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Editorial

As the winter leaves us behind, we are gearing up for the entry into force of the Unified Patent Court (UPC). This edition of the newsletter looks at the latest developments on the UPC, issues concerning the patenting of artificial intelligence based inventions, the long awaited Enlarged Board of Appeal decision concerning whether post-filing data can be used in support of inventive step, and much more. As ever, please contact your D Young & Co representative should you have any questions on these topics.

Simon O'Brien, Editor

Events

Webinar, now available on demand
European biotech patent case law
In this on demand webinar European patent attorneys Simon O'Brien and Tom Pagdin present our latest update of new and important European Patent Office (EPO) biotechnology patent case law.

24 May 2023
Webinar: Open-source software & patents - protecting your clients & their innovations
European Patent Attorneys Alan Boyd and Anton Baker present this MBL (Management, Business, Law) "Learn Live" online event.

26 May 2023
EPLIT Annual Meeting, Paris France
European Patent Attorney Hanns-Juergen Grosse will be attending the European Patent Litigators Association (EPLIT) Annual Meeting in Paris. The meeting is well-timed to meet with other European Patent Attorneys and Unified Patent Court (UPC) judges prior to the opening of the new court on 01 June 2023.

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AI

Can artificial intelligence be patented in Europe? Lessons from T 0702/20

The number of patent applications for artificial intelligence (AI) inventions is increasing year on year across a wide range of technology areas. In this article, we review European patentability requirements for AI inventions with a focus on lessons from T 0702/20.

Requirements for patentability

In order to be patentable, the European Patent Convention (EPC) requires inventions to:

- Be new.
- Involve an inventive step.
- Be susceptible of industrial application.

In addition to these requirements, the EPC specifically excludes some categories of subject matter from patentability. These include mathematical methods and computer programs which are both relevant to AI. However, these categories of subject matter are only excluded from patentability to the extent that they are claimed "as such" (Article 52 EPC).

It is easy to avoid claiming this kind of subject matter "as such". In established case law, excluded subject matter is not claimed "as such" if it has technical character by virtue of including "any hardware". As a result, a mathematical method **implemented on a computer** is not a mathematical method "as such", and is therefore not excluded from patentability.

This effectively transfers the battleground to inventive step which requires the invention to provide a non-obvious solution to a technical problem.

> An area of contention for many AI inventions is therefore the question of whether the problem they are solving is a technical problem.

A neural network with loose couplings

In T 0702/20, the invention related to "a hierarchical neural network apparatus implemented on a computer". Since the claimed apparatus was implemented in hardware, it was not claimed "as such" and was not excluded from patentability.

The application discussed conventional techniques that reduce computational requirements for hierarchical neural networks "by forming loose couplings between nodes" (EP308908A1, [0004]). It noted that these "require pre-learning to form loose couplings before carrying out classifier learning… which requires a lot of time and computation" (EP308908A1, [0008]).

The application indicated that "it is an object of the present invention to provide a hierarchical network apparatus…capable of speeding up the classifier learning and discriminating processing by forming loose couplings independently of the learning data" (EP308908A1, [0009]).

This was achieved by the neural network "being formed by loose couplings between the nodes in accordance with a sparse parity-check matrix of an error correcting code" (EP308908A1, claim 1).

At first instance, the claimed invention was found by the Examining Division to be novel but to lack an inventive step. While the Examining Division agreed that the use of the sparse parity-check matrix of an error correcting code was novel, the Examining Division did not agree that this solved a technical problem.

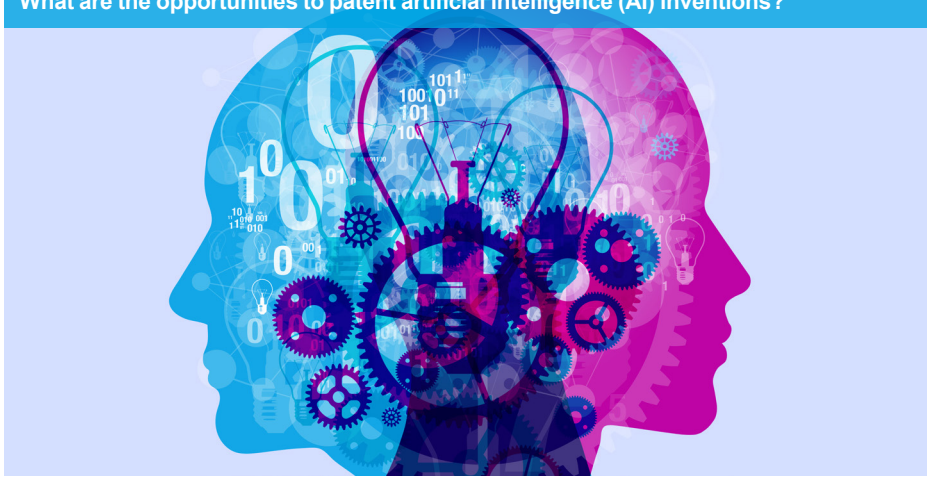
The appellant's arguments as to why the neural network was patentable

The appellant argued that:

- In contrast with conventional techniques, the claimed invention "allowed for a more efficient implementation by reducing the computing and storage requirements, so that networks could be placed on smaller devices." (T 0702/20, 6.2).
- "An artificial neural network was a mathematical algorithm meant to mimic the human brain…It allowed the automation of complex tasks, so

Case details at a glance
Jurisdiction: Europe
Decision level: Court of Appeal
Applicant: Mitsubishi Electric Corporation
Citation: T 0702/20 (Sparsely connected neural network/MITSUBISHI) of 7.11.2022
Date: 07 November 2022
Decision: dycip.com/t070220

What are the opportunities to patent artificial intelligence (AI) inventions?



that the computer could perform them instead of a human…A neural network was thus not an abstract mathematical method, but it used mathematics to solve a technical problem, as was the case in cryptography." (T 0702/20, 6).

- "A neural network was not a conventional computer program in that its functioning was not determined by the programmer but by the data used for the training. The programmer could not predict how the neural network would work. If its execution was stopped, the programmer would not understand the significance of the values of its mathematical parameters… [A neural network implemented on a computer sets the computer up to] function like an artificial brain." (T 0702/20, 6.1).

The Board of Appeal's replies

The Board of Appeal was not convinced by these arguments.

In relation to the reduced computing and storage requirements, the Board of Appeal noted that these were a result of a loosely connected network that learned differently to a fully connected network and therefore did not perform the same task. The reduction in computing and storage requirements was therefore a result of causing the computer to perform a less burdensome task, not of causing the computer to function differently. This was therefore "insufficient to establish a technical effect." (T 0702/20, 14.1).

The Board of Appeal did not agree that artificial neural networks function like a human brain. In particular, the Board of Appeal noted that an artificial neural network's "parameters and provided results are fully determined, given the training data and the training procedure: at its core, as explained above, a neural network is a mathematical approximation function, which can be simple and understandable if the network is small… It is only the sheer complexity of a larger neural network that makes it appear unpredictable. That a learning system is complex is not sufficient to conclude that it replicates the functioning of a brain." (T 0702/20, 16.1).

Finally, the Board of Appeal drew a contrast with cryptography. The Board of Appeal noted that while cryptography inventions are also independent of the data being encrypted (in the same way that the claimed neural network is independent of the data being learnt), cryptography inventions are different because they produce the technical effect of improving the system security of the encrypted messages. (T 0702/20, 18).

The Board of Appeal concluded that following the "any hardware" approach, the claimed subject matter was not excluded but that since it did not produce a technical effect it did not involve an inventive step.

The appeal was therefore dismissed.

Ways in which AI can be patentable in Europe

There are still plenty of patentability opportunities for AI inventions in Europe.

> New, non-obvious AI inventions can be patented in Europe provided that they have a technical effect that solves a technical problem across their full scope.

Indeed, it its final remarks the Board of Appeal stressed that "there can be no reasonable doubt that neural networks can provide technical tools useful for automating human tasks or solving technical problems. In most cases, however, this requires them to be sufficiently specified, in particular as regards the training data and the technical task addressed." (T 0702/20, 20).

This is in line with other case law and is reflected in the European Patent Office's Guidelines for Examination. In particular, the Guidelines for Examination provide these examples in G II 3.3.1:

- "The use of a neural network in a heart monitoring apparatus for the purpose of identifying irregular heartbeats makes a technical contribution.
- The classification of digital images, videos, audio or speech signals based on low-level features (e.g. edges or pixel attributes for images) are further typical technical applications of classification algorithms."

Conclusion

Although advances in the field of AI itself are generally not patentable in Europe, there are plenty of opportunities to patent AI inventions if they are sufficiently specified for solving a technical problem. If you have any questions or concerns regarding this area your D Young & Co representative is here to help.

Author:
Gemma Sparrow

Welcoming new partners Lawrence King & Sophie Slater

We are delighted to announce that Dr Lawrence King has re-joined D Young & Co as a partner in our chemistry and biotechnology team. Lawrence joins us having previously been a partner at AA Thornton and, most recently, Simmons & Simmons.

Neil Nachshen, partner at D Young & Co said of the move: "We're extremely pleased that Lawrence is re-joining our team; he has previously worked with many of our clients and they welcome his return. Lawrence's skill set acting before the EPO and on parallel litigation matters further enhances our experience in this area and will augment our capabilities before the Unified Patent Court (UPC) when it launches later in 2023. He will be a fantastic addition to our team."

We are also pleased to share news that European Patent Attorney Sophie Slater has been appointed partner. Sophie is an accomplished attorney who has as strong background in chemical, physical and biomedical sciences. Sophie has a particular interest in supplementary protection certificates (SPCs) and other forms of patent term extensions.

Congratulations also to patent attorneys Laura Jennings, Robert Kelly, Ryan Lacey, Arun Roy and Alice Stuart-Grumbar who have been appointed as Senior Associates.

G2/21 Enlarged Board of Appeal issues its decision

Useful links

Press Communiqué of 23 March 2023 on decision G2/21 of the Enlarged Board of Appeal: dycip.com/decisionG221presscommunication

The much awaited decision of the Enlarged Board of Appeal concerning whether post-filing data can be used in support of a technical effect for inventive step issued on the 24 March 2023.

> The response to the first question posed is clear – post-filing data submitted in support of a technical effect for inventive step cannot be disregarded solely on the ground that it was not available before the filing date.

Considering whether such data should be taken into consideration, the Board of Appeal, having summarised both EPO and national case law, concluded that each case must be assessed on its merits. It considered the posed questions regarding the "plausible" and "non-implausible" approaches to the admittance of post-filing data and decided that no specific guidance could be provided. Their conclusion may be best understood from paragraphs 93 and 94 of the decision:

"93. The relevant standard for the reliance on a purported technical effect when assessing whether or not the claimed subject-matter involves an inventive step concerns the question of what the skilled person, with the common general knowledge in mind, would understand at the filing date from the application as originally filed as the technical teaching of the claimed invention. The technical effect relied upon, even at a later stage, needs to be encompassed by that technical teaching and to embody the same invention, because such an effect does not change the nature of the claimed invention.

94 Hence, a patent applicant or proprietor may rely upon a technical effect for inventive step if the skilled person, having the common general knowledge in mind, and based on the application as originally filed, would consider said effect as being encompassed by the technical teaching and embodied by the same originally disclosed invention."

Some guidance may be derived from their acknowledgement "that the scope of reliance on post published evidence is much narrower under sufficiency of disclosure (Article 83 EPC) compared to the situation under inventive step (Article 56 EPC)."

The Board of Appeal expressed awareness that the criteria remain somewhat abstract but that "it is the pertinent circumstances of each case which provide the basis on which a board of appeal or other deciding body is required to judge."

It would appear therefore appear to be a sign of "no change" in this. A more detailed analysis of the decision will follow.

Author:
Neil Nachshen

Can post-filing data be used to support of a technical effect for inventive step?

UPC update
April 2023

We have reported previously that with effect from 01 March 2023, the sunrise period of the Unified Patent Court (UPC) is finally upon us. During this important three-month window, owners of existing European patents and published patent applications will have the opportunity to decide which of their portfolios to opt-out of the exclusive jurisdiction of the UPC, in anticipation of the 01 June 2023 opening date.

> Now that the sunrise period has officially begun, this short article will consider some of the practical considerations surrounding the opt-out procedure and implications for users of the new court system.

Now is the time to make opt-out decisions

The opt-out process itself is straightforward and does not carry an official fee.

Opt-outs can only be actioned using the electronic case management system (CMS) of the UPC, access to which is not restricted to professional representatives before the European Patent Office. However, the procedure to create a CMS user account is, in our experience, a stringent one meaning that users should allow adequate time to complete the requisite registration formalities early during the sunrise period.

Although a three-month sunrise period exists, we strongly affirm the court's recent recommendation that, where possible, patent owners should not delay the processing of opt-outs via the CMS. Prompt action is particularly important for large patent portfolios where high volumes of opt-outs are required. In these circumstances, the UPC has specific measures in place to facilitate multiple and automatic opt-out requests in one-step via an application programming interface (API) that communicates directly and securely with the CMS. Early unofficial statistics suggest that nearly two hundred European patents and pending applications were opted-out of the UPC within the first three days of the sunrise period and these numbers will likely rise significantly in the coming weeks as familiarity with the new CMS system increases.

Registrations for representation

Commencement of the sunrise period also means that applications to become a representative before the UPC may be filed going forwards.

At D Young & Co, our European patent attorneys are now busy registering as representatives before the UPC in eager anticipation of the court opening date. We were delighted to announce that D Young & Co partner Robbie Berryman was the first of our attorneys to become a fully registered representative before the UPC on 21 March 2023. Unsurprisingly, the court has indicated that a large number of applications for registration have been filed, which has led to some delays in the processing of requests.

It is still early days and, as such, some initial teething problems are perhaps to be expected. Our own experiences using the new CMS system to date have been positive and we remain committed to working alongside our clients to navigate the opportunities that lie ahead.

Author:
Lawrence King

Further detailed information concerning the unitary patent and Unified Patent Court can be found on our website: dycip.com/upandupc

D Young & Co webinars
UPC sunrise actions and our latest biotech case law update

UPC sunrise - actions to take now

The UPC sunrise period has started - actions to take now

The UPC sunrise period began at 9am CET (8am GMT) on Wednesday 01 March 2023. In this webinar, introduced by partner Rachel Bateman, European patent attorneys David Al-Khalili and Alice Stuart-Grumbar share a brief overview of the sunrise period and answer the questions that they have been asked most frequently about the sunrise period and what to do now (if anything). This ten-minute webinar is an excellent overview of the UPC sunrise period: dycip.com/upc-sunrise-start-actions.

European biotech case law

European biotech patent case law

D Young & Co partners and European patent attorneys Simon O'Brien and Tom Pagdin present our latest webinar update of new and important European Patent Office (EPO) biotechnology patent case law, including:

- T 2344/19 - definition of patient sub-groups.
- T 0670/20 - public disclosures associated with clinical trials.
- T 0605/20 - formulation of the technical problem.
- Update on Rules of Procedure of the Boards of Appeal 2020 - admissibility during appeal proceeding.

This hour-long webinar is a useful opportunity to get up to speed with the latest biotech case law: dycip.com/bio-web-feb23

The rise of techbio and its IP needs
IP strategies for data-driven innovation

In this article we will consider the way the techbio sector is developing and the strategies for protecting arising intellectual property, which may differ from strategies used in the traditional biotechnology and technology sectors.

Techbio is defined as the interface between biotech and tech, and focusses on using cutting-edge techniques from both sectors to drive innovation. During recent years there has been a surge of interest in this evolving sector. Broadly speaking, the techbio sector can be divided into two main areas. The first of these is the use of data to drive traditional innovation, and is largely driven by existing biotechnology, pharmaceutical and life science companies. We will focus on this area in this article, and will examine the arising IP needs compared to traditional approaches to innovation in the biotech space. The second area is the development of new platforms for driving innovation, and is largely driven by tech companies. We will explore this area further in a later article since the IP challenges of this part of the sector are related but distinct from those facing biotech companies.

Data-driven innovation

Traditionally, innovation in the biotech and life sciences sectors has relied heavily on wet data. Whilst this approach provides a robust system, it places a heavy burden upon the early stages of research: a time when funds may be scarce and uncertainty levels are high. Using data-driven solutions may allow companies to focus resources upon projects having a greater chance of success, driving pipelines forward in a cost effective manner.

The traditional approach

Life sciences and biotech companies have long placed a heavy emphasis on the importance of wet data. *In vitro* studies are commonly followed by testing in an animal model, and the process culminates in an expensive and lengthy clinical trial. There are many advantages to this approach, including a deep understanding of the activity of a candidate molecule and an acknowledgment of the relevant safety considerations. However, this wet experiment focussed approach requires a large investment of both time and money at an early stage of development when the outcome, and even the aims, of a project can be far from clear.

New sectors such as techbio require new IP strategies

Take, for example, the development of a small molecule pharmaceutical. Initial experiments are likely to be devised on the basis of an understanding from the literature of the causes of a particular disorder or the workings of a particular pathway. From this premise a library of small molecule candidates is chosen for initial screening, probably based upon structural similarity to a component of a pathway thought to be involved in a particular disorder. These initial wet experiments are likely to be performed *in vitro*, with a large proportion of the tested compounds found to be inactive.

It is only after extensive *in vitro* testing that the most promising candidate compounds are likely to move to testing in an animal model. Animal models can be extremely useful research tools. However, by definition they are based upon the biology of an organism which is not human, which is itself a challenge for researchers looking to devise a pharmaceutical for human use. Further, it is known that many disorders do not have an adequate animal model, hampering the development of treatments for these disorders.

Finally, once data in an appropriate animal model has indicated a reasonable chance of success for a candidate compound, clinical trials are required in order to demonstrate a reasonable toxicology profile in a healthy population, as well as a suitable therapeutic efficacy. This is a lengthy and expensive process in itself, but it also comes at the end of a process which has already taken many years, a huge amount of investment and has seen a large number of candidate compounds fall by the wayside.

There will always be a role for wet experiments and clinical trials in the biotech and life sciences sectors, but what if these expensive stages of testing could be focussed upon candidate compounds known to have a greater chance of success? This is where data-driven solutions in the techbio space can play a pivotal role.

Related webinar: biotech case law

Our most recent biotech webinar is now available to view at dycip.com/bio-web-feb23

The role of data-driven solutions

Techbio solutions offer a data-driven way in which to focus research upon candidate compounds having an increased chance of success. Taking the small molecule pharmaceutical example introduced above, data-driven approaches can reduce, or remove, the need for initial wet experiments. For example, a machine learning model trained based on a library of known chemical structures labelled with known therapeutic effects can be used to predict which other chemical structures are candidate compounds for the treatment of a certain medical condition.

Selecting an appropriate pathway through which a particular disorder can be treated is a challenging but vital initial stage in the traditional approach to pharmaceutical development. Performing this step manually, using wet experiments, requires an in depth knowledge of the relevant field, but also an element of good fortune to select a premise which has the potential to yield relevant candidate compounds. Using machine learning approaches to analyse the relevant data can reduce the need for good fortune, allowing the assimilation of a much larger data set and the arrival at a premise that is a more accurate reflection of the clinical situation and therefore more likely to succeed.

The use of data-driven solutions within a biotech process does not need to end once a relevant premise or pathway has been established. Rather, computer modelling can be used to determine the candidate compounds most likely to interact at an appropriate point in the selected pathway. This has a greater chance of success than basing decisions on the structural similarity of a candidate compound to a component of a pathway alone because it allows additional parameters such as steric interactions and affinity to be accurately modelled.

Taken together, these and other techbio approaches to pharmaceutical innovation can reduce the risks associated with early stage drug development, reducing upfront costs and allowing companies to take viable candidates into the clinic at a fraction of the cost of candidates arrived at through traditional approaches alone, for which the candidate atrophy rate will have been much higher.

Available IP

Within the traditional approach to pharmaceutical development there are a number of possibilities for arising IP, including patent protection, know-how and trade secrets.

Highly prized candidate compounds are almost always patent protected and these patents, and associated Supplementary Protection Certificates (SPCs), can be extremely valuable. Primary patent protection is likely to focus upon the structure of a candidate compound, which may be defined chemically or through the nucleic acid or amino acid sequence of a biologic in a composition of matter patent. Follow on patents are also available for novel and inventive formulations, second generation molecules, methods of treatment, and dosage regimens, amongst other things.

Ancillary inventions may relate to proprietary assays and laboratory techniques involved in the selection of candidate compounds, but these do not form the core assets of a biotech company and are often protected as trade secrets or kept as know-how rather than being the subject of patent protection. An evolved IP strategy will include preferred options for protecting this innovation whilst focussing costs upon the core assets of the company.

It is likely that the IP position for companies using techbio solutions within traditional methodologies will be similar to a traditional IP strategy approach, with patent protection sought for candidate compounds and follow on inventions, and trade secrets and know-how used to provide additional protection for associated innovations.

Taking the pharmaceutical development example introduced earlier, small molecule candidates selected using data-driven solutions will initially be protected under a composition of matter patent, with additional patents available for novel and inventive formulations, second generation molecules, methods of treatment, and dosage regimens, irrespective of whether these innovations were arrived at using data-driven solutions or traditional wet experimental techniques. As for companies developing candidate compounds using traditional approaches, the primary focus, and therefore value, surrounding this area of the techbio sector resides in the compounds themselves.

Methodologies surrounding the generation of candidate compounds are likely to be of secondary importance to biotech companies as they look to assimilate data-driven solutions into their standard experimental toolkit. These will often therefore be protected as know-how or confidential information, at least in the first instance. Biotech companies relying on data-driven approaches should also take care to protect their data sets, which may have taken considerable investment to develop and can be of significant commercial value. Although unregistered IP rights such as database rights may be available in certain countries, it is also advisable to implement IT security measures for protecting access to the data, and review contractual provisions in contracts with employees, contractors, commercial partners and customers restricting use and dissemination of such data sets.

In contrast, techbio companies developing new platforms for driving innovation will have such methodologies at the core of their business and will increasingly look to protect these platforms per se rather than merely the products thereof. Protection for the data processing platforms may also be of interest for companies developing diagnostic tools, for example, a machine learning model which processes biomarkers or genetic sequence data from a patient to generate a prediction of whether the patient suffers from a particular health condition. We will focus on these aspects of the techbio sector in a subsequent article.

Authors:
Robbie Berryman & Jennifer O'Farrell

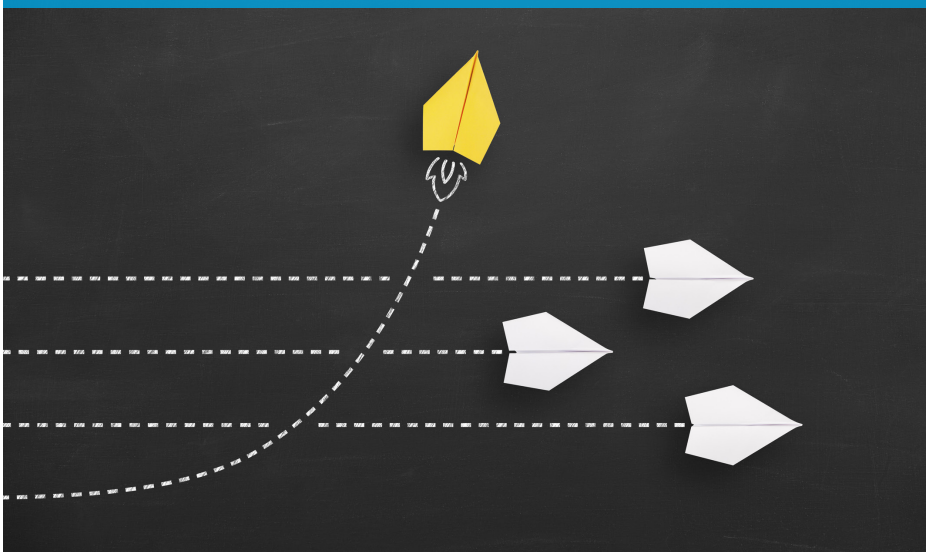
EPO Guidelines for Examination Changes from 01 March 2023

Useful links

- *"Rule 56a EPC - correction of erroneously filed parts of a patent application" published 27 June 2022: dycip.com/epcrule56a*
- *"EPO searching national prior rights to assist applicants for the unitary patent" published 07 November 2022: dycip.com/prior-right-search*
- *EPO Guidelines for Examination: dycip.com/guidelines-examination*

The latest update to the European Patent Office (EPO) Guidelines for Examination came into force on 01 March 2023. We discuss some of the more substantive changes below.

What are the key changes in the latest update to the EPO Guidelines for Examination?



Changes relating to Rules 56 and 56a

Several of the changes to the Guidelines for Examination reflect the addition, in November 2022, of new Rule 56a, and the consequential amendments that were made to Rule 56.

Rule 56 previously provided a mechanism for filing **missing** parts of an application after the filing date, but did not provide any mechanism for replacing **erroneously filed** parts of an application. New Rule 56a (and the amendments made to Rule 56) rectify this, by providing provisions for the filing of **replacement** parts of an application.

As a consequence of this change to the Implementing Regulations, several sections of the EPO Guidelines for Examination have been amended, and a new section (Part A, II, 6) dedicated to new Rule 56a has been added.

For further details on this new rule please refer to our article "Rule 56a EPC: correction of erroneously filed parts of a patent application", published 27 June 2022: dycip.com/epcrule56a.

Summons to oral proceedings as a first action in examination

The Guidelines for Examination have also been updated to provide some additional guidance regarding the situations in which it might be permissible for the EPO to issue a summons to oral proceedings as a first action in examination proceedings. In particular, Part C, III, 5 of the Guidelines for Examination have been updated to set out some situations in which, in examination of a **divisional** application, a summons to oral proceedings may be issued as a first action.

In general, it appears that the first action in examination of a divisional application is more likely to be a summons to oral proceedings if the claims are substantially the same as or broader than the parent, the parent was refused or withdrawn, and objections raised against either the parent application or against the divisional application (in the search opinion) still apply.

Of note, this section of the Guidelines for Examination still stresses that issuing a summons to oral proceedings as a first action should still be an **exceptional** occurrence.

UP & UPC

There have also been a number of changes made to the Guidelines for Examination to reflect the entry into force, after the sunrise period, of the unitary patent (UP) and the Unified Patent Court (UPC). Most of these changes are largely cosmetic (adding references to the UP and/or UPC where appropriate).

However, a more substantive change reflects the introduction of "top-up" searches for national prior rights.

In 2022 the EPO started performing top-up searches for national prior rights, in anticipation of the introduction of the UP. A national prior right is a patent or patent application filed in a European Patent Convention (EPC) state, which is not citeable against the European patent application but may be citeable against the unitary patent or a European patent application validated in that EPC state. These top-up searches, which are provided free-of-charge by the EPO, may therefore be useful to applicants, whether or not they plan to request unitary effect.

For further details on the introduction of the EPO's top-up searches for national prior rights please refer to our article "EPO searching national prior rights to assist applicants for the unitary patent", published 07 November 2022: dycip.com/prior-right-search.

There are also several articles and webinars on the D Young & Co website, if you would like to know more about the UP and the UPC. Our frequently updated UP & UPC resources, including articles, webinars and guides, are available at: www.dyoung.com/upandupc.

A full list of the changes made to the Guidelines for Examination in this latest revision is provided on the EPO website: dycip.com/guidelines-examination.

Author:
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T 1158/20
EPO videoconferences are as good as gold

Case details at a glance
Jurisdiction: Europe
Decision level: Board of Appeal
Citation: T 1158/20
Date: 22 November 2022
Decision: dycip.com/T115820

The European Patent Office (EPO) Board of Appeal has found that the "gold-standard" by which in-person oral proceedings should be the default outside of times of emergency no longer applies.

The Enlarged Board of Appeal previously decided that holding oral proceedings in-person was the "gold-standard" and therefore that in-person hearings should be the default option outside of a general state of emergency (for example, during the Covid-19 pandemic).

However, the Board of Appeal has now found in T 1158/20 that this "gold-standard" no longer applies. According to the Board of Appeal, in view of the increased level of experience with the technology gained over the last few years and the improved stability of videoconferences, oral proceedings conducted by videoconference are often now equivalent to an in-person hearing. Consequently, the Board of Appeal considered that oral proceedings by video conference can be used even in the absence of consent from the parties and outside of a general state of emergency.

G1/21

In a previous case before the Enlarged Board of Appeal, it was found in G1/21 that while oral proceedings by videoconference meet the requirements to enable parties' right to be heard, videoconferences could not provide the same level of communication that is possible when all of the participants are present in the same room. The unfamiliarity with the technology on behalf of the parties and the deciding body as well as the need to cope with technical problems provide a distraction from the issues being discussed.

As a result, the Enlarged Board of Appeal held that the limitations of video technology make videoconference suboptimal as a format for oral proceedings. While oral proceedings could be conducted by videoconference without the consent of the parties when in-person oral proceedings were not available (for example, due to the Covid-19 pandemic), in-person oral proceedings represented the gold-standard and should be the default option in the absence of such disruption.

T 1158/20

Now however, in its decision of 22 November 2022, the Board of Appeal took a different view, stating that oral proceedings held by videoconference **are** often equivalent to a hearing in person and so **can** be used both without the parties' consent and in the absence of a general state of emergency.

In the decision, the Board of Appeal set out that since G1/21 the Boards of Appeal and the parties have had extensive experience with videoconferences and that the improvements in technology now allow stable videoconferences with high-quality picture and sound to be conducted. Accordingly, oral proceedings by videoconference are no longer as far from in-person hearings as they were when G1/21 was issued.

Consequently, the Board of Appeal considered that oral proceedings in person can often be considered equivalent to oral proceedings by videoconference such that the gold-standard of in-person hearings no longer applies. Oral proceedings by videoconference may therefore be used without the consent of the parties even outside of times of emergency.

Conclusion

Until now, EPO Boards of Appeal have justified holding oral proceedings by videoconference on the basis that the Covid-19 pandemic was still ongoing, impeding parties' ability to conduct in-person hearings. T 1158/20 however represents the first time since G1/21 that the Boards of Appeal have considered the situation outside of the general state of emergency. Notably, this decision comes to a different conclusion about the suitability of videoconferences for conducting oral proceedings and the Board of Appeal has justified this difference on the basis of increased experience with oral proceedings.

We could well see further Boards of Appeal dealing with this question, and possibly a referral to the Enlarged Board of Appeal given that the use of oral proceedings by videoconference without the consent of the parties' remains a controversial issue.

We are well-equipped to carry out oral proceedings by videoconference and have extensive experience in doing so. If you have any questions about oral proceedings by videoconference, check out our Guide to ViCo at the EPO on our website or speak to your D Young & Co representative: dycip.com/vicoguide.

Oral proceedings conducted by ViCo are often now equivalent to an in-person hearing

Author:
Nathan Turnbull

Is hydrogen the future of clean energy?
EPO analysis of innovation and patenting trends in hydrogen technologies

Climate change is an increasingly prevalent driver of innovation in many fields of science and technology, not least of which is the energy sector. While the use of hydrogen as an energy source has been known and understood for decades, the widespread use of hydrogen is largely limited by pitfalls in infrastructure. For example, the UK National Grid is only due to start testing the use of hydrogen in 2023, with actual implementation looking to be much further in the future. Nonetheless, hydrogen represents the possibility for a fully decarbonised energy source.

National gas FutureGrid programme
FutureGrid is a programme which seeks to build a hydrogen test facility in Northern England: dycip.com/nationalgasfuturegrid.

In January 2023, a report of a joint study between the European Patent Office (EPO) and the International Energy Agency (IEA) was published outlining an analysis of innovative activities along hydrogen value chains, and particularly reviewing trends in patent applications regarding inventions in hydrogen technology between 2001 and 2020. This report provides an overview on the primary areas of innovation in various aspects of hydrogen technology and the actors that are driving this innovation.

Taking a high-level overview of patenting activity for hydrogen technology, the report finds that the rate of applications for international patent families (IPFs) worldwide is generally increasing. This is corroborated by the 18% year on year growth in hydrogen-related patent applications since 2005 by an earlier EPO study.

Patent insight report: innovation trends in electrolysers for hydrogen production
EPO and IRENA (2022), Patent insight report. Innovation trends in electrolysers for hydrogen production, EPO, Vienna: dycip.com/epoirenareport.

A clear majority of global IPFs comes from EU countries, Japan, and the US, with the EU and Japan contributing more than half of the IPFs in the period of 2011-2020 (28% and 24% respectively). The US notably had a significant drop in IPFs around 2015, despite being a world leader up until 2010. South Korea and China exhibit the beginnings of an increase in IPFs in 2019, but for now remain in the minority of applicants (see figure 2.1 below).

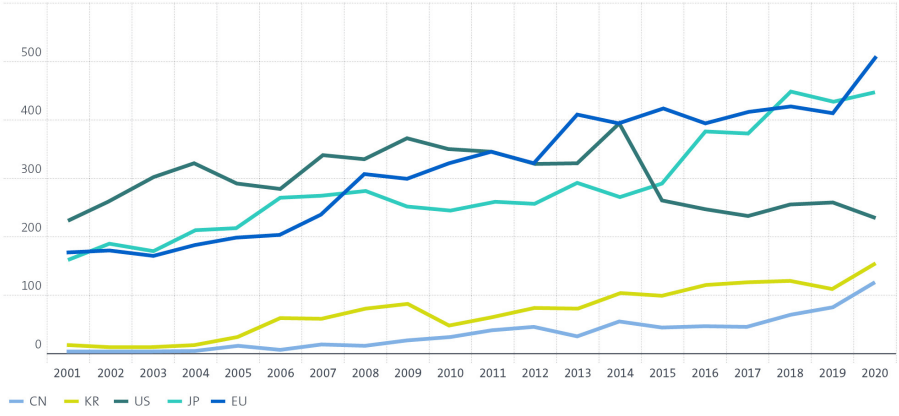
The report finds that different regions appear to focus on different sectors of hydrogen technology. Specifically, the report splits hydrogen IPFs into three main categories: (1) hydrogen production, (2) hydrogen storage/distribution and transformation, and (3) end-use applications.

Hydrogen production

IPFs for hydrogen production between 2001 and 2020 primarily focus on two sources of hydrogen: fossil fuels and water electrolysis. While fossil fuels are the most common means of producing hydrogen used today (with natural gas alone accounting for around 60%), the report finds that the rate of IPFs relating to electrolysis is increasing rapidly. Over 5,000 electrolysis-based IPFs were published between 2001 and 2020, primarily from Japanese and European applicants (see figure 3.1 below).

Figure 2.1

Patenting trends by main world regions (IPFs, 2001–2020)

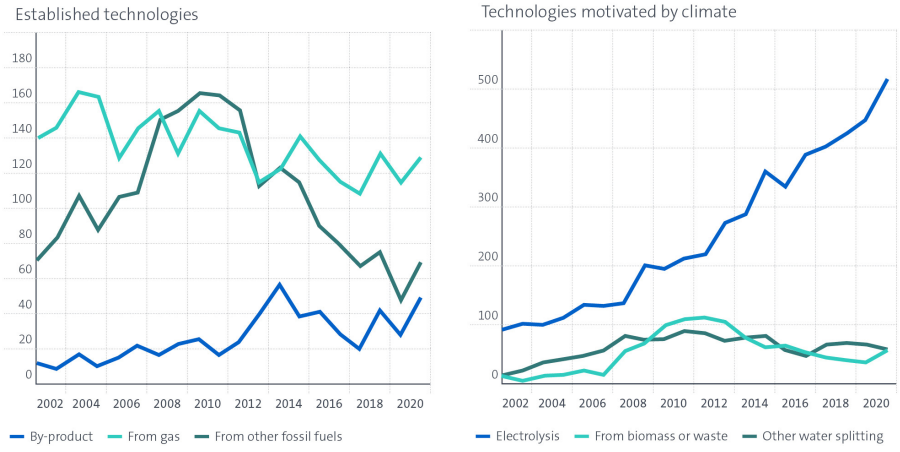


Note: The calculations are based on the country of the IPF applicants, using fractional counting in the case of co-applications.

Source: author's calculations

Figure 3.1

IPF trends in hydrogen production technologies, 2001–2020



Note: Technologies for hydrogen production from alcohols and separation/purification technologies generate comparatively lower numbers of IPFs and are not reported in this chart. For the purposes of this chart, technologies related to low-emission hydrogen production from gas and other fossil fuels have been pooled with the respective categories of established technologies.

Useful links

"Hydrogen patents for a clean energy future: A global trend analysis of innovation along hydrogen value chains", published by the European Patent Office (EPO) and the International Energy Agency (IEA), January 2023: dycip.com/hydrogenpatents

Please refer to the EPO report for a full list of citations and further information about source data for figures.

We thank the EPO for giving us permission to reproduce figures from the report.

As would be expected, fossil fuels cannot be considered as a viable option for achieving a decarbonised energy source. But electrolysis has the potential for a true zero emission source of hydrogen if powered by renewable or nuclear electricity. The recent surge in patenting activity around electrolysis could indicate a future shift in the proportion of hydrogen production towards electrolysis. Furthermore, with the increase of natural gas prices in 2022, governments around the world could face increasing pressures to consider new forms of energy production.

Hydrogen storage, distribution and transformation

The relatively low energy density of hydrogen presents many challenges for storage and distribution. The report finds many IPFs relating to liquefaction and regasification, solid fuels, and reversible chemical transformations in order to store hydrogen more efficiently. A significant proportion of the patenting activity in this area originates from large European chemical companies (such as Air Liquide or Linde), contributing to 38% of gaseous storage IPFs and 50% of liquid storage IPFs between 2011 and 2020. Japanese automotive companies (such as Toyota and Honda) also contribute a considerable amount towards gaseous storage technology (see figure 4.2 above right).

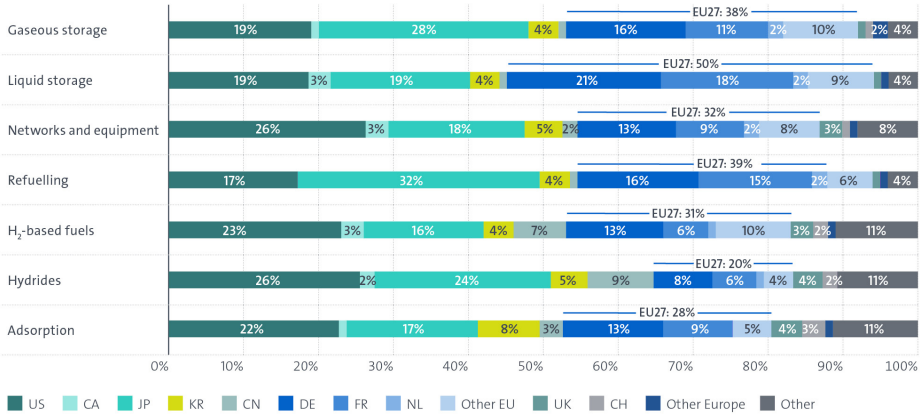
As an alternative to storing hydrogen in a pure gas or liquid form, the report also notes an increase in IPFs for synthetic fuels to "carry" hydrogen in a more efficient form. This primarily includes ammonia cracking and liquid organic hydrogen carriers. This technology appears to be relatively immature, with most IPFs originating from universities and public research organisations.

End-use applications

There is a broad range of end-use applications that propose to make use of hydrogen as an alternative to fossil fuels. An overwhelming proportion of end-use application IPFs since 2001 is in the automotive industry, with over 350 IPFs in 2020 alone. Japanese applicants, such as Toyota and Honda, are the biggest contributors to the automotive industry, with US applicants leading in aviation and European applicants leading in shipping (see figure 5.5 above).

Figure 4.2

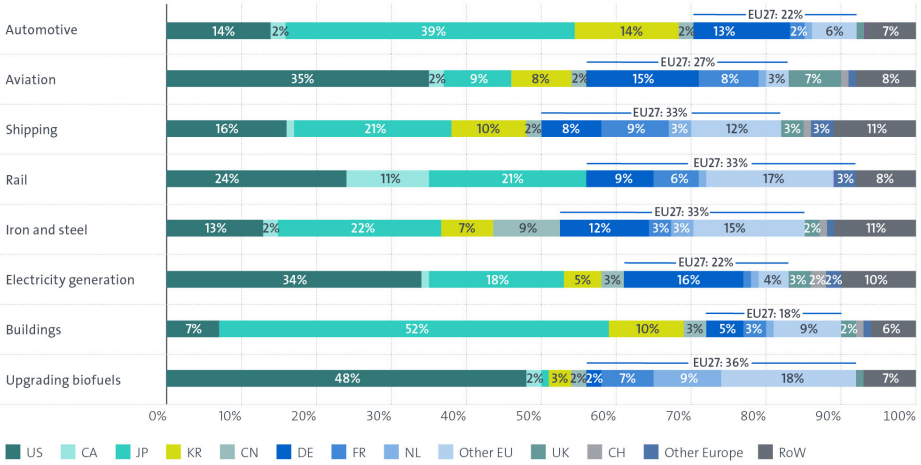
Origins of IPFs related to storage, distribution and transformation, 2011–2020



Note: The calculations are based on the country of the IPF applicants, using fractional counting in the case of co-applications. The value labels are not reported for shares below or equal to 1%. For the purposes of this chart, technologies related to vehicle refuelling have been pooled with established hydrogen distribution technologies.

Figure 5.5

Origins of IPFs related to hydrogen applications, 2011–2020



Note: The calculations are based on the country of the IPF applicants, using fractional counting in the case of co-applications. The value labels are not reported for shares below 2%.

What to expect for the future?

From the patenting trends identified in this report, there is an opportunity to speculate on the future of hydrogen technology. As climate change continues to drive technological development, recent patenting activity indicates further development towards low-emission hydrogen production through large-scale electrolysis. The improvements in gaseous and liquid hydrogen transportation can then be used to support the quickly growing hydrogen-based transportation sector.

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Can an AI machine be named as an inventor on a patent application? Thaler v Comptroller General of Patents Trade Marks and Designs

On 02 March 2023, the UK Supreme Court heard the case of Thaler v Comptroller General of Patents Trade Marks and Designs, the latest in a series of cases related to whether an artificial intelligence (AI) machine can be named as an inventor on a patent application.

Background

The case concerns two patent applications for inventions that the appellant, Dr Thaler, stated were created by an AI machine known as DABUS. The patent applications were taken to be withdrawn by the UKIPO for failure to correctly designate the inventor of the applications. Dr Thaler had indicated DABUS to be the inventor and that he had the right to grant of the patents by virtue of ownership of DABUS. This case is being heard at the Supreme Court after Dr Thaler's appeal against the decision of the UKIPO was dismissed in the UK High Court and the Court of Appeal.

The issues considered by the Supreme Court are:

1. Does section 13(2)(a) of the Patents Act 1977 require a person to be named as the inventor in all cases, including where the applicant believes the invention was created by an AI machine in the absence of a traditional human inventor?

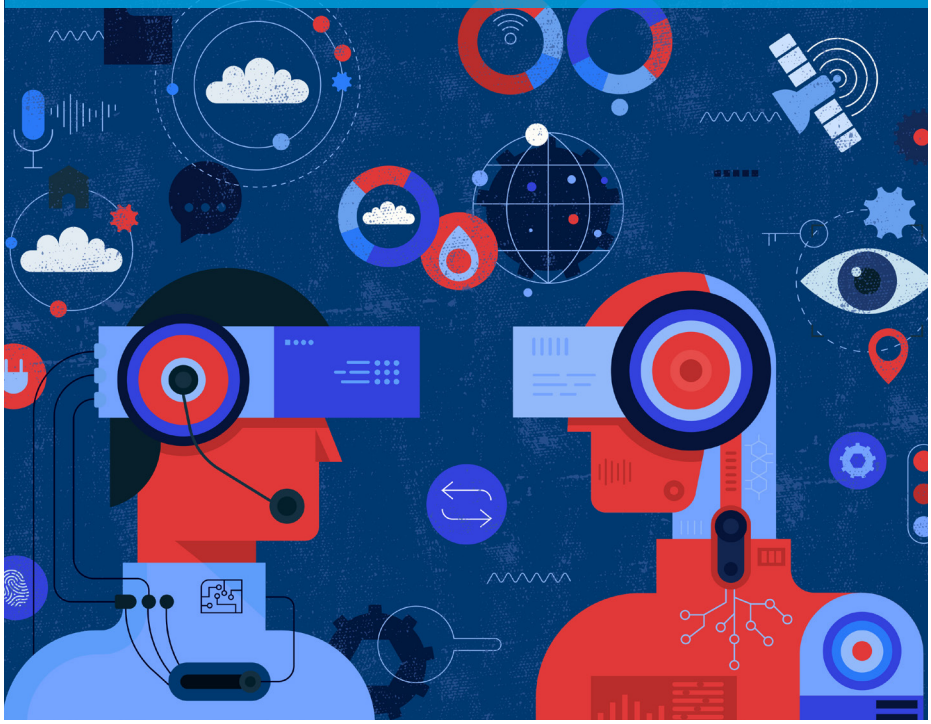
2. Does the Patents Act 1977 provide for the grant of a patent without a named human inventor?

3. In the case of an invention made by an AI machine, is the owner, creator and user of that AI machine entitled to the grant of a patent for that invention?

Submissions

The appellants argued there is no requirement in the Patents Act 1977 for there to be a human inventor in order for a patent to be granted; section 13 is a procedural requirement and requires identification of the person/persons believed to be the inventor. Dr Thaler could not, in good faith, list himself as inventor despite being the owner and creator of DABUS. Since Dr Thaler does not believe a person to be the inventor, answering "no person" should be considered a complete and satisfactory response to this requirement; in the decision of the Court of Appeal, Lord Justice Birss agreed with this line of argument, but was in the minority.

Does a machine have the moral right to be named as an inventor?



> The respondent argued the right to be named as inventor is a moral right and that a machine does not have such a right.

The purpose of the designation of the inventor is to list who the inventor is for the purposes of the Patents Act 1977 and that the right to a patent falls first with the person who derived the invention. Since the Patents Act 1977 requires a human to listed as the inventor, this requirement was not met. The respondent acknowledged that an invention need not be derived by a human, but maintained that "an invention for which a patent may be granted" must be derived by a human. This was the view of Lord Justice Arnold and Lady Justice Laing in the Decision of the Court of Appeal, Lord Justice Arnold noting that the statutory requirements are that (1) the inventor must be a person and (2) an applicant who is not the inventor must be able, at least in principle, to found an entitlement to apply for a patent in respect of the invention.

The respondent noted that the accuracy of the designation of inventor is not investigated by the comptroller, and that if Dr Thaler had listed himself as the inventor then the patents would have granted; the fact that DABUS was used to devise the invention could be set out in the description. The respondent also referred by analogy to the Copyright, Designs and Patents Act 1988, where the author for computer-generated works is the person who made the arrangements necessary for its creation. The appellants argued that it would be inappropriate to list Dr Thaler as the inventor since he is simply the creator of DABUS and that this act is sufficiently far removed from the inventive activity to not justify him being named as inventor.

Case details at a glance

Jurisdiction: England & Wales
Decision level: Court of Appeal
Citation: [2021] EWCA Civ 1374
Date: 21 September 2021
Decision: dycip.com/thalervcomptroller

Useful links

- *[2021] EWCA 1374: dycip.com/thalervcomptroller*
- *J 0008/20 (designation of inventor/DABUS) of 21.12.2021: dycip.com/j820-boa-dabus*

Discussion

In view of the questions raised by the Lords during the hearing, it is expected that the answer to the first two questions will be yes; a person is required to be named as the inventor in all cases and a patent cannot be granted without a named human inventor.

This would be in line with the majority view of other jurisdictions worldwide; the patent applications in question have been filed in 18 different jurisdictions and only granted to date in South Africa. The cases are also under appeal to the Supreme Court in Germany and the US, but the applications have been denied by the Federal Court of Australia, refused by the Board of Appeal at the EPO and, most recently, refused by the High Court of New Zealand on 17 March 2023. Such a harmonised view that an AI machine cannot be named as an inventor avoids potential difficulties in claiming priority from applications in countries which have different rules regarding AIs as inventor

> The comptroller appears to have acknowledged that the creator of an AI machine is entitled to the grant of a patent for an invention created by that machine on condition the creator lists themselves as the inventor.

This would be consistent with the computer generated works provision of the Copyright, Designs and Patents Act 1988 and would still incentivise the development of AI in the UK, which was one of the main concerns of the appellant.

Note however that the present case is a simple situation where the owner and creator of DABUS is the same person. In more complex situations, for example where the AI software was generated by a team of people and the invention was created whilst the machine operating the AI software was owned and operated by a different company, a chain of assignments or contracts would be required in order to demonstrate the operating company's right to apply for a patent.

There is a pending divisional application at the EPO where the Examining Division has objected to the designation of Dr Thaler as inventor "by virtue of owning the AI system that created the invention" for not clearly and unambiguously designating the inventor. The description of the divisional application has also been amended to refer to Dr Thaler as the "deemed inventor", which the Examining Division considers to cast further doubt as to the true inventor for the application. Whilst, like the UK IPO, the EPO does not investigate the accuracy of the designation of inventor, it does still require the person(s) who is the inventor to be identified. In their decision on the parent application (J 0008/20), the Board of Appeal stated it was not aware of any case law which would prevent the user or owner of an AI machine from designating themselves as inventor. The ambiguity in this instance is created due to Dr Thaler's repeated reference to DABUS as the inventor, rather than DABUS being a means used to derive the invention, stemming from Dr Thaler's belief that he is not the true inventor. Unless Dr Thaler's view changes, this divisional application also appears likely to be refused.

Other developments

The role of AI is currently at the forefront of government policy. In the last month, Viscount Camrose was appointed Parliamentary Under Secretary of State in the Department for Science, Innovation and Technology and Minister for AI and Intellectual Property. In the 2023 Spring Budget, Chancellor Jeremy Hunt announced a collaboration with the UKIPO to "provide clarity on IP rules so generative AI companies can access the material they need" following recommendations from Sir Patrick Vallance's review on pro-innovation regulation for digital technologies.

The comptroller also acknowledges that the role of AI will increase, but considers that a holistic approach with representation and evidence from all stakeholders is required. If changes are necessary, the comptroller believes it is for parliament to evaluate and make if necessary, not by the Supreme Court in an isolated case. As acknowledged in the government response to the recent consultation on AI and IP, discussions and any changes on AI inventorship need to be made in an international context. It therefore seems unlikely that the pending Supreme Court decision, which is expected to be handed down later this year, will differ from the decisions of the lower courts.

Author:
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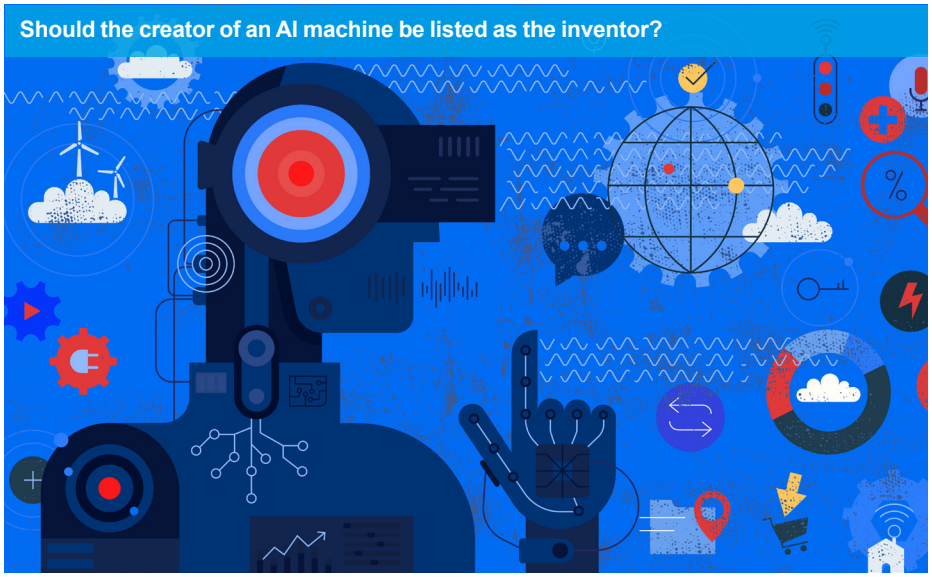

Supplementary protection certificates
Can Windsor resolve a knotty problem?

The agreement in principle of the Windsor Framework between the UK and EU regarding Northern Ireland, and its approval by the UK Parliament, brings to an end one of the most contentious parts of the Brexit saga.

> Though the Windsor Framework contains no direct provisions regarding IP rights, its provisions regarding the regulation of medicines could simplify how supplementary protection certificates (SPCs) for medicines are handled in the UK.

This is because only one marketing authorisation (MA) from the UK medicines regulator may be required to support a UK-wide SPC in future, rather than both this MA and the EU MA as is currently the case for most SPCs. However, it still leaves some questions on SPCs unanswered.

What will the impact of the Windsor Framework be on SPCs?

The Northern Ireland Protocol

The UK has four constituent parts: England, Scotland and Wales (together Great Britain) and Northern Ireland. Under the 1998 Belfast (Good Friday) peace agreement, Northern Ireland must have an open border with the Republic of Ireland, which remains part of the EU.

The Northern Ireland Protocol, which was part of the original withdrawal agreement in 2019, attempted to square this with both the EU's requirement for an external border and customs checks and the UK Government's desire to remain outside the EU single market and customs union after Brexit.

Under the original protocol, EU law on goods, including medicines and plant protection products, continued to apply to Northern Ireland following Brexit. The effect of this was that regulation of medicines in the UK, and the granting of MAs to allow medicines to be placed on the market, was split. The majority of national MAs granted by the UK's Medicines and Healthcare products Regulatory Agency (MHRA) covered only Great Britain, only some applying to the whole of the UK. In contrast, EU-wide MAs granted by the European Medicines Agency (EMA) continued to have effect in Northern Ireland, but no longer had any effect in Great Britain.

Existing SPC legislation in the EU & UK

SPCs extend the term of patents for medicines (both human and veterinary) and plant protection products (pesticides) which require the grant of an MA before they can be marketed. The aim of SPCs is to compensate the patent holder for the patent time lost due to the need to conduct efficacy and safety testing to obtain an MA – typically the process takes 10-14 years.

Under the EU SPC Regulation, the expiry date of an SPC was 15 years from the first MA date anywhere in the EEA, or five years from the expiry date of the basic patent. A further six months' extension is available for medicines where paediatric studies are carried out in accordance with an agreed paediatric investigation plan.

The UK largely retained the existing EU legislation on SPCs following Brexit. However, as a consequence of the Northern Ireland Protocol, the filing of UK SPCs is also currently split. It is currently necessary to apply for a UK SPC based on whichever regulator (the MHRA or the EMA) grants an MA first – within six months of this first grant (or six months of the grant of the basic patent, if later). However, at that point the SPC would only cover either Great Britain or Northern Ireland respectively. Once the

other MA grants, it is then necessary to apply to the UKIPO again to extend the SPC to the rest of the UK. If the second MA is not granted by the time the basic patent expires, the SPC can never cover that part of the UK. The term of the SPC was also amended slightly, the calculation being made from the date of the first MA in the UK or EEA, whichever was the earlier.

SPCs and the Windsor framework

There will be no immediate change to the existing provisions, as it will take time for the Windsor Framework to be implemented into UK and EU legislation. However, once this has been done, MHRA MAs will then once again cover the whole of the UK, and the EMA will no longer have any role in authorising human medicines for Northern Ireland.

The draft EU Regulation for implementing the framework appears to indicate that the EU envisages it to work in this way.

> The draft EU Regulation amending the current EU human medicines law indicates it is intended to come into force on 01 January 2025, but if the UK provides the EU with the necessary written guarantees which the legislation requires, it may come into force sooner.

Veterinary and human medicines

The draft regulation does not propose to amend existing EU law on veterinary medicines, so these may remain regulated by the EMA in Northern Ireland according to the current split system.

When the necessary changes have been made to the UK legislation regarding SPCs for human medicines, it could mean that the double SPC filing requirement may fall away and a single SPC filing, based on the MHRA MA, will have effect across the whole UK when granted. However, if EU law on veterinary medicines continues to have effect in Northern Ireland, as the draft EU Regulation currently appears to envisage, the two separate MAs may remain and the dual SPC filing system may remain in force for veterinary medicines.

Plant protection product SPCs

There will be no change to plant protection product SPCs, as these products are currently authorised only at a national level: there is no agency equivalent to the EMA which issues EU-wide MAs. A UK MA for a plant protection product, and any SPC based on it, already covers the whole of the UK, and will continue to do so.

SPC filing deadlines and expiry dates

The uncertainties in the framework and its implementation continue to raise questions regarding both the deadline for filing UK SPCs and the expiry date of SPCs. If the implementing legislation leaves any remaining role for the EMA in medicines in Northern Ireland (which currently appears the case, at least for veterinary medicines), then this raises the question of which MA is used to calculate both the six-month SPC filing deadline in the UK and the expiry date of the UK SPC.

The Court of Justice of the European Union treated Swiss MA dates as being the first MA date in the European Economic Area (EEA) (as they applied to Liechtenstein, an EEA member, although this was overcome by them being placed on a “negative list”). Similarly, if the MHRA MA date is somehow considered the first MA date in the EEA, because it still applies to Northern Ireland, then this could also have an effect on SPC expiry dates across the EEA.

Comment

Overall, while the Windsor Framework has the potential to remove trade barriers in medicines between Great Britain and Northern Ireland, depending on how it is implemented it has the potential to make SPCs in the UK either simpler or yet more complex. We will monitor its implementation and keep you updated.

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Copyright & database rights
UKIPO scraps plans to extend text & data mining exception

The UKIPO’s planned extension to the text and data mining exception for copyright and the sui generis database right to cover "any purpose" has been cancelled.

In July of 2022, the UK Government responded to a consultation conducted into artificial intelligence (AI) and intellectual property by announcing a change to the law concerning the existing exception to copyright and database rights for text and data mining. This proposed change would have extended the existing exception for non-commercial purposes to allow text and data mining for any purpose, thus including commercial uses.

It was seen by the Government at the time that extending the exception would encourage AI innovation in the UK.

However, in a recent Parliamentary debate, the UK Minister for Science, Research, and Innovation, George Freeman, announced that any plans to introduce such a change to the existing exception have been cancelled. It would appear that the proposed change was met with significant and unforeseen resistance.

Therefore, for the time-being, the situation remains that text and data mining can only be legitimately performed on third party data for non-commercial purposes or otherwise with the permission of the rights holder. This exception has not been extended to cover commercial purposes and any plans to do so have been cancelled.

That being said, this is a developing area in UK law likely to receive significant attention in the coming months and years as the commercial importance of AI continues to increase.

Indeed, during the debate, it was mentioned that there was a need "to get the balance right" with any future proposal, and so we should expect the conversation to continue. In the meantime, should you have any queries regarding text and data mining or AI inventions, please contact your usual D Young and Co representative.

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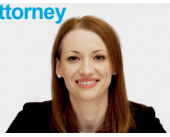

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