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NEW TECHNOLOGIES IN IP ENFORCEMENT

Contributions prepared by the European Union and the Tencent Group

1.   At the fourteenth session of the Advisory Committee on Enforcement (ACE), held from September 2 to 4, 2019, the Committee agreed to consider, at its fifteenth session, among other topics, the "exchange of information on national experiences relating to institutional arrangements concerning IP enforcement policies and regimes, including mechanisms to resolve IP disputes in a balanced, holistic and effective manner". Within this framework, this document introduces the contributions of one non-state Member (the European Union) and one private entity (Tencent Group) on the impact of new technologies on intellectual property (IP) protection and enforcement.

3.   In its contribution, the European Union explores how blockchain technology can help fight counterfeiting and its detrimental societal impact, describing how the European Union Intellectual Property Office (EUIPO) has joined efforts with the tech community on developing a blockchain solution for product authentication to support enforcement authorities. More specifically, the paper reports on the progress of the EUIPO's *Anti-Counterfeiting Blockathon Infrastructure* project: a high-level design architecture to develop the blockchain solution was selected and a roadmap for adoption and implementation was established.

2.   In its contribution, the Tencent Group discusses the symbiosis between copyright and technological innovation. It explains how new technologies (such as non-fungible tokens, virtual / augmented reality and artificial intelligence) have led to new types of copyright-protected content but, at the same time, have challenged copyright. The contribution argues for an increased use of technology in enforcing copyright and protecting the cultural industries, before making governance recommendations at the legislative, technological and platform level.

4.   The contributions are in the following order:

[Contributions follow]

NEW TECHNOLOGICAL OPPORTUNITIES FOR PROTECTING AND ENFORCING INTELLECTUAL PROPERTY RIGHTS — UPDATE ON FIGHTING FAKES THROUGH BLOCKCHAIN TECHNOLOGY

Contribution prepared by Claire Castel, Head, IP in the Digital World and Awareness Service, European Observatory on Infringements of Intellectual Property Rights, European Union Intellectual Property Office (EUIPO), Alicante, Spain[*]

ABSTRACT

The contribution provides some background on the challenge of combating trade in counterfeit goods, including the magnitude of the problem and its detrimental societal impact. Next, it addresses how blockchain technology can help address this challenge and how the European Union Intellectual Property Office (EUIPO) has joined efforts with the tech community with the objective of developing a solution for product authentication to support enforcement authorities in the fight against counterfeiting. Finally, the paper discusses the high-level design architecture that was selected to develop the blockchain solution and details the roadmap for adoption and implementation.

I.   ANTI-COUNTERFEITING BACKGROUND

1.   Intellectual property rights (IPRs) and their protection are fundamental to securing current and future economic prosperity in the European Union (EU) economy and in defending the creativity, innovation and entrepreneurship of citizens and small and medium-sized enterprises (SMEs) across Europe[1]. Conversely, infringements of intellectual property (IP), such as counterfeiting and piracy, significantly harm EU economic growth. A joint study conducted by the Organisation for Economic Co-operation and Development (OECD) and the European Union Intellectual Property Office (EUIPO) showed that in 2019, counterfeit and pirated goods amounted to 2.5 per cent of world trade and up to 5.8 per cent of European Union (EU) imports from third countries[2]. While slightly lower than the results of the previous 2016 study[3], these continue to be alarming results. The overall number and variety of counterfeit products detained at the EU borders has risen alarmingly and, consequently, increased the challenge for all actors involved in fighting counterfeiting and piracy[4].

2.   Given the limited resources of enforcement officers, technologies such as blockchain could prove to be game-changing tools in the fight against trade in counterfeit products. Since 2018, the EUIPO has led the way in applying such technologies to tackling trade in counterfeits through the Blockathon project[5]. This project came about by first organizing a hackathon-type

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[*]   The views expressed in this document are those of the author and not necessarily those of the Secretariat or of the Member States of WIPO.
[1]   Further information on IP protection in Europe can be found on the EUIPO website https://euipo.europa.eu/ohimportal/en.
[2]   OECD and EUIPO (2021), *Global Trade in Fakes: A Worrying Threat*, available at: https://euipo.europa.eu/ohimportal/en/news/-/action/view/5031024.
[3]   Organization for Economic Co-operation and Development (OECD) and European Intellectual Property Office (EUIPO) (2019), *Trends in Trade in Counterfeit and Pirated Goods*, available at: https://doi.org/10.1787/g2g9f533-en.
[4]   OECD and EUIPO (2021), footnote 2 above.
[5]   For an overview of the project up to 2019, see EUIPO (2019), *New Technological Opportunities for Intellectual Property Rights Protection And Enforcement: Blockathon – Fighting Counterfeits Through Blockchain Technology* (pages 8 to 11 of document WIPO/ACE/14/6), available at: https://www.wipo.int/edocs/mdocs /enforcement/en/wipo_ace_14/wipo_ace_14_6.pdf#page=8. The present contribution updated the EUIPO's 2019 report.

competition to test the feasibility of the idea. Later, a Stakeholder Forum was created, and, subsequently, a high-level design architecture in the form of a blockchain authentication platform was developed.

3.   Buying counterfeit products is not always an intentional act. On the contrary, as noted in various studies carried out by the European Union Intellectual Property Office (EUIPO), many consumers are misled into buying counterfeit goods, and even more are unsure whether a product they bought is in fact genuine or not. Indeed, in 2020, nine per cent of EU consumers, which amounts to around 40 million citizens, were misled into buying a fake product instead of a genuine one[6]. A much larger proportion of EU citizens (33 per cent) wondered if a product they had bought during the previous 12 months was genuine or counterfeit[7].

4.   As outlined in the previous EUIPO contribution[8], the negative effects of counterfeiting are not limited to economic loss, as they also expose consumers to health and safety risks[9], which is why the EU must remain at the forefront in the fight against counterfeits and why EUIPO has a key role to play in the overall EU strategy.

5.   Numerous existing technologies, procedures and tools[10] already contribute to the control of supply chains and the fight against counterfeiting, such as track-and-trace systems, radio-frequency identification, customs controls, as well as the EUIPO's IP Enforcement Portal (IPEP)[11]. However, the systems are often disjointed, and this isolation is used by criminal networks to their advantage.

6.   IP crime forms part of the European Multidisciplinary Platform Against Criminal Threats (EMPACT) priorities 2022-2025[12]. Therefore, the main actors involved in fighting IP crime must work closer together and develop new approaches to address these growing challenges.

7.   A potential solution to these challenges is to make use of the decentralized and synchronized blockchain technology that can deliver and create a secure and collectively shared record of authenticity. This should allow the tracking and tracing of an authentic product through the entire supply chain and empower all players involved to tackle counterfeiting more effectively. The vision is to use blockchain to develop an anti-counterfeiting infrastructure, where any interested party (producers, consumers, transport services, etc.) can easily check the authenticity of a product and alert right holders when an infringing product is detected.

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[6]   EUIPO (2020), *European Citizens and Intellectual Property: Perception, Awareness and Behaviour*, available at*:* https://euipo.europa.eu/ohimportal/en/web/observatory/ip-perception-2020.
[7]   *Ibid*.
[8]   EUIPO (2019), footnote 1 above.
[9]   EUIPO and OECD (2022), *Dangerous Fakes: Trade in Counterfeit Goods that Pose Health, Safety and Environmental Risks*, available at: https://euipo.europa.eu/ohimportal/en/web/observatory/report-on-dangerous-fakes.
[10]   The EUIPO is preparing a web-based technology watch tool to compare the various anti-counterfeiting methods and types available according to purpose, main technical and business characteristics and adoption times. An *Anti-counterfeiting Technology Guide* was published in 2021: https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/2021_Anti_Counterfeiting_Technology_Guide/2021_Anti_Counterfeiting_Technology_Guide_en.pdf
[11]   https://euipo.europa.eu/ohimportal/en/web/observatory/ip-enforcement-portal-home-page.
[12]   https://www.europol.europa.eu/crime-areas-and-statistics/empact.

II.   THE ANTI-COUNTERFEITING BLOCKATHON INFRASTRUCTURE PROJECT

A.   HISTORY OF PROJECT

8.   From a series of workshops in 2017 to a 48-hour Blockathon in 2018[13], the EUIPO conducted various activities over the last four years to investigate the benefits of blockchain technology for IPR enforcement. In 2019 and 2020, the EUIPO held in-depth meetings with the Blockathon 2018 winner and created the Blockathon Forum[14] to define the use case[15] and undertake a pilot study, which proved the feasibility of the idea and led to the development of a strategic project, *Anti-Counterfeiting Blockathon Infrastructure*[16], to drive the idea forward. In the long term, this project would ideally scale up and evolve in order to connect to the European Blockchain Service Infrastructure[17] and the European Self-Sovereign Identity Framework[18].

B.   PROJECT USE CASE

9.   Refined iteratively from the development of the idea to use blockchain technology for IPR enforcement, the original use case in 2019[19] was refined in 2022 and presented during the last Blockathon Forum hosted in May, as shown in Annex I.

10.   To begin the journey, IPR holders would gain access to the anti-counterfeiting blockchain through a dedicated portal, which would give them permissions to create tokens to represent physical goods (digital twins). Right holders could then authorize other parties, such as manufacturers, to create and handle the tokens on their behalf and record events and information for their goods.

11.   The record on the blockchain is a unique and immutable token. As goods pass from one party to another, the token is exchanged between digital wallets. The combination of a unique product identity and the continuous transfer of the digital identity between wallets creates proof that the goods are genuine. Along the journey of a product, customs and other enforcement authorities can access information, such as authentic shipping records, which can support risk assessment.

12.   From the transporter's perspective, shipping information is stored. While the solution focuses on the product level, a container can also be tokenized and connected to the goods contained using algorithms. This prevents the need to open a sealed container to check the authenticity of the contained goods each time a container moves between parties in the supply chain. Furthermore, tokenized goods with proven authenticity could be allowed a swift passage through customs checks.

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[13]   https://euipo.europa.eu/ohimportal/en/web/observatory/blockathon-2018.
[14]   https://euipo.europa.eu/ohimportal/en/web/observatory/blockathon.
[15]   https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/Blockathon/Blockathon-Forum_Blockchain-Use-Case.pdf.
[16]   https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/contentPdfs/Strategic_Plan_2025/project_cards/SD1_Anti-counterfeiting_Blockathon_Infrastructure_PC_en.pdf.
[17]   https://ec.europa.eu/digital-building-blocks/wikis/display/ebsi.
[18]   https://ec.europa.eu/digital-building-blocks/wikis/pages/viewpage.action?pageId=379913698.
[19]   https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/Blockathon/Blockathon-Forum_Blockchain-Use-Case.pdf.

13.   From the enforcement perspective, the blockchain can generate automatic alerts about the integrity of the goods if an anomaly is detected while the goods pass between parties in the supply chain. Permissioned applications can monitor for such events and send notifications to right holders and enforcement authorities. Optionally, the blockchain may record customs actions to keep parties in the supply chain updated on the status of a shipment.

14.   From an end-user perspective, the solution offers the possibility of enhancing the information held on the blockchain, by adding records manually or automatically through sensors. For a retailer or a consumer, this means taking advantage of such records to identify information such as the production facility, supply chain movements and provenance of raw materials.

15.   Finally, this infrastructure, through use of additional application programming interfaces (APIs) or defined data, will incidentally provide the following complementary functionalities:

–   By using defined data on the digital twin and creating dedicated alerts on their systems, right holders could also leverage the infrastructure to build additional services, such as product recall or market deviation use cases (e.g., where pharmaceutical products have expired or products are re-shipped towards countries with higher demand).

–   Right holders and consumers could benefit from additional business-to-consumers opportunities in the field of post-sale purchase of product sub-components, or the use of the authenticity certificate to resell in secondary market. Since the right holder defines what type of data is included in the digital twin, it could also lead to targeted loyalty program based on product specifications.

–   As part of a wider solution throughout the European Blockchain Services Infrastructure[20], consumers could benefit from a single wallet at EU level capable of storing all their non-fungible tokens (NFTs) and other digital certificates in one-location.

III.   LATEST DEVELOPMENTS AND ROADMAP

A.   THE ANTI-COUNTERFEITING SOLUTION

16.   After hosting an additional design competition in 2021, the EUIPO has now selected a high-level design architecture to develop the blockchain solution, which has been further elaborated upon during the last Blockathon Forum in May 2022[21].

17.   The overall idea is guided by the principle of technological neutrality, allowing brand owners to choose their own NFT platform, manufacturers to leverage their existing physical identification technology, and logistics operators to use their track-and-trace system of choice. The solution will introduce a common language in order for track-and-trace providers, NFT platforms and logistics enterprise resources planning (ERP) to collect and share proper data for anti-counterfeiting operations. The EUIPO will additionally create an identity management system, which will also act as the knowledge repository system to store interested stakeholders' identities and product location, thus positioning the EUIPO at the center of the ecosystem.

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[20]   https://digital-strategy.ec.europa.eu/en/policies/european-blockchain-services-infrastructure.
[21]   Further details on solution content and stakeholder feedback are available in the event report:
https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/ACBI_Blockathon/Blockathon_Forum_event_report_18052022.pdf.

18.   Concretely, the identity registry will fulfill two roles:

–   provide brand owners with means to sign digital twins of physical products; and

–   act as repository for verified brand signatures to all parties in the chain by drawing on existing EUIPO registers for Trademarks and Designs (TM and Design View[22]) and possibly interacting with national EU IP Offices through the *IP Register in Blockchain* project[23].

19.   The solution can be applied at different layers of the supply chain (sub-product, product, pallet, container). The peer-to-peer layer is an open-source API server that acts as a bridge between the stakeholders' information silos, and the nodes will notarize data exchanges and create an audit trail of the history of a shipment. The tool itself will remain versatile in terms of interoperability and with low effort and investment, thereby minimizing technological and economic barriers in the path of its wide adoption.

B.   TIMELINE AND ROADMAP

20.   The objective is, if conditions allow, to provide a live product by the end of 2023, with connection already established with participating EU customs authorities, right holders, logistics operators and retailers. Preferably, it will also establish a communication and connection protocol with providers of existing private track-and-trace blockchain solutions.

21.   In order to achieve this, it will be important, by the end of 2022, to regroup stakeholders previously engaged in the use case together with key supporting partners and undertake a proof of concept of the solution. Then, the challenge will be to transform the lessons learned from the proof of concept into technological requirements for the production of a minimum viable product and expand the existing supporting partner network engaged in leveraging the solution at it goes live.
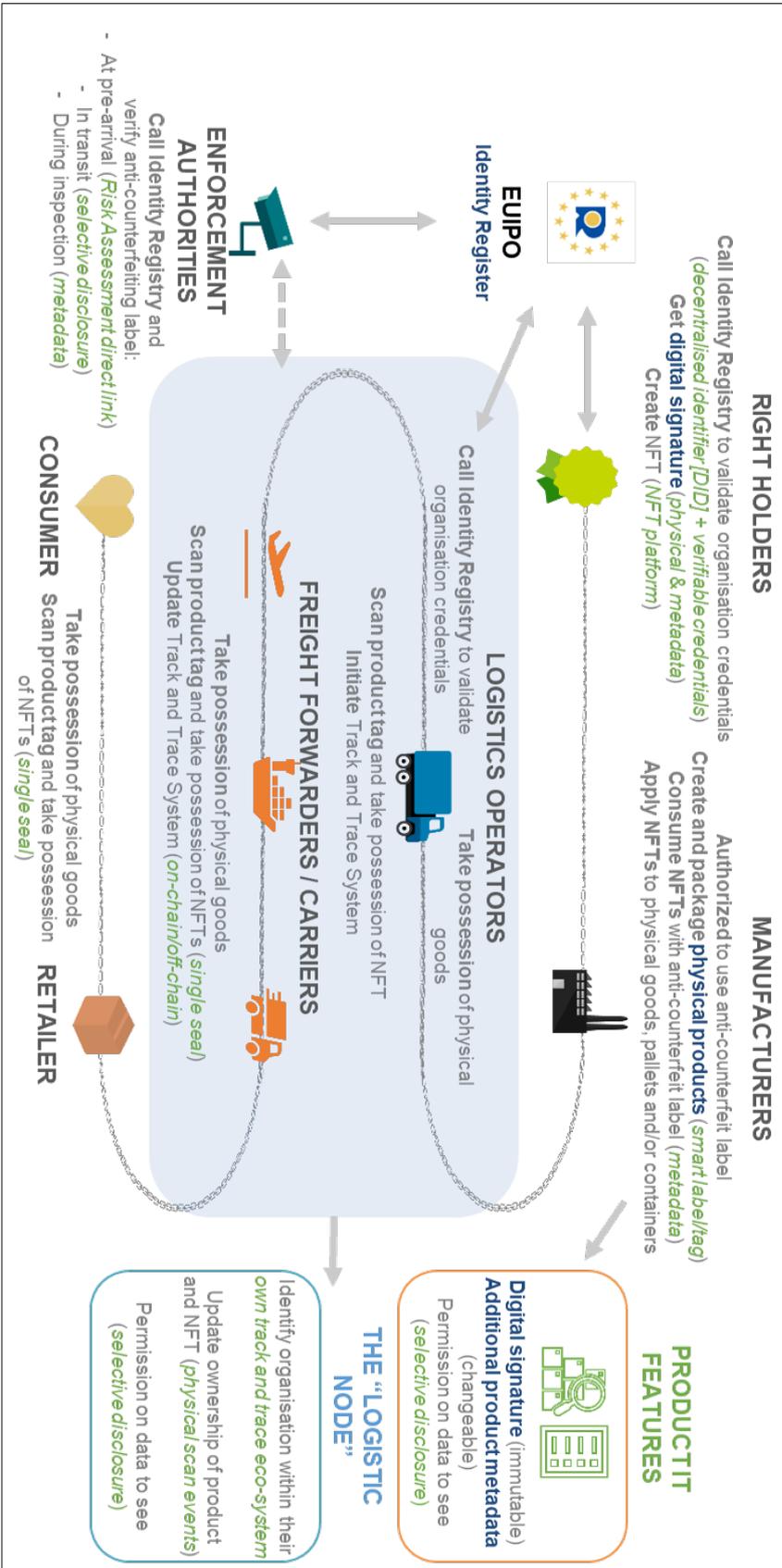

[Annex follows]

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22   https://www.tmdn.org/tmdsview-web/welcome#/dsview.
23   See https://euipo.europa.eu/ohimportal/en/news/-/action/view/8662923.

ANNEX – USE CASE WITH APPLIED IT SOLUTION

RIGHT HOLDERS

EUIPO
Identity Register

ENFORCEMENT AUTHORITIES

Call Identity Registry to validate organisation credentials
(*decentralised identifier [DID] + verifiable credentials*)
Get digital signature (*physical & metadata*)
Create NFT (*NFT platform*)

- At pre-arrival (*Risk Assessment direct link*)
Call Identity Registry and verify anti-counterfeiting label:
- In transit (*selective disclosure*)
- During inspection (*metadata*)

MANUFACTURERS

Authorized to use anti-counterfeit label
Create and package physical products (*smart label/tag*)
Consume NFTs with anti-counterfeit label (*metadata*)
Apply NFTs to physical goods, pallets and/or containers

LOGISTICS OPERATORS

Call Identity Registry to validate organisation credentials

Scan product tag and take possession of NFT
Initiate Track and Trace System

Take possession of physical goods

FREIGHT FORWARDERS / CARRIERS

Take possession of physical goods
Scan product tag and take possession of NFTs (*single seal*)
Update Track and Trace System (*on-chain/off-chain*)

CONSUMER

Take possession of physical goods
Scan product tag and take possession of NFTs (*single seal*)

RETAILER

THE "LOGISTIC NODE"

Identify organisation within their own track and trace eco-system

Update ownership of product and NFT (*physical scan events*)

Permission on data to see (*selective disclosure*)

PRODUCT IT FEATURES

Digital signature (immutable)
Additional product metadata (changeable)
Permission on data to see (*selective disclosure*)

[End of contribution]

FACILITATING COPYRIGHT PROTECTION IN CHINA THROUGH TECHNOLOGICAL INNOVATION

Contribution prepared by Mr. Jiang Bo, Vice-President, Legal Affairs, and Deputy General Legal Counsel, Tencent Group, Shenzhen, China[*]

ABSTRACT

Since technological innovation and intellectual property (IP) exist in symbiosis, to protect IP is to protect innovation. Copyright innovation not only includes technological and content innovation, but also innovation of business models. With the widespread use of blockchain, big data and artificial intelligence (AI), copyright laws should integrate technological and institutional protection, embrace technology-based governance models and facilitate building full-fledged and long-term governance mechanisms.

I.   NEW BUSINESS MODELS: THE TWO-WAY RELATIONSHIP BETWEEN COPYRIGHT INDUSTRY AND TECHNOLOGICAL INNOVATION

1.   Copyright development has extended from traditional radio and television to information networks, and from literature to games, animation, film and television, with a rise in merchandising and other IP-commercialization operations. New business models (such as audiovisual webcasting, literature, music, games and animation as well as live webcasting) are developing rapidly and have gradually become new driving forces and growth points for the cultural and creative industries.

2.   As far as the creation of new copyright-protected works is concerned, the wedding of science and technology with creativity is characterized by an abundance of imagination: examples include *Kuai Bi Xiao Xin* launched by Xinhua News Agency, *Microsoft Xiaoice* launched by Microsoft and the virtual AI singer *Ailing* developed by Tencent AI lab.

3.   Digital collections of non-fungible tokens (NFTs) are becoming increasingly popular. Underpinned by blockchain technology, the digital collections business is flourishing and shows great potential to enrich digital economy models and promote the development of the cultural and creative industries.

4.   Virtual reality/augmented reality (VR/AR) are widely used in webcasting, e-commerce, education, healthcare, entertainment, cultural tourism and other fields, which has created a number of copyright-protected works in the areas of art, film, television and games.

5.   In terms of content dissemination, with the help of real-time big data behavioral analysis, artificial intelligence (AI) can analyze user behaviors and then accurately promote the most relevant content. The channels and forms of online content dissemination are thus becoming more intelligent and diverse.

6.   In terms of technological tools, AI can be used for intelligent production and editing of videos to efficiently improve the final product. In the field of music, AI can be used for theme selection, initial generation, music arrangement and sound synthesis.

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[*]   The views expressed in this document are those of the author and not necessarily those of the Secretariat or of the Member States of WIPO.

7.   As for the digitization of cultural heritage, digital technology is used to collect data and preserve cultural heritage. Digital cultural creation platforms make it possible to explore and protect cultural heritage in a sustainable way, which in turn proves that digital content can be more interactive, intelligent and interesting.

8.   Lastly, copyright-related innovation not only includes technological and content innovation, but also innovation of business models. The metaverse represents the new era of online presence. The application of metaverse extends to social networking, performance, artwork, education, cultural tourism and many other fields, and brings about new issues that will reshape the digital copyright industry.

II.   NEW CHALLENGES: NEW TECHNOLOGIES CHANGING THE FACE OF INDUSTRIAL DEVELOPMENT

9.   Technological innovation, industrial development and copyright protection are a process of contradictory balance.

10.   The emergence and widespread use of new technologies such as blockchain and NFTs have challenged the definition and scope of copyright. Many new concepts, forms, subjects and objects have emerged.

11.   New types of infringement are emerging, and gradually extending to the whole industry chain, which has brought new challenges to copyright protection. For example, infringement tools are becoming more and more intelligent, algorithmic recommendations may cause the spread of infringement, and the "safe harbor rule" is also facing new problems.

III.   NEW APPROACH: TECHNOLOGICAL AND INSTITUTIONAL PROTECTION

12.   The copyright industry has "copyright" at its core. The industry benefits from the advancement of new technologies, however, it also relies on the establishment and improvement of the whole chain of copyright creation, utilization, commercialization, protection, management and service.

13.   Establishing copyright ownership is the first step of protection. Trusted timestamps, "unique digital copyright identifier" protection systems, digital watermarks, blockchain, *etc*., make copyright transactions more convenient and transparent, and reduce costs.

14.   Watermarking technology, blockchain, algorithmic recommendation, big data, and anti-theft chain technology are widely used to make the monitoring and analysis of copyright infringement highly intelligent.

15.   From the beginning of a copyright work life cycle, blockchain technology in particular can be used for copyright subsistence confirmation or copyright deposit, providing a new way for evidence deposit, transaction and protection of copyright online.

16.   "Security Cloud Infringement Website Blocking Technology", which blocks the distribution channels of copyright infringement and piracy through disabling access to distribution channels and displaying risk alerts on the user's device, to combat small websites that post and distribute pirated videos.

17.   By establishing an intelligent copyright asset management system, the copyright flow of each work is clearly visible, providing a basis for copyright asset investors and managers to make efficient and informed decisions.

18.   Right holders can establish all-weather, network-wide and platform-wide infringement monitoring of their IP rights. Quick and accurate investigations can greatly improve the efficiency and scope of infringement and piracy monitoring.

19.   Copyright confirmation and evidence collection can be achieved through work release and evidence deposit, copyright partners, infringement monitoring, infringement evidence collection and litigation, so as to provide a one-stop copyright protection service for creators.

20.   Blockchain technology has been actively applied in judicial trials in China. Qianhai Court in Shenzhen developed the *Zhixin IP Cloud Trial System*, using blockchain, AI and cloud computing technologies to conduct the whole process of IP case administration online, in an efficient manner covering case registration to trial and closure. Blockchain technology has provided important technical support for the innovation of judicial administration of trials.

IV.   NEW GOVERNANCE: MULTI-GOVERNANCE AND WHOLE-CHAIN PROTECTION

21.   Technologies, products and industries are constantly evolving. In the future, the development of digital content will not only open up the boundaries of the physical world, but also give us richer cognitive and life experiences.

22.   At the legislative level, new technologies will be considered and defined prospectively. The promotion of innovative business models by service providers and their obligations in the Internet era should be reviewed from a dynamic perspective.

23.   At the technological level, standards of digital copyright protection shall be unified to open up the whole chain of IP creation, utilization, protection, management and service, so as to promote the co-governance by the whole society.

24.   At the level of platform governance, a long-term mechanism should be established with diversified incentives for originality at the core, and rapid processing of infringement complaints and creative resolution of copyright disputes as the supporting elements.

[End of document]