IMPACT OF ARTIFICIAL INTELLIGENCE ON IP POLICY

COMMENTS ON WIPO'S DRAFT ISSUES PAPER

14 February 2020

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Foreword

London, 14th February 2020

Dear WIPO Secretariat,

We read with great interest the captivating issues arising for Intellectual Property (IP) policy and Artificial Intelligence (AI) as stated in your draft issues paper of Dec. 13th, 2019. We would like to offer our commentary on correctly identify the issues and highlight where we think there could be missing issues.

We, at PA Consulting, have a great multi-sector and multi-industry expertise and our impeccable track record in designing, developing and running AI systems puts as in a position to objectively provide you with constructive feedback. We believe this is draft is already a great step forward toward clarifying subtle issues on IP policy in the era of AI. It's with great re-assurance to see the pro-active steps taken by WIPO in that regard.

With that in mind, please accept our collective thoughts and feedback in the sections below as per your designated thematic questions.

We remain at your disposal for any clarifications you may have and would happily welcome the opportunity to work with you in setting direction for practical IP policy and AI.

Kind regards,

The AI team at PA Consulting

Patents

Issue 1: Inventorship and Ownership

> *(i)*   *Should the law permit or require that the AI application be named as the inventor or should it be required that a human being be named as the inventor? In the event that a human inventor is required to be named, should the law give indications of the way in which the human inventor should be determined, or should this decision be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over inventorship?*

Any invention, if it is unique in nature, when submitted, should be eligible to be registered. When registering inventions, the inventor (the source) and the owner are part of the registration and need not be the same.

The role that AI plays in human lives currently is such that it either:

     a) augment human life and enhance or extend human capabilities through a direct relationship between human interaction with the AI, or

     b) are autonomous, making decisions within a contextual solution space and are being employed by humans to serve them.

In the first case (a) the inventor is the human operating the AI, and in the second case (b), the AI should be identified and registered as the source of the invention and thus being the inventor.

We owe it to the world to properly identify the source of an invention and record how our civilization advances itself.

> *(ii)*   *The inventorship issue also raises the question of who should be recorded as the owner of a patent involving an AI application. Do specific legal provisions need to be introduced to govern the ownership of autonomously generated AI inventions, or should ownership follow from inventorship and any relevant private arrangements, such as corporate policy, concerning attribution of inventorship and ownership?*

In short, we think that underlying human based entities will claim ownership of employed AI.

The underlying question for this discussion is actually: *"what are the rights of an AI?"*

Right now, we're nowhere near the existence of sentient AI that are aware and can react arbitrarily within their changing environments. And even if we were, which we could assume that it will happen, albeit limited in scope. The question then is: do we want to grant AI individual rights?

In this perspective a sensible contemplation is that:

a) Humans will not accept AI as their equals, and grant them the same rights, and eventually work for them. In that sense, AI cannot own property.
At the moment, by and large, we as humans are not even always able to acknowledge equal rights with regards to our own diversity.

b) First generation AI are derived from human ingenuity, but we must refrain from attributing anthropomorphic qualities to it. Even though humankind might be able to create an artificial species which can generate other AIs, we should only employ them.

c) AI is owned by their human caretakers. In this sense, AI is a 'hired' force, where within a certain timeframe, or indefinite, all fruits of the labour of the AI will be owned by the human-based entity it works for. There is an analogy here with typical employment contracts where IP is transferred to the employing entity.

(iii) *Should the law exclude from the availability of patent protection any invention that has been generated autonomously by an AI application? See also Issue 2, below.*

No, as outlined above.

One consideration, based on the fact that powerful organisations have more resources to employ and develop AI that can generate patentable IP, is that we should re-evaluate the duration of protection that patents get, in order to advance the human condition.

Issue 2: Patentable Subject Matter and Patentability Guidelines

(i) *Should the law exclude from patent eligibility inventions that are autonomously generated by an AI application? See also Issue 1(iii), above.*

No. An invention is an invention, which can be registered. See the answers of issue 1.

(ii) *Should specific provisions be introduced for inventions assisted by AI or should such inventions be treated in the same way as other computer-assisted inventions?*

There is no difference. Right now, we are not talking about sentient artificial life forms which have rights. See answers of issue 1.

(iii) *Do amendments need to be introduced in patent examination guidelines for AI-assisted inventions? If so, please identify which parts or provisions of patent examination guidelines need to be reviewed.*

No. Let's not over-complicate the matter. Also, how do you prove that an invention is AI based or human originated, in case you make a distinction, purely from a registration point of view. We have to prevent owners of inventions to game the system.

Issue 3: Inventive Step or Non-Obviousness

(i) *In the context of AI inventions, what art does the standard refer to? Should the art be the field of technology of the product or service that emerges as the invention from the AI application?*

There should be no difference in interpretation of what art is. Art is something that involves creation, so anything that is created and can be judged as art classifies as such.
Last but not least, art is related to intent. This is an important notion.

(ii)   Should the standard of a person skilled in the art be maintained where the invention is autonomously generated by an AI application or should consideration be given to replacing the person by an algorithm trained with data from a designated field of art?

Yes, but the word 'skilled' will have a different meaning in the future. Using AIs to assess art, might well be possible in the future, as trained AIs are by our doing, and thus by proxy, skilled as well.

(iii)   What implications will having an AI replacing a person skilled in the art have on the determination of the prior art base?

This is possible, but we have to ensure that this AI is continuously learning and expanding its boundaries of what such skill requires. Here is the link with us as humans, as we for the coming time will dictate the relationship between art and skill.

(iv)   Should AI-generated content qualify as prior art?

We need to consider the following: If art is generated by an AI and does not qualify, can a human plagiarize it and claim it immediately as art?

Therefore, yes it should be considered prior art.

Ownership is a completely different issue.

Issue 4: Disclosure

(i)   What are the issues that AI-assisted or AI-generated inventions present for the disclosure requirement?

AI and the results they generate need to be explainable in order to be replicated on disclosure.

(ii)   In the case of machine learning, where the algorithm changes over time with access to data, is the disclosure of the initial algorithm sufficient?

If the patented item is an algorithm, then yes. If the patented item requires explanation, such as that a trained AI cannot immediately be explained algorithmically, a reference to an available input training set needs to be provided as a minimum reference.

(iii)   Would a system of deposit for algorithms, similar to the deposit of microorganisms, be useful?

Yes, in order to better automate detection of similar inventions and prior art. In general it's more a filter on inventions with support data that can be searchable.

(iv)   How should data used to train an algorithm be treated for the purposes of disclosure? Should the data used to train an algorithm be disclosed or described in the patent application?

When a patent expires, the public must be able to repurpose the registered technology. When the invention involves an algorithm that needs to be trained, a reference set must be provided in order to reach the level of the patented technology.

In the case of continuous learning, a start-set should be made available.

(v)   Should the human expertise used to select data and to train the algorithm be required to be disclosed?

Yes, as it helps with the explainability of the invention, which is a requirement and moral responsibility in order to replicate an invention when it's patent expires.

Issue 5: General Policy Considerations for the Patent System

(i)   Should consideration be given to a sui generis system of IP rights for AI-generated inventions in order to adjust innovation incentives for AI?

No. Segmentation does not incentivise unless there is something to be gained, and next to this we need to be careful not to open doors which allow owners of inventions to game the system.

(ii)   Is it too early to consider these questions because the impact of AI on both science and technology is still unfolding at a rapid rate and there is, at this stage, insufficient understanding of that impact or of what policy measures, if any, might be appropriate in the circumstances?

No, it's not too early, as in this discussion we're shaping the direction on how we see AI, like any invention, like the invention of **fire**, as a component what is shaping human life, and the rights it could hold. We should know what kind of society we want to shape.

Copyright and Related Rights

Issue 6: Authorship and Ownership

(i)   Should copyright be attributed to original literary and artistic works that are autonomously generated by AI or should a human creator be required?

The AI should be mentioned as the source, but a human or organization will claim ownership and thus copyright, as it's the purpose of the AI to augment the human abilities. There should be no difference, in terms of ownership, between the policies on patents and copyright in that sense.

(ii)   In the event copyright can be attributed to AI-generated works, in whom should the copyright vest? Should consideration be given to according a legal personality to an AI application where it creates original works autonomously, so that the copyright would vest in the personality and the personality could be governed and sold in a manner similar to a corporation?

Copyright should always be attributed to the human or company the AI is augmenting, therefore the AI as well as the copyrighted work can be sold individually, as a piece of art and an augmentation.

(iii)   Should a separate sui generis system of protection (for example, one offering a reduced term of protection and other limitations, or one treating AI-generated works as performances) be envisaged for original literary and artistic works autonomously generated by AI?

No. This would encourage gaming of the registration system, as it will get increasingly more difficult to prove a human invention from an AI invention.
We should want factuality and honesty foremost.

Issue 7: Infringement and Exceptions

(i)   Should the use of the data subsisting in copyright works without authorization for machine learning constitute an infringement of copyright? If not, should an explicit exception be made under copyright law or other relevant laws for the use of such data to train AI applications?

An invention is an invention, regardless of the fact that a copyright license might have been breached. These are two separate things. It does not undo an invention.
If the new invention requires the use of copyrighted inputs for it to work and to be exploited, then clearly a proper license for these copyrighted works need to be in place.

The newly created work is a derivative work, which enjoys to be copyrighted on its own.

(ii)   If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, what would be the impact on the development of AI and on the free flow of data to improve innovation in AI?

In such case, noting that usually copyrighted material is exploited, doing development with copyrighted materials would require a license in place.
Free flow would of course be hampered and would only feed the divide between different levels of wealth.
Infringements and related actions would hamper progress of the human condition in much the same way that patents which only express unused ideas already do.

(iii)   If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, should an exception be made for at least certain acts for limited purposes, such as the use in non-commercial user-generated works or the use for research?

Existing licensing schemes for use of works are already suitable to protect and handle the consequences of using copyrighted materials in non-commercial and user-generated works. Just think about the GPL (General Public License) for example.

An adaption in these licensing strategies might be nessecary to capture the desired outcome, such as that data can be seen as a source-code-library and thus fit certain descriptions about licensing in that respect.

(iv)   If the use of the data subsisting of copyright works without authorization for machine learning is considered to constitute an infringement of copyright, how would existing exceptions for text and data mining interact with such infringement?

With regards to this specific question, frameworks exist with regards to creating meta-data or derivative works in this nature, as they serve as a synopsis or conclusion, which is a work of its own.

(v)   Would any policy intervention be necessary to facilitate licensing if the unauthorized use of data subsisting in copyright works for machine learning were to be considered an infringement of copyright?

A policy intervention is not strictly necessary, since the law provides in this, but in order to reduce confusion it is advisable to develop a guidance and potential checklist to facilitate

(vi)   How would the unauthorized use of data subsisting in copyright works for machine learning be detected and enforced, in particular when a large number of copyright works are created by AI?

The question around copyrightable works being generated by AI is not withstanding, it may be prudent to introduce some declarative requirements in terms of IP and AI so that training data must be declared with some meaningful level of penalty for deliberate non-compliance.

Issue 8: Deep Fakes

(i)   *Since deep fakes are created on the basis of data that may be the subject of copyright, to whom should the copyright in a deep fake belong? Should there be a system of equitable remuneration for persons whose likenesses and "performances" are used in a deep fake?*

Materially, this issue is similar to that of "remixes" or "samples" in the music industry. Does copyright exist on creative works that have unauthorized usage of someone else's copyrighted work? The same rules should apply as the context is the same – in this instance the AI is simply acting as a tool to provide seamless alteration of an original piece of content, much as a remixer or sampler is altering an original piece of content to produce something new.

Issue 9: General Policy Issues

(i)   *Are there seen or unforeseen consequences of copyright on bias in AI applications? Or is there a hierarchy of social policies that needs to be envisaged that would promote the preservation of the copyright system and the dignity of human creation over the encouragement of innovation in AI, or vice versa?*

Inherently bias is something of human subjective origin, which leads to humanity as the origin and creator. Since the copyright system is geared to protect originality, where AIs are able to create original works in the face of hard metrics and human subjective-ness, AIs nor humans need any other protections, as it is upon validation of these hard and soft metrics that we value creations, that eventually lead back to us.

Data

Issue 10: Further Rights in Relation to Data

(i)   Should IP policy consider the creation of new rights in relation to data or are current IP rights, unfair competition laws and similar protection regimes, contractual arrangements and technological measures sufficient to protect data?

Current IP laws capture the fundamental management of rights as it pertains to data and their different facets within the lifecycle of a data driven system. The use of data by AI systems should adhere and follow data IP laws as normal. However, AI systems provide a relatively unknown challenge regarding the extension of data's lifecycle: during and after decommissioning of an AI system, data traces should be governed by data laws. AI system can also generate synthetic data prior, during and after their intended use. Such data should also be treated as any other data and comply with data IP laws. Access to data for training and re-calibrating an AI system should be regulated by market efficiency mechanisms and protected by IP laws to foster an ecosystem of data value that encourages quality data feeds into the system.

(ii)   If new IP rights were to be considered for data, what types of data would be the subject of protection?

Synthetic data is a relatively new data type that large scale machine learning deployments need. As these data are not real, their inception, use and decommissioning is often not supervised by IP laws. However, the presence of these synthetic data in a machine learning system is crucial as it offers a speedier and indeed effective training apparatus. A detailed engineering, business and scientific study should highlight areas in synthetic's data lifecycle where IP laws could be applicable for the benefit of consumer protection and market efficiencies.

In addition, data that are generated as part of an AI system, could be subject to protection from IP laws. For example, in healthcare a drug discovery AI system could provide a scientific breakthrough for protein folding and in doing that, several data traces would be used to train its proprietary algorithms. Provided that reverse engineering could re-create the system by re-using the original data, the author of the protein folding system would want to protect its data.

(iii)   If new IP rights were to be considered for data, what would be the policy reasons for considering the creation of any such rights?

As the AI field evolves fast, policy making for new IP rights pertained to data uses in and for AI systems would enable policy makers to maximize the widest possible benefits for AI. Market awareness of the value of AI data is a key outcome as well as a structured, regulated mechanism to share and enhance the value of AI data.

Policy making in this space would also provide greater clarity on open science vs. proprietary technology on the use of AI data. As data science progresses, synthetic data, real data and a mixture of both will continue to evolve and overlap. A clear policy on the IP rights of data will enable greater market efficiency and realisation of value from data –

especially for the smaller entities in the ecosystem that can't afford extensive litigation processes.

These policies will in turn enhance the current data IP laws landscape and make it fairer and just.

(iv)   If new IP rights were to be considered for data, what IP rights would be appropriate, exclusive rights or rights of remuneration or both?

Data is the fuel for modern AI, especially recent versions of machine learning systems. As a core enabler for machine learning, data have intellectual and monetary value. Hence, the new IP rights should acknowledge and enforce that at a micro level so that every citizen would benefit for the provision – knowingly or unknowingly - of their data. The choice of exclusivity vs. remuneration should be defined on a spectrum principle. A certain degree of proportionality should be encouraged in the policy making to prevent gaming the system but as well as encouraging original data creation. This should be driven by safety and impact analyses per sector, with healthcare, agriculture and defence and security being the most sensitive to new IP rights for AI data.

(v)   Would any new rights be based on the inherent qualities of data (such as its commercial value) or on protection against certain forms of competition or activity in relation to certain classes of data that are deemed to be inappropriate or unfair, or on both?

New IP rights for data should be driven by spectrum approach and proportionality principles. Inherent qualities of data are important in the healthcare sector, for example, where good quality data are a must for an AI system delivering lifesaving services. On the other hand, in consumer or entertainment domains, aggregate data could have diminished value over time.

Protected data characteristics regarding human rights should be protected by IP laws in perpetuity regardless the origin of these data – directly extracted from protected characteristics or inferred.

(vi)   How would any such rights affect the free flow of data that may be necessary for the improvement of AI, science, technology or business applications of AI?

Introducing new IP rights for data shouldn't be seen as a stopper for the free flow of data. Rather, should be encouraged and seen as an enabler of well governed, structured and principled use of data in our AI systems. With the emerging regulations and legislation on transparency and explainability of AI systems, data traces and provenance are a necessary health check that all legitimate AI systems' developers should do. A new IP rights data policy could enable those checks.

(vii)   How would any new IP rights affect or interact with other policy frameworks in relation to data, such as privacy or security?

New IP rights for data should be introduced as an extension to existing data privacy and data security regulations. Not a replacement. There could be cases where the inherent value of data clashes with security norms (e.g., national security as stake) hence, the IP rights would be restricted to non-monetary (re-)use. Similarly, in sensitive healthcare

applications, current privacy regulations could prevent realising the commercial value of data.

(viii) How would any new IP rights be effectively enforced?

New IP rights for data should be enforced using the normal means of enforcing IP law across jurisdictions. However, this is a fast evolving field with so many permutations for data IP holders throughout the lifecycle of data, that a new approach could be explored: use AI for AI's sake! AI systems could be developed that track, trace and manage the enforcement or otherwise of IP rights for data. As AI systems are incredibly efficient in scouring through humongous data to spot patterns, they are perfectly suitable for scanning, finding and exposing malicious use of data in the context of new data IP rights laws. This would then a valuable assistant for human enforcers and will speed up the enforcement and market compliance practice.

Designs

Issue 11: Authorship and Ownership

(i) *Should the law permit or require that design protection be accorded to an original design that has been produced autonomously by an AI application? If a human designer is required, should the law give indications of the way in which the human designer should be determined, or should this decision be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over authorship?*

As AI is essentially a tool for use in creating output, following existing rules about the design protection for those outputs should be the approach.

(ii) *Do specific legal provisions need to be introduced to govern the ownership of autonomously generated AI designs, or should ownership follow from authorship and any relevant private arrangements, such as corporate policy, concerning attribution of authorship and ownership?*

No specific legal provisions are needed – existing ownership deriving from authorship and relevant private arrangements are sufficient.

Technology Gap and Capacity Building

Issue 12: Capacity Building

(i)   *What policy measures in the field of IP policy might be envisaged that may contribute to the containment or the reduction in the technology gap in AI capacity? Are any such measures of a practical nature or a policy nature?*

It appears that the emerging technology gap is driven by market dynamics and national policy with little or no relevance to the creation and valuation of IP. As such any measures that could be considered by WIPO are likely to be practical in nature, rather than policies agreed upon in an international context. It is difficult to contain AI innovation emerging from the economies of scale that the powerhouses of US, China and some European countries established. On the other hand, a fairer and more equitable AI-driven society calls for guidance and regulations that reward and encourage smaller economies and companies to thrive in the global AI ecosystem. A practical measure would be to ensure that IP related to AI would be respected and its value enforced across the globe regardless of the nature of its creator – whether it will be a multinational conglomerate in a top global economy or a small startup in the developing world. That will create a viscous cycle where smaller companies and economies will gradually have a bigger impact on world's AI affairs, thus creating a fairer and more equitable AI ecosystem.

Accountability for IP Administrative Decisions

Issue 13: Accountability for Decisions in IP Administration

>   (i)   *Should any policy or practical measures be taken to ensure accountability for decisions made in the prosecution and administration of IP applications where those decisions are taken by AI applications (for example, the encouragement of transparency with respect to the use of AI and in relation to the technology used)?*

AI should never be the final arbiter of IP administration decisions. There must always be a human-based appeal process that can be followed. AI systems are not infallible. If AIs are being used in decision making for IP Administration then the details of the AI system (regarding training sets, bias assumptions, and identification of how the learning model developed should also be available for reference.

>   (ii)   *Do any legislative changes need to be envisaged to facilitate decision-making by AI applications (for example, reviewing legislative provisions on powers and discretions of certain designated officials)?*

As above, an AI application should never be the final arbiter in these decisions. A human-based appeals process should always be available.

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About PA.

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