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To whom it may concern

Artificial intelligence and intellectual property: call for views
Response of the IP Federation

Founded in 1920 in the UK, the IP Federation represents IP intensive companies who are extensively involved in business activity in the UK and internationally across a range of industries. Our membership includes companies that invest billions in developing and using AI technologies to build the solutions of tomorrow. In developing and using these technologies our members appreciate the importance of creating the right incentives to build, use and share AI technology. In particular, our members recognise the critical role artificial intelligence will play in innovation, driving breakthroughs across the diverse industry sectors of our membership including healthcare, manufacturing, cybersecurity and the automotive industry. Details of the IP Federation membership are given at the end of this letter.

On 7th September 2020, the Intellectual Property Office published a call for views posing a number of questions on how we think the IP framework currently relates to AI and the future of AI and IP policy. The call for views has five sections covering patents, copyright and related rights, designs, trade marks and trade secrets.

The IP Federation is pleased to submit this response to the IPO's call for views on artificial intelligence and intellectual property. We applaud the IPO's diligent efforts to assess the impact that AI has on IP as well as the impact that IP might have on AI. In this response, we have answered questions set out in two sections: i) the copyright and related rights section; and ii) the patents section. We would be very willing to take part in additional dialogue on this topic, across all five sections of the consultation and we very much appreciate the opportunity to make this response.

Copyright and Related Rights

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?***

The description provided by the IPO provides some helpful examples of how AI may use copyright works. These illustrative examples should not be considered exhaustive. AI is an area of technology which is rapidly developing. As such, a description of how AI can use copyright works will continue to develop and change.

AI may use copyright works for activities such as training, validation, classification and diagnosis. During such activities, processes may involve the use of a copyright work which may include storing the work, or part of the work within the AI system. For example AI may be trained on copyright works which are stored. Copyright works may also be used during the analysis stage for example, to implement privacy persevering technologies. AI developers may also need to make such copyright works available, for example to provide transparency on how the AI was trained, or demonstrate the efficacy of AI implemented techniques.

In examining copyright infringement, the description states that "copyright is infringed when someone *uses* a substantial part of a copyright work without the copyright owner's permission." We do not agree with this statement. Copyright can only be infringed when certain restricted acts are performed. It is also important to recognize that the idea\expression dichotomy in UK copyright law requires that ideas, facts, and unprotected elements of copyrighted works are accessible to those studying, observing and interacting with a work, just as copyright has never prohibited someone from reading a book and understanding its content. AI and other automated means of observing and understanding works should also be afforded effective access to unprotected elements of works.

As such the IP Federation supports a broad text and data mining copyright exception that permits the use of copyright works for lawfully accessed works. The ability for rightsholders to control usage contractually where the work is confidential information or know-how etc (unpublished work) will continue to exist. The rightsholder should be entitled to opt its works out of the copyright exception for TDM for commercial purposes, provided that it is required to do so in an appropriate manner, including requiring the use of machine readable steps.

The description states*: "Like a human, an AI may also infringe copyright by generating copies of the song externally, performing it, distributing it, or communicating it to the public."* We do not agree the statement that "*like a human*, AI may also infringe copyright" this statement has been interpreted to mean, AI may be used in a manner that infringes copyright. The assessment should depend on whether the song performed, distributed or communicated to the public is a copy or adaptation of a copyright work under current case law.

It may be difficult to apply infringement analysis to other copies that are "stored within the AI brain" as these copies may not be accessible. Some members are concerned that restricting such acts that relate to the

functioning of the AI system, rather than the output that is generated may have the effect of driving the development of AI outside the UK.

The exceptions to copyright and database rights that are listed in the description do not include the full list of exceptions that may apply to copyright infringement, for example in limited circumstances, such as the Rembrandt project example provided, the parody exception may apply (Section 30A of the UK Copyright, Designs and Patents Act (CDPA)).

We acknowledge that the TDM exception under UK law is only available for non-commercial research purposes. This limitation is an inherently grey area, as it is unclear what would qualify as non-commercial. The IP Federation would like to see the UK adopt a broad copyright exception similar to the TDM exception in the EU Copyright Directive. By not implementing the EU Copyright Directive, the UK is at risk of driving AI development outside the UK. It should be noted that countries implementing a fair use doctrine such as the US and Singapore are able to more easily accommodate rapid developments in technology while balancing the interest of copyright owners.

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

This question will be interpreted as who is liable for copyright infringement when AI is used to perform acts that infringe copyright.

An infringer of copyright is strictly liable under tort law. That a legal person performs an infringing act through the agency of an AI does not affect their liability.

Performance of an infringing act may occur while the AI is being trained, in this case the person with control could be the person training the AI. If the AI generates a work that infringes copyright, then the person with control could be whoever has made the necessary arrangements that have led the AI to generate the work. It should be appreciated, however, that such an assessment of who has control over the act of infringement is complicated and will depend on the facts of the particular case. It should be also be noted that AI systems may behave unpredictably or without direct human control (sometimes referred to as behaving autonomously), therefore it may be difficult to identify the person who has control over the AI system.

IP Federation members hope to see the case law develop to further clarify how the law is applied in this area and do not believe any legislative change is necessary at this stage.

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.***

By not implementing the EU Copyright Directive, the UK is left with the current UK copyright rules which provide for a limited exception to Text and Data Mining (TDM) “for the sole purpose of research for a non-commercial purpose”, leaving out a wide array of entities using TDM (including machine learning) techniques to develop breakthrough innovations. This could leave the UK at a significant disadvantage to the EU and threaten the UK’s ambition to become a powerhouse in Artificial Intelligence (AI). A “new

tech arms race" has emerged among many of the world's leading economies where many of these economies have implemented broader TDM copyright exceptions than Europe and are able, under certain circumstances, to make use of fair dealing/fair use provisions. Our members therefore strongly believe that there is a need to create a new exception for Text and Data Mining. Further details of the IP Federation's position on TDM are set out in our policy papers PP 4/20, PP 3/20 and PP 4/10 https://www.ipfederation.com/policy-papers/ .

The rapidly evolving nature of AI highlights the need to consider further exceptions that may be required where it may be necessary to provide a copy of a copyright work as an output of an AI system, such as activities that are in the public interest and do not impact the commercial interest of the copyright owner. It should be noted that countries implementing a fair use doctrine such as the US and Singapore are able to more easily accommodate rapid developments in technology while balancing the interest of copyright owners.

Under the Open Data Directive EU Member States will transpose into national law by 17 July 2021, the Directive's mandate to make public-sector data "re-usable for commercial and non-commercial purposes,". The UK government would benefit the AI industry in the UK if it were to make UK public sector data available to the same extent, while safeguarding privacy.

Depending on the data and use scenario, data sharing agreements can be complex and take months to draft and negotiate. To help alleviate this burden, the UK government could support the creation and use of model data sharing agreements. Model agreements can help reduce the "frictions" that today deter organizations from sharing data.

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.***

AI innovation requires access to large data sets. Additional protection for copyright or database owners may further limit access to data and stifle the application and development of AI in the UK. In 2018 the European Commission conducted an evaluation of the EU Database directive. In this evaluation the Commission found that while the directive's limited scope facilitates its implementation, the sui generis right should not be extended broadly to the data economy https://ec.europa.eu/digital-single-market/en/news/staff-working-document-and-executive-summary-evaluation-directive-969ec-legal-protection.

As set out in the European Commission's IP Action plan, the EU will be conducting a review of the Database Directive, pointing out that the Directive could be revisited to facilitate data access and use. The IP Federation urges the UK government not to impose stricter restrictions on the access and use of data than the EU, particularly in light of any further efforts by the EU to liberalise access to data which may result from the review of the Directive.

5. ***Should content generated by artificial intelligence be eligible for protection by copyright or related rights?***

   Our members note that some jurisdictions including New Zealand and South Africa allow protection of copyright in software where AI tools were used to build the software. Under Section 9(3) CDPA, copyright may be conferred to a person in who makes the arrangements necessary for the creation of computer-generated work. There is some debate as to whether this rule applies to copyright in software because the Software Directive requires human intellectual creation to be eligible for copyright protection.

   The IP Federation considers that there is a need for an economic and moral debate to assess the consequences of conferring intellectual property protection to content generated by artificial intelligence. If machines were allowed to create material protected by intellectual property rights then it is likely that intellectual property rights, would accrue exponentially to organisations that are able to develop AI solutions the fastest. This is compounded by unequal access to data that is used to train AI. This would create an unequal playing field for businesses who do not have access to similar training data. Our intellectual property system is available to protect the intellectual creation of any human equally. This paradigm would no longer hold true if the intellectual property system is developed to afford protection to content generated by machines. It is also possible that attributing copyright to machines may disincentivise human creativity. AI does not require incentives such as copyright protection to generate work.

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

   No response

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

   No response

8. ***Does copyright provide adequate protection for software which implements artificial intelligence?***

   Copyright alone does not provide adequate protection for software as functionality is not protected by copyright. Consequently, a functional equivalent can be independently created by someone else without infringement of the copyright in the original software. Moreover, copyright may not subsist is some aspects of the software if 'created' by the AI. However, the patent system is available to protect functionality implemented by software.

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

   Restricting the use of the TDM exception for non-commercial purposes creates unreasonable restrictions on commercial organisations wanting to implement and develop TDM solutions. Use of copyright works may be required to ensure that a copy of a work is not output among the results, or used to validate privacy persevering techniques. There may also be a need

to make copyright works available to provide transparency on how the AI was trained. Using copyright to prevent such activities may be considered unreasonable. Broadening the TDM exception to allow for commercial use would help remove unreasonable restrictions. Countries implementing a fair use exception may be in a better position to prevent copyright from creating unreasonable obstacles.

We urge the UK Government to carefully consider the steps our European neighbours and other countries are taking to allow organisations to develop and implement AI. Organisations are likely to choose to conduct their R&D in countries that do not impose unreasonable obstacles to developing and applying AI solutions.

Patents

The consultation is explicit that speculation of concepts of AI superintelligence (so-called "strong AI") is not occasioned. We agree that this is appropriate because there is no evidence to suggest that strong AI will be forthcoming in the foreseeable future.

Inventions in the field of AI arise in three main respects:

I. Inventions created in the furtherance of the field of AI, such as developments and improvements to existing AI techniques or new AI techniques that advance the technical field.

II. Inventions involving the application of AI to address a problem in a technical field, such as speech synthesis, image recognition, or network intrusion detection.

III. Inventions including novel ideas discovered with the assistance of AI, such as novel outputs of a trained machine learning algorithm applied to drug discovery, engineering problems, optimisation challenges and the like.

The IP Federation believes all such inventions should be susceptible to patent protection where the criteria for patentability, including novelty and inventive step, are satisfied.

The specific questions raised in respect of patents in the consultation are addressed in turn below.

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

   The IP Federation supports the government's goal of making the UK a global centre for AI and data-driven innovation by increasing uptake of AI for the benefit of everyone in the UK. Innovators depend on patents to protect and commercialise their innovations in the field of AI. In particular, patents incentivise investment in research and development (R&D) by protecting inventions as a property right while at the same time publishing the details of inventions for the wider good.

   Without patents the incentive to innovate is diminished, protection for inventions is reduced to trade secrets, and knowledge sharing is curtailed. Furthermore, the opportunity to commercialise innovations can be affected as ideas fall available for anyone to use, even those arising as the product of considerable research investment.

The IP Federation therefore believes the patent system has an essential role to play in incentivising investment in AI R&D to secure the UK's place as a world-leading innovative economy.

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?***

   AI is one tool in the research and development toolkit. When applied to a problem domain, AI can assist in the discovery of novel ideas. Any such discovery is always made with the assistance of, under the guidance of, or based on the contributions of a human.

   As a tool, AI does not devise inventions. AI serves as essentially an alternative mechanism for programming, instructing or configuring a conventional computer system. Whereas it is not feasible to program a computer in the conventional manner to recognize all styles of handwriting, or to correctly interpret all types of speech, AI algorithms including machine learning algorithms can be trained in a supervised manner to perform such tasks. Such training is an application of mathematics. Similarly, programming a computer to analyse large unlabelled data sets to identify latent features, novel classifications and using such new insights in new practical applications is equally an application of mathematics with AI operating as a tool. Even bio-inspired techniques such as evolutionary algorithms operating on the basis of goals or fitness functions to optimise a real-world or logical design are applications of conventional computer science in clever and beneficial new ways, even where stochastic methods are involved.

   The current and foreseeable state of the art in AI and related fields does not involve algorithms devising inventions. Nonetheless, patent applications have been filed where the applicants consider they are unable to identify a human inventor. This raises the question: what is an inventor? This question may require clarification to ensure an appropriate inventor can be identified in all cases, even where AI is used. Otherwise inventions for which applicants believe they cannot identify a human inventor cannot be subject to patent applications which require the designation of a human inventor.

   As outlined above, we believe a human is always involved in the work of an AI, whether as programmer of the AI, configuring the AI, operating the AI, supervising the AI, defining objectives for the AI, selecting input data (such as training data) for the AI or recognising applications of the output of the AI. Where an invention is devised with the assistance of AI the appropriate person(s) involved in the devising of that invention should be identifiable as the inventor(s). We recommend a broad dialogue involving all stakeholders on how clarification on this identification of an inventor can be achieved, and note inspiration may be taken from the CDPA in respect of computer generated works. Further inspiration may also be taken from case law relevant to the patentability of discoveries.

   c) ***are there situations when a human inventor cannot be identified?***

   As outlined above, the IP Federation considers that all inventions devised with the assistance of AI involve human inventors, though the current legal framework may make it difficult for applicants to properly identify those human inventors. Accordingly, a clarification may be required to ensure a human inventor can always be identified.

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

The IP Federation considers that the answer to this question is no. The purpose of identifying an inventor in a patent application is twofold: 1) to enable the right of attribution provided in, inter alia, Article 4ter Paris Convention; and 2) to determine ownership of resulting property deriving from the right to apply for a patent. In respect of ideas discovered by AI, both purposes are irrelevant: there is no right of attribution for a computer system such as AI; and there can be no proprietary ownership by AI. It follows that an AI tool cannot be an inventor at least because: the law does not permit it to be; and the principal purpose of determining inventorship is to determine ownership, and the law does not (and should not) permit AI systems to own property.

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?***

The IP Federation considers there is no need to, or purpose for, designating an AI as inventor for patent application and there is no disincentive from precluding such designation. On the contrary, permitting designation of AI as inventor introduces considerable uncertainty as to the right to file a patent application and ownership of resulting patents. An AI involved in assisting in the discovery of new ideas may exist in multiple capacities at the same time including in relation to: its owner; its lessee or tenant, such as in a cloud-computing context; its user or operator; a person responsible for or contributing to its configuration; a person recognising the value and contribution of its output; and others. Seeking to untangle these relationships from a property-ownership perspective is much less straightforward than seeking to recognise the persons involved in the devising of an invention. The IP Federation therefore believes the appropriate approach is to prioritise clarifying the human inventors involved in devising an invention.

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

The IP Federation believes there is no moral reason for recognising AI as an inventor. The purpose of designation of inventor is outlined in response to question 3 and this does not warrant extension.

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

An AI should never be named as an inventor for a patent because AI does not devise inventions (see the response to question 2). A human inventor should always be listed at least because all new ideas discovered by AI involve a human inventor. The identification of a particular human inventor can be aided by clarification of the requirements for inventorship. Ownership is suitably defined on the basis of inventorship as currently provided in the UK Patents Act.

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

Considering inventions across the following three categories:

I. **Inventions created in the furtherance of the field of AI**: such inventions can fall-foul of the excluded subject matter provisions codified in Section 1(2) UK Patents Act and Article 52(1) European

Patents Convention. In particular, improvements to AI algorithms and techniques without specific practical application can be excluded as mathematical methods or computer programs as such. The IP Federation is generally comfortable with the interpretation of these provisions in the UK Patents Act and European Patent Convention, though notes that inconsistencies can arise in the examination of patent applications between the UK Intellectual Property Office (UK IPO) and the European Patent Office (EPO) due to differing methods of applying the exclusions. Additionally, we recognise that developments in AI techniques constitute valuable contributions to the state of the art and their protection by patent without requiring recitation of a specific application would fairly reflect that contribution.

II. **Inventions involving the application of AI to address a problem in a technical field**: the application of AI to particular problem domains is normally readily protected by patent.

III. **Inventions including novel ideas discovered with the assistance of AI:** it is in the use of AI to assist in the discovery of new ideas that some patent applicants struggle to identify a human contribution sufficient, in their view, to warrant designation of an inventor. Such inventions should not be excluded from patent protection for only such reasons and the clarification in respect of the human contribution to the devising of an invention described above is warranted.

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

The current and currently foreseeable state of the art in AI and its applications do not lead us to anticipate significant patentability issues going forward, noting that changes to the patent system are most preferably made on the basis of a factual evidence-base without recourse to philosophical discourse which may not reflect the technical reality.

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

Refer to the response to Question 7 above. The current approach to interpreting the excluded categories at the UK IPO and EPO are reasonable though some inconsistencies arise between the two. The outcome awaited in the currently pending referral to the EPO Enlarged Board of Appeal in G1/19 may have an impact on the patentability of some AI inventions. If this is the case then further dialogue on the nature and scope of the exclusions will be required.

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

The IP Federation considers the answer to this question is no. Ethical oversight of AI includes questions of transparency, explainability and bias. While the IP Federation recognises the importance of these issues, we believe it is not appropriate for them to be addressed through IP provisions such as patent law and practice. Regulatory requirements to assure the social acceptability of AI should be considered separate to the patent system. While it is noted that patent applications must disclose an invention in a manner that is sufficiently clear and complete for it to be understood, this requirement serves to ensure the sufficiency of disclosure of an invention in

an application. Such disclosure need not extend to disclosure for the purpose of full transparency of an AI algorithm, or full explainability of an AI technique. Indeed, in some cases, a patent application for an invention devised with the assistance of AI may be directed to the output of the AI, in which case there may be no need to disclose the AI mechanism itself in order to sufficiently disclose the output itself. Accordingly, patent law is not an appropriate or effective home for these regulatory issues.

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

The IP Federation considers the answer to this question is no. The disclosure of inventions including applications of AI or devised with the assistance of AI is no different to the disclosure of other computer implemented inventions. Methods, algorithms and flowcharts can be used to disclose the methodology of an AI invention. There is unlikely to be a need to disclose training data or trained weights for machine learning algorithms or the like since inventions arise in the methodologies employed. Where novel outputs are discovered with the assistance of AI such as novel physical objects, novel compositions and the like, disclosure of the output is sufficient. It is not necessary to disclose how the output was discovered to sufficiently disclose the output itself.

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?

The IP Federation considers the answer to this question is no for the reasons given above in response to question 10.

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?

The IP Federation considers that AI does not challenge the level of inventive step required to obtain a patent. A new idea discovered with the assistance of AI is suitably assessed for inventive step applying the standard defined in patent law on the basis of prevailing case law. Properly applied, this standard recognises how, for an invention in a patent application, any potential for a person skilled in the art to have recourse to AI as a tool is recognised based on both the state of the art and the common general knowledge of the person. It is to be expected that the potential to have recourse to AI may be low in fields of endeavour where the state of the art indicates a low-level or absence of application of AI. It is also to be expected that the potential to have recourse to AI may increase as indications of such are found in the state of the art and/or become part of the common general knowledge of the notional skilled person.

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

The IP Federation considers the answer to this question is no. An extension to the legal fiction of *a person skilled in the art* to include a *machine trained in the art* would serve only to expand the fictional capability of the person skilled in the art to have recourse to trained machines (i.e. AI). This expansion is unnecessary. A determination of whether a notional skilled person may or may not have recourse to AI is part of an analysis of inventive step for an invention and is a question to be addressed in the context of the invention, the relevant state of the art and the common general knowledge

of the skilled person. It is not necessary to specifically codify any particular tool or technique into the common general knowledge of the skilled person, and doing so renders the legal fiction inappropriate in cases where a skilled person specifically would not have recourse to AI.

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

This question will be interpreted as who is liable for patent infringement when AI is used to perform acts that infringe patent rights. An infringer of a patent is strictly liable under tort law. That a legal person performs an infringing act through the agency of an AI does not affect their liability.

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

Proving infringement of patents is not always straightforward, and in respect of software inventions it can be particularly challenging. Infringement involving the operation of an AI is no different. The challenge can leave some patents seemingly unenforceable for being undiscoverable in use by infringers. The challenge is tempered by high quality professional services engaged in the selection of appropriate inventions for patenting, and in suitable patent claim drafting.

On behalf of the IP Federation, I would be happy to answer any questions you may have about this response, and provide any further information or comment that might be helpful to you.

Yours sincerely

Scott Roberts
President, IP Federation

IP Federation members 2020

The IP Federation represents the views of UK industry in both IPR policy and practice matters within the EU, the UK and internationally. Its membership comprises the innovative and influential companies listed below. The CBI, although not a member, is represented on the Federation Council, and the Council is supported by a number of leading law firms which attend its meetings as observers. It is listed on the joint Transparency Register of the European Parliament and the Commission with identity No. 83549331760-12.

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Airbus
Arm Ltd
AstraZeneca plc
BAE Systems plc
BP p.l.c.
British Telecommunications plc
British-American Tobacco Co Ltd
BTG plc
Canon Europe Ltd.
Caterpillar U.K. Ltd
Cummins Ltd.
Dyson Technology Ltd
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