Rigorous empirical research on intellectual property

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**4iP Council - draft note on the WIPO paper "Impact of Artificial Intelligence on IP Policy: Call for Comments"**

## 1. 4iP Council philosophy

4iP Council is an organisation made up of 24 supporters and ecosystem partners, whose aim is to develop high quality academic insight and generate empirical evidence on topics related to intellectual property and innovation. Patent rights are where the main competence of 4iP Council research has focused, including on research & development and standardisation. 4iP Council is a WIPO Observer since 2018.
We wholeheartedly support the current consultation and wish the following comments help to guide WIPO into its engagement on decipher the impact of AI on IP.

The answers below might not represent the opinions of the supporters and ecosystem partners of 4iP Council and are submitted on behalf of its managing director Axel Ferrazzini.

## 2. "AI"

Forms of computation commonly referred to as Artificial Intelligence (AI) which comprises any number of divisions, for example Machine Learning (ML), Natural Language Processing (NLP), Neural Networks (NN) and Deep Learning, and is in constant development, is a tool for augmenting human intelligence – as were the abacus, slide rules, log tables, software programming and so on – no less and no more.
The advent of these techniques has already taken place and them could be used to improve the IP system in all its aspects.

## 3. 4iP Council and the WIPO Consultation

The following comments refer particularly to patents – Sections 5(a) Patents, 5(c) Data, 5(e) Technology Gap and Capacity Building and 5(f) Accountability for IP Administrative Decisions.

## 4. Patents

- Definitions
    - A patent is a limited monopoly given by a sovereign body to "inventors" to encourage them to make their inventions public and available to their populace so that they can be built upon to encourage further innovation and advance the creation of the new goods and services to the benefit of the population.

  All patents are based on inventions that have been shown to be:
    - Novel

- Not obvious to those skilled in the art
- Capable of industrial application

- Patents and policy
  - Patents are a public goods and their continuing existence should be encouraged.
  - The good resides in any individual patent, however the basic inventions were made. It is regardless whoever and/or whatever the inventions and claims in the patent were made by.

**PATENTS**

**Issue 1: Inventorship and Ownership**

7.(ii) Could the recorded owner be the 'body' who files the patent application (human being/ organisation such as university or company/ software or machine? In this case the 'body' should have legal existence in the sovereign nation to be entitled to the exclusive rights but also responsibilities as an IP right holder.

7.(iii) If the law exclude from the availability of patent protection any invention that has been generated autonomously by an AI application even if it satisfies with the three essential conditions of patentability. Would it be go against the law? Or would it be a specific exclusion of patentability for the AI-generated inventions?
Should be set special methods for generating a patentable invention or what would be the justification of the exclusion from patent protection for the Ai-generated inventions?

**Issue 2: Patentable Subject Matter and Patentability Guidelines**
8.(i) Would the exclusion from patent eligibility inventions that are autonomously generated by an AI application mean that they would be part of the public domain? What would be their legal status?
8.(ii) If specific provisions will be introduced for inventions assisted by AI, what kind or provisions will they be? Should they be related to the value of the invention itself? Or for the method of how it was made?

**Issue 3: Inventive Step or Non-Obviousness**
9.(i) Prior art has conventionally concentrated on patent and technical literature. Could it be considered that the power of "AI" techniques considerably extend the sources/standard of art to be considered and thus increases the ultimate strength of any granted patent?
9.(ii) Taking into account that the prior art could be also assessed in a Tribunal within an injunction or invalidity proceedings, How will the replacement of the person skilled in the art by an algorithm trained with data affect these proceedings?
Any decision about the standard of the art and of a person skilled in the art must assured that the granted patents are of the highest quality at the time of examination.
Should the concept of a PSITA –Person Skilled In The Art– will include their tools –MSITA– Machine Skilled In The Art?
9.(iii) Should the method/way in which the invention was made be a criterion to judge the non-obviousness in inventions?
Could assisted human examiners with the best available tools perform a high quality assessment of the patentability conditions? The "AI" methods should become a vital component of these tools.

**Issue 4: Disclosure**

"AI" techniques and inventions based from them typically have a number of components:

- A 'defined need', currently this is provided from human sources but it could be possible a machine generated need. There could be a feedback loop in which the need itself may require to be adjusted in the light of new data or from the conclusions arrived at by the software.
- A chosen set of data relevant to these needs.
- "Training" / classification of the data to make it relevant to that need – the parameters for that can be chosen by humans in light of their understanding of the need but it could be possible that machines could also generate them and there are several software programs available that can help this.
- An algorithm that generates possible solutions to that need.
- The process can be repeated one or many times.
- A choice is made as to when the algorithm has arrived at a solution that is novel – and, it could be considerate, "creative" – to satisfy the need: this could be by human intervention or from the algorithm itself.
- A patent application can then be prepared in a format suitable for presentation to sovereign patent offices. This could be done by humans or by a software that could write the application itself.

10(i) Regarding the disclosure requirement, a body "skilled in the art" to exactly repeat the process described above, AI inventions, it would have to have access to:

- The original starting need – it could be imagined that this might change somewhat as the solutions are generated i.e. there could be some kind of feedback in the process.
- The data used – this may continually be being adjusted as the software is being used.
- Methods for training / classifying the data.
- The algorithm or algorithms.
- Any learning or feedback loops that humans or the program create.
- An understanding as to when the solutions to the need can be described as "novel and inventive."

These requirements are complex and dynamic: it is unclear if they can be directly transferable to third parties.

10(ii) is disclosure of the original algorithm sufficient?

- A number of items may change during the operation of the "AI" system. The original need itself may change as the algorithms continue to generate new solutions.
- How the new factors introduced by data, which can be continually being collected during the operation of the algorithms will be treated? What will be their legal status?
- The training could itself be changing as new data is being collected and introduced during the operation of the algorithms and the 'need itself' may also have changed during the operations.
- The algorithms themselves may "learn" as a result of changes in trained data and possible changed needs and also change their

parameters. Should the disclosure of these 'new needs' and parameters necessary?

10(iii) – a trusted secure store for the algorithms?

- The process for generating inventions is, as described above, complex and relies on a large variety of factors, which can also include human intervention at particular points.
- Would a secure store for the algorithm(s) appreciably help a person skilled in the art reproducing the invention?
- Most creators of "AI" software, particularly in the form of its source code, would consider it to be a company secret and would be very thoughtful about giving access to it to third parties so that they could reproduce the invention.

10(iv) Access to (trained) data?

- The data used to train the data for the algorithm can be:
  - Essentially publically available.
  - Private data in any number of forms, including:
    - Internally generated in-house data
    - Data purchased from one or more data owners
- It could even be difficult to describe all of the data in all circumstances in detail as some of it may be covered by confidentiality agreements.
- The data itself maybe changing as the operations are being made as could the training parameters.
- How could be made available all the data used to generate an invention to any person skilled in the art?

10(v) Human experience and expertise available?

- What should be the requirements of the human expertise to be necessary to be disclosed?
- What would be the relationship between the human expertise used to select data and to train the algorithm and the available expertise?

**Issue 5: General Policy Considerations for the Patent System**

11(i) – "sui generis" system of IP rights for "AI-generated inventions?

- It is clear that certain aspects of "AI"-generated inventions, in particular the ones related to "Disclosure" and "(Trained) Data", would demand an effort to be accommodated against current practice. There could be forms of words acceptable to those bodies skilled in the art that could provide sufficient information for them to repeat the invention and, more importantly, build on that to create new inventions in areas of interest to themselves.
- Would it be enough to incorporate AI-generated inventions into the current legal system instead of the creation of a sui generis system? What would be the factual reasons to justify the need of a new system?

11(ii) Is it necessary to wait for having a sufficient understanding of the impact of AI to consider these questions? Which factors will determine if there is sufficient understanding? Wouldn't it be preferable to do everything possible to incorporate AI-generated from now?

**DATA**

**Issue 10: Further Rights in Relation to Data**

- (i) – current or new rights?
  - The explosion of data – each autonomous vehicle is calculated to be providing >300TB of data / year, and it is said that data will be doubling every 57 days in 2020[1] – has created a new challenging scenario for the current laws and regulations. As a historical data, GDPR was first considered as a concept in 1998 and the EU regulations were not put in place until 2018 – an unconscionably long time when considering regulations trying to handle the current data explosion.
  - Should it be possible to split data into "verticals" that can be identified and separable and with different sets of regulations and laws taking into account the enormous convergence of technologies around any particular end use?
  - Should it be enough to address the data issue at a basic level considering these new dynamics of quantity and convergence?
- (ii) – differentiation between types of data?
  - Taking into account the arguments given above How would it be carried out the division of the data in different types? What would be the division criteria? Is it not possible to consider data is data as a whole?
  - Could the "ownership and use" of the data be a possible way of going forward, thinking, for example, of GDPR and personal data?
    - Could the creation of software and cybersecurity barriers give separable "islands" of data only accessible to privileged enquirers or users?
    - Could new regulations be created considering the rights of access and use to such data?
- (iii) – policy reasons for the creation of new data rights?
  - If it is considered that "data is data" would it be more reasons than the rights, the ownership and use of any data?
  - How would it be assured the openness of information to all members of society with the principle being established that

[1] Barua S. Flood of Data Will Get Generated in Autonomous Cars. Available at: <https://autotechreview.com/features/flood-of-data-will-get-generated-in-autonomous-cars>. Accessed February 14, 2020.
Dmitriev S. Autonomous cars will generate more than 300 TB of data per year. Available at: <https://www.tuxera.com/blog/autonomous-cars-300-tb-of-data-per-year/>. Accessed February 14, 2020.

any barriers to the exchange and use of data need to be transparent and democratically approved?

- (iv) – IP data rights, exclusivity and/or remuneration?
  - Could any defined body of data, whether created by man or machine, be treated as copyrightable and either kept proprietary or sold or licensed to possible users under current methods as used for artistic works?
- (v) – qualities of data for protection
  - If defined bodies of data, as created by man or machine, were treated as copyrightable then the questions of commercial value or unfair competition would be regulated through sale or licensing or, in the case of unfair competition, in the courts as currently.
- (vi) – IP rights as barriers to innovation?
  - As in (iii) taking into account the free use of information by all members of society, Would copyright laws provide suitable protection for the creators of defined bodies of da similar to the one for the creators of artistic works and their eventual use by third parties?
- (vii) – IP rights, privacy and security
  - Would "copyright-protected" data be able to satisfy these kinds of concerns in the first instance?
- (viii) – Enforcement of IP rights
  - "copyright-protected" data would have the same rights as artistic works today and the same kinds of enforcement could be used.

**DESIGNS**

Issue 11: Authorship and Ownership

How this issue will be treated in relation to the non-registered designs, which are protected in different jurisdictions with different conditions and grant different rights? How will be assured their enforceability?

**TECHNOLOGY GAP AND CAPACITY BUILDING**

- Technology moves faster than laws and regulations and is driven by need.
  - There is a belief that "AI" and its capabilities will be rapidly acquired and used where it offers real advantage to a country regardless of where the technology was originally created.
- Capacity Building – IP policy
  - How could be develop a policy that reduces the barriers to use of data and "AI" techniques or makes it available under commercially reasonable terms by both the owners and the users?
  - Data: the use of "copyright" protected data should provide a useable way to handle any problem there.
  - All governments have the current rights under certain conditions to break any IP rights to make the inventions available to their populations should they consider this necessary. This has been used in the biopharma field. Could the same happen to make "AI"

techniques available to their populations if the need were seen to be sufficiently strong?

**ACCOUNTABILITY FOR IP ADMINISTRATIVE DECISIONS**

- Could it be possible that all patent offices and examiners choose to examine and judge their applications under the same kind of "AI" software that would then be periodically updated with common agreement, e.g. AImin 1.0 / AImin 2.0 and so on?
- Could WIPO act as a central node for this system?
    - Issue 13: Accountability for Decisions in IP Administration
        - If all patent offices would use the same AI tools should obviate any problems of accountability between them if not the administration should take the similar practical measures they take currently to encourage transparency taking into account the opinion of their stakeholders, users and special features of the AI applications.
        - Should the interaction of "AI" decision-making and the power and discretion of "certain designated officials" and its legislative basis be addressed on national bases?
        - Could it be easier to accept AI decisions in the first instance proceedings on patentability and prior art if a human judge will assess the appeal?
        - Could it be easier to accept AI decisions in litigation between parties -Judge Skilled In The Art- if a human judge will assess the appeal?