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Use of Blockchain Technologies Within the Creative Industry to Combat Fraud in the Production and (Re)Sale of Collectibles

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Abstract: The music industry has evolved significantly over the last few decades, from cassette to compact disk to MP3 and now to subscription-based streaming. Simultaneously, there has been a return to analogue, especially to vinyl records. In 2021, a major record label will introduce a new kind of vinyl. From the original master tapes, one-of-a-kind copies will be made. These will be manufactured in very limited quantities and sold exclusively as collectors' items. In a world where purchasing these collectibles is as simple as tapping the screen and where there are also numerous trading markets between private individuals, new creative ways to protect consumers and digitally protected analogue collectibles must be found. This relates to both the product's authenticity and the legitimate possession of the valuable vinyl. This work in progress paper aims to determine whether digital identities of suppliers, distributors, and consumers on the one hand, and decentralized encrypted data storage on the other, can be potentially the future technology to safeguard collectibles that the creative industry should be more than just looking at.

Keywords: collectibles, blockchain, digital ID, vinyl

1. Introduction to the topic

Collecting not only for survival but for cultural or educational reasons has accompanied mankind for thousands of years (Wilde, 2015). The very first collections of cultural goods as burial artefacts go back to 3000 BC in ancient Egypt. Early collections of books already existed in the ancient world by Polycrates of Samos and Euripides. Since the 6th century AD, collecting has been the privilege of the European ruling houses and the churches in their treasuries. This demonstrated power, wealth and influence (see *ibid*). For the first time, in the Renaissance, tendencies towards individualization become noticeable, and with it begins the golden age of collecting luxury goods that serve the "knowledge of the world". The first private collections emerged in the 14th century, and from 1450 onward, specific rarities and precious objects were collected, such as antique manuscripts, coins, statues, but also plants and the first cabinets of curiosities were created. In the following period of the Enlightenment, the society becomes modernized, and consequently collecting is socialized and democratized and enters the classical bourgeoisie. Two types of collection, the public and the privately owned, were established side by side (Werner, 2018). In the private sector, a new type of collection emerged in the 19th century - the small collection. Its purpose is to give cultural and intellectual pleasure to the collectors and add value to social life. The private collection is often an expression of the personality and identity of the owners (Wilde, 2015).

In the 21st century, the trend towards private collections has manifested itself. Research shows that every third German has a collecting impulse. For Austria, with its population of just under 10 million, a country that is culturally close to Germany, it is assumed that three million people collect items privately (see Schindelbeck, 1997, Sommer 2011, Jolmes, 2014). The most diverse things are collected; from curiosities, antiques, collectible stickers to music. Also, in the 21st century, collectables increasingly include digital items, such as computer games that were installed without data carriers, items as part of computer games or music songs and albums in their pure digital form or access to a streaming service (Werner, 2018, Pfeiffer, 2018).

In regard to Blockchain technologies Serada et. al. (2020) analyzes specific characteristics of value created through digital scarcity and Blockchain-proven ownership in cryptogames. Although their research relates to a digital collection game, conclusions can be well drawn for our project. Pfeiffer et. al. (2020) have also examined Blockchain technologies and found that it is precisely the safeguarding of collective objects, in other words digital items of real-world value that can be optimally secured by Blockchain. The connection between real-world

objects and Blockchain technologies for marking ownership and ensuring that it is an original is very well illustrated in the developer docs of the company Riktig. These provide an important resource for our work.¹

2. Planned research aims and methods used

This work in progress / case study paper deals in particular with the current trend of collecting vinyls², specifically within the conceptualization of a major record label to produce strictly limited special editions directly from the original master tape. Besides the new complex manufacturing process and the strict limited availability, the aspect of counterfeit protection on the one hand and the proof of ownership on the other hand are of utmost importance. In addition, new business models are to be considered. For this purpose, the use of Blockchain technologies, specifically a demonstrator on the Blockchain Ardor/Ignis³ is being developed. The first iteration of this demonstrator is described below. This served as the basis for the expert opinions in the frame of this study.

The research questions for the final paper are divided in two parts. In the first quantitative study, collectors of vinyls will be surveyed regarding:

- their overall motives;
- why this medium is so attractive to them as a collectible;
- how they see the future of the collecting of vinyls;
- whether the protection and certification of an authentic item plays a role for them;
- and finally, if the link to a digital identity and the connection to a customer to customer (C2C) sales platform handled via smart contracts could offer advantages.

The second part will be conducted in the form of expert interviews. In this work in progress, the key statements of the first interviews are presented, which have served to find the questions for the upcoming planned longer series of expert interviews. The focus here is on the issue of counterfeit protection, allocation to identities and the establishment of a C2(B)C marketplace. The latter means that customer sells to customer, but companies are integrated as part of the automated smart contracts via Blockchain. This present two key advantages, mainly for identity verification of the traded object and its owner on the one hand and on the other hand in the form of receiving a brokerage commission as part of a new business model.

3. Presentation of the developed demonstrator

As part of the demonstrator, restrictive utility tokens are created on Ignis, the Blockchain Ardor's childchain, which will act as the digital counterpart of the respective limited edition vinyl. Restrictive means that the conditions under which the utility token can be sent from one wallet to another are defined in the form of approval models. For example, wallet addresses can be whitelisted, multi-account signature processes can be defined, or it can be determined that the possession of an authorization token is necessary to initiate certain actions.

Two different types of tokens are generated. The first type of tokens are singleton tokens (NFTs). These are unique tokens of which exactly 1 piece exists and which have their own transaction ID. This would be ideal for particularly valuable unique pieces. Here, the token description can be used for a general publicly visible description of the token, for example, which real good is digitally represented including, for instance the serial number and other factors which describe the product in general and show its unique characteristics. For each transaction, encrypted or unencrypted messages can be used to store meta-data.

This possibility is essential for our demonstrator, because the digital signature that identifies the owner is written into this as attached message, stored on Blockchain, accessible in form of the unique transaction ID. The second token corresponds to the number of pieces of a planned edition. Here the token description is the same for all tokens. If for example, a limited edition of 2000 pieces is produced, the same amount of tokens which share the same token ID and a common public description of the token properties are generated. The individualization,

¹ See <https://riktig.io/docs/developer>

² See <https://www.catawiki.de/stories/735-warum-man-jetzt-mit-dem-sammeln-von-vinyl-anfangen-sollte>

³ See <https://www.jelurida.com>

such as the serial number, which vinyl it is, the issuer, the year of issue, the owner and other relevant meta data is therefore attached as an encrypted message to each transaction.

Using the marketplace of the Blockchain Ardor, the sales process from one account to another is simulated in the form of a role play. This involves the transfer of ownership rights, payment processing directly with cryptocurrencies or via digitally signed instructions to the house bank and the possibility of matching with databases of the manufacturer for additional verification of the vinyl, including update of the respective legal owner. We will also work out how to implement concepts where the system records and verifies private data (including ownership) but no unauthorized people can read this data. As such, future research should be directed towards what is commonly referred to as zero knowledge proofs, whereas one party can prove to another that they know a value x , without conveying any information apart from the fact that they know the value x .

4. Preliminary expert statements

In this Work in Progress / Case Study Paper, we would now like to sum up briefly the results from the first round of expert interviews. The statements refer on the one hand to the feedback on the first iteration of the demonstrator and on the other hand to essential points, which have to be considered for the completion of the full paper and the development of the questionnaire for the collectors. For this work in progress / Case Study we refer to statements from three selected experts

E1 is a tech-savvy musician who also manages his band. The amateur band usually plays in front of audiences of around 150 people and sell about 500 CDs per edition. Furthermore, they have a few thousand counted streams of their songs per year. The creation of a small edition vinyls for the closest fans has already been considered.

Even though it's probably not a big issue for his band yet, he finds the collector's edition aspect exciting. For his fans, this is also a bit of gambling on the band's future success. For him, it is important that he, as a small self-publisher, gets access to the use of the systems, via for example, a licensing system of external providers (such as the vinyl or CD pressing plant be). Also, he will get the possibility, after a review of certain factors, to register his own label with large major labels and sell the limited editions, as well as to use the new resources, such as the online store, for collecting such special editions.

E2 is not from the music industry, but an expert in Blockchain based processes and smart contracts. He finds the demonstrator very exciting and the concept well developed. He suggests thinking about the possibility of multi-chain connections early on, so that different systems and Blockchains can communicate with each other. He also suggested a design where the private information is mapped separately from that of the collection piece, but nevertheless through approval models one part does not work without the other. In this way, current European data protection law can be better addressed, such that private information remains private. For him, it is important to look at the transaction costs and who will be responsible for them. An important issue is the area of digital identities, and here it is particularly important to think beyond national borders.

E3 is the executive director of the major label releasing the novel collector's editions. While the launch of this collection is not yet secured on Blockchain, there is interest in the technology and this independent accompanying research serves as an initial evaluation. While the rising consumption of streams has become the backbone of the recorded music economy, the vinyl is the only format that defies the decline of the physical business. The reason for that is the iconic history and emotional value of the vinyl disc and the fact that it is strictly analogue i.e. anti-digital. The question is, how a very digital and modern concept as Blockchain sits with the hardcore vinyl collectors and how the value of such an evidence of ownership can be communicated. Another requirement would be the easy usability for both the manufacturer of the limited editions, as well as the owners.

5. Conclusion

The initial expert interviews provided a sound basis for the development of the quantitative questionnaire. Further steps can also be taken for the second iteration of the demonstrator, which will then be discussed in the next expert round, where we plan to discuss the results of the online survey together with the second iteration of the demonstrator. With regard to the development of the demonstrator further possibilities offered by the Ignis Blockchain will be explored in further iterations of the demonstrator, such as the division into 2 token systems for the same collectible. One token will contain the private owner data (encrypted) and another token

the public data around the vinyl. Both tokens can only be sent together, which is guaranteed by the corresponding approval model. The work so far shows that the topic of combining Blockchain-based digital identities with tangible collector editions may be novel but very exciting for both the industry and the end user, namely the music fan and collector. Finally, such findings are potentially of interest for applications within other creative industries.

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