrent Inc (BTI) argues it is not a piracy firm but its tool has 170 million monthly users. Of its audience, 26% are aged 18 to 24 and 64% are male. BTI has tried to do license deals with movie studios but terms were unworkable for them. BTI however is trying to work more closely with music creators and their managers in making BTI technology work as a viable legal tool for efficient distribution across online networks.

Data provided by BitTorrent for the calendar year 2012 showed there were 152 million bundled downloads, 125 million music downloads, 25 million film downloads, and 1 million book downloads. BT noted there were 2 million legally licensed pieces of Internet archive.

A key issue for us that BTI cannot track what its users do with the Torrents, as there is no single server - something that is inherent in the architecture of its system. It claims that 85 petabytes of legal content were distributed in 2012. BTI believes the future Internet will be asymmetric and decentralised, but with content-centric networks, which will allow content industries to interact with consumers. BTI bundles are the main media format for the Internet and are designed to hold any number of different files with different content. This indicates the measurement of such files is going to become even more complex.

5.4 COUNTY ANALYTICS AND PAUL JESSOP

Paul Jessop highlighted the different approaches to measuring piracy and reminded us of some highly effective tools for measuring offline piracy that might still have relevance to our study. Offline piracy used to be measured by reference to the amount of plastic used in the pressing plants and factories (an approach favoured by HMRC when looking for underpayments of VAT) to highlight the number of 'illicit' pressed discs.

In discussing the difference between surveys and observed behaviour, Paul Jessop indicated the Nielsen Panel is the best and most effective model he has seen, as it based around large-scale panels and run across various countries. Each Nielsen panel member becomes acclimatised to the presence of spyware on their machines, even though there is a potential problem with multiple users of the computer in each household.

He questioned whether Big Champagne is capable of identifying the content of the BitTorrent files it is tracking, which begs the further question of how it correlates overall BTI traffic with the major 'music' and 'film' events.

Paul Jessop described Virgin Media's trial service with BPI, which called for analysis of traffic as a requirement of a proposed new music service. This would have entailed Virgin, and indeed any such ISP, doing analysis of the 'local loop'. He also mentioned that BTI ran an ad targeting services to monitor user behaviour and this used DPI.

The main emerging problem in music is stream ripping and how best to monitor this. Users can simply convert streams into mp3s. Ironically, this impacts YouTube's business model, as such consumers are less likely to "look at Google ads", if they are just ripping the stream from YouTube. He suggested we speak to Google and YouTube, but asked whether such services minded helping us measure accurately what is going on their networks (even though they have the technology to assess content of files on their system). He mentioned the Honeytrap where spoof sites set up to measure infringement.

There are many commercial firms 'crawling the web', such as Attributor and Detechnet which has now been bought out by MarkMonitor (part of Thomson Reuters). There are other firms like BayTSP, now known as Irdeto,³⁰⁶ that use spidering. He is convinced we can apply technological solutions to the measurement of infringement across software/music/films and games

He provided us with a taxonomy of the types of piracy, listed below, and mentioned a recent Australian experiment on measurement using DPI.

Jessop's piracy taxonomy:

Forms of Piracy

- a. Physical
- b. Home Copying
- c. Hosted Content
- d. Links/Deep Links
- e. Peer to Peer
- f. Usenet

306 (www.irdeto.com)

Means of Identification

- a. Target Identification
- b. Content Verification
- c. Container Labelling
- d. Manual Identification
- e. Metadata
- f. Digital Hash
- g. Signed Metadata
- h. Fingerprinting
- i. Watermarking

Summary of Identification Approaches “A layered approach makes sense, where fast and convenient, but the less reliable techniques are used initially and identification is confirmed by slower, more expensive or more inconvenient technologies.”

5.5 BIG CHAMPAGNE and ERIC GARLAND

This service was one of the very first services to offer bespoke measurement and analysis of Internet traffic, notably Torrents, and dominated the research within this sector for several years. Led by Technologist Eric Garland, Big Champagne is now part of Live Nation and very much focused on specific metrics and analytics within music and entertainment industries. Its technology is widely considered to have been overtaken by some of the new players in this area of commercial research. Nonetheless, the views and experience of Eric Garland and Spotify’s Will Page are articulated in the highly regarded work ‘The Long-Tail of p2p’, which they co-authored in 2009.³⁰⁷

5.6 CHORUSS/ONEHOUSE and JIM GRIFFIN

Jim Griffin is Managing Director of OneHouse LLC, dedicated to the future of music and entertainment delivery, and focused on accelerating the pace of scholarly research, especially through collaborative tools, sharing and open access to knowledge. Described as an “agent for constructive change in media and technology,” he started and ran for five years the technology department at Geffen Records. Prior to Geffen, he was an International Representative for The Newspaper Guild in Washington, D.C. While at Warner, Jim led a team the Choruss team that successfully built a new model for sound recordings: sharing music with flat-fee access to unlimited music downloads for college students. As well as music, his expertise includes wireless work in Europe, including at Nokia’s Research Centre in Helsinki, Finland, and with numerous companies in Finland and throughout Europe.

307 <http://www.prsformusic.com/creators/news/research/Documents/The%20long%20tail%20of%20P2P%20v9.pdf>

We asked Jim for his views on the potential for improved technological solutions to the problems of measuring IPR Infringement online and he pointed us to the Tor Project which is “is free software and an open network that helps... defend against a form of network surveillance that threatens personal freedom and privacy, confidential business activities and relationships, and state security known as traffic analysis.”³⁰⁸

This and the related Silk Road (‘an online Black market in the Deep Web’) are examples of the myriad ways in which those attempting to use illicit goods either sharing or for sale can operate outside the margins of normal traffic analysis and thus evade any efforts to identify and measure the scale of the problems. The association of the Silk Road with drug dealing highlights the ways in which methods used by organised crime can easily become conduits for those determined to infringe IP content away from the gaze of official, including industry, methods for tracking their behaviour. During the period of our research review, the nature of such scrutiny by government and law enforcement agencies, and with, it seems, the compliance of well-established Technology firms, has become a cause of public concern and this new focus on the surveillance of online behaviour is in our view likely to make it harder than ever to track the true levels of IP Infringement online. Some might argue this will only ever apply to the most determined IP infringers, rather than the everyday online user who takes advantage of the many opportunities for accessing infringing materials and content. Nonetheless, it is a reminder of the frailties of even the most compelling solution in this area - something enforcement agencies like FAST are only too familiar with.

5.7 DAVID LOWERY

The University of Westminster’s Music Tank³⁰⁹ held a special event on piracy in May 2013 entitled ‘Follow The Money: Can The Business Of Ad-Funded Piracy Be Throttled’, which featured contributions from the BPI’s Geoff Taylor, who “alluded to a structured scheme to tackle the issue of big-brand advertising appearing on piratical sites”. As Music Tank noted, there was by then a sense where collective solutions (such as content and tech industries cooperating) can include “mechanisms... that will help drain the swamp.”³¹⁰

Lowery is one of the more vocal opponents of pirate sites, not least because of the impact on his profession as a musician. He argued: “If you knock the funding source for those sites offline, it’s a nudge to the consumer towards legitimate sites.” Lowery also described the online ad-world as being “out of control.” Whilst some called for an easier way for infringing sites to be identified, there was an acknowledgment that the complexities of online advertising make unlawful practice difficult to monitor. Google’s Theo Bertram underlined Lowery’s point that strangling advertising revenue, rather than pursuing consumers or pushing for site blocking, is the most effective way forward.³¹¹

The event illustrated two other key points. Firstly, that many of those industries affected by ‘piracy’ are unable to fund meaningful research to measure it and, secondly, focus should move instead to solutions to piracy. This coincided with our comments elsewhere about how industry approaches infringing content – notably, how it now “follows the money.”

308 <https://www.torproject.org/about/overview.html.en>

309 Music Tank Newsletter 100, July 2013 ‘We came, we debated, we challenged’.

310 *ibid*

311 *ibid*

10. APPENDIX 6 BIBLIOGRAPHY AND SOURCES

6.1 MAIN REPORT

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