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Re: Consultation on Artificial Intelligence and IP: copyright and patents

BT's mission to 'connect for good' is underpinned by strong R&D investments. We are a top 10 UK R&D investor[1], pioneering in a range of technologies from 5G to Quantum Key Distribution (QKD), augmented reality to artificial intelligence (AI), with the hub for this research - BT labs at Adastral Park, near Ipswich - a national strategic asset. For over thirty years, AI has been at the core of our innovation strategy with BT ranked as the number one AI patent filer in the UK and a growing team[2] dedicated to bringing the benefits of AI to customers and British citizens.

We therefore welcome the opportunity to respond in this consultation on the interface between AI and intellectual property (IP) as we believe a fit-for-purpose intellectual property regime has a key role to play in cementing the UK's position as an AI and science superpower, as well as attracting direct foreign investments.

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

[1] The 2020 EU Industrial R&D Investment Scoreboard | IRI (europa.eu)

[2] On top of our AI focused Applied Research team, we have recently announced the creation of a new Digital division where AI will play a key role: BT establishes digital unit to accelerate, next-gen services for customers

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Copyright

1. Do you currently rely on the computer-generated works provision? If so, please provide details of the types of works, the value of any rights you license and how the provision benefits your business. What approach do you take in territories that do not offer copyright protection for computer-generated works?

BT does not rely on this provision.

2. Please rank these options in order of preference (most to least preferred) and explain why

Option 0 ("Make no legal change") is preferred and we recommend that options 1 and 2 are disregarded. Option 1 is unsatisfactory as it would result in the removal of protection for computer generated works. Option 2 is unsatisfactory for the reasons outlined below in response to question 3.

The availability of copyright protection for computer generated works has been a forward-thinking provision in UK copyright law. Whereas its use has been limited, reasons for this may include the unavailability of similar provisions in other jurisdictions and the historically low volume of computer-generated works. However, the propensity for computer generated copyright works increases as AI develops and the UK's copyright provisions constitute both a promising starting point for advocating similar protections in other jurisdictions and an incentive for the development of AI and products of AI in the UK.

3. If we introduce a related right for computer-generated works, as per option 2, what scope and term of protection do you think it should have? Please explain how you think this scope and term is justified in terms of encouraging investment in AI-generated works and technology.

BT does not recommend new *sui generis* rights for computer generated works. Such an approach would constitute a backwards step from a system where computer generated works currently enjoy copyright protection and would add complexity.
If option 2 prevailed, we would recommend provisions applying to a new right be very similar to current copyright provisions to maintain the current status quo.

4. What are your views of the implications of the policy options and of AI technology for the designs system?

Maintaining the currently available legal protection for computer generated works would keep the copyright and design protections in-step with each other.

5. For each option, what are your views on the risk that AI generated works may be falsely attributed to a person?

The existing provisions for addressing false attribution are currently sufficient.

Text and data mining (TDM)

6. If you license works for TDM, or purchase such licences, can you provide information on the costs and benefits of these? For example, availability, pricing, whether additional services are included or available, number and types of works covered by the licence. Please also consider the benefits that TDM provide to you and your colleagues.

TDM is increasingly important for use in the development, training and/or execution of AI technology such as AI models. For example, BT employs AI models in areas such as network and computer security, network infrastructure design and deployment, authentication, operational modelling, and other areas. The suitability and efficacy of such AI models is largely dependent on ready access to high-quality data.

The UK copyright exception for TDM is limited to non-commercial research to the exclusion of innovative commercial industry. To achieve commercial TDM for AI purposes it is necessary to negotiate individual licenses with data owners even where a data consumer is already authorised to access the data, such as publicly available data or data that is licensed for other purposes. This incurs additional cost and burden on data consumers that essentially *taxes* the AI development process in the UK.

A number of jurisdictions around the world make provision for commercial copyright exceptions for TDM. In the US, for example, text and data mining are covered by the 'fair use' principle and the US courts have explicitly upheld text and data mining as fair use in several cases, including cases of commercial use. In the EU, Directive (EU) 2019/790 adopted in June 2019 overhauled EU copyright rules to provide a broadened exception to copyright infringement for TDM whereby commercial and non-commercial entities can mine copyright content they have lawful access to, unless rightsholders explicitly reserve their rights in an appropriate, machine-readable manner.

The lack of an exception in UK copyright law for commercial TDM stifles innovation in industry and disincentivises the development and training of AI models in the UK.

7. Is there a specific approach the government should adopt in relation to licensing?

As discussed below in response to question 8, BT recommends a broadened copyright exception covering TDM for commercial purposes with provision for machine-readable rightsholder opt-out.

In the absence of such a broadened exception, and for those cases where a rightsholder may reserve their rights, the establishment of open licensing mechanisms coupled with broader governance guidance (such as in relation to the

format and quality of data for ready machine readability) would be beneficial for data consumers.

8. Please rank the options in order of preference (most to least preferred) and explain why.

Option 3 ("Adopt a TDM exception for any use, with a rights holder opt-out") is preferred, followed by Option 1 ("Improve licensing environment for the purposes of TDM") whose benefits are discussed in response to question 7.

As outlined in response to question 6, innovation in the field of AI is dependent on data and innovative industry is dependent on commercial access to data. It is also recognised that rightsholders may wish to exclude their data from a TDM exception and option 3 provides an appropriate balance between the rightsholder and data consumer by permitting opt-out.

The nature of TDM is such that data may be identified and processed automatically by a machine. For this reason, any opt-out should be machine-readable to allow reliable identification of the opt-out for both rightsholders and data consumers. More generally, we would welcome further clarity on how the 'opt-out' would work and BT stands ready to continue discussing with the government.

9. If you have experience of the EU exception with opt out for rights holders, how has this affected you?

BT has no experience of this to-date.

10. How would any of the exception options positively or negatively affect you? Please quantify this if possible.

If no legal change were made (per option 0), the costs outlined in response to question 6 would continue to be incurred as part of our work in the development and training of AI technology.

Patents

11. Please rank these options in order of preference (most to least preferred) and explain why?

BT is not in favour of the proposal of option 3 which would introduce a new level of complexity into the patent system. Such a *sui generis* right would take the form of a diluted patent right such by having a shortened term, different standard for eligibility, or other substantive differences. It is therefore likely that such a new right would be inferior to existing patents in terms of scope, extent or duration of protection, may be

more readily granted, lower in cost, and may be generated in large numbers as a result of these factors. This potential for large numbers of such rights is particularly acute in view of the potential for AI to generate inventions "on demand" and in an automatic manner, so leading to potential thickets of such *sui generis* rights encouraged by a lower cost of entry. In addition, the interface between such *sui generis* rights for AI devised inventions and conventional patent rights might lead to a gaming of the intellectual property system by applicants seeking to select between the rights for inventions to best serve their needs (e.g. extent of protection versus cost).

Considering the other options, **BT proposes the UK takes a lead in advancing an international dialogue on how the patent system can be adapted in a harmonised way advocating an approach in accordance with <u>option 2</u>**, noting that:

- the standard that must be met for an AI to be recognised as inventor is high, such as by the AI exhibiting indications that it has produced a solution <u>and additionally</u> the AI exhibiting indications that it recognises a goal or objective of an invention and/or recognises a beneficial application of a solution provided by an invention;
- the AI system or at least its controlling organisation should be identified as the inventor;
- the natural or legal person responsible for the AI should be entitled to the grant of a patent for the invention; and
- such an approach is advocated for adoption internationally in a harmonised manner.

The international context is critical to how the UK should approach AI and IP questions. The situation in respect of the patentability of inventions devised by AI is indeed different among the key jurisdictions around the world. This has been demonstrated through the *Dabus*[3] cases pursued before patent offices and courts in several jurisdictions. Even where multiple jurisdictions arrive at a common outcome in respect of the patentability of AI devised inventions, the reasoning and rationale behind such decisions can differ markedly. This is problematic for innovative companies since they do not operate in a jurisdictional silo and differences in standards and requirements adds considerable cost and uncertainty.

It is in this international context that the present questions regarding AI inventorship and the ownership of AI devised inventions must be considered. First and foremost, and irrespective of any of the options put forward in the consultation, **BT strongly advocates for a continuation and reinvigoration of substantive international dialogue on the issues such as was commenced through the WIPO conversation on IP and AI**[4]. Failure to reach an international consensus on questions such as "should an AI devised invention be patentable?" and "who owns

[3] A series of patent applications filed in jurisdictions around the world by applicant Dr Stephen Thaler for inventions purportedly devised by an Artificial Intelligence machine known as *DABUS* (Device for the Autonomous Bootstrapping of Unified Sentience).

[4] WIPO Conversation on IP and AI, 27th September 2019, 4th November 2020 and 22-23rd September 2021.

an AI devised invention?" could result in jurisdictional inconsistencies leading to increased cost, complexity, uncertainty, and burden for innovative industry.

Examples of the problems that may be created by such an inconsistency arises in:

- the US where there is a requirement for an inventor to be a natural person. Were another jurisdiction (such as the UK) to permit patents be granted for inventions devised by AI then such inventions would be ineligible for patent protection in jurisdictions such as the US. While it might be tempting for the UK to take a lead in such policy matters, the prospect for fundamental disparity between jurisdictions in this way would be ultimately costly and complex for innovative industry that operates across jurisdictions.

- Europe where the Boards of Appeal of the European Patent Office (EPO) have confirmed that a patent application naming an AI system as inventor (or, indeed, no inventor at all) is to be refused[5]. Were a contracting state of the European Patent Convention (EPC), such as the UK, to permit patents be granted for inventions devised by AI and having no human inventor, then an inconsistency may arise between national patent law and the EPC that could undermine legal certainty of European patents granted in respect of that contracting state[6].

Because of these challenges, international collaboration on the issue of patentability of AI devised inventions is urgently required and the UK is well-placed to play a vital role in the different fora. BT is keen to offer its support for any such activity.

Presently, inventions devised entirely independently by AI are not patentable in the UK and several other jurisdictions. While the current state of AI technology may be judged insufficiently mature to apply itself to independently devising inventions, the prospect of independent invention by AI is foreseeable. Industries that come to depend on such AI devised inventions may therefore see the patent-eligibility of their innovations decline. A case in point is the life science and pharmaceuticals sector which depends on patents to protect their research investments during lengthy trialling and marketing authorisation processes. This is exactly the sort of sector likely to benefit enormously from the contribution of AI in the future and may therefore suffer greatly from any implications of a failure of patent law to keep pace with AI developments.

AI technology is key to cementing the UK's position as a science and technology superpower. There is an opportunity for the UK to take a lead in this urgently needed global dialogue on how the patent system can be adapted in a harmonised way through international collaboration. Proposals for practical solutions to the present and foreseeable challenges around AI devised inventions can be developed and presented internationally for discussion and debate with a view to seeking agreement on common changes across jurisdictions.

[5] EPO Legal Board of Appeal decision in cases J 8/20 and J 9/20 (applications EP 18 275 163 and EP 18 275 174.)
[6] According to Article 2(2) EPC, the "European patent shall, in each of the Contracting States for which it is granted, have the effect of and be subject to the same conditions as a national patent granted by that State".

It is in this context that we are analysing the options presented in the consultation through the prism of three essentials questions that we believe are critical when considering how the patent system might evolve:

1. *Should inventions devised entirely independently by AI be eligible for patent protection?*
2. *Who or what, if anyone, should be indicated as inventor in a patent application for such an AI devised invention?*
3. *Who should be entitled to the grant of a patent for such an AI devised invention?*

BT Question 1: Should inventions devised entirely independently by AI be eligible for patent protection?

Considering the options presented in the consultation document, options 0 and 3 effectively answer this question "no", with options 1 and 2 answering "yes".

BT believes inventions entirely devised by AI should be eligible for patent protection.

BT is therefore not inclined to support option 0 ('make no legal change') which would preclude protection for AI devised inventions and considers that an invention that satisfies the requirements for patent protection including novelty, inventive step and industrial applicability should be eligible for patent protection irrespective of whether it was generated by a person or by an AI. To introduce or maintain a prohibition on patent protection for AI devised inventions would undermine innovative industries that depend on patents to protect and commercialise their innovations. In contrast, ensuring protection for AI devised inventions provides an effective incentive for investment in research and development using AI across all industrial fields.

Our response is based on the following analysis:

It is first necessary to recognise the extent to which AI may be capable of independent invention. In this regard, Abbott's paper "I Think, Therefore I Invent: Creative Computers and the Future of Patent Law" (2016)[7] makes a reasonable observation in respect of inventorship: if Friend A tells Friend B that A would like B to develop a phone battery with twice the battery life and A gives B publicly available battery schematics, then a novel battery devised by B is B's invention. A does not qualify as an inventor in such a scenario, and A employs person B as a "tool" in the generation of a solution to satisfy A's goal, except that B is not a tool because B is a person. Abbott draws an analogue with Dr. Stephen Thaler's Creativity Machine[8] which receives input and indications from Dr. Thaler as to the state of the art and indications of efficacy, suggesting that novel ideas conceived by the machine are solely the invention of the machine. In this case, Dr. Thaler employs the Creativity

[7] Abbott (2016) *I Think, Therefore I Invent: Creative Computers and the Future of Patent Law*. Boston College Law Review, Vol. 57, issue 4.

[8] https://imagination-engines.com/cm.html

Machine as a tool in the generation of a solution to satisfy Dr. Thaler's goal, and the tool is not a person.

At its very simplest, a person becomes an inventor by creating, or contributing to the creation of, an invention. However, other contributions may also qualify. For example, a person who recognises a new problem to be solved or who recognises the application of an existing solution to address a different problem may also be an inventor. Thus, at least three indications of inventorship arise: as recogniser of a goal or problem (indicator 1); the producer of a solution (indicator 2); and the recogniser of a beneficial application of the solution (indicator 3).

In Abbott's analysis, a goal or problem and a state of the art are provided to B who undertakes an intellectual task to devise an inventive solution. This task may involve a magical spark of invention, or may involve a lengthy search or optimisation process, or some combination of these. It is not relevant how the inventive solution is arrived at; it still constitutes the devising of an invention. Given sufficient time and a pen and paper, person B could conceivably adopt the approach of a computer – with conceivably infinite time and infinite paper even the approaches of machine learning could be performed by a human due to their inherent computability. Replacing the pen and paper with AI affords the same outcome with greater speed. AI takes away the legwork from B, but it is still B who solves the problem employing AI as a tool.

The question then arises, what if B does nothing at all? In other words, what if the goal and state of the art are posed to the AI directly and the invention arises from the AI as an output? In this scenario, it is essential to fully acknowledge the role of person A: the person presenting the goal and the state of the art. Person A subsumes person B with the AI acting as a tool to address the goal for person A, and so A is the inventor with the help of the AI as a tool.

In future, it may be conceivable that an AI devises an invention entirely independently without being used merely as a tool. For an AI to be acknowledged as the independent deviser of an invention, the AI needs to elevate its contribution above that of a tool. The AI therefore must take the role of person A in addition to any role as a tool. This is essentially a higher standard to achieve recognition of inventorship for a non-person and is justified because the starting point for defining the role of machines in the process of devising inventions is as a tool, and any departure from this prevailing position must be constituted as an elevation in contribution above that of a tool.

Referring again to the indications of an inventor, for an AI to be recognised as having independently devised an invention it will exhibit indicator 2 (producer of a solution) and additionally at least one of indicators 1 (the recogniser of the goal) and 3 (the recogniser of a beneficial application of the solution). An invention generated with the assistance of AI where the AI does not exhibit the requisite indicators is an invention generated by a person using the AI as a tool. The person in question may be the person exhibiting indicator 1, 3 or both, for example. Thus, it is a beneficial corollary of this standard for inventorship by non-persons that there is increased clarity in the identification of which persons are attributed as inventors for AI-assisted inventions.

In the situation where an AI does exhibit the requisite indicators to be recognised as an inventor (noting that this is a high bar that may not be within the remit of current AI), the question of whether such invention should be susceptible to patent protection arises. BT considers that an invention that satisfies the requirements for patent protection should be eligible for patent protection irrespective of whether it was generated by a person or by an AI.

BT Question 2: Who or what, if anyone, should be indicated as inventor in a patent application for such an AI devised invention?

Considering the options presented in the consultation document, according to option 1, a human responsible for an AI system which devised the invention would be indicated as the inventor. In contrast, according to option 2, AI itself would be indicated as inventor, or no inventor is indicated at all.

In a scenario where an AI is truly the sole deviser of an invention (in particular, where an AI exhibits the requisite indicators to be recognised as an inventor outlined above), it is disingenuous to indicate a non-inventor as the inventor. BT considers that the AI system or a controlling organisation (such as a legal person owning or leasing the AI system) should be indicated as the inventor as this would be faithful to the factual reality.

According to this analysis for question 1, BT is not inclined to support option 1 which would involve the identification of a non-inventor as inventor.

BT Question 3: Who should be entitled to the grant of a patent for such an AI devised invention?

Considering the options presented in the consultation document, according to option 1, the current rules on entitlement would be maintained. According to option 2, a person closely responsible for the invention would be entitled to the grant of a patent.

In a scenario where an AI is truly the sole deviser of an invention (in particular, where an AI exhibits the requisite indicators to be recognised as an inventor outlined above), BT considers that the natural or legal person responsible for the AI should be entitled to the grant of a patent for the invention.

Parallels can be drawn with UK copyright law and the protection afforded for computer-generated works, and the characterisation of such a person in the Copyright, Designs and Patents Act at S9(3) is a promising start: "…the person by whom the arrangements necessary for…" In respect of inventions, the relationship between such person and the invention requires careful definition to ensure the right to be granted a patent rests with the appropriate person. In extremis, challenges can include identifying the owner of AI devised inventions by a first party, hosted by a second party, having a configuration (such as training data) provided by a third party, executed under the instruction of a fourth party, addressing a problem specified by a fifth party and/or having application to a problem recognised by a sixth party. While

such challenges may be addressed contractually, it is not sufficient for stakeholders to depend exclusively on such instruments for these important determinations.

Accordingly, the wording of any proposed provision in patent law to address entitlement for AI devised inventions is of fundamental importance. For an author of a computer-generated copyright work, this is simply recited as "…the person by whom the arrangements necessary for creation of the work…" However, given the range of persons potentially involved with an AI, such an approach may not be suitable for inventions. Furthermore, even references to persons recognising a "solution to a problem" are inadequate, as inventions can reside in the identification of a new and non-obvious problem itself.

In sum, BT proposes the UK take a lead in advancing an international dialogue on how the patent system can be adapted in a harmonised way advocating an approach in accordance with option 2.

12. Would the changes proposed under Options 1, 2 and 3 have any consequential effects on the patent system, for example on other patentability criteria?

As part of contemplating what it means to "invent", and therefore who is an "inventor", it is also important to contemplate the question of the inventive step that is required for an invention to pass muster as a patentable invention.

The inventive step criterion universally operates on the basis of a fiction of a notional skilled person – a person skilled in the art, a person skilled in the relevant art, *der Fachmann*, a person ordinarily skilled in the art of the invention, or a person having ordinary skill in the art. While definitions differ subtly by jurisdiction, a common principle is that such a notional person is imbued with no inventive capability.

If a machine devises a new invention, then that invention needs to be assessed for inventive step. Machines are not humans and the notional skilled person may not readily translate to a notional machine. For example, in their favour machines have vastly greater capability to process numbers, to store and recall complex information, to perform multiple tasks simultaneously at great speed, and well-serviced machines do not make mistakes. To their detriment, machines absent instruction may not be motivated or incentivised to address any problem, and machines may not be the ultimate beneficiaries of the work they perform.

Additionally, the very existence of machines capable of invention changes the toolset of the skilled person, whether human or otherwise. If an idea can be conceived by setting a machine to a task, then a question arises of whether the idea is obvious.

Whereas BT recognises the potential for AI to invent, in particular if AI develops to a point where it is capable satisfying the standard for AI inventorship outlined above, **it is recommended that the current standard for inventive step is retained**. This may lead to a conclusion that inventions devised by a conventional AI (conventional

in the contemporaneous sense – at the time of invention) may be found obvious if any such conventional AI would arrive at the same invention. This still leaves open the prospect of invention by unconventional, novel or creative AI and AI devising inventions through processes of discovery, stochastic modelling or simulation and the like.

Accordingly, BT considers that no change is required to the inventive step criterion per se, though its application will naturally adapt through use to reflect and accommodate developments in the field of AI.

In relation to option 3, which BT does not support, any new *sui generis* right may adopt new or differing criteria for protection such as a different standard of inventive step. If such differing criteria constituted a lower bar to protection then the prospect of rapidly formed AI generated patent thickets arises at the expense of all stakeholders. This, along with new complexities introduced by the introduction of new intellectual property rights, underlines the unsuitability of a new right as proposed in option 3.

13. If UK patents were to protect AI-devised inventions, how should the inventor be identified, and who should be the patent owner? What effects does this have on incentivising and rewarding AI-devised inventions?

Should AI develop to a point where it is capable of independently devising inventions, such as by satisfying the standard for AI inventorship outlined above, BT considers that the AI system or at least its controlling organisation should be identified as the inventor, with the natural or legal person responsible for the AI entitled to the grant of a patent for the invention. Such an approach provides a clear incentive to investment in the development of AI and applying AI to generating novel outputs to address technical problems by providing legal certainty around the protection of AI devised inventions.

15. Would the UK adopting option 2 affect your global patent filing strategy, if so, how?

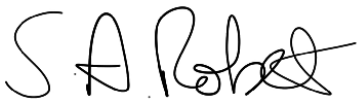
Should AI develop to a point where it is capable of independently devising inventions, such as by satisfying the standard for AI inventorship outlined above, such inventions could only be protected in jurisdictions with suitable provisions for inventions with no human inventor.

While the adoption of an approach such as option 2 in the UK would not, in itself, affect a global filing strategy, it would not be possible to obtain patent protection in jurisdictions where AI devised inventions are not eligible. It may be for this reason that patent protection in any jurisdiction may be foregone in favour of trade secret protection with corresponding impact on the dissemination of technical information and the opportunity to commercialise intellectual property.

Accordingly, BT believes that an internationally harmonised approach is important to ensure consistency of patent eligibility for AI devised inventions across jurisdictions.

BT is keen to remain engaged in ongoing discussions in the area of AI and IP and welcomes any further collaboration that may be beneficial.

Yours faithfully,



Scott ROBERTS

BRITISH TELECOMMUNICATIONS public limited company

Encl. Respondent information

Respondent information

A: Please give your name:

British Telecommunications plc.

B: Are you responding as an individual, business or on behalf of an organisation?

Business: British Telecommunications plc.

C: **n/a**

D: n/a

E: n/a

F: If you are responding on behalf of a business or organisation, in which sector(s) do you operate? (choose all that apply)

Information and communication – Publishing, audio-visual and broadcasting
Information and communication – Telecommunication
Information and communication – IT and another Information Services

G: How many people work for your business or organisation across the UK as a whole? Please estimate if you are unsure.

1,000 or more

H: The Intellectual Property Office may wish to contact you to discuss your response. Would you be happy to be contacted to discuss your response?

YES

I: If you are happy to be contacted by the Intellectual Property Office, please provide a contact email address:

scott.4.roberts@bt.com

J: Would you like an acknowledgement of receipt of your response?

YES