

RESEARCH ON IMPROVING CHINA'S DATA INTELLECTUAL PROPERTY PROTECTION MODEL

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<https://doi.org/10.54922/IJEHSS.2025.1141>

Received: 06 November 2025/Published: 16 December 2025

ABSTRACT

Data property protection is the institutional premise for the establishment of the data element market, and the current intellectual property system cannot provide appropriate positioning and comprehensive protection for data. From the legislative level, the laws and regulations on data intellectual property protection do not match, and the connection between different laws is not smooth. In terms of judicial practice, the standards for determining data intellectual property rights are not uniform

The judgments of different courts in the same region are very different. This makes it difficult for data holders to predict legal consequences, seriously affecting the authority and stability of the law. This paper delves into the relevant theories of data intellectual property protection, analyzes the current situation and institutional dilemmas of data intellectual property protection, and tries to put forward suggestions for improving the data intellectual property protection model in our country.

Keywords: Data; intellectual property protection; mode; Perfect.

1. INTRODUCTION

With the full arrival of the era of big data, the importance of data as a new growth point of our country's economy has become increasingly prominent. In 2022, the "Opinions of the Central Committee of the Communist Party of China and the State Council on Building a Data Basic System to Better Play the Role of Data Elements" (hereinafter referred to as the "Twenty Data Articles") officially positioned data as the fifth new factor of production, clarifying that data is a key role in the digital economy era. Data property protection is the institutional prerequisite for the establishment of the data element market. How to promote the rational flow of data and achieve efficient utilization on the basis of ensuring data security has become an important issue to be overcome. Data is information as the way of existence and is homogeneous with the object of intellectual property protection, which provides a realistic possibility for the intellectual property protection model of data. The Third Plenary Session of the 20th Central Committee of the Communist Party of China proposed to "accelerate the establishment of a system for data property ownership determination, market transactions, rights and interests' distribution, and interest protection".

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In 2024, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the "Opinions on the Reform, Innovation and Development of Digital Trade", which further emphasized that "study and build rules for the protection of data intellectual property rights". The intellectual property system protects the property rights of innovators to their achievements through state power, and promotes the establishment of a market order for the creation, utilization, transformation and circulation of information achievements. However, according to the existing protection methods and scope, the current intellectual property system cannot provide appropriate positioning and comprehensive protection for "data". How to establish laws and regulations that are compatible with the development of the digital economy under the existing intellectual property system is of great significance to improving the governance pattern of the digital economy. From the legislative level, the laws and regulations on the protection of data intellectual property rights do not match, and the connection between different laws is not smooth, resulting in difficulties in the application of law in the trial of specific cases. In terms of judicial practice, the standards for determining data intellectual property rights are not uniform, and the judgments of different regions and courts are very different. This makes it difficult for enterprises and data holders to predict legal consequences, seriously affecting the authority and stability of the law.

The modernization of the digital economy governance system is bound to require the intellectual property protection system to be updated in a timely manner and establish a special system that meets the needs and characteristics of data protection. Based on the above background and significance, this paper will deeply explore the relevant theories of data intellectual property protection, analyze the current situation and institutional dilemmas of data intellectual property protection, and try to put forward suggestions for the improvement of our country's data intellectual property protection model, so as to provide useful reference for our country's judicial practice of data intellectual property protection.

2. OBJECTIVE BASIS FOR PROTECTING DATA WITH INTELLECTUAL PROPERTY RIGHTS

According to the Data Security Law, data refers to any record of information in electronic or non-electronic form. The characteristics of data include dependency, non-exclusivity, and reproducibility, which make data significantly different from traditional property. The existence of data is dependent on the carrier, but its value comes from the information itself, not the physical carrier. The core elements of data and intellectual property are information. The object has intangible and immaterial characteristics, can be dominated by different subjects at the same time, and the incomplete exclusivity at the level of possession is the commonality of data and intellectual property rights. The object of intellectual property is mainly intellectual achievements, based on the intellectual creative contribution made by the creator, granting the creator the right to use the achievement exclusively, which is essentially different manifestations of information, such as works, inventions, trademarks, etc. Similarly, data, as a carrier of information, also contains rich commercial value. Data property rights are reflected in the rights to use, income and disposal of data. The protection of these rights is an important foundation for stimulating data innovation and promoting data utilization.

Throughout the development of the intellectual property system, the object of intellectual property has always expanded its scope with the continuous emergence of new technologies. Under the

intellectual property legal system, the types of rights are open and diverse, including general rights such as copyrights, patents, and trademarks, as well as special rights such as geographical indication rights, integrated circuit layout design rights, and new plant variety rights. [1] In the face of the emergence of new technologies, the intellectual property system is open and inclusive. our country's Civil Code stipulates that the types of intellectual property objects include works, inventions, trademarks, trade secrets, etc., and the objects of intellectual property protection are incompletely listed, providing legislative space for the establishment of new subject types. The inclusion of data property in the category of intellectual property objects is in line with theoretical logic and practical feasibility. This inclusion is not a simple conceptual extension, but is based on the deep fit between data property and intellectual property based on creative input, and property value can be derived and value-added.

3. THE EXISTING PATH OF DATA INTELLECTUAL PROPERTY PROTECTION MODEL

Under the framework of the existing intellectual property system, combined with the intangibility, non-exclusivity, public attributes and other characteristics of data, a variety of protection paths have been formed based on the traditional intellectual property system, backed by the Anti-Unfair Competition Law, and explored by local registration pilots.

(1) Copyright protection for original data collections

According to the Copyright Law, when compiling several works, fragments of works, or data or other materials that do not constitute a work, as long as the originality is shown in the selection or arrangement of the content, it can be recognized as a compilation work, and the copyright belongs to the compiler. This indicates that the process of data collection, collation, and analysis can be considered as compilation works if they have unique conception, arrangement, or processing methods, which are protected by copyright law. For example, in the database copyright infringement dispute between Clarivate Analytics Information Services (Beijing) Co., Ltd. and Shanghai Mace Pharmaceutical Technology Co., Ltd., the court found that a database with originality in data arrangement and collation can be protected as a "work". [2] However, the protection of data under the Copyright Law applies to the compilation of data, and the data itself is not within its direct scope of protection, which means that a large amount of data without original compilation form but containing great value cannot be fully protected through the Copyright Law.

(2) Trade secret protection for non-public data

Data that has not been disclosed, can bring commercial benefits to the right holder, and has been taken confidential measures by the right holder can be recognized as trade secrets in accordance with Article 9 of the Anti-Unfair Competition Law, and others are prohibited from obtaining, using, or disclosing it through improper means such as theft, bribery, and fraud.

The trade secret protection model of data property emphasizes the "confidentiality" (not known to the public), "value" (which can bring competitive advantages), and "confidentiality" (the right holder has taken protective measures such as encryption and permission control).

^[2] Liu Xin. Rationale and approach of data intellectual property legislation in the era of big data[J]. Intellectual Property,2023(11):47. [2] Source of the case: Shanghai Xuhui District People's Court (2019) Hu 0104 Min Chu No. 2392.

There have been many typical cases of this method in judicial practice. For example, in 2010, "Quzhou Wanlian Network Technology Co., Ltd. and Zhou Huimin and others infringed trade secrets" [3]. The court found that if the data is confidential, confidential and practical, it can be protected as a "trade secret". Article 1 of the 2020 Provisions of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Civil Cases of Trade Secret Infringement (Law [2020] No. 7) lists "data" as a type of business information, and at the same time makes detailed norms around the core dispute points of civil cases of trade secret infringement to provide clear guidance for judicial trials.

(3) The anti-unfair competition law protects the order of competition for data rights and interests. For data rights and interests that cannot be included in copyright and trade secret protection, such as platform public data, legally collected and processed non-original data collections, and data authorized to be shared by users, it is prohibited to obtain or use data at the legal cost of others by improper means, protect the "investment rights and interests" of data processors, and maintain the order of market competition. Article 13 of the Anti-Unfair Competition Law (Amendment), which came into effect in October 2025, has added a new paragraph, which clearly stipulates that operators shall not obtain or use data legally held by other operators through fraud, coercion, avoidance or sabotage of technical management measures, harm the legitimate rights and interests of other operators, disrupt the order of market competition, and establish a competition law and regulation model in which the data rights and interests of "legal possession" + "technical management measures" shall not be infringed.

(4) Realistic exploration of the data intellectual property registration system

In response to the requirements of the "Opinions on Digital Trade Reform, Innovation and Development" issued by the General Office of the CPC Central Committee and the General Office of the State Council, and to actually promote data property protection, in 2023, the State Intellectual Property Office will use 17 regions, including Beijing, Shanghai, and Zhejiang, as data intellectual property pilots, and take data intellectual property registration as a key measure to explore new paths for data rights confirmation. In September 2024, in response to the policy differences in data intellectual property registration in pilot cities, the State Intellectual Property Office implemented unified management of data intellectual property registration certificates, and data intellectual property registration certificates entered the stage of unified national standard, widespread issuance and regular application in multiple provinces and cities. The certificate registration and publicity period is 10 working days, and the electronic certificate will be issued after publicity without objection. After scanning the QR code at the bottom left of the certificate, you can view the complete information of the registration publicity, and there is a seal of the registration agency in the lower right corner, which can be used to verify the authenticity of the information and prevent tampering. The certificate is valid for 3 years, and can be renewed 3 months before the expiration date, and the validity period of each renewal is the same sample is 3 years. This unification facilitates mutual recognition and cooperation between provinces and cities, and enhances the authority of certificates. The certificate becomes a certificate of data collection holding, circulation transactions, and rights protection, helping enterprises carry out data pledge financing, transaction licensing and other activities, and providing a basis for credit evaluation of financial institutions and pricing of insurance companies. As of June 2025,

A total of 58,000 applications for data intellectual property registration have been accepted nationwide, nearly 30,000 registration certificates have been issued, and more than 90% of the registered entities are enterprises. [4] Data application scenarios are wide, covering marine, e-commerce, medical and other fields, fully demonstrating the great value and potential of data property in various industries. The data intellectual property registration certificate is effective as preliminary evidence of the legality of data rights and interests and data sources.

4. THE PRACTICAL DILEMMA OF DATA INTELLECTUAL PROPERTY PROTECTION

(1) There is a logical difference between data protection and the existing intellectual property system

Based on the intellectual creative contribution made by the creator, the intellectual property system grants the creator the right to exclusively use the achievement for a certain period of time, compensates for its innovation investment, and then promotes the scientific and technological and cultural progress of the whole society. In the era of digital economy, the source of value of data is not the intellectual creation of the subject's data, but also the information value extracted and mined after large-scale data integration, and the key lies in the investment made by enterprise data collection and collation. The value orientation of the data protection system is more diverse, and the core is to balance the circulation and utilization of data with the interests of multiple parties. On the one hand, it protects the security of personal information and the rights and interests of enterprise data assets, prevents the illegal leakage of users' personal information, and prevents the malicious crawling of data sets processed by enterprises. on the other hand, it ensures the free circulation of data as a factor of production, helps the development of the digital economy, safeguards the public interest, and prevents data monopoly or abuse from endangering market order. This is substantially different from the exclusive empowerment of the intellectual property system.

(2) The traditional intellectual property system protects data property one-sidedly

At present, the traditional intellectual property system cannot provide appropriate positioning and comprehensive protection for "data property". If a copyrighted work can protect the arrangement of original data collections, the active elements of its protection are limited to the expression of originality in the selection or arrangement of materials, which is neither an abstract selection or arrangement method, nor a specific content used to select and arrange, but a specific result produced by a certain compiler's original choice and arrangement on the specific content to be compiled. In addition, the scope of protection of a compilation is limited to itself, and does not include the compiled content contained in its downstream, nor does it include the compilation method or other derivative data expressed upstream.

[3] See: Shanghai No. 2 Intermediate People's Court (2010) Hu Er Zhong Min Wu (Zhi) Chu Zi No. 57.

[4] Xinhua News Agency. Nearly 30,000 pieces of data intellectual property rights help the development of the digital economy Exhibition, [https:// www.cnipa.gov.cn/art/2025/9/17/art_55_201578.html](https://www.cnipa.gov.cn/art/2025/9/17/art_55_201578.html), accessed October 10, 2025.

Therefore, a large number of data collections compiled by conventional methods such as time and level cannot be protected due to lack of originality, and the arrangement of copyright protection does not protect the data content.

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The Provisions of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Civil Cases of Trade Secret Infringement issued in 2020 clarified for the first time that data can be protected as trade secrets, providing a legal basis for the application of trade secret clauses to protect data. The trade secret clause also applies to confidential data, which cannot fully cover public data collections, and public data is an important source of data value in the digital economy. On the one hand, there is a contradiction between data circulation and confidentiality, if an enterprise sells or licenses data products to the market, its public use will conflict with the confidentiality requirements required for trade secrets, and it is difficult to identify them as trade secrets; On the other hand, the boundaries of identification are relatively vague, and some data may be in the gray area between openness and secrecy, such as data with an expanded scope of contact after multiple transfers, and its secrecy judgment needs to be demonstrated in detail in combination with individual cases, which is easy to cause controversy; In addition, over-reliance on this model may hinder the circulation of data elements, and the generalized application of trade secret protection may lead to enterprises not daring to make normal use of public data resources, affecting the overall development of the data industry.

Obviously, from the perspective of the traditional intellectual property system, a single intellectual property confirmation model cannot fully cover data protection

Protection. Many data cannot be protected by intellectual property because they do not meet legal requirements. For example, a data set formed in a simple and conventional arrangement order cannot reflect originality in its arrangement method and cannot obtain copyright protection; Some data will be difficult to protect as trade secrets in accordance with the law because they do not meet the requirements of "confidentiality, commercial value, and confidentiality" of trade secrets. However, the existing data intellectual property protection model is difficult to meet the current market demands for exploring the value of data. [5] Due to the complexity of data rights generation scenarios, subject relationships, and differences in technical characteristics, it is advisable to adopt a composite approach that adapts to them and construct a protection model that matches the characteristics of the digital economy.

5. SUGGESTIONS FOR OPTIMIZING THE DATA INTELLECTUAL PROPERTY PROTECTION MODEL

From our country's "14th Five-Year Plan" digital economy development plan in 2021, a comprehensive layout has been made for the development of the digital economy;

In 2022, the General Office of the State Council issued the "Overall Plan for the Pilot Comprehensive Reform of Market-oriented Allocation of Factors", exploring the establishment of rules for the circulation of data elements, establishing a legislative orientation for balancing data circulation and data protection, and providing goals for the construction of our country's basic data system. In the increasingly fierce development trend of data competition, to implement the regulatory goal of balancing data circulation and data protection, it is necessary to prevent data theft in the name of "data circulation", but also to be vigilant against data monopoly under the guise of "data protection", which not only supports the innovation and development of data holders, but also considers the competitive advantages brought by the subject's investment in data

resources to reasonably protect them, ensure the reasonable and stable operation of data rights confirmation and property rights, and also strengthen anti-monopoly and prevent the disorderly expansion of capital to break the data monopoly. Maintain openness to untapped public or raw data, encourage open competition in data, and provide fairness for the innovation and development of the data industry economy. Therefore, the optimization of data protection models should be closely combined with the characteristics of data to give full play to the value of data. our country's "Guidelines for the Construction of National Data Standard System" divides data into personal data, enterprise data and public

In terms of definition, the subjects of data rights confirmation include data sources and data processors, which are composed of three parts: natural persons, legal persons, unincorporated organizations, and the state. Based on the particularity of data form, it is more reasonable to divide data objects into personal data, enterprise data and public data. [6] Correspondingly, judicial practice has formed a multi-normative and parallel adjudication path such as the Anti-Unfair Competition Law, the Copyright Law, and the Personal Information Protection Law, and established the adjudication rules of "classified protection and stepped application". Priority shall be applied to the protection of copyright law for data collections with originality in the selection and arrangement; apply trade secret rules to data that meets the requirements of trade secrets; The first two are not applicable, but if the operator has made substantial investment in the formation and addition of data value, the improper use of the data shall be regulated through competition regulations. [7] According to the actual needs of data classification protection, the following suggestions are put forward for the improvement of the data intellectual property model:

(1) Copyright law protection mode

There are two main ways to incorporate data into copyright law, one is to classify it into a certain category of existing work types, and the other is to use data as a new type of work separately. This article argues that no matter what path it takes, Since originality is the basis for the construction of the entire copyright law, it should be a common requirement that all types of works need to meet, and the copyright protection of data collections should be uniformly applied to the originality standard. If the protection of data collections abandons the requirement for originality of works, it will shake the foundation of the entire copyright law and confuse the existing copyright rules. At present, when compilation works are cited as the basis for data collection protection, such as the case of *White Rabbit v. Dingrong* [8], *NavInfo v. Qihoo* [9], all require a certain degree of originality in the data collection, that is, the screening of data

Or the arrangement can reflect the personality of the producer. In view of the exclusivity of copyright law in protecting works, it sets up strong rights protection compared to other data rights and interests, so the protection of copyright law should be applied to data collections with originality in the selection and arrangement of originality.

[5] Yang Tianwa. How to strengthen the protection of data intellectual property rights[N].Guangming Daily, 2024-08-03

[6] Bao Weijie, Chen Xiaoqing. Data Ownership: A New Topic in Marxist Ownership Theory in the Digital Economy Era[J]. Shanghai Economic Research, 2024(9):36

[7] Li Yingxin. Promoting the efficient allocation of data elements with the rule of law[N].People's Court Daily, 2nd edition, 2025-06-16

For data intellectual property registration certificates issued by various regions in practice, because they have preliminary evidentiary effect in individual cases after formal examination [10], it is recommended to strictly review the content in the review and adhere to the originality standard to enhance the proof effect of their data rights and interests.

(2) Trade secret protection model

According to the existing regulations, the protection of data trade secrets needs to meet the triple conditions of "confidentiality, commercial value, and confidentiality", and the court needs to review this item by item in data confirmation cases. At present, there are differences in the determination of data trade secrets by courts due to the different intensity and effectiveness of technical measures taken by enterprises for data confidentiality in data disputes claiming trade secret protection. Some courts require enterprises to adopt strict physical isolation, encryption technology and other confidentiality measures, while some courts believe that basic authority management has met the requirements of "reasonable confidentiality". Some scholars believe that taking technical measures on data is a constituent element of protected commercial data to measure whether the data is protectable. The technical measures in the protection of data rights and interests are to declare the meaning of rights, which is different from the confidentiality measures in the protection of trade secrets. [11] This article also argues that the standard of confidentiality measures in the determination of data trade secret protection should be higher than the technical measures of data rights declaration, and if the data has commercial value, it is publicly visible and managed through basic technical protection (such as API interface permission control) or user agreement restrictions, it should not be recognized as "taking reasonable confidentiality measures" and should not be included in trade secret protection.

(3) Anti-Unfair Competition Law "Special Fund for Data Protection"

In particular, the promulgation of the special fund for data protection in October 2025 of the Anti-Unfair Competition Law (Amendment) has established a data rights protection model of "legal holding" + "technical management measures", which reflects the importance that legislators attach to the protection of data rights and interests Guidelines to achieve refined protection of data rights and interests, and then effectively balance data protection and data circulation.

According to the legislative goal of balancing data protection and data circulation, the data rights granted to data holders should be limited, and it is recommended to adopt a limited enumeration method to delineate the scope of data holders' rights and give data holders limited protection.

[8] See: Foshan Dingrong Software Technology Co., Ltd. and Jinan White Rabbit Information Co., Ltd. Copyright Ownership and Infringement Dispute Case, Foshan City, Guangdong Province

People's Court (2016) Yue 06 Min Zhong No. 9055 Civil Judgment.

[9] See: Beijing NavInfo Technology Co., Ltd. v. Beijing Qihoo Technology Co., Ltd., Beijing Xiuyou Technology Co., Ltd., etc Unfair Competition Dispute Case, Beijing Intellectual Property Court (2019) Jing 73 Min Zhong No. 1270 Civil Judgment.

[10] Li Yingxin. Promoting the efficient allocation of data elements with the rule of law[N].People's Court Daily, 2nd edition, 2025-06-16

[11] Kong Xiangjun. On the Construction of the "Special Provisions on Commercial Data" of the Anti-Unfair Competition Law: A way to implement the top-level design of the central government's data property rights system Eastern Methodology, 2022, (05): 26.

Protectable data rights and interests involve the legality of data generation, the contribution made by data holders to generate data, and the resulting competitive benefits or competitive advantages, and these data rights and interests should be lawfully held by data holders. Specifically, for "legal holding", the main consideration is whether the data holder is the legal operator of the data; whether operating costs have been invested in data and business services provided, including but not limited to business activities such as collection, storage, arrangement, management, and dissemination; paying for maintaining data security; Other derivative use and development of data; whether there is an agreement on the ownership and use of data in the agreement signed with the user; Whether commercial benefits can be obtained and competitive advantages can be obtained as a result. Because the Anti-Unfair Competition Law (Amendment) does not classify data attributes from the supply level, it is difficult to adapt to the diverse competition scenarios in the digital economy. In judicial practice, it is still necessary to face up to different scenarios of data application, and the use of data originating from users and data holders that have not been deeply processed and public data should not be subject to competition regulations as long as they do not violate the principles of "legality, legitimacy, necessity, non-excess, and user consent".

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