AIPPI UK RESPONSE TO UK GOVERNMENT OPEN CONSULTATION

ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY

INTRODUCTION

AIPPI United Kingdom (AIPPI UK) supports the UK Government's objective to ensure that that the UK remains at the global forefront of IP regimes with an IP system that is responsive to the needs of innovators, creators and consumers. We welcome the opportunity to respond to the Consultation entitled "Artificial intelligence and Intellectual Property: call for views", requesting views on how artificial intelligence may impact the current legal framework surrounding various aspects of intellectual property law in the UK.

AIPPI UK is the UK national group of The International Association of the Protection of Intellectual Property, known as AIPPI (Association Internationale pour la Protection de la Propriété Intellectuelle), which is the world's leading international organisation dedicated to the development and improvement of laws for the protection of intellectual property. AIPPI UK's membership comprises over 400 IP professionals from all areas of the profession (barristers, solicitors, patent attorneys and trade mark attorneys, working in private practice, in-house and in industry, as well as academia).

This response has been authorised by and is made solely on behalf of AIPPI UK. AIPPI UK has not sought the views of AIPPI internationally. Nothing in this response is or may be taken to imply anything as to either the views of AIPPI internationally or the views of any particular individual.

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PATENTS

1. What role can/does the patent system play in encouraging the development and use of AI technologies?

1.1 AIPPI UK believes that the patent system does and should continue to play an important role in encouraging the development and use of AI technologies.

General Discussion

1.2 The patent system is designed to further the public policy objective of rewarding and fostering human innovation. The 'patent bargain' that is struck means the inventor obtains a commercialisable monopoly in return for disclosing the invention to the public for use after the monopoly has expired[1]. The patentee ensures a return on its investment into R&D by having a time limited exclusive right to exploit its invention and society learns of new technology, exploitable on the patent's expiry. As Terrell on the Law of Patents puts it, "innovation is encouraged and knowledge is disseminated."[2]

1.3 In recent years, much has been written on the ineffectiveness of the patent system (irrespective of national office), with numerous commentators decrying that patents in fact restrict innovation rather than promote it[3] particularly when compared with product innovation that has been supported by, for example, open source initiatives. Further, much has been made of the role of patent aggregators or "non-practising entities" in exploiting weaknesses in the US patent system to target operating companies with patent infringement proceedings concerning technologies the defendants know little about.

1.4 Notwithstanding its critics however, the patent system persists as a commonly used tool for innovators to seek a return on their investment in R&D.

1.5 While an analysis of NPE litigation is outside the scope of our response, we understand that many factors contribute to this highly contentious landscape (including historical differences in how successful defendants claim costs from the patentee) and it is difficult by any measure to conclude that the reason for its existence is a patent system that is at its core unworkable.

1.6 There continues to be strong support for the use of patents as a critical business asset in particular industries such the pharmaceutical and biotechnology sectors. Marshall Phelps argued in 2015[4]:

> *"In the real world, one need only look at the smartphone industry to see the truth in that thought experiment. Does anyone believe that global smartphone use would have experienced such extraordinarily rapid growth under a trade secret regime? Impossible. Only a strong patent system enabling the licensing and cross-licensing of proprietary technology across four very disparate*

[1] Warner-Lambert Company LCC v Generics [2018] UKSC 56, at [17]
[2] Paragraph 1-01
[3] https://www.economist.com/leaders/2015/08/08/time-to-fix-patents
[4] Forbes.com, 16 September 2015, "Do Patents Really Promote Innovation?"

industries —telephony, electronics, computing and software — could have produced the hugely successful smartphone industry that we enjoy today."

1.7 Irrespective of one's view, it is fair to say that, at least in respect of software, patents are not seen as a pre-requisite for successfully commercialising a new technology In reality, there is an emerging trend that both the patent system and more open forms of innovation play important though different roles in promoting R&D and incentivising investment into new software related technologies. In respect of AI a recent report by the Centre for the Governance of AI, Future of Humanity Institute, University of Oxford, highlighted how major corporations had developed innovation strategies that blended a proprietary patent-driven approach with one that focussed on open source software. Broadly, the report suggested that companies needed to commit to open source in order to build a firm's reputation, attract AI graduate engineers and encourage the use of paid services. However, most also conformed to a desire to patent because of competitive pressure and the need to retain the threat of enforced exclusivity.

1.8 The reasons for employing both proprietary and open innovation regimes are complex and could depend on the manner of the contribution that each approach makes. A research paper published in 2015[5] assessed the comparative advantages of intermediate disclosure policies (such as in open source software) versus final disclosure policies (such as in patent systems) in fostering innovation.

"[Open source] promoted efficient reuse, coordination and convergence on a globally optimal solution with less entry and effort (i.e., lower costs) and higher performance. However… we might be concerned that [such] intermediate disclosure encourages path dependence and lock into a suboptimal solution approach, or leads incentives to evaporate. Such systems might therefore benefit from offsetting features of their design to countervail these weaknesses, as being directed – for example – to problems where the optimal solution approach is well known and wide experimentation is less useful and where returns to reuse are especially high. Final disclosure [such as patents] promotes higher levels of entry and effort and independent experimentation. On the one hand, this generates a wide diversity of approaches; on the other hand, this led to considerable effort devoted to sub-optimal approaches… Nonetheless, we might surmise that such systems might therefore also benefit from offsetting features of their design to countervail these weaknesses. This includes being devoted to conditions where wide diversity of experimentation is highly valued. Alternatively, if capabilities tend to concentrate and accumulate in individual innovators and there is little benefit from drawing on widely distributed contributions, then there may be higher returns to simply maximizing incentives of greatest experts, foregoing some degree of reuse."

1.9 As a result, while it is safe to conclude that the patent system indeed fulfills its role in fostering innovation, it should be recognised that, at least in respect of AI, other models may co-exist which may be more appropriate depending on the nature of innovation.

[5] Research Policy Volume 44, Issue 1, February 2015, Pages 4-19: https://www.sciencedirect.com/science/article/pii/S0048733314001425

1.10 On balance, most economists today still agree that patents can and do stimulate economic growth and motivate investment in technology.[6] We support this view and the sentiment is reflected by innovators, who filed 3.3 million patent applications in 2018, up 5.2% for a ninth straight yearly increase, according to WIPO's annual World Intellectual Property Indicators (WIPI) report. Further, it remains true that a carefully managed patent strategy can result in the protection of innovation that helps a smaller technology business level the playing field with a competing large tech company.

1.11 The approach by patent offices to protect AI has received mixed press but many have been proactive in trying to deal with these challenges (see below). In the UK one report focussed on the length of time taken by the UKIPO to grant AI related inventions as being three times longer than in China[7]. The contrast was highlighted by the fact that the UK is home to many institutions that are prolific at generating AI-related innovation (such as Sheffield University to the Alan Turing Institute) and the large number of UK based academic publications over the last two years. However, in our view, many reports will not account for factors such as methods of examination, prosecution strategies employed by the patentee and quality of the granted patent. The UKIPO's own analysis[8] usefully pointed out that the proportion of AI patent applications in the UK is growing at a similar rate to that of the US. It also concluded that 88% of patents first filed in the UK are also protected abroad, reflecting the global nature of the AI sector and the desire for UK-based applicants and inventors to seek protection and commercialise their inventions in international markets.

1.12 Rather than question whether the patent system (UK or otherwise) fosters innovation, we think it may be more appropriate to examine whether the patent system in its current guise could be more accessible to all corners of the technology community, and in particular those that are developing new technologies in AI. Specifically, do patents systems, and the governments that operate them do enough to encourage the AI technical community to invent and then incentivise them to disseminate that knowledge through the patent system?

Legal Framework

1.13 The balance between incentivising individuals who invent and of the dissemination of knowledge to society is a key factor connecting inventorship with ownership under UK law. Without ownership of the patent asset an inventor has little leverage to negotiate a commercial deal for financial gain and so little incentive to disclose their invention.

1.14 The patent bargain is further supported under UK law by the principle of 'sufficient disclosure'. A patentable invention requires disclosure of the invention which is sufficiently clear and complete for it to be carried out by a person skilled in the art.[9]

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[6] See "TECHNOLOGY TRANSFER AND THE ECONOMIC IMPLICATIONS OF THE STRENGTHENING OF INTELLECTUAL PROPERTY RIGHTS IN DEVELOPING COUNTRIES" OECD Trade Policy Working Paper No. 62, By Walter G. Park and Douglas C. Lippoldt http://fs2.american.edu/wgp/www/park_lippoldt08.pdf

[7] https://www.tortoisemedia.com/2019/12/04/ai-in-the-uk/

[8] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/817610/Artificial_Intelligence_-_A_worldwide_overview_of_AI_patents.pdf

[9] Art 83 European Patent Convention and Section 72(1)(c) Patents Act 1977

Without a sufficient disclosure the public is not in a position to understand how to put the invention in effect and so the bargain has not been fulfilled.

1.15 In relation to AI there is no reason to assume that these principles, reflected in UK legislation, would not be applicable in the same way as other technologies, with software patents being the obvious comparison. As elaborated in our discussion below however, unique challenges may arise in the context of that application of patent law, many of which are themselves inter-linked. Of note are:

1.15.1 In the context of an AI-related invention, is the claimed subject matter directed towards:

1.15.1.1 the AI system itself;

1.15.1.2 an invention that involves the use of AI, for example, as a tool; and

1.15.1.3 an invention that has been generated, in whole or in part, by an AI system, and if in part, what has been the nature of the precise contribution made by the AI system, and how should such an invention be commercialised if the AI is prohibited from owning the resulting patent,

1.15.1.4 The current level of sophistication of AI systems, and whether there is even a medium term expectation that application focussed 'narrow' AI systems will develop into general intelligence systems capable of generating inventions;

1.15.1.5 Should the concepts of inventive step and person skilled in the art be adapted for AI related inventions;

1.15.1.6 What is the necessary "sufficient disclosure" in relation to AI inventions, and how can the requirement be met in so-called 'black box' systems; and

1.15.1.7 Who is held liable where AI systems infringe the patent rights of third parties.

1.16 Some of the above challenges have clear policy implications, for example, the ability to patent purely AI generated inventions. Some problems are more practical in nature, for example how best to explain the operations of a deep neural network so that it may be put into effect by the skilled person. Such practical challenges may well be addressable in the short term.

1.17 However, as it currently stands, there is no prohibition on AI-related inventions being patentable, which we think is a beneficial outcome for society in line with existing patent policy. To have such a prohibition may well reduce the attractiveness of AI as a technology area to potential investors and reduce the incentive side of the bargain. As to whether AI generated inventions should be patentable, the problem still seems comparatively remote when assessed against technical reality, and any solution would

have to address a number of fundamental legal principles, not only in relation to patent law, but also in respect of legal personhood of non-humans.

1.18 Moreover, other forms of intellectual property right are available to protect AI technologies, where the patent system deems it inappropriate. Trade secret protection may provide adequate protection, at least in relation to the product or service that utilises AI, especially where the AI itself operates in the opaque environment of its own black box. Further copyright affords some protection in relation to the computer code that implements the AI system.

AI as an inventor

2. Can current AI systems devise inventions? Particularly:

A) To what extent is AI a tool for human inventors to use?

B) Could the ai developer, the user of the AI, or the person who constructs the datasets on which ai is trained, claim inventorship?

C) Are there situations when a human inventor cannot be identified?

Parts 2(A) and 2(C) appear to be aimed at a (prospective) rightsholder.

For 2(B):

Assumptions

2.1 Any innovation created using AI must be patentable in that it satisfies the requirements of novelty, inventive step, sufficiency of disclosure and industrial applicability, and also does not fall within any of the categories of excluded subject matter.

2.2 For each of the below cases, our answer assumes that the innovation is patentable and the only issue to be decided is whether the contribution made by the relevant person is sufficient for them to be considered an actual devisor (and therefore inventor) of the inventive concept.

Criteria for inventorship under UK law

2.3 Under the UK Patents Act 1977, the inventor is said to be 'the actual deviser' of the invention.[10] UK case law provides that the 'actual deviser' of an invention is the natural person who came up with the inventive concept.[11] Accordingly, there are two requirements that must be met. Firstly, the deviser must be a 'natural person'. Secondly, the deviser must have contributed to the inventive concept of the patented invention. The UK Patents Act explains that the 'patented invention' is that specified in a claim of the specification of the patent application or the granted patent as interpreted by the description and any drawings contained in that specification.[12] UK case law provides that it is the contribution to <u>the inventive concept of the patent</u> that should be

[10] UK Patents Act 1977 Section 7(3)
[11] Yeda Research and Development Co Ltd v Rhône-Poulenc Rorer International Holdings Inc and others [2007] UKHL 43
[12] UK Patents Act 1977 Section 125

assessed.[13] Therefore, the determination of inventorship requires a factual assessment of the nature of the contribution to the invention, with only an inventive contribution that goes to the 'heart' of the invention being sufficient to confer inventorship. In contrast, a non-inventive contribution that only amounts to adding the common general knowledge in the art, such as by contributing only simple and routine experimentation, is not sufficient to confer inventorship.[14]

2.4 Against this legal backdrop, as to whether any of the following persons could be considered an inventor will turn on the nature of the invention and facts surrounding the specific contribution in each case. Without those facts, it is not possible to conclusively say whether or not any of these persons could meet the criteria for inventorship. Accordingly, the analysis below should be read in light of the uncertainty surrounding both the nature of the inventive concept and the nature of the contribution in each case.

2.5 It should also be noted that, for each of the below cases, the given person may not be the <u>only</u> inventor, but could be considered as a co-inventor, together with person(s) from the other use cases. For example, an AI algorithm developer may be a co-inventor with the AI user, if both parties have contributed to the inventive concept of the patentable invention.

AI algorithm developer

2.6 We do not see why a human who has designed or contributed to the design of the AI algorithm should be excluded from consideration as an inventor subject to satisfying the test of being an 'actual deviser' or the invention in line with UK case law.

2.7 This could be possible to establish where the development of the AI has a direct consequence on the patentable subject matter produced by the AI. However, where the person who designed the AI was unconnected with its use, it might be harder to establish how they contributed to the inventive concept, in the same way that proprietors of off-the-shelf software have no automatic rights in patentable inventions that are created by others using that software.

AI user

2.8 Whether there can be a successful claim to inventorship will depend on the circumstances of use. In every circumstance, the question is whether or not that user has made a contribution that goes to the heart of the inventive concept. For example, the following are hypothetical use cases that could lead to different outcomes for inventorship:

2.8.1 A user might use AI with an intended outcome, and that outcome, having being achieved, could be patentable. In this scenario, AI is being used as a tool to assist innovation, but the user has controlled the outcome and identified that said outcome could be patentable.

2.8.2 Alternatively, a user might use AI with an intended outcome, but the AI might end up delivering an unintended outcome that is nevertheless patentable. In

[13] Yeda [2007] UKHL 43
[14] IDA v University of Southampton [2006] EWCA Civ 145

this scenario, AI is still being used as a tool for innovation, but the user's input is limited to the recognition that there is a patentable outcome.

2.9 Where a human uses AI as a tool to assist their work, their contributions could be sufficient to establish inventorship. This would be the case if, notwithstanding assistance from an AI, the human user has continued to make the substantive contribution to the inventive concept of the patentable invention. For example, they may have selected the target(s), designed the overall research and/or honed the AI's chosen results. This use case is comparable to where a human uses a computer program to aid them in their work. Ultimately, the computer program (or AI) is operating within the parameters set by the user, which does not detract from the user's overall contribution to the inventive concept.

2.10 Whether or not the user intended the results actually obtained by the AI does not directly affect the question as to whether or not they could be considered an inventor under UK law. However, if they did not intend the result, this could suggest that they have not made a contribution that goes to the heart of the inventive concept.

2.11 If the only contribution the human has made is recognising that the AI's output (whether intended or not) is patentable, as to whether the user has made enough of a contribution to establish inventorship will depend heavily on the facts.

2.12 There is a distinction to be made between the AI output itself being a patentable invention or whether the output suggests to the human that the output can form part of a patentable invention. In the first case, under UK case law, merely showing that an invention works is not enough to establish inventorship.[15] So, merely showing that an AI's output works is unlikely to be enough.

2.13 However, this is to be contrasted with the case where the human is required to recognise that the discovered output could be applied in a new and inventive way, which could be patentable. Such a contribution may well qualify said person as an inventor. For example:

2.13.1 An AI could produce output (whether intended or not) that may only be patentable once the human user has demonstrated the utility of that output. Looked at another way, under UK law, discoveries *as such* are excluded from patentability.[16] Where an AI produces a result that is a mere discovery (even if that result has been generated without human input) a human may nevertheless be required to demonstrate the utility of the result, and therefore identify a patentable invention.

2.13.2 In another example, an AI may generate results that, although have an indicated use, need significant further testing to demonstrate that said use is indeed plausible. Again, even if that result was generated without human input, the subsequent input by a human may be enough to establish inventorship.

15 [2006] EWCA Civ 145
16 UK Patents Act 1977 Section 1(2)(a)

Person responsible for AI training datasets

2.14 Under the EPO Guidelines, where an invention is an AI classification method, and that classification method serves a technical purpose (such as classifying digital images or audio based on e.g. pixel attributes or edges), 'the steps of generating the training set and training the classifier may also contribute to the technical character of the invention if they support achieving that technical purpose'[17]. Extrapolating this, a person who selects training data (and presumably a person who trains the AI) could be a potential inventor, in the same way that the AI algorithm designer may also be an inventor.

2.15 However, as with all cases, this will be a question of the degree of dependence on the algorithm's operation on the training data. Returning to the 'tool' analogy above, if there is low correlation between the training of the AI and the nature of the results it yields then it is more likely this person would be equivalent to someone who calibrates a tool, and so unlikely to be an 'actual deviser' of any invention ultimately produced using the AI.

Other use cases

2.16 This question does not consider (and therefore we have not considered) the person who generates or selects the data or source of data that is inputted to the trained AI.

3. Should patent law allow AI to be identified as the sole or joint inventor?

3.1 As a preliminary point, we assume that this question asks whether or not inventorship can/should be derived from an AI's input, as opposed to whether or not an AI can/should have the right to be named as an inventor on the patent or application (which right flows from the legal recognition of inventorship). In other words, we read the reference to AI being 'identified' as the sole or joint inventor to mean AI being recognised as a sole or joint inventor according to UK law, as opposed to merely named on the patent or application as such.

3.2 Overall, our view is that currently patent law should not allow AI to be identified as the sole or joint inventor. Our answer is based on our opinion that the current laws appear to be adequate to deal with current uses of AI (we have explained our reasoning below). Although future uses of AI could test the limits of the legal framework for inventorship, a change in these laws could have consequences for other patentability criteria or liability issues (discussed further below). Furthermore, we think that identifying AI as a sole or joint inventor calls into question whether or not AI could or should be recognised as a legal person (or may even confuse that issue if, for example, AI is recognised as an inventor for patentability purposes, but not as a legal person so far as liability goes). Therefore, any such change could not be made without making consequential changes to the patent and other legal regimes.

Are current laws adequate?

3.3 Implicit in this question is a consideration of whether or not the current law regarding inventorship of inventions made using AI is adequate. We have considered this

[17] Part G 3.3.1 EPO Guidelines for Examination

question first before considering whether, notwithstanding this answer, the law should be amended to recognise AI as the sole or joint inventor.

For present-day implementations of AI?

3.4 We do not consider that current or near-future levels of AI technology should require that AI entities are designated as sole or join inventors. Indeed, even though the system in DABUS was described to be 'fully autonomous' the proceedings never tested if this was the case as a matter of fact.

3.5 The current requirements under UK law should be adequate to deal with present implementations of AI. The inventors are the natural persons who are the actual devisers of the inventive concept of the patent or application in question and insofar as devising the invention has involved the use of an AI entity, the AI entity's role should be considered akin to that of any other tool. The providing to the AI entity of instructions, training data, targets or objectives, and the interpreting, confirming or selecting of the results of the AI entity's operation are all examples of activities more usually performed by natural persons. Where these activities or any combination thereof, results in the invention or contributes to the 'heart' of the inventive concept, it will be this person or these persons who are entitled to be named as the inventor(s).

For future implementations of AI?

3.6 It is conceivable that, possibly in the near future, AI will become sufficiently advanced to the extent that it will be capable of recommending solutions that humans merely have to test in order to prove that they work. Applying the case law to this scenario, the human(s) will not have met the criteria for inventorship. However, extending the UKIPO's reasoning in the DABUS case, the AI also will not have met the criteria for inventorship (because it is not a natural person).

3.7 While it is correct that this would result in non-patentable inventions and a perceived loss of value to the owner of the invention, granting patent protection for AI generated inventions is more complicated than just the resolving the issue of inventorship. For example, it is unclear whether such patents would require different standards relating to sufficiency of disclosure, inventive step, and who the 'person skilled in the art' should be, and how as a practical matter such applications should be examined. We discuss this further below.

3.8 The benefit of an AI system being named as inventor under existing patent laws is that ownership of the invention may be transferred to a third party (e.g. its owner) who may in due course go on to seek commercial benefit by exploiting the exclusive right. As discussed earlier, the AI itself, as a non-human, has little incentive to participate in the patent bargain. The UK government should consider this as a matter of policy. Though a detailed discussion of the pros and cons of such an approach is outside the scope of this paper, allowing such a mechanism may lead to unforeseen consequences. For example, it may motivate a 'land grab' on technologies by those few companies that have the financial resources to deploy AI in such a manner. Counter arguments exist, in so far as patent rights cost money and no company has unlimited resources with which to deploy such a patenting strategy. However, as we mention in our answer to question 1, the patent system elicits a competitive pressure on businesses to ensure that it has some response to the patent estates of third parties. In the face of risks that

competitors may try do the same, such a patent 'arms race' cannot be ruled out. Further due consideration must be given to the nature of the patent system itself; that it exists to reward the spark of human invention in return for disseminating knowledge to human society. It cannot be said that it was intended to reward the automatic generation of ideas, however inventive, by an automated process with no human intervention.

4. If AI cannot be credited as inventor, will this discourage future inventions being protected by patents? Would this impact on innovation developed using AI? Would there be an impact if inventions were kept confidential rather than made public through the patent system?

4.1 As a preliminary point, we read 'crediting' or 'recognising' the inventor in the context of the legal recognition of inventorship, as opposed to the right to be named as an inventor on the patent or application (which right flows from the legal recognition of inventorship).

4.2 We have answered this question from a legal perspective. In other words, we have considered whether or not, if AI cannot be credited as inventor, this will detract from a patent law goal of fostering innovation through patenting. As to whether or not it will in fact discourage future inventions from being protected by patents, this is likely to be more pertinently answered by a rightsholder.

4.3 One of the objectives of the patent regime is to foster innovation. We think that recognising an AI entity as a sole or joint inventor does not further this objective and may, in certain circumstances, hinder it. The public policy motivation of fostering innovation underlies the 'patent bargain' that is that '[t]he inventor obtains a monopoly in return for disclosing the invention and dedicating it to the public for use after the monopoly has expired'.[18] While society itself may benefit from the disclosure of patent applications that contain AI generated inventions (and so able to use those inventions on patent expiry), it does not necessarily follow that AI needs to be considered an inventor in the traditional sense in such circumstances.

4.4 Under UK law, inventorship is the starting point to derive principles of ownership insofar as it is the inventor that is primarily entitled to a grant of a patent and so benefit from its value as a property asset. As a result, irrespective of the position on inventorship, without the ability for an AI to own and derive value from its monopoly, there is no benefit to be had from the 'patent bargain'. Patents that are incapable of being commercialised would appear to serve little purpose from a public policy perspective.

4.5 Therefore, as to incentivising innovation, this objective is not furthered by naming an AI as the inventor because an AI is unlikely to be motivated to innovate by the prospect of obtaining patent protection. In this regard, the hearing officer expressed the same view in BL O/741/19. Nevertheless, there is then a question as to whether/how the creator/owner of the AI should be encouraged to innovate.

4.6 As to the appropriate means of incentivising innovation in AI, the group considers that this would involve a broader consideration of, inter alia, the patentability of the AI and whether or not the patent system (as opposed to any other form of intellectual property

[18] See e.g. Warner-Lambert Company LCC v Generics [2018] UKSC 56, at [17]

right) is the correct means to reward innovation in AI. For example, an absolute prohibition on AI-generated inventions being patentable may well have the impact of limiting commercial investment in AI systems. This would have a negative impact on the healthcare and pharmaceutical industries for example, industries that are considered as very beneficial to society. In such circumstances it could be argued that such a prohibition would be contrary to public policy. However, irrespective of what the public policy should be in relation to the protection of AI generated inventions, the group does not in any event consider that naming an AI as the inventor furthers this cause (incentivising innovation in AI) because, for the reasons given above, the AI would not be able to pass on the benefit of the monopoly to its developers.

4.7 There are additional public policy issues in relation to whether the patent is appropriately disclosed and dedicated to the public. The sufficiency requirement of patentability requires disclosure of the invention which is 'sufficiency clear and complete for it to be carried out by a person skilled in the art' under art 83 EPC or 'clearly enough and completely enough for it to be performed by a person skilled in the art' under Section 72(1)(c) PA. Any AI generated inventions will need to be carefully scrutinised under this test and careful consideration given to who the skilled person is. If the disclosure is only 'sufficiently clear and complete' to an AI, and not a human - there is a serious question as to whether the patent has been made available to the public in a true sense. In such circumstances, it is difficult to see how the patent bargain can be fulfilled. Humans cannot take the benefit of the invention because the public is not in a position to practice the invention on expiry of the patent because of lack of sufficient disclosure.

5. Is there a moral case for recognising AI as an inventor in a patent?

5.1 Insofar as this question concerns whether or not there is a moral case for inventorship being derivable from an AI's output, we have answered this in question 4.

5.2 Insofar as this question concerns whether or not an AI should have the right to be named as the inventor, this is considered as follows.

5.3 As set out above, in the UK the benefit/s of being named as an inventor co-exists with the rights and benefits of ownership of the patent. Therefore, while the right of being named would not conflict with any particular underlying purpose of patent law, the lack of legal personhood for the AI does conflict with the consequence of being named, that is the ownership and commercialisation of the invention.

5.4 The issue raised in this question may be more relevant in considering co-inventors, specifically in circumstances where, if the AI were a natural person, it would have been a co-inventor of the patent. In that instance, the natural person co-inventor receives the sole and exclusive benefit of the patent even though the natural person is only one of the contributors to the inventive concept. This may not pose a practical or moral issue where the natural person (or their employer) has also invented the AI but its implication in a collaboration or joint venture situation is more pronounced. If the natural person is working with another organisation's employee to devise the invention, that organisation, by ordinary operation of law (in a natural person collaboration) would likely have an ownership stake in the patented invention. This would not be the case where a natural person is working with another organisation's AI, which cannot itself be a recognised inventor. As a consequence the collaborating organisation is deprived

of any rights to the invention and the natural person would be the sole inventor and primary owner. However, ordinarily this problem could be resolved by contract, as with many existing collaborations and joint venture agreements which make express provision for ownership of IP.

5.5 Insofar as inventorship by an AI could be recognised in a manner that is not linked to ownership, the current legal infrastructure provides no tangible opportunities for this. While of course the contribution or 'naming' of the AI can be detailed in the description this does not provide 'recognition' in terms of inventorship principles, but mere acknowledgement.

5.6 It could be said that even acknowledging AI's contribution may undermine the purpose of naming the inventor, since, to a degree, it would be an admission that not just the natural person inventor, but an AI in addition, had contributed to the inventive concept of the patent. However, as a matter of fact, the human co-inventor's contribution is no different in either case and still subject to the same legal test set out in the answer to question 1 above.

5.7 A possible incentive for recognising (or at least ensuring acknowledgement of) an AI would be to enable transparency on the state of the art. Patents, as opposed to trade secrets/confidential information, are rights which are required to be registered through a public register. A mechanism to recognise the input an AI has had on the inventive concept, may facilitate the public disclosure of ways in which AI is being used in society.

5.8 Nonetheless, recognising an AI by way of inventorship is not required to achieve disclosure on the use of AI, and more generally and for the reasons given, could risk undermining the purpose of naming the inventor.

6. If AI was named as sole or joint inventor of a patented invention, who or what should be entitled to own the patent?

6.1 See our answer to question 5 above.

<u>Conditions for grant of a patent</u>

7. Does current law or practice cause problems for the grant of patents for AI inventions in the UK

7.1 AI inventions are principally, if not exclusively, computer implemented, typically via software executing on a computer. The Patents Act 1977 contains statutory provisions which exclude various categories of subject matter being deemed to be inventions for the purposes of patent protection[19], but only to the extent that a patent (or patent application) relates to these categories as such. These categories include mathematical methods, schemes, rules or methods for performing a mental act, doing business or programs for computers, all of which are relevant categories for AI inventions. Whilst the UK courts have attempted to clarify the extent to which these excluded categories apply to computer-implemented inventions, the statutory provisions can often be restrictive both from a legal and a practical standpoint. The

[19] s. 1(2) Patents Act 1977

guiding law in recent years has been that decided by the Court of Appeal in *Aerotel v Telco and Macrossan's Application*[20], in which the Court adopted a four step test, namely:

7.1.1 Properly construe the claim;

7.1.2 Identify the actual contribution;

7.1.3 Ask whether it [the actual contribution] falls solely within the excluded subject-matter;

7.1.4 Check whether the actual or alleged contribution is actually technical in nature.

7.2 Of concern for AIPPI UK is that inventions based on AI are likely to have a contribution which involves one of the excluded categories, and where a technical contribution, if present, might reside wholly within one of the excluded categories, e.g. a program for a computer.

7.3 In *AT&T Knowledge Ventures*[21], the Mr. Justice Lewison set out various signposts as to the form of possible technical effects which might indicate that a technical contribution outside the computer program exclusion exists. In the main, the signposts relate to the real world operation of the computer executing claimed computer implemented steps. Thus, for processes where the invention claimed relates to the processing of the data, particularly the cognitive content of that data, then the *AT&T* signposts do little to ease the effective bar to patentability.

7.4 This can be particularly problematic for innovative AI processes. For example, in the case of a wholly new machine learning algorithm which enables improved cognitive analysis of certain data, the contribution would typically be said to reside solely within the software *per se*. In practice, the UK Intellectual Property Office has looked for a real world link to the data input and/or output by the data processing. Thus, various computer implemented processes are routinely deemed patentable, for example in the field of data compression where the data output is in and of itself “improved” in the context of its real world application within the day to day operation of a computer. However, this real world link can often be missing or difficult to justify when the AI algorithm itself is the underlying innovation. AIPPI UK questions whether it is in the public interest to exclude innovative AI processes from patent protection based on an overly formal assessment of patentability under the *Aerotel* test and/or a missing signpost under *AT&T*, as is typically the case with patent applications proceeding through examination at the UKIPO.

7.5 It is notable that in certain subsequent cases in the UK courts, this overly formal approach has not been exclusively followed, e.g. in *Symbian*[22] and in *HTC*[23]. Moreover, the EPO has for many years followed a different approach as set out in T 641/00 (*Comvik*)[24], whereby the statutory exclusions are deemed fulfilled (and thus

[20] Aerotel v Telco and Macrossan's Application [2006] EWCA Civ 1371
[21] AT&T Knowledge Ventures [2009] EWHC 343 (Pat)
[22] Symbian Ltd v Comptroller [2008] EWCA Civ 1066
[23] HTC Europe Co Ltd v Apple [2012] EWHC 1789
[24] T 0641/00 (Two identities/COMVIK)

circumvented) based on at least one technical feature being present in the claim; the question of patentability is then addressed under the EPO's usual problem and solution approach with an assessment of obviousness of technical features in light of the objective technical problem. Thus, innovative AI processes *per se* are considered at the EPO within the context of inventive step, and so long as a technical problem can be defined based on the computer implemented steps, then the assessment follows a more conventional path of an inventive step assessment. This is different to the UK, at least under a rigid approach following *Aerotel* and *AT&T* (as applied by the UKIPO), where, as mentioned above, the established signposts pertaining to the real world operation of a computer are typically required, before any further assessment of patentability can take place.

7.6 Thus, for innovative AI processes proceeding in patent applications via the UKIPO, it can often be difficult to obtain granted patents. On the basis that the patent system exists primarily to encourage innovation, and with AI innovation now a regular feature of innovation in many technological fields, AIPPI UK sees the current framework in the UK as being overly restrictive.

8. Could there be patentability issues in the future as AI technology develops?

8.1 As stated above, AIPPI UK believes that the existing UK framework is already overly restrictive in how it grants patent protection to innovative AI processes in the UK, and the consequences of this for encouraging AI innovation in the UK in future are only likely become more significant.

<u>Exclusions from patent rights</u>

9. How difficult is it to secure patent protection for AI inventions because of the list of excluded categories in UK law? Where should the line be drawn here to best stimulate AI innovation?

9.1 As stated above, there are a number of difficulties under the current legal framework for innovative AI processes themselves. There are likely to be fewer issues when obtaining patent protection in the UK for other forms of AI innovation, for example the application of AI to particular fields or problems, or for machine learning training techniques, since these forms of innovation are usually predicated on a particular technical application or are tied to a particular technical field, and thus the existence of a technical contribution is easier to justify, for example one relying on the AT&T signposts.

9.2 AIPPI UK is of the view that, on the basis that the patent system exists to stimulate innovation with the reward of a time-limited monopoly, it is surprising that core advances in innovative AI processes themselves could be excluded from patent protection directly as a result of provisions in the Patents Act; on the other hand specific technical applications relying on those processes might not be so excluded. If it is the underlying innovation in a given AI process which is of societal benefit, and which has wider applicability, then we question why the monopoly should not be granted without limitation to specific applications.

10. Do restrictions on the availability of patent rights cause problems for ethical oversight of AI inventions?

10.1 If AI innovators do not pursue patent protection for their technology (because they will not ultimately succeed in obtaining a monopoly under the restrictive framework as currently exists), they will not routinely be in the position of having to provide a public disclosure of their AI technology. AIPPI UK views this as an economic issue in the context of the patent system, and does not believe that ethical oversight of AI should be a concern for patent law. However, since we do see that societal benefit accrues from an effective patent system rewarding innovators for their disclosure, if the consequence of providing this disclosure is that it is more likely that ethical oversight can be implemented across a broad spectrum of AI technology (which we believe it would be), then AIPPI UK would see that as beneficial. Whilst the current restrictive framework for innovative AI processes might make it more difficult for ethical oversight, we do not believe that this in and of itself should be the reason for loosening the framework; the reason for doing so should be an economic one based on the principal that the patent system rewards innovation, and in particular innovative AI processes that are likely to be technologically beneficial.

<u>Disclosure of the invention</u>

11. Does the requirement for a patent to provide enough detail to allow a skilled person to perform an invention pose problems for AI inventions?

11.1 Section 14 of the Patents Act requires that the specification of a patent/application

> *shall disclose the invention in a manner which is clear enough and complete enough for the invention to be performed by a person skilled in the art*[25].

11.2 Where an invention relates to innovative AI processes, then the requirement under the Act to provide a sufficient disclosure would typically necessitate a clear and complete disclosure of the process itself, which, from a drafting perspective should never be particularly burdensome; there needs to be a full disclosure of the process such that it can be implemented by the person skilled in the art. However, from a commercial standpoint, we see that the disclosure requirement can be a deterrent to potential patent applicants applying for patent protection in the first place.

11.3 On the basis that an innovative AI process has to be disclosed in full, and the nature of computer implementations being such that infringement by third parties could can be difficult to determine, then applicants can be deterred from relying on patents in the first place – why risk disclosure when it may be difficult to enforce? However, AIPPI UK does not view this as particularly problematic in the context of the patent system, so long as viable patent protection can be obtained for innovative AI processes (although we have concerns about this as mentioned above). Ultimately, there is a commercial decision to be made when applying for a patent and providing the disclosure required – is it worth it? The circumstances of this will vary on a case by case basis. However, to vary the threshold for the disclosure requirement, perhaps by setting a lower threshold, would be fundamentally at odds with the basis of the entire patent system. In the context of inventions which relate to AI being used in particular

[25] s. 14(3) UKPA

fields or problems, again we see no issue with the current disclosure requirement *per se*.

11.4 AIPPI UK does, however, consider that the disclosure requirement can be problematic for inventions that pertain to trained AI models. In terms of implementation, there is a burden on the applicant to disclose the invention sufficiently such that it can be implemented. In the context of trained AI models, this would typically necessitate a sufficient disclosure of the training data or applicable coefficients and weights of the model. Once disclosed, we stipulate that, in certain circumstances it is possible for third parties to rely on the disclosed data or parameters in a different AI model, possibly circumventing the patent whilst relying on the underlying innovation in providing and/or selecting the relevant data; this could be particularly problematic for trained models where the underlying training data would have to be disclosed. Again, AIPPI UK sees no particular problem with the patent system's disclosure requirement *per se*; patents should be obtained only when there has been a complete disclosure to enable the invention to be performed. The issue in this context is the possibility of circumventing the monopoly accrued by the patent by relying on the disclosed data in a different model.

11.5 Despite the above concern, the patent system should be able to address this by permitting protection for use of the underlying data in any relevant AI model. Patent claims of the general form "Use of data X, Y, Z [obtained via steps A, B, C] in training an AI system" are not standard in many AI based patent applications, but are of increasing commercial relevance. Under current UK practice, particularly that adopted by the UKIPO in its assessment of technical contribution (see above), we doubt that such claims would be looked upon favourably. However, if the practice and assessment under s. 1(2) develops in a way which enables this form of claim scope, then we would hope that patent protection for trained AI models (and the underlying data/parameters) could be obtained whilst enabling and encouraging a full disclosure of the relevant data/parameters.

12. In the future could there be reasons for the law to provide sufficient detail of an AI invention for societal reasons that go beyond the current purposes of patent law?

12.1 There might be reasons for the law to provide such a requirement. However, AIPPI's view is that this should not be a reason for modifying the existing framework of the patent system in so far as it relates to AI technology. As stated above, the reason for providing a sufficient disclosure of the invention is to fulfill the objective of the patent system, i.e. the skilled person can implement the invention without undue burden (once the time-limited patent monopoly has expired).

<u>Inventive step</u>

13. Does or will AI challenge the level of inventive step required to obtain a patent? If yes, can this challenge be accommodated by current patent law?

13.1 AIPPI UK's view is that the analysis of inventive step where AI is used can be accommodated by current patent law. Though some of the mechanisms which we currently use to understand shorthand for obviousness may be challenged, the overarching statutory test is capable of addressing inventions which involve AI.

13.2 Section 3 (Inventive Step) of the Patents Act provides that:

> *An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).*

13.3 As noted recently by Lord Hodge in the recent UK Supreme Court case *Actavis Group PTC EHF & Ors v ICOS Corporation & Anr* [2019] UKSC 15 (27 March 2019), the focus of an obviousness assessment should be the inventive concept of the relevant claim, whether adopting the approach to assessment conventionally employed by the English Courts (*Windsurfing/Pozzoli* approach) or the "problem-and-solution" approach conventionally employed by the European Patent Office (EPO). However, fundamentally, these formulas are just aids to, and should not distract from the statutory question, being whether the invention is "obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art

13.4 The key considerations for any challenge to obviousness therefore include (i) the characteristics of the person skilled in the art and (ii) prior art.

Person skilled in the art

13.5 Importantly, the person skilled in the art is not a natural person, but a legal fiction.

13.6 Mr Justice Laddie provides a helpful explanation of the skilled person in *Lilly Icos LLC v. Pfizer Ltd [2000] EWHC Patents 49* (08 November 2000), at [62]:

> *The question of obviousness has to be assessed through the eyes of the skilled but non-inventive man in the art.* ***This is not a real person.*** *He is a* ***legal creation****. He is supposed to offer an* ***objective test*** *of whether a particular development can be protected by a patent. He is deemed to* ***have looked at and read publicly available documents*** *and to* ***know of public uses in the prior art.*** *He understands* ***all languages and dialects****. He* ***never misses the obvious nor stumbles on the inventive****. He has no private idiosyncratic preferences or dislikes. He* ***never thinks laterally****.* ***He differs from all real people in one or more of these characteristics.*** *A real worker in the field may never look at a piece of prior art – for example he may never look at the contents of a particular public library – or he may be put off because it is in a language he does not know. But the notional addressee is taken to have done so. This is a reflection of part of the policy underlying the law of obviousness. Anything which is obvious over what is available to the public cannot subsequently be the subject of valid patent protection even if, in practice, few would have bothered looking through the prior art or would have found the particular items relied on. Patents are not granted for the discovery and wider dissemination of public material and what is obvious over it, but only for making new inventions. A worker who finds, is given or stumbles upon any piece of public prior art must realise that that art and anything obvious over it cannot be monopolised by him and he is reassured that it cannot be monopolised by anyone else.*

(emphasis added).

13.7 In many ways, this legal description of a skilled person seems far closer to an algorithm or machine learning platform than it does to a person. The idea of an all knowing 'person' with no lateral thinking ability is much more akin to how AI currently operates than it is to any human.

13.8 Accordingly, there is nothing in the analysis of a skilled person that precludes the use of AI, in fact it may be quite a good analog.

13.9 As set out above in relation to inventorship, AIPPI UK's view is that the appropriate framework is to consider the use of AI as a tool. In that respect, what the person skilled in the art can be taken to know, should be considered by reference to what is standard within that field / industry. If the use of AI is an ordinary part of the person skilled in the art's toolkit, the way e.g. CAD is for a structural engineer or CFD is for biomedical engineer, then access to that AI should be considered as part of any obviousness analysis. The test can be determined by what can the skilled (human) person do with and understand by reference to their field while using the AI.

Prior Art

13.10 As set out above, the use of AI may make it more realistic for individuals to have access to the full complement of prior art when faced with creating a new invention.

13.11 A potential future issue with respect to AI and prior art is a proliferation of prior art to an extreme extent. This may result in difficulty identifying relevant prior art, though equally the increase in sophistication of computer models may counteract that. One point which may cause some concern is if AI is used deliberately used in a defensive manner to crowd fields with art which does not have a plausible research backing or benefit. This could prevent genuine research without contributing to the furthering of knowledge.

Assessing obviousness where AI is involved

13.12 An example of judicial 'short-hand' which AIPPI UK believes will likely be impacted or even upended completely by AI is the '(not) obvious to try' line of jurisprudence highlighted in *Actavis UK Ltd v Merck & Co Ltd* [2008] EWCA Civ 444. It may be that, particularly for dosing regimes and selection inventions, the computing power and speed of AI led combinations means that the threshold for what is 'worth trying' is so low as to be irrelevant for the purpose of assessing obviousness. This may be particularly relevant to biotechnology and pharmaceutical products.

13.13 The obviousness question is ultimately a question of fact and at its heart is about human judgement. The AIPPI UK view is that existing patent law is well equipped to handle considerations of this question which involve AI inventions.

14. Should we extend the concept of "the person skilled in the art" to "the machine trained in the art"?

14.1 No. The person skilled in the art is someone with a practical interest in the field. The characteristics of that person (as set out above in question 13) are a legal fiction which

are capable of being applied to an individual who is using AI as part of their work in their field.

14.2 Further, there is no 'machine' skilled in any art. Any attempt extend the concept of 'person skilled in the art' to the 'machine trained in the art' does not recognise that a definition of AI, machine learning or even a 'computer' is not static this extension solves no practical problem in assessing the relevant standard.

Infringement

15. Who is liable when AI infringes a patent, particularly when this action could not have been predicted by a human?

15.1 Accountability for the actions of AI is part of a broader discussion than IP law and has had considerable writing with respect to appropriate liability and accountability, particularly in the context of product liability and drone (warfare) use. It is desirable for this to be part of a broader public consultation over the responsibilities of individuals where they use of AI generally.

15.2 In relation to patent infringement specifically, we note that this is a strict liability statutory tort. Given, in our view, it is not desirable for AI to have legal personhood, the actions of the human owner/operator of the AI are those which must be considered in relation to liability for patent infringement.

15.3 The relevant human/s has/have at their disposal, the innocent infringer defence. As the office will be aware, the test concerns only ignorance of the existence of the patent and not failure to appreciate that an act committed by them/their AI might constitute an infringement. Where there is no actual knowledge (as is likely in the circumstances of this question), the existence of reasonable grounds will be judged in light of all circumstances. In the case of AI, we suggest those circumstances may include how it was first programmed, what material is has been provided with/exposed to and how the interplay between its hardware, software and external environment may have resulted in the infringement.

15.4 We note for completeness that we do not view contributory infringement as relevant here, given that the AI cannot be the primary infringer on its own (lacking legal personhood).

16. Could there be problems proving patent infringement by AI? If yes, can you estimate the size and the impacts of the problem?

16.1 Yes, in our view, there could be.

16.2 This would be particularly the case where the AI is being used to infringe a process patent. Evidence for the infringement of process patents is already difficult to prove and often requires special assistance from the Court to do so by way of disclosure.

16.3 This becomes even more difficult in relation to some types of AI uses. For example, AI which employs deep neural networks usually operates in a 'black box', where its processes are unknown even to its human programmer. In such circumstances, it would be extraordinarily difficult for any claimant to prove infringement. If the AI is less

sophisticated or of an explainable model, then the Claimant could be assisted by disclosure and the standard of proof being the balance of probabilities.

16.4 Further, for the infringement of a product patent, there does not appear to be additional hurdles where AI is involved.

COPYRIGHT

1. Do you agree with the above description of how ai may use copyright works and databases, when infringement takes place and which exceptions apply? Are there other technical and legal aspects that need to be considered?

1.1 While the technical implementation of AI systems is complex, AIPPI UK considers the description to summarise the fundamental technical issues which are relevant from an IP perspective. AIPPI UK is not currently aware of additional legal or technical issues which need to be considered at this stage.

2. Is there a need for greater clarity about who is liable when an AI infringes copyright?

2.1 No. AIPPI UK agrees that the person who is liable is normally whoever has control over the infringement and the ability to stop future infringement. In light of the current state of AI technology AIPPI UK considers this framework to be sufficient in the short to medium term. To the extent fact specific questions regarding the identity of the person who has control of an AI system arise, AIPPI UK considers that these are best addressed by case law developed by the courts.

3. Is there a need to clarify existing exceptions, to create new ones, or to promote licensing, in order to support the use of copyright works by AI systems? Please provide any evidence to justify this.

3.1 Yes. The exception provided under s29A CDPA relating to making copies for text and data analysis for non-commercial research purposes provides almost no assistance to commercial organisations who wish to develop AI systems based on copyright works. It also creates challenges for non-commercial organisations who wish to collaborate with commercial organisations in the development of AI systems. The applicability of the temporary copies exception provided by s28A CDPA to the use of copyright works for training AI systems is also currently unclear. Furthermore, it does not extend to copies of a work which are stored permanently by an AI system or need to be retained for future maintenance, validation or development of an AI system.

3.2 In relation to database right, there is no temporary copies exception or text and data mining exception in relation to database right and the “fair dealing” exception provided by Regulation 20(1) of The Copyright and Rights in Databases Regulations 1997 is limited to the extraction of a substantial part of a protected database “for the purpose of illustration for teaching or research and not for any commercial purpose”.

3.3 The UK does not therefore currently have a comprehensive exception to copyright or database right which covers the use of copyright works or protected databases to train AI systems for commercial purposes, notwithstanding those works or databases may be lawfully in the possession of the person wishing to use them to train an AI system. Put another way, the right for a human to read a work does not currently entail the right for them to use the work to train an AI system.

3.4 AIPPI UK is aware of at least one example of a commercial organisation based in the UK which desires to use copyright works to train AI systems but has been hindered by protracted negotiations with rights holders to obtain a licence which specifically permits

their use of these works for computational purposes. AIPPI UK is also aware of at least one example of database rights creating a barrier to the development of an AI system in an industry where a particular party holds a monopoly over the supply of the data needed to train the system and is unwilling to license that data to others for use in the development of AI systems.

3.5 AIPPI UK is also aware of anecdotal evidence which suggests that decisions regarding the jurisdiction in which commercial AI research is conducted are influenced by the availability of permissive exceptions to copyright protection which cover the development of AI systems. For example, jurisdictions such as the United States and Israel, which have a general “fair use” exception to copyright infringement, are considered by some to provide a permissive environment for AI research and may attract more investment in AI development than jurisdictions with less permissive exceptions to copyright.

3.6 In this regard, AIPPI UK notes the UK Government's stated intention not to implement Directive (EU) 2019/790 on copyright and related rights in the Digital Single Market as part of UK law. The UK will not therefore be adopting the text and data mining exceptions provided by Article 3 and Article 4 of that Directive. Article 4 in particular provides a text and data mining exception which is broader than the exceptions currently provided under UK law, both in terms of the activities it permits (commercial and non-commercial activities) and the rights to which the exception applies (copyright and database right). AIPPI UK also notes that other non-EU jurisdictions are rapidly adopting their own text and data mining exceptions to copyright, with Singapore being a notable recent example. Some may therefore argue that EU Member States and other jurisdictions with permissive text and data mining exceptions will, over time, potentially become more attractive destinations for AI research than the UK due to their adoption of text and data mining exceptions which are broader in scope than those currently available in the UK. Following this reasoning, it may be suggested that there is an opportunity for the UK to distinguish itself as a centre for AI research by creating a more permissive regime for text and data mining than other jurisdictions, such as the EU.

3.7 However, AIPPI UK believes there are several reasons why any policy decision taken by the UK regarding text and data mining expectations should take a more nuanced view of matters than “permissive text and data mining exceptions = more investment in AI research and development”.

3.8 First, AIPPI UK is not currently aware of any systematic research which assesses the impact of text and data mining exceptions on attracting investment in AI research and development. While anecdotal evidence should not be discarded, it should be treated with caution. There are many factors which are likely to influence decisions regarding investment in AI research a development beyond the availability of exceptions to copyright for text and data mining. Furthermore, while many of the uses of AI which have been discussed within the IP community involve the use of copyright works as training data, a substantial proportion of commercial AI systems are trained using datasets where the individual elements are not protected by copyright. In many cases, contractual restrictions and/obligations of confidence relating to data play a far more important role in dictating an AI developer’s ability to use that data to train an AI system

than any intellectual property rights which may subsist in the individual datum or a database containing them.

3.9 Second, any exception to the exclusive rights provided by must consider the legitimate interests of rights holders. Text and data mining techniques provide new ways in which value can be created from copyright works and protected databases. Where a copyright work is a single datum amongst many others which are present in a data set used to train an AI system, the percentage of the overall value created by text and data mining which attribute to the use of that copyright work is very small. Instead the value arises as the result of the aggregation of many such works and its creation often involves a significant investment in systematising, organising and labelling the data which can then be subject to text and data mining processes. Where the dataset is contained within a database, which is itself a copyright work by virtue of the selection or arrangement of its contents, or is protected by database right resulting from a substantial investment in obtaining, verifying or presenting its contents, the work undertaken by the rights holder is likely to account for a larger percentage of the value which is created by training an AI system. The case that a rights holder should share in the value which is created by training the AI system appears to us to be stronger in the latter case than the former. These differences between categories of protected subject matter and their contribution to the value created by text and data mining should be considered when framing any new exceptions covering these activities. However, a potentially difficulty middle ground is a training dataset which contains many works owned by an individual rights holder, but the dataset itself is not protected by database copyright or database right.

3.10 Third, AIPPI UK is aware of examples of rights holders and collective rights management organisations developing services which facilitate the licensing of copyright works for text and data mining purposes, such as the PLSclear TDM service offered by Publishers' Licensing Services (https://www.pls.org.uk/services/text-and-data-mining/). The creation of such services often involves investment in new formats for the presentation of works and interfaces by which they can be accessed. The development of these services and the investment in new data formats and data access mechanisms should be encouraged as they increase the availability of high-quality data which is readily available for computational use. Adopting overly broad text and data mining exceptions would have the potential to de-incentivise the creation of such services, by removing the ability of IP rights to control the intended use of those services. However, text and data mining exceptions would appear to be more desirable where a work or protected database has been made available to the public for non-computational use, but no effective mechanism exists to obtain a licence permitting computational use. One potential option would be to create a text and data mining exception which is subject to a requirement to pay a reasonable royalty and is only available to the extent there is no effective licensing scheme available to allow computational use. Such an exception would need to be designed carefully to ensure it fulfilled the policy objective of removing barriers to licensing data for computational use. In this regard AIPPI UK notes that s66 CDPA provides an exception for lending to the public of certain works, which is subject to "such reasonable royalty or other payment as may be agreed or determined in default of agreement by the Copyright Tribunal" and does not apply where a licensing scheme already exists for those works.

3.11 Finally, AIPPI UK also wishes to make the following observations:

3.11.1 Text and data mining exceptions are only one aspect of a broader issue relating to data access. Data access engages many other policy considerations including competition law, data protection law and cybersecurity. For example, concerns regarding data holders with significant market power which allows them to effectively block the development of competing AI systems may be more appropriately addressed through the lens of competition law.

3.11.2 AIPPI UK has observed that while certain sectors (such as financial service and sports) have a great deal of experience with data licensing, many other sectors suffer from a knowledge gap which can act as a barrier to the efficient sharing of data for use in the development of AI systems. Initiatives which increase public understanding of data licensing and access to template/example data licences are therefore to be strongly encouraged.

4. Is there a need to provide additional protection for copyright or database owners whose works are used by AI systems? Please provide any evidence to justify this.

4.1 In light of the UK's departure from the EU, the UK Government has indicated that it intends to amend The Copyright and Rights in Databases Regulations 1997 such that only UK citizens, residents and businesses are eligible for database rights in the UK for databases created on or after 1 January 2021. Pending any change of position by the EU, UK citizens, residents and businesses will also not be eligible to receive or hold database rights in the EEA for databases created on or after 1 January 2021. Losing the ability to obtain new database rights in both the UK and EEA creates significant disruption to a number of existing business models. It also has the potential to divert investment in database creation away from the UK. A business which has to decide between establishing in the EEA and obtaining database rights which protect the database in a market of over 500 million individuals or establishing in the UK and obtaining database rights in a market of 66 million individuals may well choose to establish in the EEA. While it may be possible for the business to create an establishment in both the UK and EEA in order to obtain rights in both markets, the legal and financial complexity of doing so may put this option out of reach for a large number of organisations, especially amongst the SME community.

4.2 While this issue has received comparatively little attention, AIPPI UK strongly believes that a continued reciprocal protection for databases should form part of any future trade agreement made between the UK and the EU.

Protecting works generated by AI

5. Should content generated by AI be eligible for protection by copyright or related rights?

Literary, Dramatic, Musical and Artistic Works

5.1 AIPPI UK considered the application of existing copyright and economic rights to AI-generated content as part of its response to AIPPI's 2019 Study Question "Copyright in artificially generated works".

5.2 In preparing its response, AIPPI UK identified a gap in the protection available for literary, dramatic, musical and artistic (LDMA) works which are generated by an AI system but fail to satisfy the requirement for originality on the basis they are not an "author's own intellectual creation". We refer to this category of LDMA works below as "**AI-Generated Works**" and to original LDMA works with human authors as "**Human Created Works**". AIPPI UK also identified several factors which it considered relevant to assessing whether the gap should be filled in some way, either by existing rights or by the introduction of a new right. Having considered these factors, AIPPI UK proposed the introduction of a new economic right to cover AI-Generated Works which would qualify for copyright protection as original LDMA works but-for their creation by an AI system.

5.3 AIPPI UK's responses and reasoning are recorded in its submission to AIPPI which is accessible online at: https://aippi.soutron.net/Portal/DownloadImageFile.ashx?objectId=5296

5.4 AIPPI UK is not aware of any empirical research which considers the potential impact of the gap in protection for AI-Generated Works on their creation. Nor are we aware of specific examples of creators of works which utilise AI systems in their production changing their behaviour as a result of the gap in protection. This may result from a belief that section 9(3) CDPA gives rise to protection for all forms of computer-generated work, or that the level of human involvement in the creation of their works is enough to establish that they meet the requirement for originality. The use of AI in content creation is also still at a relatively early stage and the potential for the commercialisation of such works is still being explored. However, notwithstanding this AIPPI UK believes that the gap in protection will become increasingly important as AI technology and the markets for AI-Generated Works develop.

5.5 Having reflected further on the current gap in protection for AI-Generated Works, and with the benefit of the robust discussion held during the 2019 AIPPI World Congress, AIPPI UK considers that the factors which need to be balanced when considering the extent to which the gap should be filled include the following:

5.5.1 The creation and dissemination of AI-Generated Works may give rise to a public good. This could include the creation of categories of work which are not economically viable for human authors to create, or provide works which otherwise satisfy needs which are currently underserviced by the Human Created Works.

5.5.2 In some situations, the production and dissemination of an AI-Generated Work would have an identical societal benefit to the production and dissemination of an equivalent Human Created Work. To permit free dealing with AI-Generated Work, while providing the author of the Human Created Work a long-term monopoly over dealings with their work appears arbitrary without further justification.

5.5.3 The creation of some AI-Generated Works requires significant investment, e.g. in order to create the AI system itself or to obtain the training data required in order to create the work. If AI-Generated Works arising as the result of such an investment can be freely copied, the creators of such works may either choose not to make them public (in order to retain the possibility of protecting them under the laws of confidence) or choose not the make the relevant investment in the first place.

5.5.4 It may be possible to create AI-Generated Works at a relatively low cost, especially as AI technology advances. Granting extensive monopoly rights to AI-Generated Works which can be created with limited investment risks creating an imbalance between the risk taken by those who control the generation of the work and the reward available to them. One possible result of over rewarding the creation of AI-Generated Works could be to incentivise their mass creation as a mechanism to threaten human authors with infringement proceedings based on allegations that they have copied an AI-Generated Work. Overly broad rights granted to AI-Generated Works may therefore have the potential to stifle human creativity.

5.5.5 The expression of human personality through the creation of works is a cornerstone of human culture and must continue to be encouraged, rewarded and protected. Any protection offered to AI-Generated Works should not act to diminish the incentivisation and recognition of human creativity which is currently present in our system of copyright.

5.5.6 The restriction of copyright protection to only Human Created Works provides a crucial dividing line between protectable and unprotectable subject matter. It prevents copyright from extending to purely factual information such as numbers, individual words or other purely factual records of some state of affairs. This dividing line is important for freedom of expression, as it prevents a party claiming a proprietary right over factual information.

5.6 Taking these factors into account AIPPI UK believes that a limited form of protection for AI-Generated Works is both justified and desirable. It must however be framed carefully.

Entrepreneurial works

5.7 AIPPI UK does not consider that any changes are required to the current framework under the CDPA for the protection of entrepreneurial works, such as sound recordings, films, broadcasts and typographical arrangements.

6. If so, what form should this protection take, who should benefit from it, and how long should it last?

6.1 In light of the matters set out in our response to Question 5, AIPPI UK proposes that a new *sui generis* right should be created in order to protect AI-Generated Works. We refer to this right below as the New Right. The framing of this right should consider the following matters:

6.1.1 **Eligible subject matter**: The subject matter eligible for protection should be clearly defined and allow the creators of AI-Generated Works and third parties to establish with ease whether a particular work is capable of being protected by the New Right. Categories of subject matter which are not currently eligible for copyright protected as an original LDMA work (e.g., factual information) should not be protectable by way of a New Right. AIPPI UK proposes that an "objective originality" test should be adopted to define the subject matter eligible for protection by way of a New Right. This test would consider a hypothetical situation; had the LDMA work been created by a notional human author, would it be considered original, i.e. an intellectual creation reflecting that notional person's personality? This approach would prevent a New Right extending the subject matter which is currently eligible for copyright protection as LDMA works, e.g. it would not extend protection to factual information. Adopting an "objective originality" approach would also allow third parties to adopt a consistent approach to distinguishing between protected and non-protected subject matter (although we discuss a potential issue relating to the ability of third parties to distinguish between Human Created Works protected by copyright and AI-Generated Works protected by a New Right below).

6.1.2 **Additional requirements for protection:** As set out in our response to Question 5, there is a potential distinction to be drawn between AI-Generated Works which are created as a result of a substantial investment and those which are created with little economic cost to their creator. A direct way to distinguish between each category of work would be to introduce an additional requirement that a New Right extends only to (objectively original) LDMA works which result from a substantial investment in their creation. This approach would allow works which did result from a substantial investment to benefit from the New Right while denying protection to works which did not. It would also follow the model adopted for sui generis database rights under the Database Directive (96/9/EC), allowing for the potential re-use of existing case law regarding the necessary level of substantiality. A potential disadvantage with this approach is that third parties would be required to guess the level of investment which was required to create an AI-Generated Work before determining whether they are free to use it. This issue exists to some extent with sui generis database right, a reasonable assessment can usually be made by considering the nature of the data contained within the database and the investment which would have been required by the creator of the database to obtain, verify or present that data. The best a third party assessing the subsistence of the New Right in an AI-Generated Work may be able to do is to make an inference regarding the work required to create the work considering the current state of AI technology. On the other hand,

the existence of a substantial investment test may dissuade creators of AI-Generated Works which did not result from a substantial investment in their creation from attempting to enforce a New Right against a third party. AIPPI UK has not at present reached a definite conclusion on whether a substantial investment requirement would be desirable.

6.1.3 **Authorship/initial ownership:** AIPPI UK considers s9(3) CDPA to provide a sufficiently certain framework for determining the natural or legal person (or persons) who should be considered the author of an AI-Generated Work. While this provision itself does not benefit from extensive judicial interpretation, the approach adopted under s9(3) is sufficiently similar to that adopted for authorship of films and sound recordings to allow the more extensive case law developed in those areas to provide useful guidance. Alternately, if a substantial investment requirement is adopted for a New Right, the approach adopted under Regulation 14 of The Copyright and Rights in Databases Regulations 1997 could provide an appropriate model to identify the author(s) of the AI-Generated Work.

6.1.4 **Scope of protection:** In light of the considerations set out in our response to Question 5, AIPPI UK considers that the scope of protection offered to AI-Generated Works by a New Right should be narrower that the protection offered to original LDMA works with human authors. AIPPI UK proposes that the New Right should be constructed along the same lines as the scope of protection which applies to entrepreneurial rights. The New Right could for example prohibit **only** the facsimile reproduction of all or a substantial part of an AI-Generated Work.

6.1.5 **Term of protection:** AIPPI UK considers that the term of protection for an AI-Generated Work under a New Right should (i) be shorter than the protection offered to an equivalent original LDMA work; and (ii) run from the end of the calendar year in which the work was made. AIPPI UK considers that the term should be no more than 25 years.

6.1.6 **Relationship between by copyright and a New Right:** The proposal for a New Right set out above would give rise to the hypothetical situation in which a third party could be presented with two identical LDMA works (one a Human Created Work protected by copyright and the other an AI-Generated Work protected by a New Right) and yet the term and scope of protection applying to each work would differ substantially. Without a way of distinguishing between the two categories of work, a third party may be well advised to assume that both works were protected by copyright in order to avoid the risk of dealing with a Human Created Work as if it was an AI-Generated Work. If this approach was adopted by third parties, the policy objectives of creating a narrower scope and term of protection for a New Right would potentially be frustrated. One potential solution to would be to introduce an additional requirement that a New Right could only be enforced if an AI Generated Work (or lawful copies thereof) are marked or tagged in some way to indicate their nature, although this may present practical difficulties for certain categories of work. The solution would however be partial, as third parties would be encouraged to treat AI-Generated Works which are not marked as such as if

they were Human Created Works. This would however be no worse that the situation in which no New Right is introduced.

7. Do other issues need to be considered in relation to content produced by AI systems?

7.1 The application of moral rights to AI-Generated Works should be considered, although AIPPI UK is of the view that the creators of AI-Generated Works should not benefit from moral rights.

Copyright protection for AI software

8. Does copyright provide adequate protection for software which implements AI?

8.1 No. AI applications commonly involve the combination of elements of code written by human authors (e.g., elements which manage data input, formatting and output) with AI models developed as a result of some form of training process. A model may, for example, be embodied in a database representing the weighting of different connections in a neural network. While copyright protection of the elements of code written by human authors is well understood, the application of copyright to certain data structures which represent trained AI models ("**AI Model Data Structures**") is currently unclear. The questions of (i) authorship; and (ii) originality, discussed in the response to question 5 apply equally to AI Model Data Structures.

8.2 Current industry practice is to assume that all elements of a trained AI system are eligible for copyright protection and to manage the ownership of that copyright contractually. To the extent the issue of copyright ownership is not addressed by contract, the existing provisions of the CDPA relating to authorship and ownership (including s9(3) CDPA) provide a framework for the resolution of disputes between parties involved in the creation of an AI application regarding ownership of AI Model Data Structures.

8.3 However, for the reasons discussed above in the context of question 5, the current provisions of the CDPA leave substantial questions as to whether AI Model Data Structures may qualify as original literary works eligible for copyright protection. As between contracting parties involved in the development of the AI system this issue may potentially be addressed by imposing obligations of confidence or other contractual restrictions regarding the use and disclosure of an AI Model Data Structure. However, contractual obligations are only enforceable against the counterparty to a contact and rights of confidence in equity are only enforceable against a limited group of persons who receive information in circumstances which place them under an obligation of confidentiality and can be lost by publication of the information. Uncertainty regarding the subsistence of copyright in AI Model Data Structures is therefore likely to provide a disincentive against dissemination of the trained AI model to the public.

8.4 The adoption of a sui generis right for AI-Generated Works, as outlined in our response to questions 5 and 6 above would provide a clear legal basis for the protection of AI Model Data Structures.

9. Does copyright or copyright licensing create any unreasonable obstacles to the use of AI software?

9.1 We are not currently aware of copyright or copyright licensing creating unreasonable obstacles to the use of AI software.

DESIGNS

1. Do you agree with the analysis above which concludes that it is not possible for AI to be the author or owner of a UK or Community design?

1.1 Yes, under the current legal framework it is not possible for an AI system to be the author, designer or owner of a UK or Community design. The key obstacle is that the courts and the legislature have indicated that references to a "person" in the legislative framework which underpins design law in the UK and EU should be construed a natural person or legal person.

1.2 Specifically, Articles 11(3) and 11(5) of the Designs Directive (Directive 98/71/EC) make reference to the design right holder as a "person": '*The ground provided for in paragraph 1(c) may be invoked solely by* ***the person*** *who is entitled to the design right under the law of the Member State concerned' and 'The ground provided for in paragraph 2(c) may be invoked solely by the person or entity concerned by the use'.* Furthermore, section 2(3) of the Registered Design Act 1949 ("**RDA**") identifies the author of a design as "***the person*** *who creates it*" and section 214(1) of the Copyright, Designs and Patents Act 1988 ("**CDPA**") identifies the designer of a design as "***the person*** *who creates it*". The ordinary interpretation of "the person" would be the natural person who creates the design. However, AIPPI UK is not aware of any case law in the context of design rights which expressly limits the designations of "author" and "designer" to natural persons and we note that section 5 of the Interpretation Act 1978 provides that, unless the contrary intention appears, the word "person" in UK legislation includes a body of persons corporate or unincorporated. We further note that, in the case of unregistered designs, section 217(1) CDPA defines "qualifying persons" as including both "individuals" (i.e. natural persons) and "a body corporate or other body having legal personality" (i.e. legal persons). It therefore appears possible for legal persons to qualify as an author or designer, although (outside the case of computer-generated designs, which we consider below) this may of little practical consequence as a legal person may only act through its agents, who will themselves be considered the person who creates a design.

1.3 We are not aware of any courts or IP offices having specifically considered whether AI is capable of being an author/designer or owner of a design in the UK or EU, but the question has been raised in relation to patents and considered by the patent offices in the UK, the EU and the US. Mr Stephen L Thaler attempted to register two patents with a machine called 'DABUS' as the inventor, and failed on each application, with the decisions being also upheld on appeal. Part of the reasoning adopted by Smith J in *Thaler v The Comptroller-General of Patents, Designs And Trade Marks* [2020] EWHC 2412 (Pat) was that an applicant for a patent must be a natural or legal person, which an AI system was not. Although subject to a different legal regime, the analysis can be extended by analogy to the author/designer or owner of a design.

2. Are there, or could there be, any tensions with the current legislation when seeking to register a design or be recognised as the owner of an AI-created design? Who would be the legal entity applying for the rights? The RDA and CDPA set out that the person who made preparations for the creation of a computer-generated design is the author or creator (s2(4) RDA and s214 CDPA). If read broadly this provision could give the creator of the AI system rights to be identified as the author of a design, even if they have not inputted data required for it to operate.

2.1 Yes, we believe that there are tensions with the legislation as currently drafted. Section 2(4) RDA and section 214(4) CDPA make provision for computer-generated designs, which are taken to be designs generated by computer in circumstances such that there is no human author/designer. Section 2(3) RDA and section 214(1) provide that the author/designer is the person who creates the design. However, no determinative test is provided by the legislation, or is apparent from case law which could be used to establish the circumstances in which a design does not have a human who created it. This issue arises because the subsistence of a design right (under the CDPA) and the right to apply for a design right (under the RDA) are not premised on the existence of a specific mental act relating to the design which can be attributed to a specific individual. The absence of such an act could be used to determine whether a design is computer generated. However, without the requirement for a specific mental act, the only relevant test to decide whether the design is computer generated is to consider whether the design was "created" by a human.

2.2 Where an AI system is utilised in the production of a design, the "created" test clearly gives rise to the potential for disputes between different natural persons who were involved in the process by which the design was generated. At one end of the spectrum, a human designer may use an AI system as a tool to assist them in creating a design. At the other end of the spectrum, a human may acquire a "design machine" which creates new designs with the press of a single button. Many would consider the first example as clearly involving a human who should be considered the author/designer and the second example as not involving a human author/designer. However, between these two extremes lie many intermediate cases in which the "created" test provides very limited assistance in assessing whether the design has a human author/designer.

2.3 While the "computer-generated" designs provisions contained in section 2(4) RDA and section 214 CDPA, provide a backstop deeming provision which apply when there is no human author/designer, they do not assist in determining whether there is a human author/designer in the first place. On one view, they only act to expand the class of persons who may claim to be the author/designer of a design and therefore the potential for disputes regarding ownership of a design/entitlement to apply for a design. As noted in the question, if read broadly they could include within the class of persons who could claim to be the author/designer of a design, the person who created the AI system, even if they play no direct role in the creation of that specific design. As section 2(4) RDA and section 214(1) CDPA do not appear to limit "person" to natural person, this class could potentially also include legal persons.

2.4 Regarding the application of the test under section 2(4) RDA and section 214(1) CDPA, the clearest candidates for 'author' and 'designer' are the "creator" of the system and

the end user or 'operator' of the system, as they are 'the person by whom the arrangements necessary for the creation of the design are made'. However, there may be others involved: such as an intermediate step where a person selects information to train an AI system who is neither responsible for its coding nor the final operation of the design process.

2.5 The RDA and CDPA provisions should not automatically deem the original creator of an AI system as the author of designs that are the final outputs of that system in all cases, and we see two scenarios where this issue must be regulated carefully.

2.6 First, if an AI system was produced and marketed as a software package for use by others, it would be no more than the "tool" used to create designs. The control exercised by the person or system that operates the AI, would in that case make the decisions regarding selection of input data and weighting of inputs, and the final version or versions of the design. The original creator of the system would therefore exercise very little control over the final output, such that it would not be correct for the original creator of the AI system to have any rights to that output.

2.7 Alternatively, there may be some cases where the final operator or buyer of an AI system exerts no independent creative input into the design process, and merely operates the program that is arranged by others. In this case, the output design would not be a function of the creative input of the operator and any "authorship" would most likely be attributable to the creator of the AI system. We consider these cases to be less common, and that the majority of fact scenarios will involve the first scenario.

2.8 On balance, we consider that in the majority of cases the 'final' user will be the one that qualifies as the rightful author because they would be the person making the "arrangements" for the creation of the design, applying a broad and objective interpretation of the term.

2.9 We finally note that the formulation "person by whom the arrangements necessary for the creation of the design are undertaken" is similar to the wording used to identify the person who should be considered the producer of a sound recording or a film under the CDPA. While not directed to the creation of a design, the case law which has developed around these provisions would potentially provide a useful guide to assessing the application of section 2(4) RDA and section 214(1) CDPA.

3. Who should be recognised as the author of a design created by AI where the system has been bought from a supplier, and the buyer has provided input or data to the system? Does the wording of legislation need to be changed?

3.1 We do not believe that there is a uniform answer to this question that will apply to all AI systems equally and refer to our answer to Question 2.

3.2 We do not believe it would be correct or equitable for a buyer not to have ownership/authorship of the design after it has gone to expense of purchasing the AI system and expended time and effort in inputting the data to achieve the design output. At the same time, a supplier of a sophisticated AI system that operates "off the shelf" without any time or effort expended by the buyer, should be recognised for the investment made in the AI system and the proximity of this investment to the creation of a specific design.

3.3 The legislation should therefore reflect the general proposition that the author of a design will be the one or more persons, entities and/or systems who have exercised actual and substantial control over the creation of the design and made decisions regarding the final output of the design. In the case where control and decisions are exercised by multiple parties, then they should be deemed joint authors.

4. Do you consider that legislation should be changed to allow AI systems to be recognised as the author of a registered design or designer of an unregistered design?

4.1 No, we consider that only a natural (or potentially legal person) should be considered an author or designer of a design.

4.2 Nevertheless, it may be useful to acknowledge or disclose the use of an AI system in the creation of a design. The disclosure could be made during the context of design registration, and could be provided as additional information and for information purposes only. It would also allow the UK government to track the use of AI within designs. We believe that such disclosure should not be mandatory or have legal consequence.

5. If so, how should we assess when AI stops being a tool programmed by a human and becomes an intelligent entity capable of producing its own IP? What proof or evidence would be required?

5.1 If AI systems are to be recognised as authors or designers, only fully autonomous and self-sufficient systems with little or negligible human interaction should meet the criteria.

5.2 The assessment could be made on a graduated scale based on the level of automation and the level of human interaction with the AI, and on a case-by-case basis. This determination would likely be a matter of expert opinion and would require the use of expert evidence in court.

6. Unlike UK domestic legislation, the CDR has no provisions relating specifically to computer-generated designs. Does this result in legal uncertainty in relation to authorship and ownership of computer-generated designs? Would the same apply to AI-generated designs?

6.1 We believe that the lack of specific computer-generated design provisions in the CDR could lead to legal uncertainty, however in light of Brexit and the limited impact of the CDR on protection of designs in the UK moving forward, we do not consider that the UK Government should address this issue as a priority at this time. We also note that, as set out in our response to Question 2, even with the presence of computer-generated design provisions the RDA and CDPA suffer from significant uncertainty regarding the identity of an author or designer of a design generated with the assistance of an AI system.

7. Are there any other issues in relation to the CDR which we should consider in relation to AI?

N/A

8. Can the actions of AI infringe a registered or unregistered design? Can AI do the acts set out in law (s7(2) RDA)?

8.1 Some actions of AI systems should infringe a registered or unregistered design. This is because some infringing acts are capable of being programmed to occur automatically via the internet or through software, for example, offering a product for sale online.

8.2 §7(2) states '[…] any reference to the use of a design includes a reference to— (a) the making, offering, putting on the market, importing, exporting or using of a product in which the design is incorporated or to which it is applied; or (b) stocking such a product for those purposes'.

8.3 However, these acts of infringement are unlikely to occur without any involvement of a natural or legal person, who should be found ultimately liable for the infringement or share the liability. While there is a possibility that the AI could be the initial instructor for these actions to take place virtually, we believe that most organisations, at least for the time being, would not allow an AI system to make such decisions alone, particularly where there is a risk of infringement. In any event, such AI decision-making would most likely be based upon strictly applied criteria coded into the AI system's programming, and is therefore causally linked to a person with legal capacity deciding the criteria.

9. When considering infringement are there, or could there be, any difficulties applying existing legal concepts in the registered designs framework to AI technology? Does AI affect the use of the "informed user" in measuring overall impression?

9.1 The *"informed user"* test is fairly well understood as an objective test in designs law as a whole, having regard to knowledge of the design corpus. The test is fairly broad and flexible and if facts and circumstances in the future lead to the ability of an AI system to be a "*user*", courts and tribunals could extend the principle by analogy to include AI systems as part of their assessment.

9.2 On the basis of current technology, the probability of AI systems being "*informed users*" of designs seems to be very limited.

10. If AI can infringe a registered design, who should be liable for the infringement? Should it be the owner, the programmer, the coder, the trainer, the operator, the provider of training data, or some other party?

10.1 As noted above, we consider that this should be a question of degree of control, accountability and factual circumstance. The extent of liability will depend on the level of automation of the AI system, the level of human interaction, and the identity of the human interaction. What amount of direction did each relevant person provide the AI system and to what degree where they able to control the output - who was ultimately in control of the result? We note that this will be a complex and difficult determination. In particular, we consider knowledge of the infringing design or AI system will be key - did the programmer know that an infringement was likely but sold the system in any event or was the owner aware that the design was infringing but used it anyway?

10.2 We do not consider there to be an easy or singular answer to the liability issue surrounding AI and understand that this question will be one of great importance to the development of AI in future. However, as a general principle, we would argue that the owner should remain liable as it is the entity benefitting commercially from the use of the design, and is the entity most likely to have the greatest direct control over the AI system. In practice, it is likely that the owner would have a contract with the supplier of the AI (if purchased) and that the agreement would apportion liability as negotiated by the parties.

TRADE MARKS

1. If AI technology becomes a primary purchaser of products, what impact could this have on trade mark law?

1.1 Short of the development of a machine with true artificial general intelligence, with desires and a degree of freedom, it is difficult to envisage a scenario in which an AI could be the primary purchaser of a product. AI is, at present and for the foreseeable future, likely to be a tool to assist humans with their actions (such as making purchases). Moreover, AI is not a legal person and cannot enter into a contract to purchase.

1.2 This is not to say that an AI may not be involved to some extent in the purchasing decisions for products, but in all likelihood it will be led by human decisions.

1.3 By way of example, at a consumer level, if a person instructs an AI assistant (for example an Amazon Echo) to purchase coffee, that assistant will likely choose the most appropriate coffee on the basis of its dataset about that person. If it is aware that the person purchased coffee from Brand A once, and has not purchased that coffee again but an alternative brand or brands, then in all likelihood they disliked the coffee and the AI would not buy it. Conversely, if the person buys coffee repeatedly from Brand B, then in all likelihood this is the coffee that the AI would "choose". This does, of course, assume that the relevant brand is available.

1.4 Similarly, at a business level, if an AI is engaged to assist with procurement, it will make "decisions" around a set of human-led criteria. For example, it may "choose" the most appropriate product for a business on the basis of the product's quality, price, and business efficacy. While these criteria will likely be more complex than those engaged at a consumer level, they are once again data-driven considerations.

1.5 Save where a product's brand has a direct bearing on the criteria being considered by an AI, therefore, brand will have no impact on the AI's data-driven decision. Where brand does have a bearing (for example, because the person in the coffee scenario above has a favourite brand of coffee), the AI is merely a proxy for the human's brand preference and, therefore, it is still the human's ability to understand brand origin which is the important consideration from a trade mark perspective.

1.6 In summary, an AI, at least at present and for the foreseeable future, is unlikely to be concerned with or confused by brand, and therefore the impact on trade mark law of AI becoming involved in the purchase of products is limited.

1.7 The impact longer term – if an AI can genuinely be said to be the primary purchaser, with no human intervention – is almost impossible to contemplate. When that happens, we will in all likelihood be in a world where an AI has a degree of desire and free will, and we may well have concerns greater than the state of trade mark law. All else being equal, we may have to consider the concept of the average consumer, whether the threshold for confusion needs to be changed (if an AI is harder or easier to confuse), and whether sales only to an AI can generate reputation and goodwill. At this stage, however, this is all very speculative.

2. Are there, or could there be, any difficulties with applying the existing legal concepts in trade mark law to AI technology?

2.1 This question, following after the question about AI purchasing goods, suggests that this answer is a follow on to that. However, there is also the possibility that the AI is the assessor (a 'judge' if you will) when used in relation to trade mark law to decide if there has been or the potential for infringement (a lawyer's tool, perhaps). This would require an analysis of the concept of who the average consumer is (at present reasonably well-informed and reasonably circumspect and observant). As one of the criteria is imperfect recollection, the nature of confusion as to origin, will need to be reconsidered. What weight should be given to each of the criteria in the test, will be problematic. Moreover, where it is AI that has become the primary purchaser (if that were possible), 'imperfect recollection' would seem no longer to be applicable.

2.2 In conducting an infringement analysis, a judge views the relevant criteria in the context of the products being purchased. We already see this in respect of infringement via advertising keywords, for example, where the test has been adapted slightly to consider whether the ad enables normally informed and reasonably attentive internet users to ascertain whether the goods or services referred to in the ad originate from or are connected with the proprietor of the mark or from a third party. It begs the question as to whether the involvement of AI as the primary purchaser (if that were possible) will ever lead to 'confusion', and if there is 'confusion' will the 'average consumer' require to be considered in new ways? This potentially could lead to the law as it presently exists having two sets of different criteria being applied.

2.3 Given that AI is not a "person", the scenarios we envisage are of the AI assisting a human in making purchases.

3. Does AI affect the concept of the "average consumer" in measuring likelihood of confusion?

3.1 As described above, if an AI could eventually become a consumer in its own right, then the concept of "average consumer" would need to be considered, but AI is not a legal person and so this appears unlikely to arise as an issue.

3.2 Fundamentally, the purpose of a trade mark is to designate origin, to allow customers to establish the origin of goods or services. It is difficult to envisage a situation in which an AI is likely to have a less thorough picture of products and their competition than a human (given humans' emotional responses to brands, imperfect recollection, and so on). It therefore seems that a human will be more likely to be confused than an AI.

3.3 To the extent that AI is used as the primary purchaser (if that were possible), the whole concept of brands and the origin function is called into question: the AI does not care about the brand, so long as the criteria it has been given (to use the coffee example above, strength of blend, type of blend, price, availability, deliverability etc).

4. What is the impact of AI on the drafting of section 10 of the TMA? Can AI "use in the course of business" a sign which may be confusingly similar or identical to a trade mark?

4.1 The starting point with section 10 is that it may only be infringed by a "person". Consistent with our views set out above in questions 1 and 2, in the context of trade mark law, it is difficult at this point in time to attribute to AI the relevant characteristics of legal personhood.

4.2 We do not consider it is appropriate or helpful to think of this scenario as AI 'using' a sign in the course of trade. AI is an asset that may be owned by a business and deployed in various activities, but any use is likely to be at the direction of the trading entity or someone on its behalf. It is not, therefore, whether an AI can use 'in the course of business' but rather is the AI performing an act in the course of the business that deploys the AI. The fact it is AI carrying out the act is irrelevant as to whether there has been infringement committed by a business in the course of its trade.

5. Can the actions of AI infringe a trade mark?

5.1 The answer is undoubtedly "yes", given that it is the business that utilises the AI that is infringing. The AI could use a registered mark without permission or conjure up a sign that is similar (and so infringes that registered trade mark). However, that is likely only to be the case because of the instructions or criteria input into the AI. The fact that this could potentially occur suggests that the AI has either not been programmed to search all the trade mark databases wherever held, or else it has but reached a conclusion that there is no infringement and so used the sign created. If judged by an AI 'judge' the same conclusion might be reached, if by a human judge, it might not be.

5.2 Whether the acts of the business using AI could constitute use of a mark in accordance with honest practices in industrial or commercial matters for the purposes of section 11 is an interesting question. As it will be the business that is to be assessed as to whether it has acted honestly judged by objective standards, the fact that the criteria the AI has been given might not be viewed to be honest, will be a difficult (if not impossible) issue to judge. In the end, what is honest turns on the totality of the circumstances and so that should continue to be a useful barometer against which to assess all kinds of honesty, whether by a human or an AI.

6. If AI can cause trade mark infringement, does this change who could be liable? Should it be the owner, the operator, the programmer, the trainer, the provider of training data, or some other party?

6.1 The AI is not a legal person so cannot be sued, and cannot be held liable, for infringement.

6.2 One way to analyse this question is by reference to where the interests behind the AI lie and the intersections between those interests and the act of infringement. The answer in each case may be different, such that in one case it may be the owner and in another the operator. It is difficult to see how an owner of an AI could not in some way be liable for an act of infringement by the AI.

6.3 To the extent there are joint tortfeasors, they should also be liable. If there is a common design, then each of the combiners will be liable: *Lush v Amazon* [2014] EWHC 181; *L'Oreal v ebay* C-324/09.

6.4 None of the above analysis is any different to a traditional analysis of liability in trade mark law.

TRADE SECRETS

1. Is trade secret protection important for the AI sector? Does the nature of AI technologies and business influence your answer?

1.1 Generally speaking, the importance of trade secret protection increases whenever, owing to the nature of a given business, the "exclusive" IP rights (such as patents, copyright, trade marks and design rights) are: (i) more difficult to obtain; and/or (ii) less useful from an enforcement perspective. Both of these considerations apply to businesses operating in the AI sector, for the reasons explained below.

1.2 Taking the various exclusive rights in turn:

Patents

1.2.1 Patents are classically the most important IP right for innovative businesses, given that they can provide a product/process monopoly for a 20-year term (and, *de facto*, can provide ongoing protection when a successful program of R&D is combined with further patent filings).

1.2.2 In the case of AI businesses, however, there are meaningful challenges to obtaining patent protection, at least insofar as the technical substance of the technology is concerned. These challenges arise from the statutory restrictions on excluded and ineligible subject matter, including in particular the exclusions relating to abstract ideas (in the US) and both software and mathematical methods as such (in Europe). As is the case for software products more generally, these provisions serve as an obstacle to patent protection for AI-related innovations, given that many will involve mathematical method(s) and/or software process(es).

1.2.3 Further, the nature of AI innovations will present challenges to enforcement. This is because, as for software products more generally, it will be difficult to identify whether infringement has actually taken place (since the technical effects are implemented within compiled code, which cannot be viewed). Further, even where infringement can be identified, it is often possible for the infringer to "design around" the patent's claim, by developing an alternative product that no longer infringes but operates in largely the same way. There is no reason to think that these challenges will not apply in relation to AI; indeed, the "black box" nature of AI will make detecting infringement even more difficult.

Copyright

1.2.4 In light of the above, copyright is generally regarded as providing greater protection for software products. However, copyright protection is still of limited utility if (as will often be the case) the software code can be re-written in a non-infringing manner whilst still achieving the same technical result. Again, there is no reason to think that this would be any less of a problem in relation to AI software. Furthermore, it has been suggested that certain aspects of AI systems may fail to qualify for copyright protection on the basis they do not involve an intellectual creation of their author and, as a result, do

not qualify as original literary works (see the answer to Question 8 in the Copyright section of our response).

Database rights

1.2.5 These could potentially be very useful for protecting the datasets used in AI systems, which will often be a key aspect of the overall AI solution (for example, in machine learning applications). However, if the AI technology is regarded as separate from the datasets over which it is operated, database rights will provide no protection.

Trade marks & design rights

1.2.6 Trade marks and design rights are obviously of little relevance in relation to protecting the technical substance of AI technology and so are not considered further.

1.3 In view of the above, trade secret protection should be regarded as being extremely important for the AI sector. (Please note, when referring to “trade secrets”, we also intend to encompass the concept of confidential information more generally.)

1.4 Indeed, businesses in the AI sector should be well-positioned to benefit from the existing UK trade secrets regime, since, unlike some software companies, there will be less need for AI businesses to reveal their coding, datasets, models, etc., to third parties. AI companies should therefore largely be able to operate in a confidential environment, with software developers bound by NDAs and confidentiality obligations in their employment contracts, and with source code and datasets being securely protected.

1.5 Further, given that developments in AI are likely to occur continuously and incrementally (and potentially at great pace), confidentiality is by far the most convenient form of securing AI innovations – since protection is immediate and automatic, without the administrative burden (and lengthy timeframes) involved in patent filing or any other form of registration. Confidentiality in core aspects of an AI business’s operation may therefore potentially be maintained in perpetuity through trade secret protection.

1.6 Of course, the nature of the AI industry also presents certain challenges to the adoption of an IP strategy focused on trade secrets, notably as a result of labour mobility. In particular, labour mobility in the software field is generally quite fluid, whilst UK employment law does not allow the enforcement of unreasonable restrictive covenants. As such, there are limited means available to prevent employees in a new role from applying information that, through the course of their previous employment, has become part of their own general skills and knowledge.

1.7 Accordingly, trade secret protection may only remain dependable for so long as a company is able to retain its key employees and ward off staff poaching by rivals. In an active and competitive industry, it is therefore likely that trade secret protection will have a finite shelf-life.

2. Does the nature of AI pose any problems if UK trade secret protection is required? Does UK trade secret law give adequate protection to aspects of AI technology where no other intellectual property rights are available?

2.1 We believe that the nature of AI does not pose any particular problems in terms of obtaining UK trade secret protection – in fact, for the reasons addressed above, AI innovation is perhaps best protected using trade secrets.

2.2 This is because, as previously explained, software code, datasets and algorithms can all be managed in a secure and confidential environment, allowing ongoing and incremental developments and improvements to be captured in a verifiable, recorded manner. With appropriate measures in place to preserve confidentiality, it would be possible for protection to be maintained over a particular trade secret indefinitely.

2.3 Our response to Question 3 below does outline some general disadvantages to the use of trade secrets in the AI industry, but these issues are largely common to all industries in which trade secret protection is useful. For example, software and algorithms can be susceptible to reverse-engineering, if the product or interface is made available to third parties or the public. As trade secrets do not enjoy a monopoly right, enforcement is difficult in such circumstances (unless unlawful acts have taken place). The problem of reverse-engineering is not unique to the AI industry, however.

2.4 Issues relating to, among other things, employee mobility may make trade secret protection more difficult in the AI industry – at least where competitors wish to (and are able to) poach skilled employees from their rivals – but, again, this is a problem facing any industry in which protection of valuable information or technology is sought under the law governing trade secrets. In any event, as a practical matter, it is appropriate that a balance should be struck between trade secret law on the one hand (given the potential value and importance of some protected technologies) and employment law on the other. By adopting a flexible approach, the law ensures that fundamental freedoms of employment and of contract are preserved.

2.5 With this in mind, the UK's existing regime in relation to trade secrets should be adequate to protect AI technology, with no particular problems that are exclusive to the AI industry. There is therefore no reason to legislate in order to provide any further or special protection for AI innovation.

3. What are the advantages and disadvantages of using trade secrets in the AI sector? Could information that is not shared inhibit AI development?

3.1 As discussed above, the primary IP rights that might be relied upon to protect innovation arising in AI technology are patents and trade secrets. As such, our response to this question essentially compares the advantages and disadvantages of the protection offered under patent and trade secret law.

3.2 Advantages of relying on trade secret protection in the AI sector include the following:

3.2.1 Trade secret protection arises automatically and immediately, and hence is more easily obtained than patent protection (given the requirements for application filing and prosecution). This is important in the AI sector, where

technological developments may occur on a continuous basis, whilst it can take years for a patent application to proceed successfully to grant.

3.2.2 Where AI developments have a longer shelf-life, trade secret protection can last as long as confidentiality is maintained (and, therefore, potentially forever). Patent protection is time-limited, with patents typically expiring twenty years after the date on which their application was filed.

3.2.3 Using trade secret protection necessarily avoids having to comply with the disclosure requirements that are at the heart of the patent application process. This enables businesses operating within the AI sphere to maintain their competitive advantages over their rivals. Filing a patent application also requires a comprehensive description of how the relevant product or process works – certain AI innovations (including those involved in, for example, machine learning, or those of a complex nature) can be very hard to describe clearly and concisely.

3.2.4 Trade secret protection is generally available for a broader selection of innovations and technologies, given the stringent restrictions encountered in relation to patentability. As discussed above, while software, mathematical methods and raw datasets may not be entitled to protection under patent law, they can still attract protection as trade secrets. Further, trade secret protection may subsist in a given innovation or technology without it having to meet the threshold requirements of novelty and obviousness for patentability.

3.2.5 With regard to enforcement, patents are considered national rights and the scope for obtaining cross-border injunctions for patent infringement is limited. With trade secrets, on the other hand, recent efforts to harmonise the EU Member States' national laws through EU Directive 2016/943 (the **Trade Secrets Directive**) mean it should now be easier to seek pan-European injunctions for the misappropriation of trade secrets. Further, trade secrets can to some extent be protected on a contractual basis.

3.3 Of course, there are also a number of disadvantages to using trade secrets in the AI sector, including:

3.3.1 Trade secret protection is only available to the extent that the relevant matter is kept confidential. Maintaining confidentiality over AI innovations and technology may however be difficult for a number of reasons:

3.3.1.1 AI developments may be scaled and distributed widely and at considerable speed, making it more difficult to maintain appropriate levels of oversight. Where innovations are susceptible to reverse-engineering (see below), vigilance over accessible systems and technology is essential.

3.3.1.2 As previously explained, the employment market in the software industry at large is generally quite fluid. When coupled with the technical nature of many standard roles, the extensive use of consultants and other workers on (potentially) short-term

contracts, it is easy to see how misappropriation of trade secrets could arise.

3.3.1.3 Source code, algorithms, models and data sets may be built upon and developed using open-source foundations, meaning that elements of the protected matter may be publicly available.

3.3.2 While trade secret protection avoids the costs associated with filing, prosecuting and maintaining patent applications, trade secret protection involves certain other costs. For example, businesses with AI trade secrets may need to invest in significant physical barriers and technical solutions, as well as employee education/compliance measures, in order to prevent or mitigate misappropriation.

3.3.3 Trade secret protection does not grant a monopoly right and enforcement is only possible in relation to misappropriation. Consequently, it is not possible to prevent independent development or (lawful) reverse-engineering. As discussed above, AI innovations and technology may be susceptible to reverse-engineering, for example through “model extraction attacks” (i.e. by running many many repeated test requests, to establish the basis on which an AI system operates).

3.3.4 Even with significant investment in security and monitoring protocols, it can still be difficult to detect misappropriation of trade secrets (given that source code and algorithms may be operating in the Cloud) and to enforce one’s rights. For example, in the event that misappropriation is detected, then:

3.3.4.1 enforcement action must be taken very quickly, since once confidentiality is breached trade secrets may not be recoverable (though damages may be available as a remedy for such breach);

3.3.4.2 it can be challenging to prove allegations of misappropriation in Court (and even harder to do so without having to participate in significant disclosure exercises, potentially involving further confidential material and legal costs); and

3.3.4.3 there may be difficulties in evidencing ownership of or defining the protected matter. Algorithms and datasets are often evolving on a constant basis, preventing the owners of trade secrets from being able to keep a precise record of their innovations.

3.4 In response to the question of whether information that is not shared could inhibit AI development, the answer must be yes. Unlike in patent and copyright law, trade secret law does not reward the disclosure and dissemination of innovation. Instead, trade secret protection is beneficial primarily because it prevents the disclosure of proprietary information and allows companies to defend their position in an entirely unilateral way.

3.5 In a fast-developing sector like that of AI, pervasive use of trade secrets therefore has potential to diminish innovation for a number of reasons:

3.5.1 by disincentivising innovators from disclosing the results of their research and development efforts (even where these have borne no fruit), such efforts are likely to be duplicated by others – potentially at great time and financial cost (which would otherwise be spent elsewhere);

3.5.2 because trade secret protection applies immediately and without any qualification to, for example, raw data, third parties that may have built significant discoveries upon such information are never able to access it; and

3.5.3 with companies understandably keen to ensure their trade secrets remain confidential, employees may be burdened with significant non-compete and non-disclosure obligations in their employment contracts. These restrictions may cause difficulties in switching between employers, resulting in the inhibition of innovation on a company- and industry-wide level.

3.6 There are, of course, counter-arguments suggesting that the safety net provided by trade secret protection may actually - under certain circumstances – enhance collaboration. For example, if Company A is confident that its trade secrets are adequately protected, it may be more likely to share information and material with Company B under terms of confidentiality. Such counter-arguments may, however, be less applicable to the AI industry, where collaborative efforts are potentially less common, research interests are more niche, and highly-skilled employees may find it more difficult to articulate their particular lines of enquiry clearly and effectively.

3.7 For context, however, it should be noted that the nature of trade secret protection is such that it has potential to inhibit development – at least partially – in nearly any industry. It should come as no surprise that offering an innovator the opportunity to withhold its technology and information for its own sole and exclusive use could be unhelpful to the progress of its competitors.

3.8 Aside from the protection of AI systems themselves, trade secrets protection has an important role to play in issues relating to the access, use and dissemination of datasets used to train AI systems. Many AI systems are trained using data which is not protected by copyright and is not contained within a database which is protected by a database right. While contractual terms can be used to license such data, they are only enforceable against the counterparty to the contract. Trade secrets are therefore likely to provide the most effective remedy to control the unlawful access, use and dissemination of datasets as against parties with which the controller of the dataset does not have a contractual relationship. However, in order to benefit from trade secrets protection, the dataset controller must keep the dataset secret and only share it under controlled circumstances. The requirement of secrecy creates a significant obstacle to the development of a marketplace for open data licensing. This contrasts with open source software, where licence terms imposed by the creator of the software are supported by an underlying copyright which can be enforced against anyone using the software in breach of the relevant licensing terms. This issue is exacerbated by the lack of international harmonisation regarding the protection available to datasets. For example, a dataset protected by a database right in the UK will not be protected by an equivalent database right in the United States. While other forms of protection may be available under US law, the lack of harmonisation creates uncertainty for businesses who may decide to fall back on trade secrets protection

rather than risk making a valuable dataset publicly available. The UK's proposed amendments to The Copyright and Rights in Databases Regulations 1997 (such that only UK citizens, residents and businesses are eligible for database rights in the UK for databases created on or after 1 January 2021) also creates a significant disincentive for businesses based in the EU to make newly created datasets publicly available in the UK (see the answer to Question 4 in the Copyright section of our response). In light of these considerations AIPPI UK believes that a harmonised database right throughout the world is desirable and would incentivise and facilitate data sharing and licensing.

4. Do trade secrets cause problems for the ethical oversight of AI inventions?

4.1 Put very simply – yes. This is because businesses operating in the AI sector have a rational self-interest in maintaining confidentiality over their trade secrets and restricting disclosure or scrutiny of their underlying technical processes. As a consequence, absent mandatory or consensual mechanisms, trade secrets present an obstacle to oversight. While it is important to state that this is true of trade secrets in <u>any</u> industry, reduced transparency in the AI space does give cause for greater concern given the way in which many AI innovations are developed and used.

4.2 Requiring wholesale transparency, however, would cause its own problems. For example, mandatory disclosure of how AI algorithms operate may offer the opportunity for parties to game the system, enabling manipulation of decision-making and encouraging abuse. It would also disincentivise innovation in the AI industry by removing any commercial advantage a business might gain by developing new technologies or building enhanced algorithms. Further, it may remove the ability to protect certain inventions altogether (where these inventions are unable to rely on the "exclusive" IP rights and are limited instead to trade secret protection and confidentiality).

4.3 What is needed is compromise. Regulatory restrictions should not be used to deny innovators the competitive advantage their research and development efforts deserve, while the existing legal framework governing trade secrets should not give businesses *carte blanche* to use the "black box" effect to abrogate their responsibilities to those impacted by their technologies. Any legislation that could impact on trade secret law in the UK should however be approached with caution.