Lee & Ko Intellectual Property

NEWSLETTER

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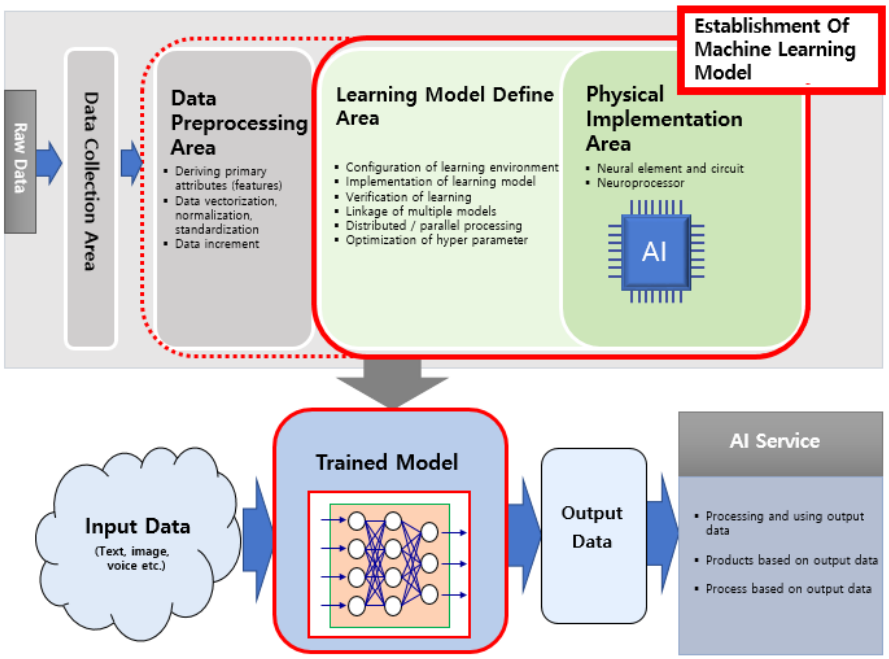
KIPO's New Examination Guidelines for AI-related Inventions

In January 2021, the Korean Intellectual Property Office (**KIPO**) newly issued a separate publication titled 'Examination Guidelines by Technology,' which includes a section called 'Examination Guidelines of AI-related Inventions', in order to provide more detailed determination criteria and more examples of examination cases on patentability of artificial intelligence (**AI**)-related inventions which continue to increase rapidly. Previously, examination regulations for AI-related inventions were contained in the Patent and Utility Examination Guidelines amended in March 2019, and a casebook titled 'Patent Examination Cases of AI-related Inventions' was published in April 2020. The information below will focus on the contents newly added to the section of the recently published 'Examination Guidelines of AI-related Inventions'.

I. AI-related Inventions subject to the Examination Guidelines

KIPO's Examination Guidelines of AI-related Inventions are applicable to inventions that require AI technology based on machine learning. The Examination Guidelines divide machine learning-based AI-related inventions into AI learning modeling inventions and AI applied inventions. The basic overview diagram of AI-related Inventions used in this Examination Guidelines is as follows:



II. Determination of Enablement Requirement (Deficiency of Description)

1) The detailed description of the invention should specifically describe a correlation between input data and output data from a trained model to implement AI-related inventions. Cases in which the correlation is specifically described include those where: ① learning data is specified, ② there is a correlation among the characteristics of learning data to solve the technical problems of the invention, ③ the learning model or learning method to be trained using the learning data is specifically described, and ④ a trained model for solving the technical problems of the invention is generated by the learning data and the learning method.

   If the Examiner issues a preliminary rejection for the correlation not being explained, the applicant should argue that a person of ordinary skill in the art (**POSITA**) was able to estimate (figure out) the correlation, whose explanation is omitted, from the common technical knowledge at the time of filing the relevant application; or if such an argument is not possible, he/she should delete the limitation to the relevant learning data (input data). Adding an explanation about the correlation or related working examples in response to the preliminary rejection would not be allowed as it would be considered addition of new matter.

2) When data preprocessing, which converts collected raw data into learning data, is a characteristic technology of the invention, and (i) the invention does not describe how to perform and embody the steps and functions of data preprocessing, or (ii) the invention does not specifically describe the correlation between the raw data and the learning data, or a POSITA has difficulty estimating or figuring out the correlation, then the enablement requirement is not satisfied.

3) If an AI-related invention based on reinforcement learning does not specifically describe a method of reinforcement learning, including the correlations among agent, environment, state, action, and reward, or if a POSITA has difficulty estimating or figuring out the learning method, then the enablement requirement is not satisfied.

III. Determination of Novelty and Inventiveness

1) When comparing an invention set forth in the claims to a cited invention, novelty and inventiveness should be determined by extracting the corresponding points and differences between technical constituents of both inventions with regard to the concrete means (learning data, data preprocessing method, learning model, loss function, etc.) of implementing the AI-related invention.

2) When an AI-related invention is used in an entirely different industrial field

   An AI-related invention, including a specific trained model, may have different outcomes or effects depending on the applied industrial field. Novelty and inventiveness are not necessarily denied for having no difference in technical constituents between the claimed invention and cited invention in cases where an AI-related invention overcomes a problem which had been unsolved for a long time in a specific industrial field, or overcomes a technical difficulty in a specific industrial field, or achieves superior effect by changing the industrial field.

3) When an AI-related invention has a feature in learning data

   An AI-related invention may have different learning model outcomes and performance depending on the

learning data. It is difficult to recognize inventiveness only by the difference in learning data between the claimed invention and the cited invention, and it is appropriate to determine novelty and inventiveness in consideration of whether a specific information processing on the learning data adopted in the claimed invention is specified, and whether better effects have occurred due to the difference in learning data.

4) When an AI-related invention has a feature in utilizing learning results (result data)

When an AI-related invention specifically sets forth in its claims the configuration using the results output through the trained model, the products based on the output result, and the processing method based on the output result, and has remarkable effects therefrom, its inventiveness may be recognized.

5) When a claimed invention simply changes the AI learning model while using the technical idea of a cited invention (e.g., changing a Recurrent Neural Network (**RNN**) to a Convolutional Neural Network (**CNN**)), the inventiveness of the invention is not recognized unless such change shows superior effect.

6) Cases determining inventiveness in the examination casebook

The new Examination Guidelines include specific examination cases where inventiveness is or is not found, as shown below.

- When the claimed invention is identical to the cited invention in terms of the technical field and learning data, but there is a difference in the learning model which results in superior effect, then inventiveness may be recognized.
- When the claimed invention is identical to the cited inventions in terms of the technical field and learning model, and there is a difference between the claimed invention and cited invention 1 in the learning data, but cited invention 2 discloses the corresponding feature to the learning data, and there is no difficulty in combining the cited inventions and there is no difference in effect, then inventiveness is not recognized.
- When the claimed invention is identical to the cited invention in terms of the technical field and learning data, and a difference in the learning model can be derived by a POSITA using a simple design modification, inventiveness is not recognized. However, where specific configurations other than the learning data and learning model (configurations that are not directly related to AI-related technology) are added to the AI-related invention, and thereby the claimed invention has a unique effect distinguished from the prior art, the possibility of recognizing inventiveness will be increased.

IV. Patent Eligibility

Both the former and new Examination Guidelines explain the standard of determining patent eligibility of AI-related inventions. The KIPO Guidelines require information processing by software to be concretely implemented by using hardware in AI-related inventions. However, the patent eligibility of AI-related inventions is not strictly assessed under the patent practice in Korea. Generally, the patent eligibility of a computer related invention (including an AI-related invention) is satisfied even if technical ideas are embodied in a general purpose computer. Technical ideas tend to be assessed in terms of novelty/inventiveness rather than in terms of eligibility.

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KIPO's New Examination Guidelines for Pharmaceutical Inventions

In January 2021, the Korean Intellectual Property Office (hereinafter, **KIPO**) released the 'Examination Guidelines by Technology,' which includes a section of 'Examination Guidelines for Pharmaceutical Inventions' that comprises recent court precedents and provides more detailed determination criteria for patentability of pharmaceutical inventions. Although the guideline for pharmaceutical inventions is stipulated in the existing Patent Examination Guidelines, it has been reorganized into a separate guideline with new contents added. The newly added major guidelines are summarized below.

I. Scope and Type of Pharmaceutical Inventions

Whether an invention corresponds to a pharmaceutical invention is determined based on whether the invention recites a medicinal use in the claims. In the case where the medicinal use is not explicitly recited in the claims, if the content disclosed in the description of the invention comprises the medicinal use and if such content may affect its scope of rights as a medicine through an amendment at a later point, the invention should be treated as a pharmaceutical invention. A pharmaceutical invention can be categorized into a compound pharmaceutical invention, a natural product pharmaceutical invention, a biomedicinal invention, and a medicinal formulation invention.

II. Specification Description Requirements

In addition to the description requirements for drafting a specification regarding active ingredients of compounds and biological materials in the existing Patent Examination Guidelines, description requirements for active ingredients of a natural product has also been added to 'Examination Guidelines for Pharmaceutical Inventions'. For example, the scientific name and origin must be indicated for a natural product that is hard to obtain. Further, when the extract of the natural product and fractions thereof are used as active ingredients, the preparation method must be specifically described.

With respect to the description requirements for a specification of a medicinal formulation invention, since a medicinal formulation invention characterized by the formulation's physical form or excipient, etc. is irrelevant to new medicinal use, even though it comprises a medicinal active ingredient, the pharmacological effect of the formulation does not necessarily need to be described in the specification.

III. Claim Description Requirements

A medicinal use invention should be described in the form of 'a composition.' A 'compound' limited to a medicinal use is not a medicinal use invention, but an invention related to a compound. In addition, if a pharmacological mechanism of an active ingredient is described along with a medicinal use, the pharmacological mechanism cannot be recognized as an independent constitution.

New claim description requirements for active ingredients have been added for each type of pharmaceutical inventions. Meanwhile, if a medicinal formulation invention has technical characteristics in the formulation's physical form or excipient, and not in the medicinal use or ingredients exhibiting pharmaceutical effects, the active ingredient and medicinal use are not required to be disclosed in the claims.

IV. Descriptions Not Written as Academic Terms

As a principle, descriptions not written in accordance with academic terms (for example, chemical names of substances) are not acceptable. However, exceptions to this include cases where the description of the invention defines a tentative term for which there is no other appropriate term, or the tentative term is recognized as indicating the relevant medicine by the academia at the time of the examination.

V. Industrial Applicability

When the subject matter of the claim is an atomic coordinate regarding an amino acid sequence, base sequence, or tertiary protein structure, it is a mere presentation of simple information, and thus does not qualify as an invention. Therefore, it is not considered an invention with industrial applicability.

VI. Novelty

In the case of a medicinal use invention, a claimed invention is considered identical to a cited invention, when: (i) the pharmacological effect seems to be based on the same or similar action mechanism even though the medicinal use of both inventions is stated differently, and (ii) the subject, means and time of application of the subject medicines cannot be substantially distinguished.

For natural product pharmaceutical inventions, if the description of a claimed invention merely imitates prior art, such as prescriptions disclosed in existing oriental medicine books and herbal medicine-related dictionaries or prescriptions derived from folk remedies, the invention is considered to lack novelty. However, if it invents a novel medicinal use even though the constitution and use of a certain medicine are disclosed in the existing oriental medicinal books, it will be deemed to have novelty.

Determination of novelty for a biomedicinal invention comprising a peptide or nucleic acid is made by comparing the active ingredient with that of prior art in view of the amino acid sequence of the peptide or the base sequence of the nucleic acid. In the case of a medicinal composition comprising peptide or nucleic acid with the same sequence as the prior art, the novelty should be determined based on the medicinal use thereof. On the other hand, the novelty of a biomedicinal invention comprising an antibody is determined based on the amino acid sequence of the antibody, an antigen or an epitope thereof. In the case of a composition comprising

an already-known antibody, the novelty should be determined based on whether its medicinal use is known or not.

VII. Inventiveness

- In the case of a medicinal use invention comprising a plurality of active ingredients, its medicinal use and easiness of combining the active ingredients should be determined, and if the plurality of active ingredients adopted show qualitatively different or remarkably superior effects over prior art, inventiveness can be recognized.

- Regarding a natural product pharmaceutical invention derived from a plant or a microorganism of the same genus but different species, if it has a significantly improved pharmacological effect over the prior art even though its medicinal use is identical to that of the prior art, it will be considered to have inventiveness.

- A biomedicinal invention comprising a peptide or nucleic acid having inventiveness as active ingredients is considered to have inventiveness. However, when a variant peptide in which some amino acids are deleted, added or substituted as compared to a known protein still has a skeleton similar to that of the known protein, the medicinal use invention of the variant peptide related to the known medicinal use of the known protein is considered to lack inventiveness.

  Regarding a preparation method and purification method of a protein therapeutic, inventiveness is not recognized if the related elements of the claimed invention – such as the type of target substance and culture medium, concentration, purification, or purity – are technical means generally adopted or modified in the manufacturing method of protein therapeutics disclosed in prior art and the effect of the claimed invention is not substantially different from that of the prior art.

  In a medicinal use invention comprising a known peptide, the inventiveness of the invention is not denied by a prior art reference teaching away from the function of the known peptide.

- With respect to the inventiveness of a medicinal formulation invention, the new guidelines specifically divides medicinal formulation inventions into ‘an invention where the active ingredients are substituted as compared to the formulation of the prior art,’ ‘a formulation defined by the effect/properties thereof,’ ‘an invention characterized by the preparation method of a formulation’ and ‘a formulation comprising an element corresponding to a well-known or generally used technique’, and provides specific determination criteria for each of the formulation inventions. Specifically, if a claimed invention and prior art have the same problem to be solved and the compounds of both inventions share properties in common or fall within the same category, the difficulty of composition is not recognized in the application of the active ingredient of the claimed invention into the prior art formulation.

  Further, in a formulation limited by an effect or characteristic (pharmacodynamic parameters, etc.), the effect or characteristic is a factor that limits other components of the formulation and should be considered when determining inventiveness. In the case of an invention with a feature in a preparation method of a formulation, the inventiveness thereof can be recognized if the different preparation method of the formulation results in a final formulation distinguishable from prior art and the remarkable effect of such formulation is recognized.

Lastly, even if a formulation invention merely comprises known ingredients and has a conventional form, if it is difficult to combine the components constituting the formulation or if the components are organically combined to exhibit a significantly superior or new effect, inventiveness may be recognized.

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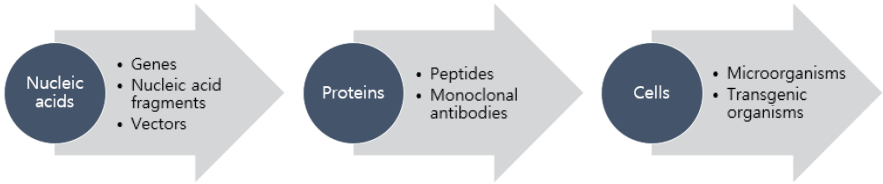
KIPO's New Examination Guidelines for Biotechnological Inventions

In January 2021, the Korean Intellectual Property Office (**KIPO**) newly released its 'Examination Guidelines by Technology,' which includes a section of 'Examination Guideline for Biotechnological Inventions' that provides detailed determination criteria for patentability of biotechnological inventions.

I. Overview

The new Examination Guideline for Biotechnological Inventions establishes the determination criteria for industrial applicability, novelty and inventiveness for biotechnological inventions, which had not been included in the former Patent Examination Guidelines. In addition, the new guideline reclassifies the previous categories of the biotechnological inventions, such as genetic engineering, microorganisms, animals, and plants, into nucleic acids, proteins, and cells according to the life information flow (shown below) to present the examination criteria step by step.



In addition, the new guideline presents various examination cases of drug repurposing technologies that use artificial intelligence (**AI**), and provides clear examination criteria on main issues regarding inventions based on convergence technology that combine new technologies of other fields.

The main newly established guidelines on the determination of industrial applicability, novelty and inventiveness of a biotechnological invention are introduced below.

II. Industrial Applicability

■ Nucleic acids

If a gene is presumed to be that of a specific protein based on a homology search through a publicly known database – in other words , if the gene cannot be specifically proven to be of a specific protein – then in principle, the relevant claimed invention is considered to lack industrial applicability.

- **Proteins**

  If the preamble of the claim only describes 'an amino acid sequence,' 'a protein sequence' or 'a polypeptide sequence,' but the actual invention being claimed in view of the entire specification is recognized as 'a separated protein' or 'a separated polypeptide,' then the claimed subject invention may be rejected based on the ground that it is not clear which category the invention belongs to.

  In cases where a claimed invention applies a computer program or AI-related technology in order to derive the desired information from data generated *in vivo*, its eligibility as an invention may be determined with reference to *Patent Examination Guidelines for Computer-related Inventions* and *Patent Examination Guidelines for AI-related Inventions.*

- **Cells**

  In the case of microorganisms, the purpose of use and method of use thereof must be disclosed in the specification in order for it to be recognized as an industrially applicable invention. In the case of transgenic organisms, there must be a significant difference when compared to before the organisms are transformed by the genes that were introduced for transforming the organisms, and the utility resulting from such difference should either be disclosed in the specification or easily inferred.

III. Novelty

- **Nucleic acids**

  For genes and nucleic acid fragments, novelty is determined based on the nucleotide sequences.

- **Proteins**

  For proteins, novelty is determined based on the amino acid sequences. Where a peptide is already known in its isolated and purified state, but is specified by other specific means and distinguished as a separate substance when compared to conventional peptides, it is seen to have novelty.

  As for monoclonal antibodies, in principle, novelty is determined by the amino acid sequences in the variable region. In some cases, it can be determined based on three (3) CDR amino acid sequences in the variable region of a heavy chain and three (3) CDR amino acid sequences in the variable region of a light chain. In this case, as long as the novelty of an antibody is recognized, the cell line for producing the antibody is considered to have novelty.

- **Cells**

  For an invention related to use of microorganisms, novelty may be recognized even if the used microorganisms are identical to the known microorganisms if the claimed invention has superior effect over prior art due to the difference in specific use. In the case of transgenic organisms, a claimed invention is considered to have novelty if it has a characteristic distinguishable from prior art due to certain manipulation such as deletion, substitution or addition of genes.

IV. Inventiveness

Nucleic acids

With respect to genes, even if amino acid sequences of a conventional protein are already known, if a gene is described in specific nucleotide sequences and has remarkable effects through codon optimization compared to a gene with different nucleotide sequences encoding the protein, the relevant claimed invention will be considered to have inventiveness.

For nucleic acid fragments, even if it has been revealed that a known SNP or polymorphism can be used for new use such as disease diagnosis, such claimed invention is generally considered to lack inventiveness if the subject matter thereof is a primer capable of amplifying the SNP or polymorphic site or is the probe itself that can detect the site. However, if said primer or probe is described in the format of claiming a new use of the specific polymorphic site which is distinguishable from the prior art, inventiveness can be recognized.

The inventiveness of a vector is, in principle, determined by the constitution comprised in a sequence or a cleavage map. If there are constitutional difficulties in combining the inserted genes or nucleic acids, or if any significant effect therefrom has been proved, the vector comprising such genes or nucleic acids is considered to have inventiveness.

Proteins

In the case of peptides, when a nucleic acid encoding a peptide has inventiveness, the peptide is, in principle, considered to have inventiveness as well. On the other hand, even if a peptide is already known in its isolated/purified state, it can be considered to have inventiveness if it is specified by other specific means that have a new activity or a synergistic effect over the conventional activity and has a remarkable effect over the known substance. In addition, if a variant peptide in which some amino acids are deleted, substituted or added as compared to a known peptide has a remarkable effect over the known peptide in terms of activity, side effects, absorption capacity or stability, inventiveness may be recognized.

In the case of monoclonal antibodies, the relevant claimed invention is considered to have inventiveness if the claimed antibody has a remarkable effect over the conventional antibody in terms of specificity or binding affinity to the antigen through six (6) CDR amino acid sequences in the variable regions of a heavy chain and a light chain.

Cells

For an invention of a microorganism, the inventiveness thereof is determined by comparing the invention with the known microorganisms in terms of mycological properties of microorganisms, effects on use or other characteristics. For an invention related to use of microorganisms, if the used microorganisms are significantly different from the known microorganisms in terms of mycological properties, then inventiveness may be recognized even if the use of the claimed microorganisms would manufacture the same substance as the known microorganism does. On the other hand, even if the used microorganisms have novelty over the known microorganisms, they are considered to lack inventiveness if they taxonomically belong to the same species or genus as the known microorganisms and the subject matter of the invention related to use is the same as the known microorganisms. However, inventiveness may be recognized if the use of the claimed microorganisms provides a remarkable effect over the use of the known

microorganisms.

In the case of transgenic organisms, an invention is considered to have inventiveness if it can exhibit a remarkable effect by a certain manipulation such as deletion, substitution or addition of genes.

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KIPO's New Developments and Case Precedents on Trademarks and Designs

I. Trademark

1. KIPO's Revised Examination Guideline

The Korean Intellectual Property Office (**KIPO**) maintains a very detailed trademark examination guideline which is regularly updated to improve the consistency and predictability in trademark examination.

The most recent amendment of the Trademark Examination Guideline was implemented in January 2021. This time, the amendment mainly focused on clarifying unclear guidelines and adding more specific guidelines regarding the examination on atypical marks.

The major amendments worth noting are as follows.

1) Clarify conditions for Convention Priority

The amendment specified that Convention priority should be allowed in cases where the trademark comprises only of plain letters, and only differs from the original mark by a commonly used font style.

The Convention priority can only be recognized based on a certified copy of the original application issued by the authorities of the relevant country. A simple copy of the application, a copy of the Trademark Gazette, or a printout of the trademark database is not acceptable.

2) Anonymous information briefs

An information brief is a statement informing the KIPO of the rejection grounds of a certain trademark application. While information briefs have been allowed to be filed anonymously to encourage the submission of information briefs, the amendment clarifies that the KIPO is exempt from the duty of notifying whether an information brief will be used when such information brief was filed anonymously.

3) Supplement functionality examination of atypical marks

The conditions for applying the following 4 criteria were specified: ① whether or not there was a corresponding patent or utility model application, ② advertising of the relevant function, ③ whether or not there is a substitute, and ④ affordability of manufacturing a substitute product.

4) Supplement examination guidelines for three-dimensional shape of interior/exterior of the place where goods and services are provided

The amendment specified that the interior or exterior of a place where goods and services are provided is a registrable three-dimensional mark.

The parts that are not claimed by the applicant may be depicted with dotted or broken lines.

In principle, a three-dimensional shape of the interior or exterior of the place where goods and services are provided is considered to be indistinctive. Thus, there must be proof of acquired distinctiveness through use in Korea.

5) Supplement examination guidelines for color-only marks

Commercial color codes which are used to indicate the color to be claimed were expanded to Hex, RAL, RGB, CMYK, and KS A 0062 in addition to Pantone.

6) Differentiation of different types of software

Before the amendment, various software had been considered similar to each other irrespective of their function and use. However, the general concept of 'software' has now been subcategorized into system software, application software, and game software and are considered to be dissimilar. Thus, broad-scope descriptions such as 'software' or 'computer program' are no longer allowed.

Before the amendment, various software in Class 9 had been considered similar to IT services in Class 42. Now, IT services in Class 42 are divided into software-related and hardware-related services, and only software-related services are considered to be similar to software in Class 9.

2. ROLEX Loses in Invalidation Action against ROLED

The luxury watch brand, 'ROLEX' lodged an invalidation action against LG DISPLAY's trademark 'ROLED'. However, the IPTAB ruled that 'ROLED' is not similar to 'ROLEX' and is not likely to cause any confusion among consumers as to the origin of goods in light of the trade conditions, such as the nature of market, target consumers' income, knowledge, etc., trade channels and linguistic practices. 'ROLEX' appealed the IPTAB's decision to the Patent Court, but ended up withdrawing the appeal under a settlement with LG who agreed to delete 'telecommunication device in form of wristwatches.'

II. Design

1. Definition of 'Article' to be Amended to Extend Design Protection to Projected Images

The KIPO is preparing to revise the definition clause of 'article' in the Design Protection Act, in order to extend the design protection to images which are not protected under the current Act. Under the current law, a design is defined as 'a shape, pattern or color, or a combination of them in an article (including parts of an article and fonts) which invokes a sense of beauty through visual perception' and thus, a design should be something incorporated into a tangible article (except for letter fonts). In the same way, a GUI can be protected only as part of a monitor or screen, etc.

However, there have been discussions to protect the design of an image projected on other surfaces. Recently, the need to protect designs that are shown in virtual reality and augmented reality are increasing. Therefore, to protect these images which are not incorporated into a tangible article, the definition of 'article' needs to be amended. KIPO is planning to propose an amendment to the Design Protection Act shortly.

2. More Articles Became Subject to a Partial Examination

Under the Korean Design Protection Act and current practice, there are two different examination proceedings, depending on the article. Designs for clothing, packaging, etc. which are prone to changing trends and which are easy to imitate are subject to a partial examination, while designs for other products are subject to a full, substantive examination. Under a partial examination, only formalities and a few absolute rejection grounds are examined. On the other hand, in a full examination, all rejection grounds including 'loss of novelty' and 'easiness of creation' are examined. As of December 1, 2020, the KIPO extended application of partial examination to food (Class 1), bags (Class 3), packaging (Class 9), and personal ornaments (Class 11), in addition to clothing (Class 2), textile (Class 5), and stationery (Class 19).

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How Have YouTube Videos been Used As Prior Art?

YouTube has become one of the most popular OTT platforms in the world where a vast amount of information is uploaded and shared every day. As such, the younger generation searches for information not only on Google, but on YouTube as well. Of course, a significant amount of technical information have accumulated on YouTube. Under these circumstances, the Korean Intellectual Property Office (**KIPO**) analyzed how these videos have been actually used as prior art in patent examinations, IPTAB trials and Patent litigations[1]. The analysis results are briefly introduced below.

I. Legal Basis for YouTube Video to Qualify as Prior Art

A YouTube video corresponds to 'an invention publicly known in Korea or in a foreign country prior to the filing of a patent application' prescribed in Article 29(1)(i) of the Patent Act regarding non-patentable inventions, and thus qualifies as a prior art. Further, for patent applications filed after July 1, 2013, a YouTube video also corresponds to 'an invention disclosed to the public through electric telecommunication line in Korea or in a foreign country prior to the filing of a patent application' prescribed in Article 29(1)(ii) of the Patent Act.

II. Considerations in Case of Citing a YouTube Video as a Prior Art

To use YouTube videos as prior art, some of the following considerations need to be taken into account.

First, the posting date of the YouTube video of interest must be earlier than the filing date of the relevant patent application or the earliest priority date. Usually, the posting date of a video would be when the video is uploaded, so if the video itself is replaced, then a new URL will be given, thereby changing the posting date.

Second, the YouTube video of interest must be publicly known or disclosed to the public. A video uploaded on YouTube may be set to 'private' so that the public cannot view the video. As such, the video to be cited as a prior art must have maintained its setting as 'open to public' from the time it was uploaded. Even if the video was set to 'private', the purpose of posting the video, the need for non-disclosure, the number of views, comments, and whether the 'private' setting was made on the posting date or at later point

1) *Intellectual Property & Innovation*, KIPO, Vol. 2, September 2020, pp.131-154

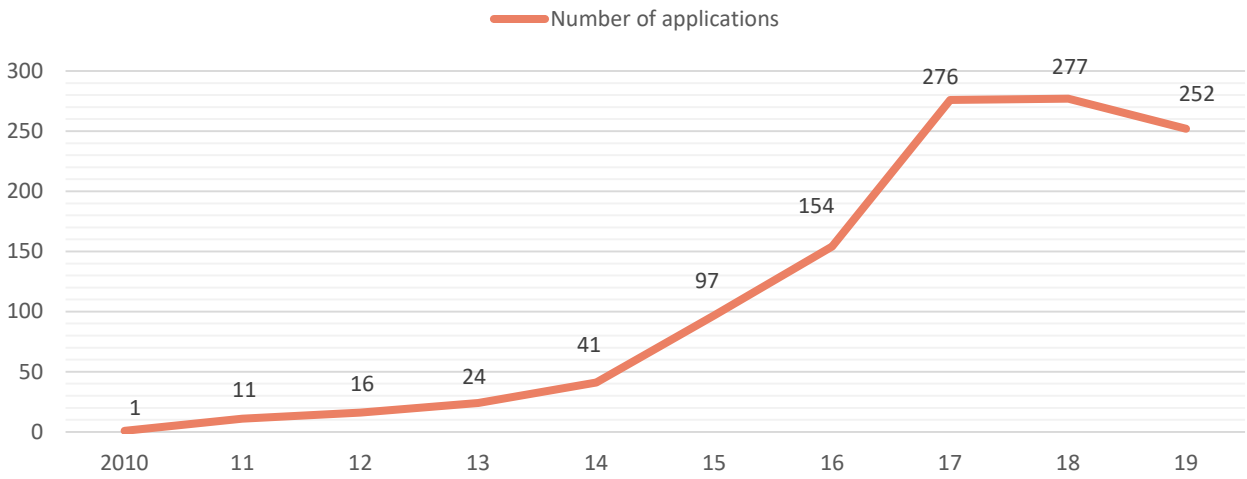
are factors that may be considered to determine whether or not the video was publicly disclosed.

Third, it is preferable to submit a YouTube video along with a screenshot of the video as prior art. There are instances where a video is not accessible even with the Internet address of a YouTube video, thus it is recommended to capture and submit a screenshot showing the Internet address and the date that the video was posted together.

III. Statistical Data of YouTube Videos Cited as Prior Art

KIPO's patent examination stage

According to the KIPO data on patent examinations based on the date of drafting a notice of preliminary rejection, the number of cases in which YouTube videos were used as prior art in patent examinations reached about 277 in 2018 as opposed to 1 case in 2010, showing an increase rate of about 78% each year.



The technical fields where YouTube videos are often used as prior art from most to least, according to the sections classified under International Patent Classification (IPC), are as follows:

138 cases for A63F (Board or Video Games), 90 cases for G06F (Digital Data Processing of Games), 77 cases for G06Q (Business Method Invention), 71 cases for G09B (Educational Appliances), 62 cases for A63H (Toys), 56 cases for B26D (Cutting Tools), 49 cases for E05B (Locks), 35 cases for H04N (Pictorial Communication), 32 cases for G03H (Holographic Apparatus), and 31 cases for B25J (Robot).

The total number of examiners who have used YouTube videos during the examination process is 336. After only one examiner used a YouTube video in 2010, it then increased to 130 examiners in 2019.

The technical fields in which YouTube videos are widely used as prior art are industry fields that many teenagers participate in, such as games, data processing of games, educational equipment, toys, VR, etc. The KIPO examiners who used YouTube videos as prior art are also young and familiar with these technologies.

IPTAB's patent trial stage

YouTube videos submitted as prior art to the IPTAB, based on the date a patent trial was filed, increased from 2 cases in 2012 to 25 cases in 2018, which is not considered to be that many. When further broken down by type of trial, 57 of the cases were invalidation trials, 18 were appeals cases against a decision of final rejection, 12 cases were scope confirmation trials, 4 cases were petitions for patent cancellations, and then finally 2 of the cases were correction trials.

< Number of patent trials at IPTAB >

Year	2012	2013	2014	2015	2016	2017	2018	2019	Total
Number	2	1	3	17	18	15	25	13	94

The technical fields at the patent trial stage which involve the use of YouTube videos as prior art, from most to least, are listed below according to each IPC section:

9 cases for A63B (Apparatus for training or game), 7 cases for A45D (Hairdressing or shaving equipment), 7 cases for H04B (Transmission), 5 cases for A44C (Personal Adornments), 5 cases for G06Q (Business Method Invention), 4 cases for B65G (Conveyors for Loading), 3 cases for G09B (Educational Appliances), 3 cases for G09F (Display), 3 cases for H05K (Printed Circuits), and 2 cases for A41D (Outerwear). When comparing the technical fields between the patent trial stage and patent examination stage of the top 10 IPCs that use YouTube videos, both stages have G06Q (Business Method Invention) and G09B (Educational Appliances) in common. Other than this, there is no similar tendency that is found overall.

Patent Court's litigation stage

The number of cases where YouTube videos were submitted to the Patent Court as prior art, based on the date of filing a lawsuit, amounts to 1 in 2013, 7 in 2017, up to 22 by 2019, showing that there is not much use of YouTube at the litigation stage. Similar to the IPTAB's patent trial stage, cancellation of invalidation trials at the Patent Court had the most cases using YouTube videos, at 19 cases.

IV. Note

As more and more technical information are accumulated on YouTube, it can be fully predicted that most people, including examiners, would access YouTube in search for prior art, which should be taken into account during patent filing, patent examination, IPTAB trials and litigation proceedings.

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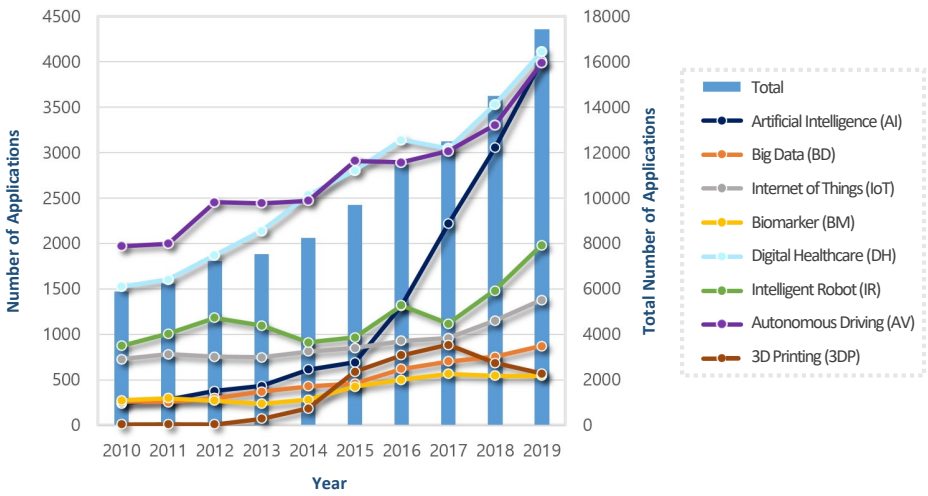
Patent Statistics for 4th Industrial Revolution-related Technologies

The Convergence Technology Examination Bureau of the Korea Intellectual Property Office (**KIPO**) published 'Patent Statistics for 4th Industrial Revolution-related Technologies' in September 2020 to help the government and companies establish industrial policies and give direction for R&D policies relating to the 4th industrial revolution.

The Patent Statistics disclosed statistics on applications for eight single technologies (artificial intelligence, big data, Internet of things, biomarkers, digital healthcare, intelligent robot, autonomous driving, 3D printing) and seven convergence technologies of these technologies.[1] Following are the Korean patent application trends for these technologies and major applicants.

I. Korean Patent Applications for Single Technology



In the past 10 years, there has been a significantly larger number of Korean patent applications in the digital healthcare and autonomous driving fields than other fields in the 4th industrial revolution and has maintained its high annual growth rate (digital healthcare: 11.7%, autonomous driving: 8.15%). The field of artificial intelligence shows an average annual increase of 55.1% in patent applications over the past five years, which is the highest compared to other technical fields.

1) The search systems used are the Korean Multifunctional Patent Search System and the Derwent World Patent Index system.

Overall, large corporations such as Samsung Electronics and LG Electronics lead in filing patent applications in most fields, and national research institutes and universities specialized in ICT, such as ETRI and KAIST, have also been actively filing patent applications. Among foreign companies, U.S. companies with ICT-related platforms such as Google, Qualcomm, Apple, and Microsoft lead in filing patent applications in Korea. Korean applicants account for 76.2 - 95.1% of total applicants in each technical field, taking up a high proportion of applications overall.

The patent application trends and main applicants for each technical field are explained below.

- **Digital Healthcare (DH)**: The number of applications in this field has more than doubled in the last 10 years. In terms of the cumulative number of applications in the past 10 years, the biometric medical device field (11,894 cases) had the most, followed by the medical/health information processing device field (6,814 cases) and the bio-diagnostic signal processing technology field (6,646 cases). In the last 5 years, the bio-diagnostic signal processing technology field showed a rapid 40.5% increase of applications. Among companies that filed multiple applications in Korea in the last 10 years, Samsung Electronics came first with 2,446 cases among Korean companies, while Siemens (316 cases) came first among foreign companies, followed by Nike (114 cases) and Cannon (85 cases).[2)]

- **Autonomous Driving (AV)**: The 'environmental awareness' field accounts for the most applications at 41.4%. In this field, the number of applications regarding vehicle image recognition technology has notably increased. Since 2017, applications in the 'traffic control service' field combined with AI and IoT have been rapidly increasing. In terms of the number of applications filed in this field, Hyundai Motor Company (1,946 cases) and Hyundai Mobis (1,269 cases) took the lead among Korean companies, while Qualcomm (263 cases) was followed by Nisan (169 cases), Bosch (149 cases), and Toyota (134 cases) among foreign companies.

- **Artificial Intelligence (AI)**: Technology that realizes visual intelligence accounts for half of all Korean applications in the field of ‘artificial intelligence.’ Meanwhile, according to the statistics of U.S. applications, the language intelligence field had the largest number of applications (14,007 cases), followed by the visual intelligence field (13,557 cases) and learning and reasoning field (10,840 cases). In recent years, however, the number of applications in the 'visual intelligence' field has overtaken that of the language intelligence field. Samsung Electronics accounted for the most number of applications filed in this field (1,674 cases) among Korean companies, where for foreign companies, Google had the most (236 cases), followed by Qualcomm (121 cases).

- **Intelligent Robot (IR)**: Among the specific technical fields, the robot component technology field has the largest number of applications. For companies that filed multiple applications in Korea, LG Electronics came first with 1,054 cases among Korean companies, and for foreign companies, Kawasaki Chukokyo (123 cases), Yasukawa Denki (106 cases), and Intuitive Surgical (102 cases) were in the upper ranks.

- **Internet of Things (IoT)**: Among the specific technical fields, the ‘applied service’ field accounts for more than 50% of all Korean applications in the fields of IoT. Korean companies that filed multiple applications in

2) Hereinafter, the number of cases in parentheses of the companies that have filed multiple applications is the number of applications in Korea from 2010 to 2019 in the relevant technical field.

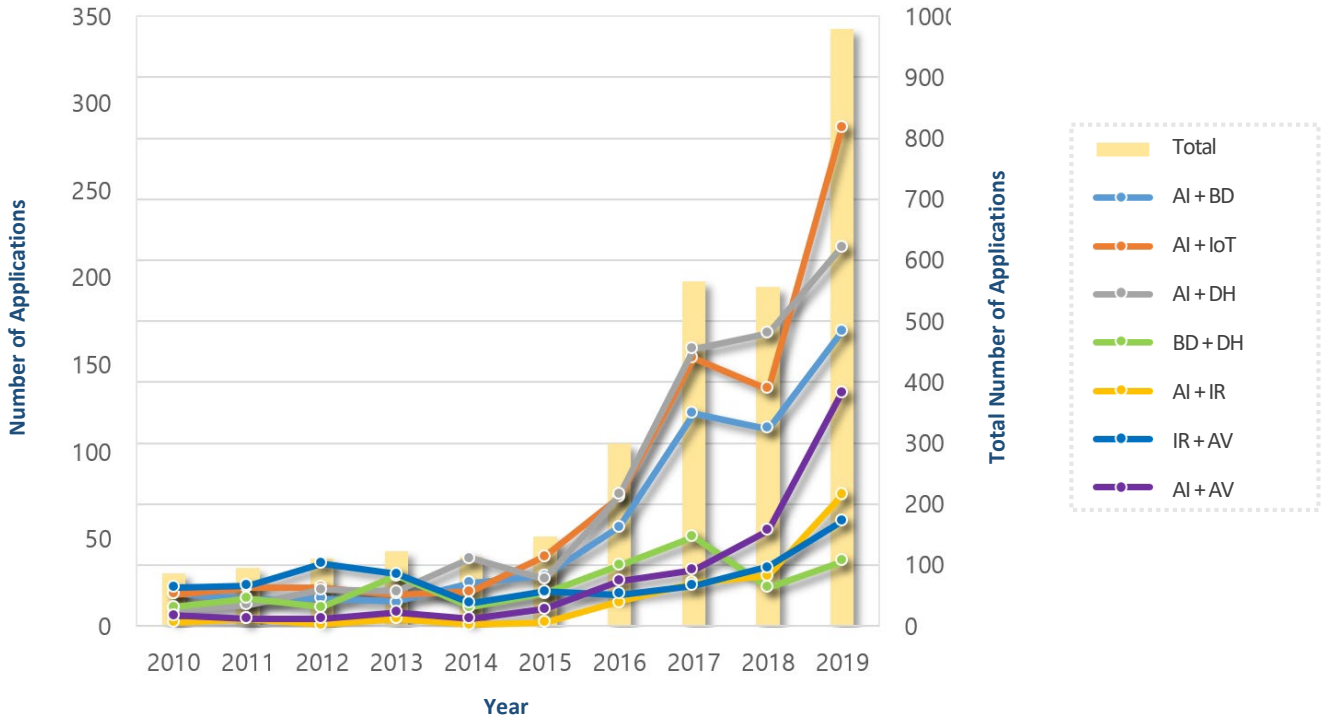
Korea include Samsung Electronics (288 cases) and ETRI (228 cases). The top applicants among foreign companies include Qualcomm (222 cases) and Huawei (112 cases). In the case of US applications, the 'network' and 'applied services' fields account for more than half of all applications.

- **Big Data (BD)**: Technology related to 'data collection or search' accounts for the largest number of patent applications at 52% of the total while the proportion of applications for 'data analysis and data visualization' is also increasing. Companies that have filed multiple applications in the BD field include ETRI (161 cases) among Korean companies, and Microsoft among foreign companies. In the case of US applications, program developers (large companies) such as IBM, Microsoft, and Google have a high share in the number of filed applications.

- **3D Printing (3DP)**: The rise in applications in this field has been stagnant since 2018. The number of applications in the manufacturing process and manufacturing equipment field accounts for 45.5% of total applications. Korean companies that have filed multiple applications in this field include Korea Institute of Industrial Technology (107 cases), and foreign companies that have filed multiple applications include HP (85 cases) and XYZ/Kinpo (70 cases).

- **Biomarker (BM)**: Applications for cancer biomarker technology tend to focus on biomarker technology for the discovery of therapeutic agents rather than diagnosis. In the biomarker technology for diseases excluding cancer, applications in the diagnostic field account for about half of all applications. Korean companies that have filed multiple applications in this field include Rural Development Administration (173 cases), Yonsei University (147 cases), and Seoul National University (138 cases), and foreign companies include Genentech (38 cases).

II. Korean Patent Applications for Convergence Technology



As applications in the AI technical field are increasing, applications in the field of convergence technology with AI is also increasing overall.

The IoT field has recently shifted to using AI for data processing, analysis, and judgment. In particular, from 2015, the number of AI+IoT applications has shown a rapid increase, showing an increase of about 110% in 2017 and in 2019.

In the fields of future prediction, consumption trend analysis, new drug development, and disease diagnosis, numerous applications were filed regarding technologies for processing and analyzing big data using AI. Specifically, many applications have been filed in the healthcare field which relate to digital healthcare technologies that apply AI and big data to diagnose/predict various diseases. Meanwhile, the number of applications that apply deep learning, deep neural networks, etc., when diagnosing diseases based on medical images are also increasing.

In the autonomous driving field, the number of applications has skyrocketed since 2019 due to vehicle technology development, accumulation of big data from various pilot projects, and development of AI+IoT traffic control systems.

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Protection against Intentional Infringement of IP Rights Strengthened

Following the July 2019 amendment to the Patent Act introducing punitive damages for patent infringement, the Korean National Assembly has since passed additional legislation to strengthen the protection of IP rights. The new legislation includes amendments to the Trademark Act, the Design Protection Act and the UCPA (Unfair Competition Prevention and Trade Secret Protection Act), introducing punitive damages for trademark and design infringement and idea theft, as well as an amendment to the Patent Act, removing the requirement of a complaint from the injured party to initiate a criminal case for patent infringement. The amendments to the Trademark Act, Patent Act and Design Protection Act have been effective since October 20, 2020, and the UCPA amendments will become effective April 21, 2021. All of the amendments will be applicable to infringing acts or thefts arising after the amendments go into effect. A brief summary of the amendments follows:

I. Amendment to the Trademark Act

- **Introduction of treble damages for intentional acts of trademark infringement**

  Under this amendment, courts can award up to triple the amount of confirmed damages in case of intentional acts of trademark infringement (Article 110(7)). Under the new law, courts will consider the following factors when awarding punitive damages: (i) extent of damages suffered by the trademark owner/exclusive licensee as a result of the infringement; (ii) infringer's economic benefits; (iii) duration and frequency of the infringing activities; (iv) infringer's efforts to mitigate damages; (v) infringer's willfulness or awareness of the severity of harm; (vi) penalties imposed for the infringement (e.g., from a parallel criminal prosecution); (vii) financial status of the infringer; and (viii) extent of damage to the distinctiveness or reputation of the trademark caused (Article 110(8)).

  Thus, punitive damages, available for patent infringement and traded secret misappropriation since last year, are now also available with respect to trademarks. Companies doing business in Korea are encouraged to pay closer attention and to consult with their legal counsel on potential trademark infringement issues.

- **'Reasonably expected' royalties as basis for damages computation (Article 110(4) of the Trademark Act)**

  Prior to this amendment, the Trademark Act, which calculated damages

based on royalties that would be 'ordinarily expected' by the trademark holder, had been heavily criticized for awarding insufficient damages, generally lower than the prevailing market rates. To address this issue, the amendment altered the 'ordinarily expected' standard to a 'reasonably expected' standard, allowing courts to properly reflect the market reality when calculating royalty-based damages (Article 110(4)). This revision should allow, in many instances, trademark holders to receive higher damages awards.

- **Increased maximum statutory awards (Article 111(1) of the Trademark Act)**

  The Trademark Act initially adopted statutory damages (up to KRW 50 million) in 2011 to alleviate the trademark holder's burden of proof in quantifying damage figures where it is difficult to estimate damages or prove actual damages. Under this amendment, the maximum award of statutory damages for trademark infringement is increased to KRW 100 million, and KRW 300 million in case of intentional or willful infringement (Article 111(1)). This newly increased statutory award, together with treble damages and reasonably expected royalties as basis for damages computation, is expected to result in compensatory damages more favorable to the right holders.

II. Amendment to the Design Protection Act

- **Introduction of treble damages (Articles 115(7) and (8) of the Design Protection Act)**

  Similar to the Trademark Act amendment, this Design Protection Act amendment adopts punitive damages for design infringement, where a court can award up to three times the amount of confirmed damages in case of intentional or willful infringement (Articles 115(7) and (8)).

- **'Reasonably expected' royalties as basis for damages computation (Articles 53(2) and 115(4))**

  This amendment also adopts a 'reasonably expected' royalty standard when calculating royalty-based damages (Articles 53-2 and 115(4)).

III. Amendment to the UCPA

- **Introduction of treble damages (Article 14-2(6))**

  Similar to the amendments to the Trademark Act and the Design Protection Act, this UCPA amendment authorizes courts to award damages as a punitive measure of up to three times the confirmed damages for idea theft (recognized under Article 2(1)(j) of the UCPA) where intentional or willful act is established (Article 14-2(6)). Among the actions that constitute unfair competition under the UCPA, the amendment focuses specifically on idea theft, in order to strengthen protection against the misappropriation of ideas exchanged in connection with commercial transactions, by parties having superior positions of power.

- **More effective administrative investigations and recommendations for corrective actions (Article 7 to 9 of the UCPA)**

  Under this amendment, any pending administrative investigation an unfair practice under Article 2(1) of the UCPA (except for Articles 2(1)(h) and (k)) may be suspended or terminated in the event the relevant administrative agency (i.e., the Commissioner of KIPO) becomes aware of a relevant ongoing dispute

mediation before the Industrial Property Dispute Mediation Committee (Articles 7(3) and (4) of the UCPA).

The amendment also diversifies the types of recommended corrective actions that the administrative agency can issue where unfair practice under Article 2(1) of the UCPA is confirmed (except for Articles 2(1)(h) and (k)). The current UCPA allows recommendations that are necessary to correct the existing unfair practice, which may include suspension of the unfair practice and removal of the infringing mark. The amendment allows any recommendations that are necessary to correct the existing unfair practice, including suspension of the existing unfair practice, removal of the infringing mark and prevention of future reoccurrences.

Furthermore, the amendment allows the administrative agency to make public announcement of the unfair practice and recommendation issued in connection thereof, in the event the agency's recommendation for corrective action is not complied with (Articles 8(2) and (3) and Article 9).

IV. Amendment to the Patent Act

This amendment to the Patent Act brings about a substantial change with respect to how criminal prosecutions are brought for patent infringement. Under the amendment, complaint by the injured is no longer required for indictment. Rather, patent infringement is now a crime that cannot be prosecuted if the patentee or exclusive licensee expresses intent not to punish the infringer (Article 225(2)). This means that prosecutors can now enforce against patent infringement even if there is no complaint filed by the injured (i.e., the patentee or the exclusive licensee) or the shorter statute of limitation (i.e., 6 months) has run out. This change aims to strengthen IP protection for patent holders, and to reinforce the effectiveness of criminal investigations, which may now happen in parallel with civil proceedings (infringement disputes in Korea traditionally ended at civil proceedings and did not proceed further to criminal proceedings, but now parallel criminal and civil proceedings are more likely to occur). With this amendment, potential infringers are now required to be more proactive and vigilant in defending their business and activities.

For any further inquiries relating to any of the foregoing or any other IP matters, please contact Lee & Ko's IP Practice Group.