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(submitted per email to ai2ip@wipo.int)

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Re :   **WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI) Draft Issues Paper on Intellectual Property Policy and Artificial Intelligence Document WIPO/IP/AI/2/GE/20/1 dated December 13, 2019**

Dear Sirs,

Reference is made to the above-identified draft issues paper (the "Draft Paper") prepared by the WIPO Secretariat which was made available for comments by all interested parties.

I am submitting the instant comments in my personal capacity, as individual and patent professional. These comments focus on the PATENTS section (Issues 1 to 5) and are solely meant to represent my personal views on the relevant issues at stake. While answers to the identified questions are not required at this stage, the below comments follow the structure, issues and questions listed in the Draft Paper for ease of reference.

I. Preliminary observations / What is Artificial Intelligence (AI)?

There is clearly <u>no</u> definite answer as to what Artificial Intelligence (AI) is actually meant to refer to beyond the basic understanding that this terminology is typically used – often abusively – to refer to "intelligence" demonstrated by machines, by opposition to "natural" intelligence as displayed by humans.

In most cases, AI basically involves or relies on "artificial" automation of decision-making processes with varying degrees of sophistication (such as the use of neural networks, reliance upon machine-learning capabilities, implementation of advanced sensory architectures, etc.). Such decision-making processes are usually characterized, programmed or otherwise implemented in a "machine" (typically computer-implemented) to replicate or simulate human thought processes, sometimes more efficiently than humans.

As of today, and even though there have undeniably been huge advances over the years with respect to the performance and sophistication of AI-implemented processes and systems, such AI "machines" are not capable of independent judgment (and luckily so) and still rely on varying degrees of human input and/or interaction. AI "machines" are still very much designed to do what they are told or taught to do, be it by programming or with the help of machine-learning capabilities or other means.

Before addressing the relevant issues, and even attempting to respond to the various questions being put forward in the Draft Paper, it is therefore important – if not critical – to define what "Artificial Intelligence (AI)" is supposed to be.

In that regard, it is also worth reminding that, under the Laws of most States, a clear legal distinction is made between persons capable of discernment ("*personnes douées de discernement*" in French legal jargon) and persons incapable of discernment ("*personnes incapables de discernement*" in French legal jargon), which distinction has important implications from a legal standpoint, especially with regard to issues such as ownership or the capacity to enter into any binding agreement with third parties.

Such a legal distinction would surely also need to be made or taken into consideration with regard to any AI allegedly making a creation or invention, irrespective of whether or not such creation or invention can be protected from an IP standpoint. Especially, an AI, being in essence a machine, is incapable of independent judgment. In that respect, how could it qualify as a "person", in particular a "person" capable of such discernment as to be in a position to enter into any agreement affecting ownership of the relevant creation or invention?

If, for the sake of argument, an AI (assumed to be incapable of independent judgment) were to be assimilated to a "person incapable of discernment", then who would qualify as the responsible person being entitled to "represent" or "defend" the AI's "interests"?

Is the mere ownership of the AI as such sufficient? Most likely not as one cannot "own" a "person". What about the rights of the developer or "genitor" of the AI?

These are not rhetorical or philosophical questions, but questions that have considerable legal implications and bearing.

II. Comments and observation re: PATENTS section of the Draft Paper

II.1 Inventorship and Ownership in the case of inventions "*autonomously*" generated by AI (Issue 1)

One key factor to be considered in this context is whether or not the invention is or can be "*autonomously*" generated by AI.

As long as the relevant AI is incapable of independent judgment, it is highly doubtful that such AI can generate an invention in a truly autonomous way and, therefore, can be considered as the "true" (and only) inventor of the relevant invention. There is most likely – if not systematically – some human input or interaction involved in such generation, be it during the development of the AI or the use of the AI. In such case, the AI could at best be seen as some sort of "co-contributor" (not necessarily an "inventor") of the relevant invention in addition to the natural person or persons providing input or otherwise interacting with the AI (or possibly the developer of the AI), which natural person(s) could – or probably should – be designated as (co-)inventor(s).

Now, irrespective of whether or not the invention was "*autonomously*" generated by AI, with or without human input or interaction, there is no established principle under the applicable Law that would allow any legal assimilation of the AI to a "*person*", even less a "*person*" capable of discernment, which is ultimately key to allowing determination of the right or entitlement of the relevant Applicant to file a patent application for that invention.

Whether or not the AI should formally be named as an "inventor" is possibly irrelevant in that regard. Now, if an AI were to be formally designated as "inventor" in connection with an invention for which a patent application is filed, and provided such designation would be permitted (which is not currently the case, at least in Europe), one would in any event need to ensure that a proper, verifiable and legally-sound chain of ownership from the AI "inventor" to the relevant Applicant can be established. There is especially no particular reason to apply principles that would differ from established principles that apply in respect of inventions made by natural persons where the Applicant's entitlement to apply for patent protection should be established by agreement or under the applicable Law, for instance by virtue of an employment agreement between the inventor-employee and his or her employer.

In that regard, it should be determined if the mere ownership of the AI "inventor" as such could be sufficient to establish a proper chain of ownership. In effect, the mere ownership of the AI "inventor" is not sufficient, as demonstrated by the so-called "**DABUS**" cases discussed below, let alone because one cannot reasonably "own" a person and derive any right from such mere ownership.

Indeed, and opportunely, as the WIPO is surely aware, the "DABUS" cases have recently led to decisions from both the European Patent Office (EPO) and the UK Intellectual Property Office (UKIPO), namely in relation to:

  i. European patent application No. 18275163.6 of October 17, 2018 (published on November 6, 2019 as **EP 3 564 144 A1**) and British patent application

No. 1816909.4 of October 17, 2018 (published on December 25, 2019 as **GB 2574909 A**), entitled "**FOOD CONTAINER**" (hereinafter referred to as the "**DABUS I**" cases); and

ii. European patent application No. 18275174.3 of November 7, 2018 (published on November 6, 2019 as **EP 3 563 896 A1**) and British patent application No. 1818161.0 of November 7, 2018 (published on January 1, 2020 as **GB 2575131 A**), entitled "**DEVICES AND METHODS FOR ATTRACTING ENHANCED ATTENTION**" (hereinafter referred to as the "**DABUS II**" cases).

Both cases have recently been <u>refused</u> by first instances of the EPO (by consolidated decisions dated January 27, 2020 from the Receiving Section of the EPO) and the UKIPO (by decisions dated December 4, 2019 from the Comptroller of the UKIPO) on basically the same grounds, namely:

- that the relevant AI machine (named "DABUS") is not a natural person and cannot therefore be considered as an inventor; and
- even if DABUS were to be considered as an inventor, the Applicant is not entitled to apply for a patent simply by virtue of ownership of the AI "inventor", because a satisfactory derivation of right has not been provided or demonstrated.

It is worth pointing out that the 16-month deadline to submit a suitable declaration of inventorship has yet to expire, namely on February 17, 2020 for the "DABUS I" cases and on March 9, 2020 for the "DABUS II" cases. This being said, the Applicant apparently has no intention to submit a corrected declaration of inventorship that would meet the formal requirements imposed by the EPO or UKIPO.

Based on public records, corresponding patent applications also appear to have been filed by the Applicant before the Israel Patent Office (ILPO) under patent applications Nos. 268604 and 268605 of August 8, 2019 (published on October 31, 2019) and before the U.S. Patent and Trademark Office (USPTO) under patent applications Nos. 16/524,350 and 16/524,532 of July 29, 2019 (yet to be published), but the status of these other applications is unknown. The ILPO and USPTO are likely to reach decisions in these matters as well, but it remains to be seen if such decisions will be made public.

It is to be noted that the relevant Applicant (Mr. Stephen L. THALER) has apparently lodged an appeal against the decisions of the Comptroller of the UKIPO, which appeals are now pending before the UK Patents Court. It is assumed and expected that appeals will likewise be lodged against the consolidated decisions issued by the Receiving Section of the EPO.

In other words, the relevant appeal instances have yet to issue their final decisions in these matters and the outcome of the appeal proceedings will surely be of great interest.

This being said, considering the applicable legal framework, both under the European Patent Convention (EPC) and the UK Patent Act, one should reasonably expect the appeals to be dismissed.

Interestingly, with regard to the Applicant's entitlement to apply for patent protection for the relevant inventions, and looking at the relevant facts pertaining to European patent

application Nos. 18275163.6 and 18275174.3, the Applicant initially took the view that it had acquired the right to the European patents as employer (which implied some sort of employment agreement between the AI "inventor" and the Applicant) and subsequently corrected the relevant designations of inventor to indicate that the Applicant had acquired the right to the European patents as successor in title, namely as being the owner of the AI "inventor".

The initial statement indicating the origin of the right to the European patents was inherently flawed (as surely recognized by the Applicant in view of the subsequent correction of the designations of inventor) in that there cannot, under the applicable Law, be any employment agreement between the AI "inventor" and the Applicant.

The Applicant's corrected statement alleging that it had acquired the right to the European patents as successor in title of the AI "inventor", through mere ownership of the AI, is interesting but also flawed. Mere ownership of the AI is clearly not sufficient to entitle the Applicant to derive any right in the AI-generated invention, and the Applicant cannot claim to be the direct and sole successor in title of all rights that – in theory – originally vested with the AI "inventor" (assuming that any rights could vest with the AI "inventor" in the first place). In any event, the Applicant's position was ultimately rejected by the Receiving Section of the EPO as set forth in the Reasons of the consolidated decisions dated January 27, 2020.

The above "DABUS" cases demonstrate, if need be, that the currently applicable legal framework (under the EPC or the UK Patent Act) neither provides for nor permits designation of an AI as an inventor, and rightly so. More fundamentally, even if such designation were to be formally permitted, there would be no legal basis under the relevant Law that would allow to establish entitlement of the Applicant to acquire the right to the (European or UK) patent from the AI "inventor".

In other words, with respect to the relevant issue at stake, it is of little importance whether or not the AI may formally be designated as inventor and whether the relevant patent law should permit such designation (it probably should not). The fundamental question is whether or not the AI as such has any legal or personal capacity that would allow it to enter into any binding agreement with the relevant Applicant regarding the transfer of the rights in and to the invention that has allegedly been made by the AI.

Based on the current state of the technology, and while there have been advances in AI technology, one cannot reasonably conclude that any AI as such (irrespective of its degree of sophistication) is capable of such discernment as to allow it to enter into any proper, verifiable and legally-sound agreement with any Applicant (it being understood that such Applicant must in any case be a natural or legal person).

Strictly speaking, the questions (i) and (ii) listed under section 7 of the Draft Paper should likely be answered in the negative. As a matter of fact, the questions as posed wrongly presuppose that an invention can be "_autonomously_" generated by AI.

Referring once again to the aforementioned "DABUS" cases, the Applicant basically contends that the AI is the "true" and "only" inventor of the relevant inventions. This is misleading at

the very least, and likely challengeable before a Court of law. This being said the EPO and the UKIPO do not check the accuracy of the designation of inventor(s) as submitted by the Applicant. They merely check if the formal requirements regarding inventorship are met, and those require the designation of at least one natural person and, if the Applicant is not the inventor, a statement indicating the origin of the right to the patent.

With regard to question (iii) listed under section 7 of the Draft Paper, no particular exclusion appears to be necessary under the applicable Law.

This being said, if an AI "inventor" were to be formally designated in connection with any patent application, the applicable Law (or Guidelines) should probably provide, for the sake of clarity, that an invention generated by AI should be regarded as an invention made by the natural person or persons that have provided relevant input or interacted in a material way with the AI to allow the generation of such invention. This would at least provide a legal mechanism allowing determination of at least one natural person that would qualify as an inventor for the purpose of the relevant inventorship requirements. Whether or not the relevant natural person to be designated as inventor is a developer or creator of the AI or a user that provided relevant input or interacted in a material way with the AI is to be decided on a case-by-case basis depending on the applicable facts, which determination should be made by the Applicant. Patent Offices do not and cannot be expected to check the accuracy or veracity of the relevant designation of inventor(s). This question would ultimately be left to the Courts of law to decide, if ever challenged.

II.2 Patentable Subject Matter and Patentability Guidelines in the case of AI-generated or AI-assisted inventions (Issue 2)

With regard to AI-assisted inventions (i.e. inventions for which an AI machine is used to assist inventors in the inventive process or forms a feature of the invention), those inventions should be treated in the same way as computer-assisted or computer-implemented invention. There is objectively no reason to treat such inventions differently.

With regard to AI-generated inventions (i.e. invention for which an AI machine is allegedly making a technical contribution to the inventions), and provided the formal requirements regarding inventorship are met, there is objectively no reason to treat such inventions any differently than inventions made by natural persons. In effect, pursuant to the principles mentioned above, any such inventions would ultimately be considered as being made by one or more natural persons that are ultimately designated as inventor(s).

II.3 Inventive Step or Non-Obviousness of AI inventions (Issue 3)

The conditions of patentability should be examined in strictly the same manner, irrespective of whether or not the invention is generated by AI. The applicable standards with regard to, especially, the definition of the relevant state of the art and the definition of the skilled person in the art should be the same. There is objectively no reason to apply different standards.

II.4 Disclosure (Issue 4)

The same standards should likewise apply with regard to sufficiency of disclosure. Generic answers cannot be given to the questions as listed in the Draft Paper, and the requirement would have to be assessed on a case-by-case basis, like this is done today. In that regard, sufficient information should be provided in the patent specification to ensure that the disclosure requirement is met, be it by including the relevant information in the patent specification itself or by reference to publicly available information.

It is unclear in which respect a "system of deposit for algorithms", similar to the deposit of microorganisms, would be useful, let alone necessary. Algorithms can normally be described or characterized in written documentation or included as software code in the patent specification itself.

Whether or not the disclosure of training data sets is required will depend on the criticality of such training data sets for carrying out the invention. If the invention relies on the use of a particular training data set in order to be carried out, then this particular training data should likely be disclosed as part of the patent specification. By contrast, if the relevant training data set is not critical in order to reproduce the invention, disclosure thereof may not be necessary.

Likewise, if human expertise is specifically required to select data and to train the algorithm, sufficient information should be disclosed in the patent specification that would enable a person skilled in the art to perform the relevant data selection and training, without undue burden. As a matter of fact, such human expertise may be considered as (further) evidence of the contribution of a natural person in the realisation of the invention, which natural person should probably be listed as inventor.

II.5 General Policy Considerations for the Patent System (Issue 5)

There appears to be no real justification for a sui generis system of IP rights for AI-generated inventions. The existing Patent System is reasonably flexible – and can be adapted if necessary – to suitably deal with the challenges posed by those inventions. This being said, the Patent System should constantly be adapted to cope with emerging technologies, and AI technology is no exception.

It is most certainly not too early to consider the relevant issues and questions, and come up with suitable policy measures. This being said, in my humble opinion, we are still far from reaching a state where AI will truly become "self-conscious" and capable of full, independent judgement. And maybe it is just as well so.

III. Conclusion

This concludes my comments on the PATENTS section of the Draft Paper.

It is important to avoid being carried away by the mere assumption that, as of today, inventions can be "*autonomously*" generated by AI. Even though the "DABUS" cases suggest otherwise – which "artificial" setting is likely made with the main desire to push the relevant Patent Institutions to rule on the matter – and unless I am proven wrong, there is no such thing as an invention "*autonomously*" generated by AI. This assumes that the AI as such is capable of discernment and acts alone, on its own initiative, without any particular human input or interaction, which – quite frankly – is pure science fiction at this stage. The assumption that an invention can be "*autonomously*" generated by AI, without any human input or interaction whatsoever, is dubious at the very least.

Now, to quote the late Stephen Hawking: "*The development of full artificial intelligence could spell the end of the human race*". We will probably have other things to worry about than adjusting our Patent System if we reach a stage of full, self-conscious AI.

Let us hope that we do not reach such a stage.

Sincerely yours,

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