

Exploration of Digital Asset Application: A Blockchain-Enabled Media Copyright Organizing Solution Based on Cloud Computing

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Keywords: Digital Asset Application, Media Copyright Trading, Blockchain.

Abstract: The media industry has been impacted by big data. Digital assets, as an important asset, with the combination of cultural and economic attributes, owned by media companies, which is of great significance to explore its innovative application. In this paper, we design a media copyright trading based on online-offline hybrid model. Specifically, the online media asset hosting operation platform, is divided into two parts, MAM and trading section. MAM is the foundation of the platform, and digital assets needs to be guaranteed through MAM before the transaction. MAM stores certificates through block chain, to realize media digital data copy right confirmation. Based on the premise of the separation of ownership and usufruct, the transaction plate realizes the realization of the usufruct of media assets hosted on the media asset trusteeship operation platform through "Block trading" and "Live trading" assets transactions. In addition, by giving full play to the characteristics of media resources and extending the digital assets transaction scenarios offline, which can effectively maximize the transaction value. It is expected that this paper can provide an effective path of digital assets application for the media industry.

1 INTRODUCTION

At present, the theoretical understanding of digital assets lags behind its application practice, and on the whole, there are widespread disputes over big data's confirmation of rights, transaction pricing and capitalization in all kinds of industries. This forms a potential hidden danger to the sustained and healthy development of big data's industry and digital economy, as well as the media industry, cultural industry and other related fields rooted in digital assets.

This paper focuses on digital assets, through the construction of a blockchain-enabled media copyright organizing solution based on cloud computing, to explore the digital assets' right determination, transaction, digital application path, hoping to provide reference for the exploration of big data in certain industries and related fields.

2 THE DEFINITION OF DIGITAL ASSETS AND THE IMPORTANCE OF ITS COPYRIGHT TRADING

2.1 The Definition of Digital Assets

How to define digital assets? "A digital asset is any item of text or media that has been formatted into a binary source that includes the right to use it." (Van, 2006), "Digital asset is an ownership with any kind of data in binary form stored in your computer or over the internet in a cloud somewhere." (Toygar, 2013), "Any digital form of information stored in computers, smart phones, digital media or clouds." (Warwick-Ching, 2012), however, these definitions are based on format, without considerations of the content of digital assets.

Generally speaking, digital assets mainly refers to video, audio, text, pictures and other media content data generated by media companies in the process of business production, as well as channel big data and

advertising resource big data. In addition, the application of big data collection technology, the collection of user terminal data, interactive data, behavior data and other derivative data. From the perspective of asset attributes, on the one hand, digital assets is not only the content asset of media companies, but also the core asset, with high cultural value; on the other hand, these "sleeping" assets are often sealed in inventory, lack of effective scene applications, and its potential commercial value needs to be further explored.

Looking at the typical characteristics of digital assets for media, it is mainly based on original and contained data, with obvious characteristics such as unstructured, fragmented, massive disorder, high reuse value, strong spillover effect and so on.

2.2 The Importance of Copyright Trading for Digital Assets

Copyright is the core of the value chain of media industry. In essence, the digital asset belongs to copyright industry. Media is the carrier of content assets, which is the form of expression of media. With the rapid development of modernization, industrialization and informatization of the media industry, the traditional broadcasting channels owned by the radio and television media are no longer scarce resources, and the development of the media industry is gradually encountering a bottleneck. (Li, 2014) For media industry, in addition to channel resources, a large number of content resources accumulated for many years should be their most valuable core assets. How to transform the advantages of content resources into industrial advantages and maximize the copyright value and economic interests of content resources is a realistic problem to be solved urgently. It is of great significance to solve the problem of copyright use of media assets inventory content resources, to make these precious content materials really move, to promote the industrial development of media assets, and to increase the value of content assets through the market.

Large media companies are working on their digital work-digitizing historical newspapers, valuable documentary videos, audio materials, and even TV dramas, variety shows, stage dramas, etc., so that people can access them on the Internet. For example, China Central Television has more than 1 million hours of collection resources, of which nearly 700000 hours have been digitized (Sun, 2018); for example, BBC's ambitious Digital Media Initiative (DMI) spent £100million, but cancelled the project because of high costs, poor internal management, and inability

to explain the value of digital media assets (Steve Hewlett). It is noteworthy that some local regional media companies have been digitizing rapidly and effectively.

The Weekly Challenger, as a local newspaper in Saint Petersburg, Florida, United States, established in 1967, successfully realized digital through a special legislative appropriation from the State of Florida (García-Perdomo, 2021). Palopo Pos, a local media in Luwu Regency, Sulawesi Selatan, Indonesia (Amir, 2022) and a newspaper library in Kerala, Malaysia (Sreekala, 2019) have successfully realized digital by the help of local authorities or companies' funds. Compared with large media companies, they have relatively less media resources and lower costs, so they can digitize faster. However, in the era of integrated media, they face the same cost challenges in the future as the volume of data storage continues to increase.

3 DESIGN OF BLOCKCHAIN-ENABLED MEDIA COPYRIGHT ORGANIZING SOLUTION BASED ON CLOUD COMPUTING

For media asset management, the traditional way is to store it and manage it through the platform. However, with the rise of social media, the attention of local regional media companies is decreasing, and the cost of maintaining media assets is also increasing. Therefore, it is necessary to make use of the value of media assets through a series of combination methods, such as technology and business, to reduce the cost of media asset management, and even become a new source of income.

3.1 Traditional Media Assets Rights Management in Regional Media Company

Local regional media companies, different from trans-regional media, even some multinational media groups such as CNN, BBC, FOX, TASS and CGTN, pays more attention to local news, activities and other content related to the life of local residents. Although it does not perform well in the media content variety, compared with multinational media groups, its content is more accurate (Selina, 2018), and compared with social media, it can reflect objective facts more timely and comprehensively (Limaye, 2020). Local

regional media companies output includes local news, especially breaking news, daily news, local variety shows, films, documentaries, event records and so on. With the expansion of data scale, especially the improvement of video definition, the cost of preserving and managing these data assets increases gradually over time, thus it is necessary to manage these valuable local media data assets while managing them, in order to give these assets effective and profitable protection, instead of increasing the pressure of financial cost simply.

However, most Media Asset Management platform (MAM) only focuses on (Veynberg, 2019) the management of media assets, that is, digital assets metadata governance, including a series of processes such as the formation of data associations. At present, there are some forward-looking researches, such as FINA's MAM database (Kaliszewska, 2021), not only does it have effective tools and multi-dimensional metadata structures, but also detailed analysis of the unique characteristics of audiovisual collections. Paying attention to the analysis of the content of media assets is undoubtedly based on the establishment of content-based transactions. Therefore, it is necessary to design a platform that supports the trading of media assets based on MAM function.

However, the copyright issue is a major difficulty in media asset trading process, especially the context of social platforms, while copyright is the restriction of copying, whereas the ethos of social networking is the promotion of sharing (Bosher, 2019). Informing in its user agreement is useless because very few people will read it, and most copyright infringement is untraceable. Using block chain for certificate storage and tracking combined with crawler technology is a feasible way (Zhou, 2019), but it is a better way to plan media property transactions through online platforms or offline scenarios.

3.2 Integration of Digital Asset Hosting Operation Plan Base on Online and Offline

In the article, the online media asset hosting operation platform, is divided into two parts, MAM and trading section. MAM is the foundation of the media asset hosting operation platform, carrying the responsibility of data governance and ownership determination. Not only does MAM distinguishes data by format, but also the semantic attributes of entities, including participants, organizations, location, events, and time. Among them, participants are not limited to the author of media, but also includes the main characters in media, such as the protagonist of the play, the party

of the news and so on. Similarly, the other four elements, such as organizations, containing not only the file metadata, but also the analysis of the content. Meanwhile, the platform will complete the data mining of media assets through data cleaning, association and other steps, and ensure media data transmission and data security through point-to-point transmission.

Media assets needs to be guaranteed through MAM before the transaction. In view of the two problems, the difficulties of media assets tracing and the unclearness of commercial value, MAM stores certificates through block chain, and embeds copyright information and embedded coding in metadata to realize media digital data copy right confirmation, building foundations for subsequent copy right evidence obtaining. MAM crawls the embedded code in the whole network and compares it with copyright confirmation to realize the media resource copy tracking.

Currently, a phenomenon exists that media assets is in the hands of individuals, including editors, journalists, directors, and other staff. On the one hand, this has caused economic losses to local-regional media companies-you can't force the staff to take out the media assets that the company does not know exists. On the other hand, hiding these media assets is a waste of society, and people will no longer see or hear the history behind these media assets. At the same time, there are many phenomena of illegal use of media assets to develop derivative products or services without permission, which cannot be completely solved by crawler search and tracking, and it is difficult to obtain evidence and safeguard rights in court.

NFT has caught public attention since 2021, with bright market expectations and variable collections from videos, pictures, art masterpieces, even games. Considering the difficulties to protect copyrights, and the current situation that NFT could be seen as economic bubbles because of lacking actual dependents. Therefore, it is necessary by applying blockchain technology, based on NFT tokens, through digital assets dividends to enable stakeholders to have the opportunity to obtain benefits in a legitimate form. Assets owners and local-regional media companies can achieve permanent accounts that cannot be tampered with through the number of NFT holdings on the basis of reaching an agreed dividend ratio. Through platform access, developers, such as YouTube's organizers, can meet their needs and get their corresponding income from buyers. Simultaneously, consumers can also buy NFT through the platform, so as to get a certain income of digital assets to participate in dividends, so as to make NFT produce value, rather than simple speculation. In addition, by accessing the judicial chain of the court, the platform can upload the

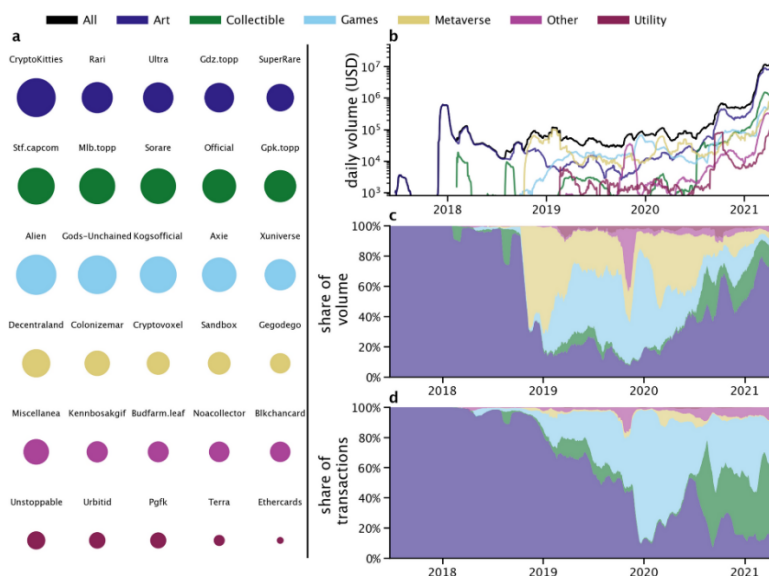


Figure 1: NFT market description (Nadini, 2021).

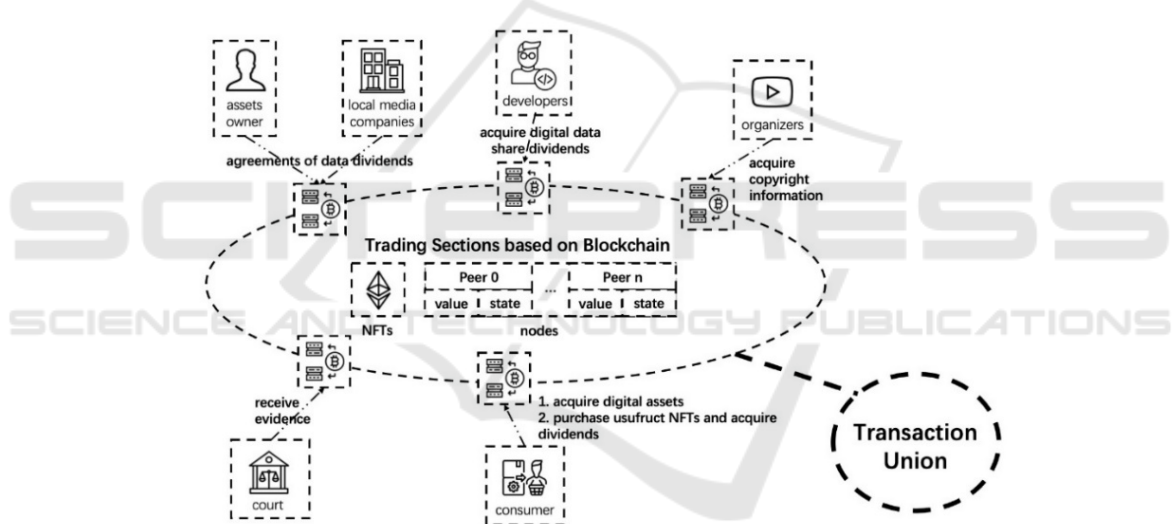


Figure 2: Trading Sections based on Blockchain (Photo credit: Original).

evidence directly to the court as material evidence. Finally, through the interconnection of multiple platforms, we can achieve transaction union and form a decentralized and untampered local-regional media companies blockchain platform, so as to improve the liquidity of media assets and increase more value.

Based on the premise of the separation of ownership and usufruct, the transaction plate realizes the realization of the usufruct of media assets hosted on the media asset trusteeship operation platform through "Block trading" and "Live trading" assets transactions. "Block trading" refers to the one-time sales of media assets through the platform API interface to operators, including professional trading platforms or

databases, such as Springer Link CNKI, or large comprehensive media such as BBC, social networking sites such as YouTube, according to a certain theme, pricing according to Digital Assets Valuation Model (Song, 2010). MAM's trading section records the start and end times of each transaction, so that the user is notified of the termination of the contract at the end and the new contract can be renewed.

"Live trading" digital asset transactions are based on the consumer side, providing services to provide media resources directly to consumers. One way to open data is to sell directly, such as "Birthday Daily"- selling the electronic media resources to consumers in the form of "birth-date newspapers", based on

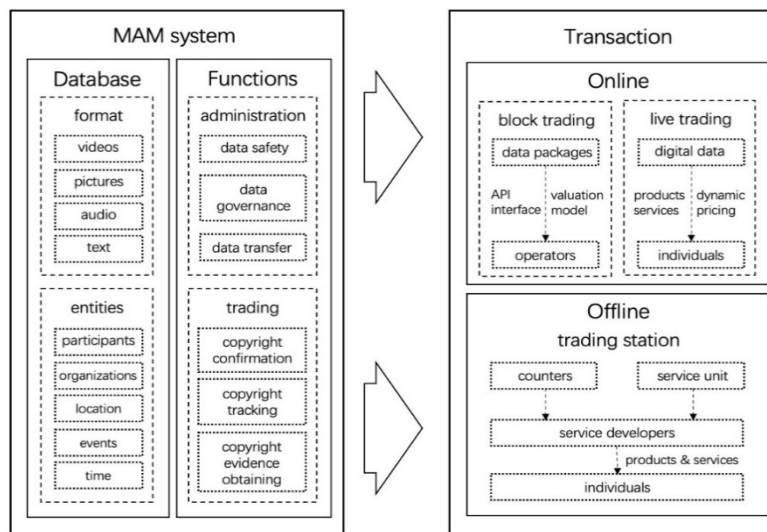


Figure 3: Media Copyright Trading based on Online-Offline Hybrid Model (Photo credit: Original).

MAM's participants' face recognition data, extracting the characters in specific media resources, etc. In addition to the direct pricing of similar referring products, auction bidding is adopted for popular media resources and derivative products, and the final purchasers can get the NFT tokens of media resources and derivative products.

Traditionally, asset trusteeship only relies on online platform, by using website or applications, losing opportunities of extending to make money on scale. However, the high-input city-level hall of compared with, fully considering that the "trading station" of the media resource application is more cost-effective, which can be deployed in shopping malls, libraries, cinemas and other places that are fully related to the content of media resources. It includes temporary, mobile automatic interactive equipment, or spot with personnel to promote the platform. These will be licensed to local service developers, such as film promoters, event planners, curators, etc., helping local-regional media companies develop its unique local advantages over large media groups

4 CONCLUSION: RETHINKING ON THE APPLICATION OF DIGITAL ASSETS

Specifically, the online and offline integrated digital assets copyright trading application has important innovative value, which effectively solves the business "inertia" of "re-broadcasting over copyright". It pro-

vides a clear path of fine authorization and online-offline integration, which is helpful to solve the dilemma of transaction channels in the market-oriented development and utilization of digital media copyright resources. As a kind of identifiable intangible assets, radio and television media assets are the precious wealth with the most development potential. Only through the realization of the value of media assets and the reorganization of the trading platform and local-regional media companies' organizational structure, can we maximize its potential market value in the face of huge media content assets, achieve extensive economic benefits, and maintain and increase the value of valuable assets.

Generally, digital assets, as an important part of big data in cultural area, which is a small step in the application and exploration of digital assets, could help to improve advance of the media industry. As media industry is different from other industries, digital assets is also significantly different from data in other industries. In addition to economic benefits, the important cultural value, historical value and social value of culture itself are also worthy of attention. Technology serves the business, and it is expected that this article can bring some different practical paths and theoretical sublimation in the field of "big data + culture".

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