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Members of Working Group

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Questions

I.   Current law and practice

Initially, the Swedish group wishes to provide some general remarks of relevance to our answers provided below.

The European Patent Convention ("EPC") and the development within the European Patent Office (EPO) have been given particular weight by the Swedish Supreme Administrative Court and the Swedish Supreme Court. Sweden became a party to the EPC in 1978 and the Swedish Patents Act is highly harmonized with the PCT and the EPC. Also, practice in Sweden develops in conformity with the EPC as interpreted by the European Patent Office. Furthermore, patents valid in Sweden may either have been granted by the Swedish Patent and Registration Office (PRV) or by the EPO.

Naturally, Swedish patent law is based on international agreements, such as the Paris Convention for the Protection of Industrial Property (Paris Convention), the Patent Cooperation Treaty (PCT), the European Patent Convention (EPC), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and the Patent Law Treaty (PLT).

Below, reference is made to Sections of the Swedish Patents Act. It is also referred to the Swedish Guidelines for Examination, (RL). These Guidelines however are not legally binding and only serve as guidance to Office Examiners.

Inventiveness

1)   When assessing Inventive Step under your law, are the concrete/actual circumstances under which an invention was made (*e.g.*, the amount of time and resources used by the concrete inventor) considered at all, or is the assessment of the Inventive Step rather an objective examination of the invention against the prior art? Please briefly explain.

   No, such circumstances are not considered.

2)   Further to question 1), when assessing Inventive Step, does your law differentiate between an invention made by a human being using AI technology and inventions made autonomously by AI? In particular, assuming that a specific invention could have been made using AI without Inventive Step, is the invention still patentable if the applicant claims that the invention was made without using AI? Please briefly explain.

   No, there are no such provisions. There are also no such provisions indicated in case law or guidelines for examination.

3) The following questions relate to the definition of the person skilled in the art when assessing Inventive Step of an AI Invention under your law:

a) What is the definition of the "person skilled in the art"? An AI "person"? A human person? A human person having access to AI? Does the increasing use of AI in the inventive process change the definition of the person skilled in the art? Please briefly explain.

The technical development in AI, or any other technology, does not change the definition of the skilled person as such. However, the skilled person has access to standard technological tools in the relevant field. The definition of the skilled person is thus as set out in EPO case law.

b) What kind of "skills" (*e.g.*, access to software) does this "person" have in the specific context? Please briefly explain.

The skilled person has the standard "skills" in the art. This means i.a. access to known tools, e.g. software, used in the relevant field.

c) Do the capabilities of AI impact the assessment of the skillset of the person skilled in the art? In particular, do the capabilities of AI to process a high amount of theoretical solutions of a given problem impact the assessment of the skillset? Please briefly explain.

NO. The capabilities of known AI generally used in the art is part of the toolkit of the person skilled in the art. The capabilities of AI thus do not impact the skillset of the skilled person but might rather impact the assessment of inventive step.

d) Does your law treat common general knowledge differently for AI inventions? Please answer YES or NO, and you may add a brief explanation.

NO.

4) Further to questions 2) and 3), under your law, how is the Inventive Step assessed in the following hypothetical cases (you may answer whether Inventive Step is met by answering YES or NO, but you also may add a brief explanation):

a) A publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on publicly available data (*e.g.*, the invention is in the pharmaceutical field, the AI system was trained using structural information and binding data of molecules binding to a target protein and inhibiting its physiological function. The suggestion for the technical solution is a new molecule selected from a library of molecules and predicted to bind to the target protein and inhibit its physiological function).

The AI system is known, and the training data is known. Furthermore, the resulting molecules are also known. The mere application of known training data to a known AI system to select a known solution would not be inventive unless there is some existing technical prejudice against making this combination (which does not seem to be the case).

b) A publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on <u>not</u> publicly available data (e.g. a library of molecules available only to the applicant).

The mere application of known training data to a known AI system would not be inventive unless there is some existing technical prejudice against doing so (which does not seem to be the case). However, if there is some inventiveness in population of the library by the applicant, for example all molecules provide some technical solution, there may be a possibility of inventive step.

c) A publicly available AI system is trained using <u>not</u> publicly available training data (*e.g.*, unpublished experimental results obtained by the applicant). The trained AI system is used to make a suggestion for a technical solution based on publicly available data.

There may be an inventive step if the training data improves the output of the AI system to provide a "better" suggestion.

d) A <u>not</u> publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on publicly available data. The AI system relies on commonly used AI principles and leads to the same result as another publicly available AI system commonly used in the technical field of the invention.

Any finding of inventive step should be contingent on the differences between the claimed technical solution and the prior art. As the claimed AI system relies on commonly used AI principles, it would appear that there would not be any non-obvious differences over the prior art that could lead to an inventive step.

e) A publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on publicly available data. The AI system is <u>not</u> commonly used in the technical field of the invention.

The key question is whether there is an inventive step in the application of the AI system in this new technical field. The mere application of known training data to a known AI system would not be considered inventive, and the skilled person may be prompted to seek a solution in other technical fields. If there is no such prompt, and/or there is some existing technical prejudice against application of the AI system in this particular field, there may be an inventive step.

f)   A publicly available AI system is trained using publicly available training data. The trained AI system makes a plurality of suggestions for technical solutions based on publicly available data. A human selects one of the suggestions as the most promising based on his/her experience.

> *The mere application of known training data to a known AI system would not be considered inventive unless there is some existing technical prejudice against doing so (which does not seem to be the case). The selection of one of the suggestions by a human would* prima facie *appear to be within the capabilities of the skilled person without the use of inventive skill, and would therefore also be considered to lack an inventive step.*

5)   Assuming that an AI system becomes standard for solving technical problems in a certain technical field, does the Patent Office in your country use this AI system during examination of a patent application? Please answer YES or NO, and you may add a brief explanation.

NO. There is no such situation at present. If it would arise, the Patent Office would likely make an assessment on the cost and benefit of obtaining access to such AI system.

Sufficiency of disclosure

6)   Please briefly describe the standard of sufficiency of disclosure under your jurisdiction.

As the EPO.

7)   Further to question 6), does your law provide exceptions from the standard of sufficiency of disclosure? Please answer YES or NO, and you may add a brief explanation.

NO, the standard of sufficiency of disclosure is the same for all technologies.

8)   Does/did the increasing use of AI change the standard of sufficiency of disclosure? Please answer YES or NO, and you may add a brief explanation.

NO.

9)   Under your law, is it possible to overcome a possible lack of sufficiency of disclosure by submitting a "deposit" of AI software or data? Please answer YES or NO, and you may add a brief explanation.

NO.

10)   Is the standard of sufficiency of disclosure met in the following hypothetical cases (you may answer whether sufficiency of disclosure is met by answering YES or NO, but you also may add a brief explanation)? Hereinafter, "publicly available" refers to the priority/filing date.

a)   The specific profile of a wing or the specific composition of a drug was designed using AI, and this AI system was trained using publicly available training data.

The AI is irrelevant to sufficiency of disclosure in this case. It is the wing profile and the drug composition that must be sufficiently disclosed.

b) The specific profile of a wing or the specific composition of a drug was designed using AI, and this AI system was trained using <u>not</u> publicly available training data.

The AI is irrelevant to sufficiency of disclosure in this case. It is the wing profile and the drug composition that must be sufficiently disclosed.

c) The invention consists of a new or improved AI, and the AI platform or environment (which may involve extensive databases) in which the invention is operating is publicly available on a website.

The standard of sufficiency of disclosure will be met if the skilled person can reproduce the AI of the invention based on the disclosure in the patent application.

d) The invention consists of a new or improved AI, and the AI platform or environment (which may involve extensive databases) in which the invention is operating is <u>not</u> publicly available.

The standard of sufficiency of disclosure will be met if the skilled person can reproduce the AI of the invention based on the disclosure in the patent application.

II. Policy considerations and proposals for improvements of your Group's current law

<u>Inventiveness</u>

11) According to the opinion of your Group, is your current law regarding inventiveness of AI inventions adequate and/or sufficient? Please answer YES or NO, and you may add a brief explanation.

YES.

12) According to the opinion of your Group, would a differentiation between an invention made by a human being using AI technology and inventions made autonomous by an AI regarding the assessment of Inventive Step conflict with the purpose of patent law to incentivize creation (you may also refer to other general patent law doctrines under your law, if applicable)? In answering this question, please specifically refer to the scenario that a specific invention could have been made using AI without Inventive Step, but the patent applicant claims that the invention was made without using AI. Please briefly explain.

The Swedish group believes that it is premature to discuss autonomous inventions by AI, as this appears to be quite a few years away. It would also greatly complicate the patent system to differentiate patentability assessments based on how an invention was created, or by whom.

<u>Sufficiency of disclosure</u>

13) According to the opinion of your Group, is your current law regarding sufficiency of disclosure of AI inventions adequate and/or sufficient? Please answer YES or NO, and you may add a brief explanation.

YES

14) According to the opinion of your Group, if applicable, would the recognition of the possibility to submit a "deposit" in order to overcome a possible lack of sufficiency of disclosure help to foster innovation? Please answer YES or NO, and you may add a brief explanation.

NO

III. Proposals for harmonization

Please consult with relevant in-house / industry members of your Group in responding to Part III.

The Swedish group perceives that the questions in this regard are somewhat premature as the interplay between the patent system and AI technology is an emerging field. It is thus not yet clear to the group whether any harmonization efforts are required.

Inventiveness

15) Do you consider harmonization regarding the inventiveness of AI inventions as desirable in general? Please answer YES or NO, and you may add a brief explanation.

This response does not refer to a hypothetical situation where a claimed invention has been made "autonomously" by AI. In the opinion of the Swedish Group, it is premature to consider such situations, given the lack of institutional and court decisions.

As the Swedish Group sees it, Question 15 cannot be answered by a simple "yes" or "no". There is already a common international understanding in place regarding the concept "Inventiveness", or "Inventive step". The Swedish Group is not aware of any essential differences between jurisdictions regarding evaluation of inventive step. Thus, there is no lack of harmonisation. To try to introduce special criteria for determining inventive step in regard to so-called "AI inventions", whatever that term may mean, would as the Swedish Group sees it only complicate this consensus.

The Swedish Group notes that a general aspect in judgment of inventive step under patent law is that the inventor is under no obligation to describe how he arrived at his invention. It does not matter if it is by a flash of genius, by a long time of systematic work, by use of AI, or in any other way.

As the Swedish Group sees it, the emergence of so-called "AI inventions", does not change the concept of "inventiveness" or "Inventive step" as already applied internationally. Whether or not the claimed invention would be deemed obvious or non-obvious should as usual depend on the state of the prior art, including the state of the common general knowledge.

16) When assessing Inventive Step, should the law differentiate between an invention made by a human using AI technology and inventions made autonomous by an AI? In particular, assuming that a specific invention could have been made using AI without Inventive Step, should the invention still be patentable if the applicant claims that the invention was made without using AI? Please briefly explain.

    NO.

    As in the Swedish Group's response to Question 15, the present response does not refer to a hypothetical situation where a claimed invention has been made "autonomously" by AI. In the opinion of the Swedish Group, it is premature to discuss inventive step in such cases, given the lack of institutional and court decisions.

    The Swedish Group must however note that Question 16 seems to mix up inventive step and inventorship. As noted in the response to Question 15, an inventor is under no obligation to describe how he arrived at his invention. As the Swedish Group sees it, to change that principle would set a dangerous precedent. It would risk getting spill-over effects for non-AI-related inventions.

17) The following questions relate to the definition of the person skilled in the art when assessing Inventive Step of an AI Invention:

    a) What should the definition of the "person skilled in the art" be? An AI "person"? A human person? A human person having access to AI? Should the increasing use of AI in the inventive process change the definition of the person skilled in the art? Please briefly explain.

       The definition of the skilled person should be in line with the current EPO Guidelines: a skilled practitioner in the relevant field of technology who is possessed of average knowledge and ability and is aware of what was common general knowledge in the art at the relevant date.

       The skilled person should be a human person. Inventors are humans, as affirmed by the recent Dabus decisions. As such, the skilled person for the purposes of assessing inventive step should also be a human.

       For "AI inventions", it is to be noted that AI is not necessarily the relevant field of technology for all inventions that use AI (e.g., for the use of a neural network in a heart-monitoring apparatus for the purpose of detecting irregular heartbeats, the relevant field of technology may be some branch of cardiology).

The increasing use of AI in the inventive process should not change the definition of the person skilled in the art any more than in other areas where technology is developing at high speed.

b) What kind of "skills" (*e.g.,* access to software) should this "person" have in the specific context? Please briefly explain.

As discussed above, these should be same as any other field – the skilled person should possess average knowledge and ability and be aware of what was common general knowledge in the art at the relevant date.

c) Should the capabilities of AI impact the assessment of the skillset of the person skilled in the art? In particular, should the capabilities of AI to process a high amount of theoretical solutions of a given problem impact the assessment of the skillset? Please briefly explain.

No. AI is a tool for the skilled person to use. The skilled person is presumed to have had access to everything in the state of the art – a known AI system is part of that state of the art regardless of its capabilities, and the skilled person has access to it. The question is more whether it is then applied in an inventive way.

d) Should the law treat common general knowledge differently for AI inventions? Please answer YES or NO, and you may add a brief explanation.

NO. As discussed above, the skilled person should be aware of what was common general knowledge in the art at the relevant date. AI is, at present, a tool for use by the skilled person. An AI system may be part of the common general knowledge or the state of the art dependent on its ubiquity.

18) Further to questions 16) and 17), how should the Inventive Step be assessed in the following hypothetical cases (you may answer whether Inventive Step is met by answering YES or NO, but you also may add a brief explanation):

As a general comment, it is noted that the inventions discussed below are not excluded from patentability, as they are said to be of a technical nature and provide a technical solution.

Inventive step is assessed the same way in all cases a)-f) and cannot be answered by YES or NO based on the available information. Inventive step is based on whether the technical solution provided by the invention would be obvious to the skilled person based on the prior art and, if relevant, publicly available AI tools and training data sets.

a) A publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on publicly available data (*e.g.*, the invention is in the pharmaceutical field, the AI system was trained using structural information and binding data of molecules binding to a target protein and inhibiting its physiological function. The suggestion

for the technical solution is a new molecule selected from a library of molecules and predicted to bind to the target protein and inhibit its physiological function).

b) A publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on <u>not</u> publicly available data (e.g. a library of molecules available only to the applicant).

c) A publicly available AI system is trained using <u>not</u> publicly available training data (*e.g.*, unpublished experimental results obtained by the applicant). The trained AI system is used to make a suggestion for a technical solution based on publicly available data.

d) A <u>not</u> publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on publicly available data. The AI system relies on commonly used AI principles and leads to the same result as another publicly available AI system commonly used in the technical field of the invention.

e) A publicly available AI system is trained using publicly available training data. The trained AI system is used to make a suggestion for a technical solution based on publicly available data. The AI system is <u>not</u> commonly used in the technical field of the invention.

f) A publicly available AI system is trained using publicly available training data. The trained AI system makes a plurality of suggestions for technical solutions based on publicly available data. A human selects one of the suggestions as the most promising based on his/her experience.

19) Assuming that an AI system becomes standard for solving technical problems in a certain technical field, should Patent Offices use this AI system during examination of a patent application? Please answer YES or NO, and you may add a brief explanation.

NO. Patent offices must be free to develop their own best practice.

20) Would it be desirable that assessment of Inventive Step be automated in Patent Offices, using standard AI systems and publicly available information in order to evaluate Inventive Step? Please answer YES or NO, and you may add a brief explanation.

NO.

21) Please comment on any additional issues concerning any aspect of inventiveness of AI inventions you consider relevant to this Study Question.

Sufficiency of disclosure

22) Do you consider harmonization regarding the sufficiency of disclosure of AI inventions as desirable in general? Please answer YES or NO, and you may add a brief explanation.

The globally accepted requirement that a patent must describe the invention sufficiently to enable the skilled person to carry out the invention is also applicable to AI inventions. As for other inventions, the sufficiency of the disclosure is evaluated in view of the prior art and common general knowledge. This is a case-by-case evaluation of all circumstances, for which there is little guidance in patent office guidelines or case law.

In the patent office examination, the sufficiency of disclosure of an AI invention, like other inventions, may be denied when there are objective grounds why the disclosure is insufficient. This does not seem to occur frequently for AI inventions. In post grant patent office proceedings and in court proceedings, the patent may be found invalid when challenged by a third party proving the insufficiency of the disclosure. This seems to occur rarely with AI inventions.

Though patent practitioners have practical experience of disclosure issues in different jurisdictions, there is no common perception of whether and in what respects current national/regional practices actually differ with regard to sufficiency of disclosure of AI inventions.

Thus, it is not apparent that there are essential differences in the global evaluation of the disclosure requirement with regard to AI inventions and that there is a lack of harmonisation of the application of the global standard to AI inventions.

However, it is essential for a proper functioning of the global patent system that national/regional practices regarding the disclosure requirement for AI inventions develops in a globally consistent way. At this stage, there are in this relation - in particular in the context of the WIPO Conversation - issues that need further consideration.

Such an issue raised in both the AIPPI SQ276 and the WIPO Conversation, is the creation of a deposit system related to AI inventions.

A further such issue that might not be controversial and yet desirable to settle on the global level seems to be the applicability to AI inventions of the same principle for the disclosure requirement as for inventions in general. The current requirement of a strict application of a sufficient disclosure within the whole claimed range must also apply to AI inventions. This seems to be particularly significant for inventions related to machine learning and training data that potentially have widely varying technical applications.

In this context, it needs to be taken into account that it may be difficult to establish at the application date whether the required effect is obtained within the entire scope of the claim. As for other inventions, the burden of proving insufficiency of disclosure in examination proceedings and in post-grant proceedings is therefore an essential factor. The same principles in these respects as for other inventions should also globally be applicable for AI inventions, i.e. in the examination proceedings there must be justified objective reasons for denying the sufficiency of the disclosure and in post-

grant proceedings a party claiming that the disclosure is insufficient has the burden of proving this.

Another issue is the application of a case-by-case evaluation of sufficiency of disclosure also in relation to AI inventions. This is particularly relevant with regard to the specific disclosure of algorithms, training data and training model(s), including the Black box problem.

If YES, please respond to the following questions without regard to your Group's current law or practice.

Even if NO, please address the following questions to the extent your Group considers your Group's current law or practice could be improved.

23) Should the increasing use of AI change the standard of sufficiency of disclosure? Please answer YES or NO, and you may add a brief explanation.

   NO, prima facie, we do not consider it necessary to change the standard of sufficiency of disclosure in the light of the increasing use of AI. As in all other fields of technology, sufficiency of disclosure should be based on whether the skilled person is able to implement the invention. The sufficiency of disclosure shall be determined on a case by case basis, for example as for other kinds of CII inventions.

24) Should the law provide exceptions from the standard of sufficiency of disclosure regarding AI Inventions? Please answer YES or NO, and you may add a brief explanation.

   NO

25) Should it be possible to overcome a possible lack of sufficiency of disclosure by submitting a "deposit" of AI software or data? Please answer YES or NO, and you may add a brief explanation.

   NO, not under any circumstances. (cf. Question 14 above)

26) Should the standard of sufficiency of disclosure be met in the following hypothetical cases (you may answer whether sufficiency of disclosure is met by answering YES or NO, but you also may add a brief explanation)?

   a) The specific profile of a wing or the specific composition of a drug was designed using AI, and this AI system was trained using publicly available training data.

      YES, if the disclosure as a whole fulfills the sufficiency requirements.

   b) The specific profile of a wing or the specific composition of a drug was designed using AI, and this AI system was trained using not publicly available training data.

      YES, if the disclosure as a whole fulfills the sufficiency requirements.

c)   The invention consists of a new or improved AI, and the AI platform or environment (which may involve extensive databases) in which the invention is operating is publicly available on a website.

YES, if the disclosure as a whole fulfills the sufficiency requirements.

d)   The invention consists of a new or improved AI, and the AI platform or environment (which may involve extensive databases) in which the invention is operating is <u>not</u> publicly available.

YES, if the disclosure as a whole fulfills the sufficiency requirements.

27)   Please comment on any additional issues concerning any aspect of sufficiency of disclosure of AI inventions you consider relevant to this Study Question.

Still, there is a general lack of guiding decisions in the case law. Further, we consider that some of the questions raised are premature to discuss, for example those re-lating to AI as an autonomous inventor. At this stage, we do not believe that there is a need for any special considerations due to the increasing involvement of AI in the do-main of patents.

<u>General</u>

28)   Please indicate which industry sector views provided by in-house counsels are included in your Group's answers to Part III.

Automotive, Communication analysis/eye tracking, telecommunications