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World Intellectual Property Organisation

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WIPO Call for Comments "Impact of Artificial Intelligence on IP Policy"

On behalf of Telefonaktiebolaget LM Ericsson (publ) ("Ericsson"), we are pleased to submit the following comments in response to the Call for Comments on the Impact of Artificial Intelligence on IP Policy as published on the WIPO web site.

Ericsson is a Swedish multinational networking and telecommunications company headquartered in Stockholm. The company was founded in 1876, employs 95,000 people, and operates in over 180 countries. Ericsson is dedicated to research and innovation, leading the development of cellular technology — from 2G to 5G — and 40% of the mobile traffic worldwide runs through Ericsson's networks. Today, mobile networks experience massive amounts of data every second. For example, on a mobile network in the US, 4 terabits of data cross the network every second and 15 million data events are registered.

We have spent over a decade innovating and deploying AI & Automation solutions across our products and services, to boost network performance, improve the end-user experience, enhance operational efficiency, and enable new revenues for our customers. In June 2019 Ericsson announced plans to build its first US fully-automated smart factory. The state-of-the-art factory will produce Advanced Antenna System radios to boost network

capacity and coverage, including rural coverage, as well as 5G radios for urban areas, both necessary for rapid 5G deployments in North America. On September 19, 2019, we announced that this USD 100 million next-generation smart manufacturing factory will be located in Lewisville, Texas, near Ericsson's North America headquarters in Plano. Our interest in ensuring sound patent policy in AI and related technology is therefore closely related to our U.S. innovation and work in this area.

We appreciate that AI is a new and developing technology, and the role it plays in patentable inventions and the speed with which it is integrated into our patent system may change dramatically over time. For now, we offer feedback based on our current understanding of the AI landscape. We thank the WIPO for this opportunity and provide our answers to the questions regarding Patents below.

Issue 1: Inventorship and Ownership

6.   In most cases, AI is a tool that assists inventors in the invention process or constitutes a feature of an invention. In these respects, AI does not differ radically from other computer-assisted inventions. However, it would now seem clear that inventions can be autonomously generated by AI, and there are several reported cases of applications for patent protection in which the applicant has named an AI application as the inventor.

7.   In the case of inventions autonomously generated by AI:

(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?

Ericsson response: For the foreseeable future, and since we consider that AI is still just a tool, intervention from natural persons will still be needed to make inventions and as such natural persons should still be named inventors.

Once Artificial General Intelligence (AGI) exists, since there is a need for intellectual property rights (IPR) for AI-generated inventions, the concept 'inventor' may have to be revised accordingly. Specifically, the more intelligent the AI becomes (including the data set it has at its disposal), the less contributions from natural persons are needed for the AI to invent. However, Ericsson currently has no firm opinion on whether the existing patent laws need to be revised to cater for AGI or whether a new form of IPR law is needed for that purpose. We

do believe that a significant amount of time may pass before such a need arises, and revising the laws and regulations regarding inventorship may be premature at this time.

(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?

Ericsson response: We believe that the party that paid for the AI, made the AI, or paid for the related context in which the AI was utilized to make the invention should be able to own any resulting patents.

(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.

Ericsson response: We do not believe there are specific eligibility considerations that are unique to AI inventions.

Issue 2: Patentable Subject Matter and Patentability Guidelines

8.   Computer-assisted inventions and their treatment under patent laws have been the subject of lengthy discussions in many countries around the world. In the case of AI-generated or -assisted inventions:

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

Ericsson response: We do not believe there are specific eligibility considerations that are unique to AI inventions.

(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?

Ericsson response: The legislators need to start a review of the IP laws. It is highly likely that the current IPR laws cannot harbor a balanced need for protection of AI-generated inventions. In view of potentially necessary changes to fundamental concepts (e.g. inventorship, person skilled in the art, definition of prior art) it may be advisable to consider creating a specific IP law.

(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.

Ericsson response: Currently established tests for inventiveness may not be applicable to AI-generated or assisted inventions. Also the topics of prior art and common general knowledge may require a different view.

Issue 3: Inventive Step or Non-Obviousness

9.   A condition of patentability is that the invention involves an inventive step or be non-obvious. The standard applied for assessing non-obviousness is whether the invention would be obvious to a person skilled in the relevant art to which the invention belongs.

(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?

Ericsson response: Depending on the focus of the invention, the field of the product/service may be relevant prior art, or the field of AI, or both.

(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?

Ericsson response: We do not believe that AI impacts the level of a person skilled in the art, at least as long as AGI does not exist. However, availability and use of AI tools may become natural for a person of ordinary skill in the art.

If AGI exists, the definition of the person skilled in the art may have to be reconsidered.

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

Ericsson response: Regarding the prior art base, it will likely not make a difference. A difference may arise in interpretation of the prior art; e.g. an AI may be able to make connections between parts of a disclosure that a human person would not do.

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

Ericsson response: An AI may automatically publish huge amounts of information that may be susceptible to review by another AI but not by a human inventor. It will have to be defined how such prior art is assessed.

<u>Issue 4: Disclosure</u>

10.   A fundamental goal of the patent system is to disclose technology so that, in the course of time, the public domain may be enriched and a systematic record of humanity's technology is available and accessible. Patent laws require that the disclosure of an invention be sufficient to enable a person skilled in the relevant art to reproduce the invention.

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

Ericsson response: We do not believe there are specific disclosure-related considerations that are unique to AI inventions.

    (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?

Ericsson response: Beyond disclosure of the initial algorithm, it should also be described how the evolution of the algorithm is implemented, as far as relevant for the invention resp. required to put the invention into practice.

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

Ericsson response: The relevant aspect here is sufficiency of disclosure to put the invention into practice, which must be fulfilled. It is conceivable that in some cases disclosure of an algorithm or parts thereof is necessary or helpful therefore, which in some cases may be too lengthy to be put in a patent specification. In such cases, a system of deposit for algorithms may be helpful. We can however not anticipate to which extent this might be necessary.

    (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?

Ericsson response: Again, this is a question of sufficiency of disclosure. If information on the training data is necessary in this respect, it must be included. This must however be balanced versus other requirements with respect to data, e.g. confidentiality or protection of personal data. In most cases, not the data as such will be necessary, but rather the type and potentially amount of data.

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

Ericsson response: If it is necessary to put the invention into practice, it should be disclosed.

Issue 5: General Policy Considerations for the Patent System

11.   A fundamental objective of the patent system is to encourage the investment of human and financial resources and the taking of risk in generating inventions that may contribute positively to the welfare of society. As such, the patent system is a fundamental component of innovation policy more generally. Does the advent of inventions autonomously generated by AI applications call for a re-assessment of the relevance of the patent incentive to AI-generated inventions. Specifically,

(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?

Ericsson response: In view of potentially necessary changes to fundamental concepts (e.g. inventorship, person skilled in the art, definition of prior art) it may be advisable to consider creating a specific IP law (see also our response to 8 (ii)).

(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?

Ericsson response: We do believe that a significant amount of time may pass before such a need arises, and revising the laws and regulations e.g. regarding inventorship may be premature at this time. Nevertheless, as legislatory processes are expected to take their time, it is wise to start such considerations now. Even if some issues may not be foreseen at the moment, several basic issues are identified. In any case, international harmonization is desirable.

Sincerely,

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