techUK's response to the IPO's call for views on IP and AI

techUK represents the companies and technologies that are defining today the world that we will live in tomorrow. More than 850 companies are members of techUK. Collectively they employ approximately 700,000 people, about half of all tech sector jobs in the UK. These companies range from leading FTSE 100 companies to new innovative start-ups. The majority of our members are small and medium-sized businesses.

techUK welcomes the opportunity to respond to the IPO's call for evidence. If you'd like us to provide any further information in regards to our response, please contact [redacted]

Patents questions

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

Artificial intelligence has emerged as a general-purpose technology with widespread applications throughout the economy and society. It can provide new opportunities to address some of our biggest societal challenges, promote growth and encourage innovation. AI is being used to tackle numerous problems, and figures indicate that the numbers of AI patent applications are increasing across a broad range of sectors[1]. For this technology to continue to thrive, it's important to provide intellectual property (IP) protections for AI innovations.

Recognised or formal IP protection is highly beneficial and important for the development of AI and it's in the interests of both the economy and society generally that the AI produced in the UK is of the highest quality and leads in the state of the art. One of the key purposes of patent systems and broader IP rights, is to incentivise investment in innovation; if AI is afforded specific protection in that system, this will be positive for the development of AI technology. For many companies across many sectors, the protection afforded by patents is essential for their business model to work. Many companies are investing significantly in upfront R&D in the field of AI and its applications, and patent systems must provide protection for inventions whether in novel applications of AI ("AI-assisted inventions"), inventions generated with contributions from AI ("AI-generated inventions"), or inventions in the AI systems themselves. Protection for AI technology output could be particularly important given others could potentially copy without access to the original technology.

Drug discovery is a great example of the need for patent protection for AI-generated inventions. Developing AI technology to discover and develop new medicines requires huge investment. Biotech companies use AI technology internally and so detecting infringement of AI-technology patents is difficult. The outputs from the technology may include novel molecules used to treat patients. Traditional pharma industry business models rely on patent protection for these molecules. Leveraging AI assists with speed, efficiency and accuracy of discovery, however there are extensive regulations and restrictions around the (long- often many years) testing process before a drug can be offered to market. A monopoly right is a fair reward for that amount of monetary and time investment. Without patent protection, competitors could copy the drugs/active ingredients, able to circumvent/short circuit the initial R&D investment. Patent protection is essential for AI-generated-inventions. Without it, there is less incentive to invest.

[1] https://www.iam-media.com/patents/ai-has-finally-arrived-and-change-coming-life-sciences

In addition, focus on enforcing existing law and ensuring patent examiners have access to training on the latest technology is also key.

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?

First, we need to be clear what we mean when we say that AI has contributed to an invention. The narrative in this call for evidence is that AI exists as a large-scale, futuristic system that is akin to a human (Artificial General Intelligence, or AGI). For example, the supplementary information suggests at that "an AI "brain" should be treated in a similar way to a human one". We would suggest that this comparison is inappropriate. There's also a misconception that AI is independently creating lots of new innovations.

In reality we're not at a place where AI is inventing in a widespread fashion. Current and foreseeable AI technology will likely be driven by a human contributor. In most cases, we are dealing with *assisted inventions*, not *automated inventions*: AI is a tool that assists in the invention process or constitutes a feature of an invention. This AI assistance may include making small but inventive contributions. The IPO should focus on solving challenges that we face today and the near-term future, rather than issues related to AGI, which are quite far down the track.

The identification of an inventor in the current policy framework serves two purposes: to respect the moral rights of inventors by properly attributing inventions to their inventor(s); and to determine ownership of any resulting patents. We believe that the debate around determining who to identify as an inventor needs to be resolved as an issue of ownership and link to who owns resulting patents.

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

As outlined above with respect to question 2, the concept of agreeing inventorship can be complex and may warrant further discussion. It may be unnecessary and unhelpful to attribute an invention to an AI since an AI does not devise inventions without human involvement and an AI cannot anyway own any resulting IP.

The copyright act states that for certain works the owner is the person by whom the arrangements necessary for making the work were undertaken. For example, the person that programmed the computer or owned the computer. If we transferred this principle to patents, the inventor of an invention generated by AI could be taken to be the person making the arrangements necessary for devising the invention. techUK believe this is a starting point for bringing clarity to this debate but would recommend consultation more widely.

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?**

Innovators, especially commercial organisations, have the choice whether to keep something confidential or to disclose it. Incentives to keep confidential include competitive advantages. Incentives to disclose include reputation advantages. The patent system provides an incentive to disclose and share knowledge with the world, by providing a period of exclusivity. For innovations that are not patentable, the incentive to disclose is weakened and confidentiality is more likely. The less innovation shared, the harder it is to build on the innovation of others, and the slower the pace of innovation.

Some innovations can't be kept secret. For example, novel treatments for disease ultimately need to be given to patients. Consumer products need to be given to customers. Here the lack of patentability may reduce the incentive to invest in AI solutions (and reduce the potential positive impact from AI output on society). It may also impact the commercial viability of certain businesses and industries.

In addition, providing information and training to patent examiners to help them make the best decisions they can and issue the right patents remains key.

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

Addressed in Q2

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

Addressed in Q3

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

Further clarity would be welcome on what is meant by the definition of 'AI inventions' and whether this means protecting the AI itself or the inventions created by AI.

There is an unfortunate challenge in getting patents on improvements to AI because there is an exclusion for software (unlike the two leading countries, US and China). With AI improvement to the algorithms themselves it can be hard to show that there is enough of a contribution to the art to get a patent. Improvements to an algorithm is an area of real innovation and companies dedicate considerable time to making AI algorithms more susceptible to learning and classifying, and making AI more efficient. techUK would like to see these improvements to AI being acknowledged and protected through patents.

Recent analysis of where AI patents are being filed across the world shows that the US is dominating the technology, holding 60% of all patents. Companies from China (9.3%), Japan (10%) and the European Union (8.8%) are on a similar level. Specifically, Chinese companies have doubled their market share to 9.3% in the last three years, while the shares of US and EU companies are declining[2]. Further consideration is needed for how the UK can step-up and increase its share of patents. AI might also be part of the solution when it comes to dealing with the backlog of patent applications that currently exist.

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

Current and foreseeable AI technology will likely be driven by a human contributor. An AI tool is the creation of, configured by, operates under the instruction of, and with objectives directly or indirectly specified by, a person. The prospect of the development of "strong AI" which may necessitate a review of the involvement of humans in the invention process is considered unlikely for the foreseeable future.

There is currently a huge disparity between how different patent offices' value patents directed to inventions involving AI. This could create problems, especially when these solutions are adopted around the world. The UK must get better at clearly articulating its approach on a global-scale and how these laws compare with offices around the world. International harmonisation is key.

[2] The Patent Landscape of Artificial Intelligence- A deep dive into global developments in AI, LexisNexis

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?**

One concern we have with discussing the excluded categories is that they are the same as those in Europe under the European Patent Convention. Any discussion on these categories has to be had as part of a wider discussion with the EPC as well as the UK. We wouldn't want to see the UK diverging from the EPC on this matter, as this could risk creating additional burden for companies operating in the UK and Europe.

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

Answered in Q3

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?**

It's important here that we focus on the actual purpose of-sufficiency in a patent, which is not necessarily to show how the invention was conceived but to show how it works. There's sometimes an assumption that you have to share training data, which can be voluminous and private/sensitive. It needs to be clearly stated that in most cases this is certainly not the case.

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?**

If this question alludes to a new role for patent law in addressing regulatory issues for AI technology then we are concerned that it would take patent law into a new and unwarranted direction. Patent law is concerned with providing protection for innovation and giving a patent for a period of time, and in response the patent is published disclosing how an invention works. Using AI for societal good is important, but patent law is not the place to address these regulatory concerns.

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 process of invention is to be distinguished from a process of discovering mere novelties. Guided by the principles of patent law, invention requires a further inventive step. As the tools available to assist inventors increase, including the use of AI, so too will the standard for inventive step.

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

As discussed above, we are currently in the assisted inventions, rather than automated inventions phase. As such, the concept seems to be able to be flexed to the appropriate context, rather than suggest that AI operates a different, separate, space.

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

An infringer of a patent is liable under tort law. If the infringer uses an AI to perform such infringement, they are still liable. The use of an AI does not affect infringement at all, even if the AI infringes accidentally.

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. This is an issue that is not unique to AI. Standardisation may help to resolve or reduce the problem.

Copyright questions

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

AI models are owned, operated and deployed by legal entities. We would argue that sufficient clarity or scope currently exists in the current legal framework to hold the appropriate entity/entities responsible for infringement.

As an aside, it's also worth noting that AI can in some circumstances be an efficient way of identifying the likelihood of infringement taking place.

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.**

Further work is needed from an education and awareness perspective to help make this process easier. techUK would advocate for enforcement of existing rights where applicable, rather than developing additional rights.

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

Given that the CDPA already protects computer-generated works under S.9(3), it is possible that some AI-generated output will fit the definition of this norm, being therefore protected under S9(3). To be clear, content generated by AI should be eligible for protection by copyright or related rights with the rights residing with the legal owner of the AI system and not with the AI system.