European Commission

GUIDE

IPR Protection for AI Technology & Application of Blockchain in China

CHINA IPR SME HELPDESK

For free, confidential, business-focused IPR advice within three working days E-mail: question@china-iprhelpdesk.eu

Artificial intelligence (AI) has become one of the most important and potentially revolutionary technological advancements of the 21st century, playing a major role in industries ranging from automated driving to language and speech recognition. China is one of the leading players in this field with more than 30 universities in the country having established AI departments/schools. China, thus, offers many opportunities for European SMEs to collaborate on the field of AI development. AI and the data associated with it are legally known as intellectual property (IP). IP is a critical consideration for European SMEs that come to China, wishing to tap into the market potential for business growth for their AI-related products, or to recruit from the talent pool of China's booming AI industry.

Similarly, blockchain technology is emerging as an important technology in sectors ranging from property and banking to food safety. It is also having an impact in the legal sector. For European SMEs wanting to secure intellectual property such as trademarks, copyrights and trade secrets, blockchain could be an extremely useful asset, especially in the Chinese context where blockchain-based evidence is recognised in court.

This guide provides European SMEs, active in the AI-intensive industries, with knowledge on how AI is protected by IP laws in China, outlining how to protect AI and data through copyright, patent and trade secrets. It also gives European SMEs an overview of legal opportunities provided by blockchain, and the use of blockchain in Chinese courts.

1 Chinese IP Law Regarding AI

A. Introduction

According to the *In-depth Analysis Report of Artificial Intelligence Patents Technology* issued by the China Patent Protection Association in November 2018, AI usually refers to 'humanoid intelligence technology implemented by ordinary computer programs'. Andreas Kaplan and Michael Haenlein define AI as a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation.[1] These definitions establish that AI includes both algorithms and data, which can be protected as intellectual property.

B. How to Protect Algorithms

1. Copyright Protection

In Chinese law, a creator has copyright over their work as soon as original work is created, even if this work was created outside of China. Hence, copyright protection is automatic and no action by the creator to secure this right is normally needed. However, according to Article 32 of the *Notice of the State Council on Promulgation of Several Policies for Encouraging the Development of Software and Integrated Circuit Industries*, priority protection will be given to software that has been registered. After registering software, the creator will receive a software copyright registration certificate, which brings preferential treatment in areas such as taxation, intellectual property rights, investment and financing, industrial technology, exports and talent attraction. According to *the 2018 China Intellectual Property Protection Status* issued by the China National Intellectual Property Administration (CNIPA), the number of computer software copyright registrations in China reached 1,104,800 in 2018, a year-on-year increase of 48%.

When enforcing software copyrights, creators should be able to prove authorship to Chinese authorities. As copyright enforcement is much easier with software copyright registration certificate as proof of authorship, it is suggested for European SMEs to register their copyright with the Copyright Protection Centre.

Please note that, in terms of AI, copyright only protects the expression of the algorithm and not the core idea of that algorithm. Therefore, if another enterprise translated the core idea of a copyrighted algorithm into another programming language, it would not be an infringement of that copyrighted algorithm. In order to protect the core idea of the algorithm, right holders may consider securing their IP protection by patents.

2. Patent Protection

Patent protection is a way to protect the core idea of the algorithm. A patent provides protection for the invention to the owner of the patent meaning that the invention cannot be commercially made, used, distributed or sold without the patent owner's consent.

[1] Andreas Kaplan; Michael Haenlein (2019) Siri, Siri in my Hand, who's the Fairest in the Land? On the Interpretations, Illustrations and Implications of Artificial Intelligence, Business Horizons, 62(1), 15-25

Article 2 of the *Patent Law* states that an invention shall mean a new technological scheme proposed for a product, a process or the improvement thereof. According to the definition of the invention relating to computer programs in the 2017 e dition of the *Patent Examination*, an invention patent application involving a computer program can be authorized if it constitutes a technical solution to the problem.

In Chinese Patent Law, patent rights will not be granted for the 'rules and methods' of intellectual activities – i.e. a set of words which outline what the product is. Since an AI algorithm is a sequence of code, rather than a material object, it cannot be patented by description alone. Instead, European SMEs wanting to apply for patent protection should demonstrate that their invention constitutes a technical solution to a technical problem; meaning that the AI is a process which produces technical and tangible results, rather than just a descriptive guide of what the product constitutes of. If this can be effectively proven, then patent rights will help European SMEs to secure their algorithms in China. It is recommended to use the help of an experienced patent lawyer or an expert when drafting the patent application to make sure the application meets the requirement of being a technical solution to a technical problem and could thus be patented.

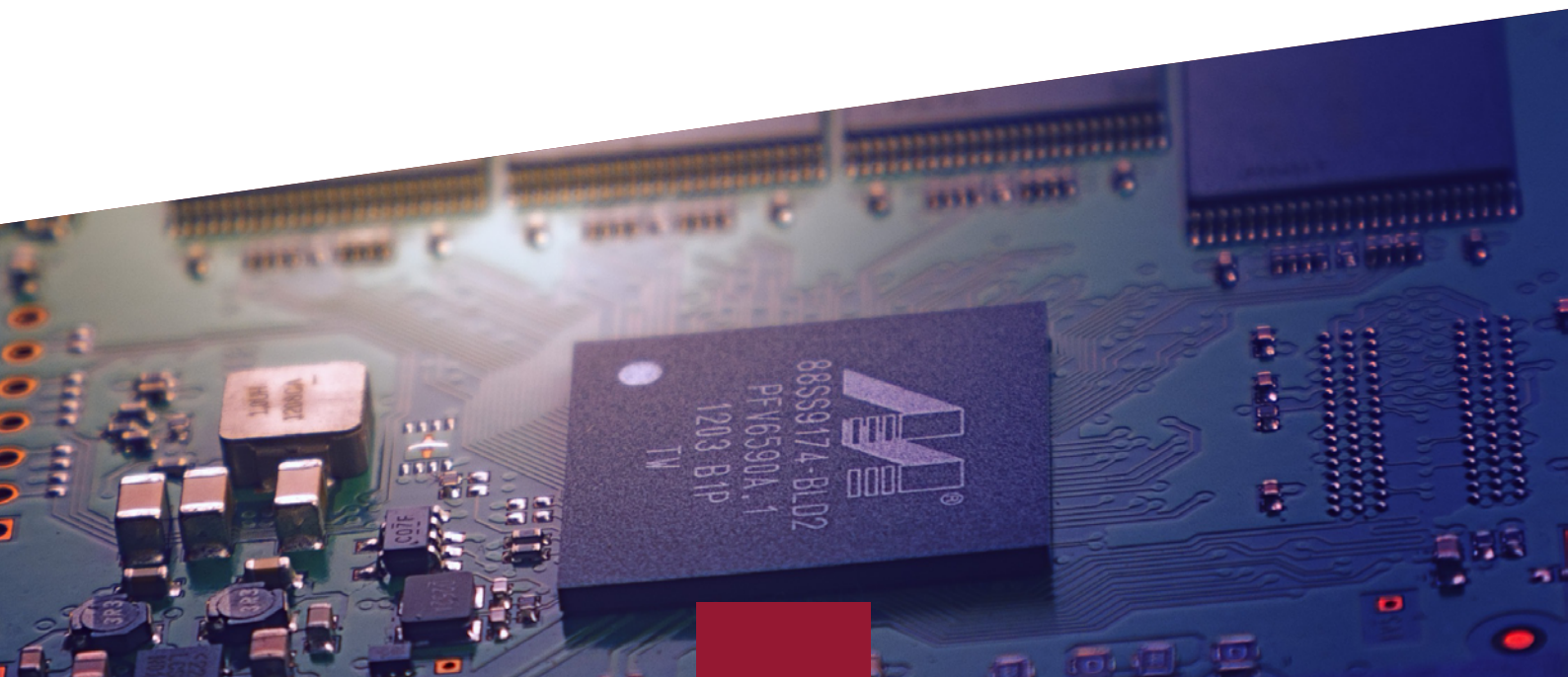
Please note that algorithms could only be protected by invention patents and not by utility model patents. For more information on patent protection please refer to the China IPR SME Helpdesk guide to Patent Protection in China (https://www.china-iprhelpdesk.eu/sites/all/docs/publications/China_IPR_Guide-Guide_to_Patent_Protection_in_China_EN-2013.pdf).

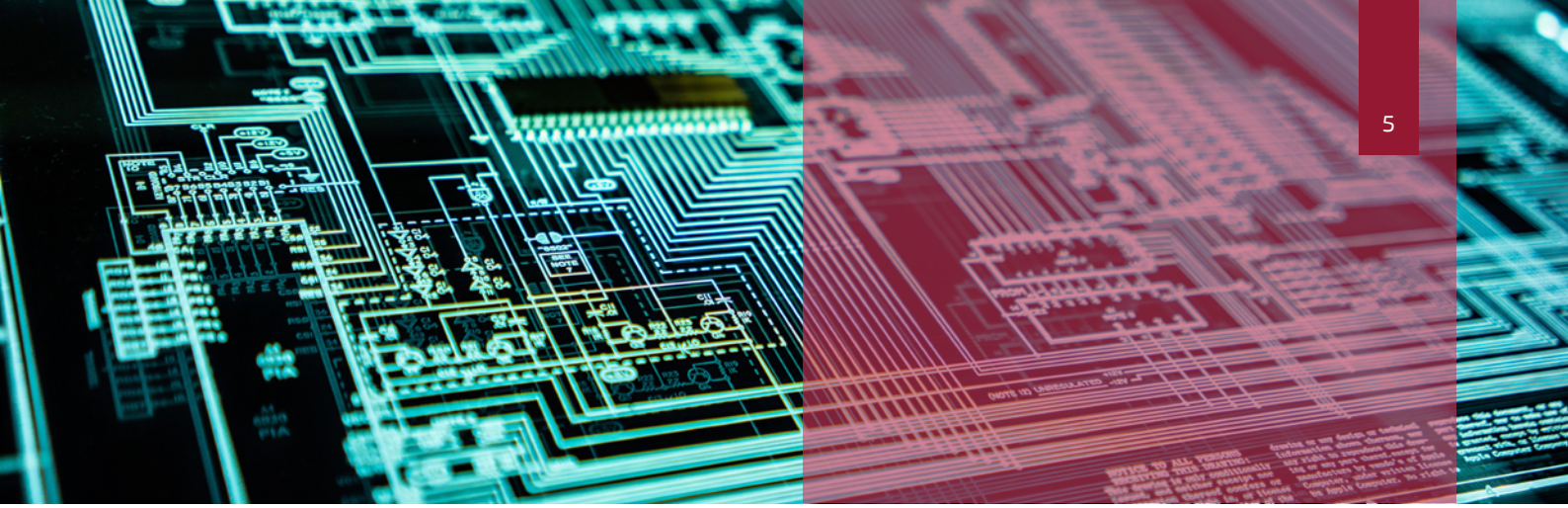
C. How to Protect Data

AI relies on having access to big data collected as input for the algorithms. Without big data, AI cannot conduct self-learning and deep thinking. Companies generally protect their big data through copyright or by relying on the anti-unfair competition law.

1. Data Protection through Compilation Works – use of copyright

Under Chinese copyright law, compilation works can be protected by copyright. According to the Article 14 of the *Copyright Law*, there are two major characteristics of compilation works, which need to be met for the compilation works to enjoy copyright protection. The first characteristics is aggregation. Compilation works aggregate works or other materials which do not constitute a work by itself but do when they are compiled together. Let's take the example of a collection of data on the location of petrol stations. The location of a single petrol station couldn't be protected by compilation, but if the location of 1000 petrol stations were aggregated, this would be a valuable amount of data which can be secured by compilation works. The second characteristics is originality. The selection or arrangement of the data can only be protected by the *Copyright Law* as a compilation work if it meets the requirements of originality. Unfortunately, there is no clear definition for originality and this is often left for the judges to decide. The below case study further demonstrates this point.





Case Study[2]

In the case of Jinan White Rabbit Information Co., Ltd. (White Rabbit) v. Guangzhou Lianrui Intellectual Property Agency Co., Ltd. (Lianrui), White Rabbit provides White Rabbit Trademark Information Database that users could use to search information on trademark status. Lianrui copied the data from the White Rabbit Trademark Information Database and provided such data to the public. White Rabbit sued Lianrui for copyright infringement. The argumentative issue here is whether the White Rabbit Trademark Information Database could be protected by Copyright Law as a compilation work. The Court held that White Rabbit collected and compiled Trademark Notices promulgated by the Trademark Office, and timely identified, aggregated and organized the trademark information of trademark initial review, registration, transfer, change, renewal, etc. After designing solutions according to the professional needs of clients, the White Rabbit Trademark Information Database was considered original and conformed to the characteristics of a compilation work. Therefore, the database could be protected by the *Copyright Law*.

2. Data Protection through Anti-unfair Competition Law

Big data is an information asset formed by a collection of data that cannot be captured, managed, and processed by conventional software tools over a certain time period. If big data is illegally captured, it can damage the economic interests of the right holder, violate business ethics and disrupt market competition. The right holder can protect itself through applying Anti-unfair Competition Law. European SMEs can also make use of the Anti-unfair Competition Law if their data is illegally captured in China. The case study below demonstrates how companies can rely on the Anti-unfair Competition Law to enforce their rights should their big data be illegally captured.

[2] (2017) Lu 01 Minchu No.1383

Case Study[3]

In the unfair competition dispute of Beijing Baidu Netcom Technology Co., Ltd (Baidu). v. Shanghai Hantao Information Consulting Co., Ltd., (Hantao) and Shanghai Jietu Software Technology Co., Ltd., the Court held that Baidu plagiarized and copied the information presented in the Dianping app (operated by Hantao) into "Baidu Maps" and "Baidu Knowledge" without a license. Baidu rapidly obtained users, market share and network traffic from Dianping. This action cut the competitive advantage and trading opportunities of Dianping and caused a considerable loss to Hantao. Baidu was found guilty of collecting and using the data of Dianping by the People's Court in Shanghai's Pudong New Area: 'Baidu's collection and use of the dianping.com information was a "free ride" on Hantao's efforts, and thus ran against well-recognized commercial ethics and the principles of honesty and good faith', the Court held. Baidu's behaviour was ruled to have disrupted market competition order and therefore constituted unfair competition.

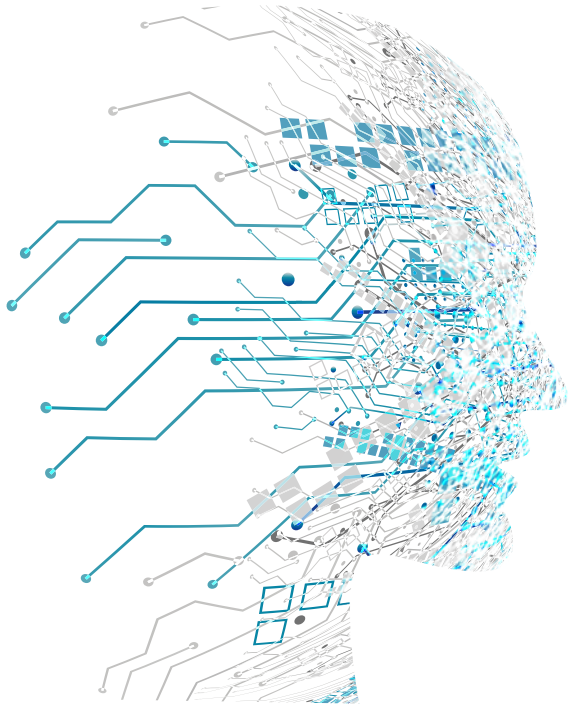
D. Protecting Algorithms and Data through Trade Secrets

Trade secret law can also be used to protect data as well as algorithms. If the information within the data is not known to the public, has commercial value and the rights holder has adopted corresponding confidentiality measures, the data can be protected by trade secrets.

For trade secrets to be protected, the underlying information cannot be publicly disclosed. In theory, trade secrets can be permanently protected when confidentiality measures are successful. For European SMEs, the following confidentiality measures should be considered[4]:

1. restricting the confidential information only to the relevant personnel for whom knowledge of such information is necessary;
2. taking preventive measures, such as locking the carrier of the confidential information;
3. putting a "*confidential*" mark on the carrier of the confidential information;
4. using passwords or codes, etc., for confidential information;
5. entering into confidentiality agreements like Non-Disclosure Agreements with employees and partners;
6. restricting access of visitors to confidential machinery, plant, garage and other premises, or making a confidentiality request to such visitors.

The protection of AI through trade secrets offers a wide protection scope, long protection periods, automatic acquisition of rights and no need to disclose/register information. The protection of trade secrets, however, also has its complications. For example, the machine learning in AI (using algorithms and data) extracts information from a wide variety of sources that are in the public domain. The information AI extracts does not become confidential because it is used in machine learning. Instead, trade secrets protect the procedure of information processing, rather than the information itself. It is often hard to distinguish the public information from the self-developed part in AI systems, and thus it is difficult to ascertain what part of the AI should be confidential. Similarly, open source code or disclosed third-party codes may need to be referenced in the development of AI. One solution is that at the beginning of the project, the right holder needs to differentiate between the open source part and the self-developed part. This allows the rights owner to make the original source distinct from the self-developed part, and in turn this enables the rights owner to claim confidentiality of the IP they have developed.



[3] (2016) Hu73 Minzhong No.242
[4] Article 11 of Supreme People's Court, Several Issues Concerning the Applicable Laws in the Trial of Unfair Competition Civil Cases Interpretation

2. Application of Blockchain in IP Protection

A. Introduction

Blockchain technology has risen to prominence as the technology behind cryptocurrencies like Bitcoin. It is an open ledger of information that can be used to record and track transactions. This information is shared on a peer-to-peer network, so all parties can see, exchange and verify it. This allows for transparency among multiple parties who can see what will be entered onto a ledger in advance, without any single party having the ability to change any ledger entries later on. Each transaction or "block" is transmitted to all the participants in the network and must be verified by each participant "node" solving a complex mathematical puzzle. Once the block is verified, it is added to the ledger or chain.[5]

Due to these characteristics, blockchain can be a useful tool for IP protection, as it could be used to show evidence of registered and unregistered IP rights. It provides evidence of creatorship or functions as means of provenance authentication. In cases of trademark use, blockchain could prove the first use of the trademark. For European SMEs this could be an efficient way to secure IP protection when expanding their business activities as blockchain is available 24/7 in its digitalized form. While the use of blockchain in IP protection is still in its nascent phase, there are cases of practical application of blockchain in IP protection in China. The following will highlight these cases.

B. Preservation of Evidence

1. Copyright Registration

Although, copyright registration is not an effective requirement in an IP dispute, the copyright registration certificate is a significant advantage for the right holder as it can be used as prima facie evidence in court. Due to its decentralized nature, the blockchain could help legal agencies cope with a predicted surge in copyright registration requirements. If a user were to log into the copyright registration website using the blockchain technology, the user could register at any time and in any place, enabling a more efficient registration process than the copyright registration agency can provide. The registration information is recorded on the chain with an immutable timestamp, which forms a powerful proof of rights. For European SMEs, using blockchain could offer a more effective means of copyright registration.

The Office of the Central Cyberspace Affairs Commission announced the first batch of domestic blockchain information service filings on 30 March 2019. These commercially available blockchains offer European SMEs services that cater to protecting their IP. For example, the Anne Copyright Blockchain is a third-party platform that provides DCI (Digital Copyright Identifier) registration

[5] Clark, B. (2018, February). Blockchain and IP Law: A Match made in Crypto Heaven? Retrieved from https://www.wipo.int/wipo_magazine/en/2018/01/article_0005.html.

services using blockchain technology. The digital copyright application channel provided by Anne's mobile application can operate 24 hours a day, 7 days a week and is also accessible to companies outside of China.

2. Prior Use of the Trademark

Blockchain technology can be used to record the prior use of a trademark – i.e. it can prove that the trademark was used by the claimant at a certain date. The right holder could upload relevant evidence to the blockchain and create an information chain with a timestamp of the first time the trademark was used. This method would effectively solve the problem of proving prior use. This technology will most likely be available in the near future, with companies like "Kbyun.com" working on a trademark securing blockchain.

3. Preservation of Trade Secrets

Blockchain technology uses a 'hash algorithm' – it transfers each piece of information on the chain into a unique 'hash' (usually a number sequence). This can be used to encrypt trade secrets; the blockchain has the trade secret hash value, and this can be used as evidence that the file existed at a certain point in time. Since the recorded information is in the form of hash value and not in the form of the trade secret itself, the specific content of the trade secret is not exposed. Therefore, blockchain technology can provide proof of existence without exposing any trade secret content.

Blockchain technology can also track the theft of trade secrets. Cases of trade secret theft are usually caused by internal employees. After the theft, the employees sometimes start their own business or join a competitor, while the plaintiff often struggles to prove that the trade secret had been stolen. For European SMEs, the advantage of using blockchain is that the chain leaves a trace of downloaded information, allowing the trade secret owner to locate the source of the theft. This can then be used as valid evidence in a lawsuit.

The Legal Basis for the Preservation of Evidence through Blockchain

In September 2018, the Supreme People's Court issued the *Provisions of the Supreme People's Court on Several Issues Concerning the Hearing of Cases by Internet Courts*. It stated that the Internet court shall accept electronic data as evidence if the submitter could prove its authenticity. This provision legally determines the validity of electronic evidence preserved by blockchain, for both foreign and Chinese companies.

Taking the copyright infringement evidence preservation as an example, the right holder captures the infringing page, calculates the hash value from the captured page, and uploads the hash value to the blockchain. In the trial, the court ensures that the electronic evidence has not been tampered with and establishes the authenticity through a hash value consistency check.

In practice, there have been cases in which the courts have approved evidence preserved by blockchain.

Case Study

On 28 June 2018, Hangzhou Internet Court ruled on a dispute of an information network transmission rights between Hangzhou Huatai Yimei Culture Media Co., Ltd. and Shenzhen Daotong Technology Development Co., Ltd. (the Huatai case). In this case, the plaintiff secured evidence of the infringement of defendant's webpage through Baoquan.com (a third-party evidence preservation platform; operates in Chinese only). The judgment was the first blockchain case in which the Court recognized the legal effect of electronic evidence via blockchain technology.

Since the Huatai case, the effectiveness of the blockchain method as electronic evidence has been approved by courts in other judgments. These include disputes on an information network transmission right between COL Digital Publishing Group Co Ltd and Beijing Jingdong 360 Degree Electric Commerce Co., Ltd, and a similar dispute between Beijing Dagongwang Technology Co., Ltd. and Shenzhen Meili Shijie Culture Communication Co., Ltd.

For European SMEs operating in China, the benefits of securing IP via blockchain technology are numerous including: having remote access to IP information across various multinational offices, having a possibility to store trade secrets easily and being able to use the blockchain as evidence in Chinese courts.

A. Smart Contract

In the Internet era, how to grant and obtain license fees fast enough is a salient topic. A blockchain-based smart contract can be set up to allow users to download content when payment is completed. For instance, on the Ethereum-powered music platform "VOISE", artists upload their music and can set their own prices. A user pays them directly for the music via electronic currency, which then allows them to instantaneously download it.

Since blockchain is near-immutable, smart contracts implemented through this technology can help overcome other shortcomings. Firstly, they do not rely on any third-parties, such as banks, and therefore reduce transaction costs and improve transaction efficiency. Secondly, the data cannot be deleted and can only be added, making it traceable. Thirdly, blockchain creates a distributed ledger: every device connected to the network has access to a shared and synchronized copy. This means that the data, in theory, will never be lost.

Furthermore, digital publications are generally extremely easy to copy, disseminate and pirate on a large scale, causing SMEs to lose potential revenue. Monitoring of smart contracts using blockchain can assist in overcoming such a problem by allowing the author to save the work on the blockchain and assigning a timestamp to the work. This type of smart contract can automatically search for pirated content online, triggering copyright protection mechanisms once pirated content is found.

3.

Take Away Messages

1 Software copyright registration certificate can be used as a proof of authorship by the copyright owner in disputes. The certificate is also a prerequisite for software copyrights in high-tech investment and allows right holders to enjoy preferential treatment in taxation, intellectual property rights, investment and financing, industrial technology, exports, and talent attraction. Whilst copyright in China arises automatically upon completion of the original work, it is advisable for the European SMEs to register their copyright with the Copyright Protection Centre or through blockchain service.

2 Copyright protection only protects the expression of the algorithm and does not protect the core idea. This means that using the same algorithm in other programming languages would not constitute an infringement. Patent protection can help to overcome this problem.

3 An invention involving a computer program can be patented if it constitutes a technical solution (i.e. a process that solves technical problems and gets technical results), rather than just a broad description of the intellectual property. Use the help of an experienced patent lawyer to draft your application.

4 The compilation of data can only be protected by the *Copyright Law* if it meets the requirements of aggregation and originality.

5 In case of an illegal data collection, European SMEs could rely on the *Anti-Unfair Competition Law* to enforce their rights.

6 When using trade secrets to protect algorithms and data, the right holder needs to differentiate between the open source information and the self-developed part. SMEs must be able to clearly describe the origins of the self-developed part to keep that part as confidential trade secret.

7 Chinese law has determined the validity of electronic evidence preserved by blockchain, and there have been cases in which plaintiffs won using electronic evidence preserved by blockchain. In suitable cases, EU SMEs in China can choose to use the blockchain to preserve electronic evidence.

Guide: IPR Protection for AI Technology & Application of Blockchain in China

Download Guide

European Commission

The China IPR SME Helpdesk provides free, confidential, business-focused advice relating to China IPR to European Small and Medium Enterprises (SMEs).

HELPLINE Submit further questions to the Helpdesk via phone, email (question@china-iprhelpdesk.eu) or in person and receive free and confidential first-line advice within three working days from a China IP expert.

TRAINING The Helpdesk arranges training on China IPR protection and enforcement across Europe and China, tailored to the needs of SMEs.

MATERIALS Helpdesk business-focused guides and training materials on China IPR issues are all downloadable from the online portal.

ONLINE SERVICES Our multi-lingual online portal (www.china-iprhelpdesk.eu) provides easy access to Helpdesk guides, case studies, E-learning modules, event information and webinars.

Prepared by:

DEVELOPMENT Solutions

European Chamber 中国欧盟商会

POLICIES LIMITED

Universitat d'Alacant
Universidad de Alicante

[1]The language offer will depend on the specific service and experts' availability.

If you have any queries on how to protect your Intellectual Property in China contact our Helpdesk service:

If you want more information on additional free services offered by the Helpdesk contact the coordination team:

Room 2080, Beijing Sunflower Tower No. 37
Maizidian Street
Chaoyang District Beijing 100125, P.R. China
Tel: +86 (10) 8527 5705
Fax: +86 (10) 8527 5708
question@china-iprhelpdesk.eu

Follow us on Social Media and stay tuned on new releases of factsheets and other IP content:

@china-iprhelpdesk

www.china-iprhelpdesk.eu

Guide developed in collaboration with IP law firm Rouse.

Publications Office of the European Union

The China IPR SME Helpdesk is a free service for SMEs which provides practical, objective and factual information about Intellectual Property Rights in China. The services are not of a legal or advisory nature and no responsibility is accepted for the results of any actions made on the basis of its services. The content and opinions expressed are those of the authors and do not necessarily represent the views of the European Commission and/or the Executive Agency for Small and Medium-sized Enterprises or any other body of the European Union.

Before taking specific actions in relation to IPR protection or enforcement all customers are advised to seek independent advice. Neither the European Commission nor the Agency may be held responsible for the use which may be made of the information contained herein.

Luxembourg: Publications Office of the European Union, 2019

The images and graphs has been designed using resources from Freepik.com

Print ISBN 978-92-9202-692-9 doi:10.2826/05803 EA-04-19-684-EN-C
PDF ISBN 978-92-9202-691-2 doi:10.2826/890640 EA-04-19-684-EN-N

Last update November 2019

CHINA IPR SME HELPDESK

An initiative of the European Commission