NFT Usage and Future Direction

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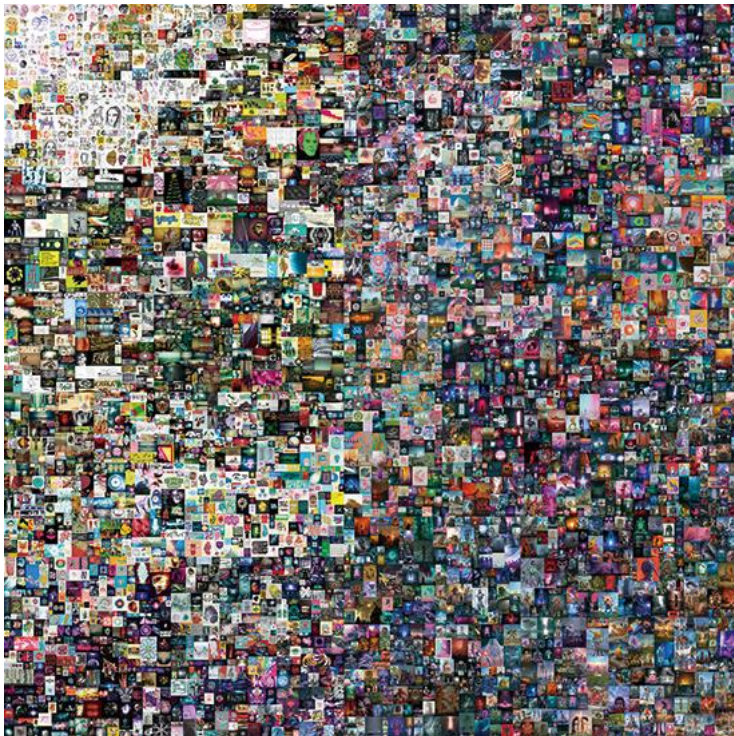**Korea Internet & Security Agency**

Table of Contents

I. Reasons for NFTs Attention [1/4]

Everydays: The First 5000 Days

- It is a collage of the artist's digital works uploaded online for 13 years from 2007

- It is the first NFT work to be traded at Christie's auction, and the third highest price among living artists

- 42,329 ETH, $69,346,248(2021)

FILTERS

BEEPLE (B. 1981)
PILGRIMAGE

Estimate
USD 150,000 - 250,000

Price Realised
USD 252,000

BEEPLE (B. 1981)
HUMAN ONE

Estimate on request

Price Realised
USD 28,985,000

Why do people pay attention to NFTs? ∙∙∙

Digital Flex   When the supply of material means is relatively insufficient compared to human material needs

⟨ Baseball Cards ⟩

About 5.5 billion won sold at auction ('21.6)

1933 GOUDEY
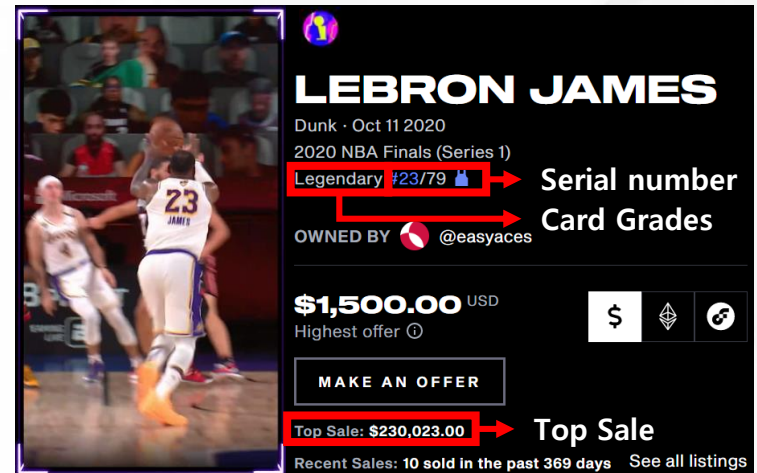BABE RUTH   #53
9   02043875

→ Serial number
→ Card grades(1~10)

#53   #144
#181   #143

**Babe Ruth Baseball Cards issued in 1933
The extraordinary sports collection of Dr. Thomas Newman**

⟨ Digital Sports Cards ⟩

**Approximately KRW 240 million transaction
in Top Shot Marketplace ('21.2.23)**

LEBRON JAMES
Dunk · Oct 11 2020
2020 NBA Finals (Series 1)
Legendary #23/79   → Serial number
→ Card Grades
OWNED BY @easyaces
$1,500.00 USD
Highest offer ⓘ
MAKE AN OFFER
Top Sale: $230,023.00   → **Top Sale**
Recent Sales: 10 sold in the past 369 days   See all listings

**NBA Top Shot is officially licensed NBA
The higher the probability of drawing a rare card,
the higher the card pack price.**

LeBron James dunk card in 'NBA Top shot'

Play(Dunk) + Serial Number(Back Number) + Match Result(Win)

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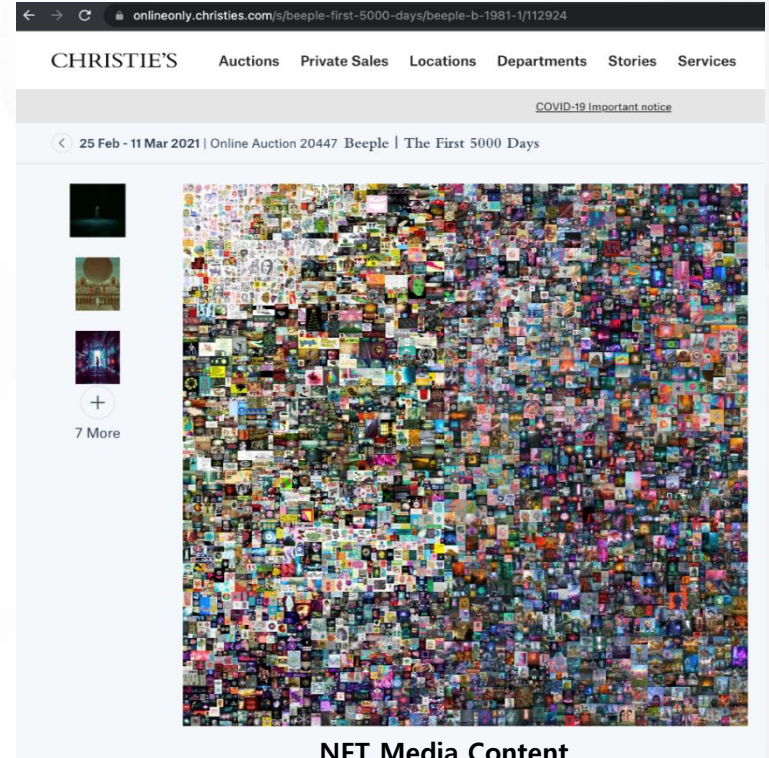
* Source : YONHAP NEWS, NBA Top Shot

Why do people pay attention to NFTs?

Digital Genuine

The ability to accept or believe that is consistent with or based on facts

It was difficult to verify authenticity because digital contents were duplicated during the transmission process, but with the advent of NFTs, it is possible to verify the authenticity of digital contents.

NFT Smart Contract Information

Details

Beeple (b. 1981)
EVERYDAYS: THE FIRST 5000 DAYS
token ID: 40913
wallet address:
0xc6b0562605D35eE710138402B878ffe6F2E23807
smart contract address:
0x2a46f2ffd99e19a89476e2f62270e0a35bbf0756
non-fungible token (jpg)
21,069 x 21,069 pixels (319,168,313 bytes)
Minted on 16 February 2021. This work is unique.

CHRISTIE'S   Auctions   Private Sales   Locations   Departments   Stories   Services

COVID-19 Important notice

25 Feb - 11 Mar 2021 | Online Auction 20447 Beeple | The First 5000 Days

7 More

NFT Media Content

NFT Metadata

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Why do people pay attention to NFTs? ··

Digital Ownership

The right to have fully control over

Buyers can reproduce for various purposes by directly transferring the ownership and resale rights of the character IP of the purchased NFT

The Bored Ape Yacht Club (BAYC)

Operate a private party that only NFT owners can enter

Create owned NFT characters as metaverse avatars

Manufacturing and selling wine using NFT characters

Clothing production using NFT characters

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What is NFT?

Fungible ≒ Replace

Easy to exchange or trade for something else of the same type and value

Fungible Token (FT)
ERC-20

Non-Fungible Token (NFT)
ERC-721

#1 #2 #3 #4 #5 #6 #7 #8

#9 #10 #11 #12 #13 #14 #15 #16

1 ETH   1 ETH   1 ETH   1 ETH

Worth of virtual assets is equal

Worth of #1 and #16 is different

II. Understanding NFT [2/3]

The Difference between FT and NFT

| Features	FT(ERC-20)	NFT(ERC-721)
Type	Currency	Deed
Token Information	Token Symbol	Unique Identifier of Contents
Substitutes	O	X
Divisibility	O	X
Trace information	Balance	Ownership
Application	Transfer Token	Owner Rights

Criteria	Contents
NFT Media Content	The original digital content itself, usually stored on an external storage medium other than the blockchain
NFT Metadata	Provision of NFT media data title, brief description, creator information, media data storage address, etc.
NFT Smart Contract	Provides functions such as ownership verification, transfer of ownership, and royalty payment / records NFT metadata storage location

* Source : FINANCIAL SECURITY INSTITUTE (2021. 8)

The Component of NFT

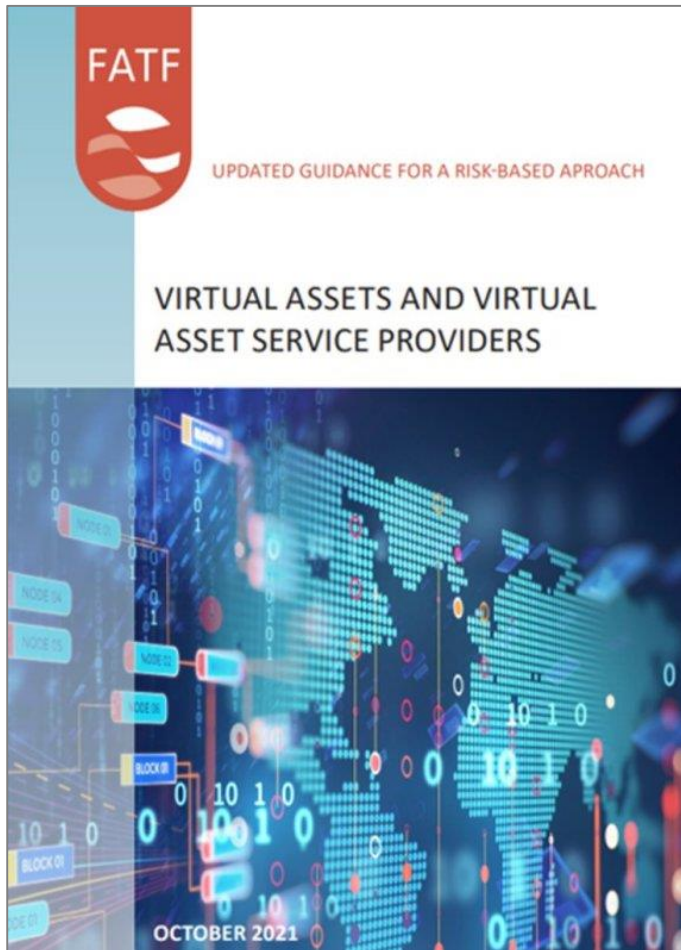**NFT Media Content**

NFT Smart Contract

NFT Metadata
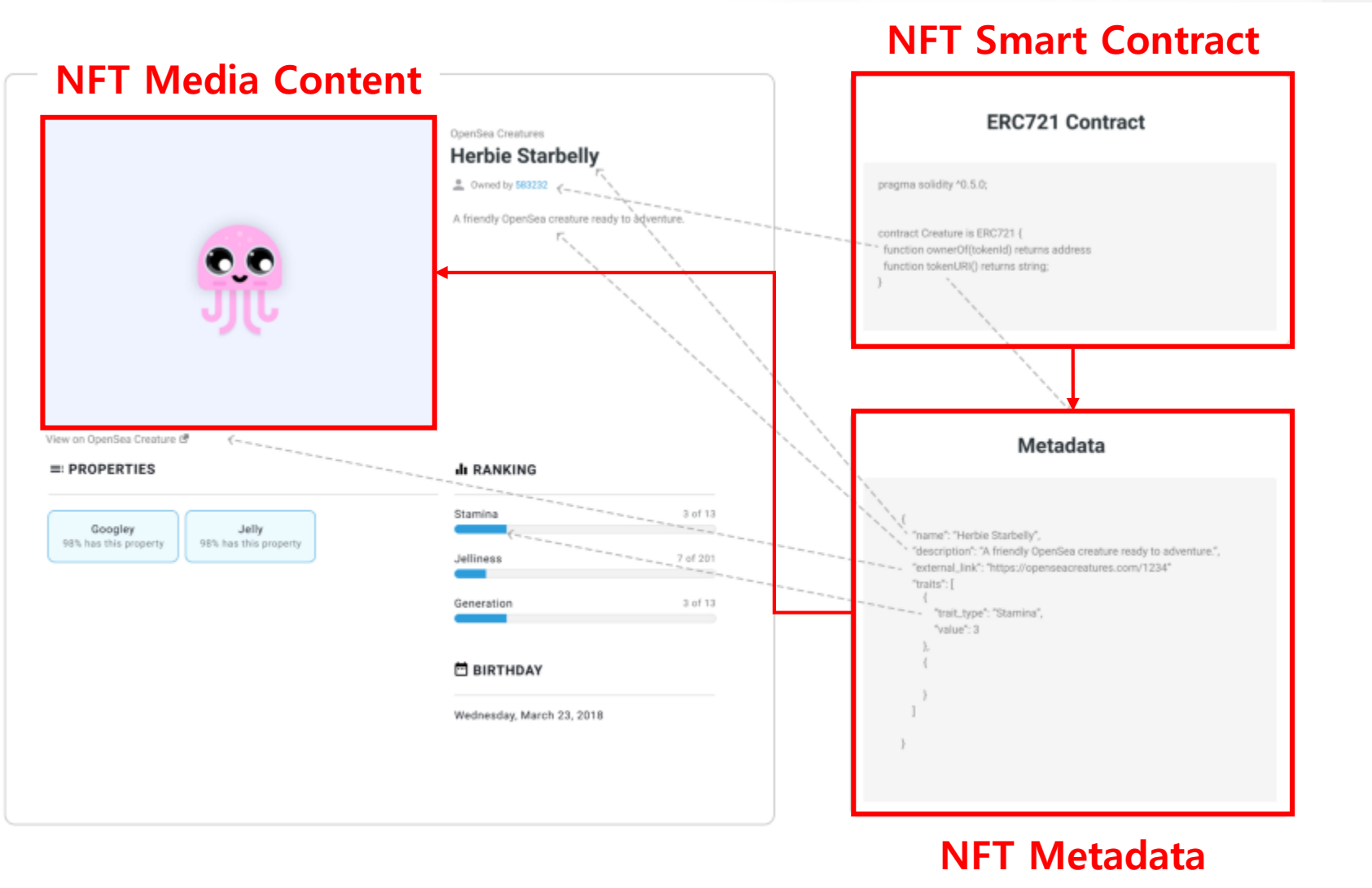
* Source : learn.fungyproof.com

Is NFT in virtual assets?

FATF(Financial Action Task Force)

FATF describes NFTs as "digital assets that are unique, rather than interchangeable, and that are in practice used as collectibles rather than as payment or investment instruments." **NFTs are generally considered not to be VAs(Virtual Assets).**
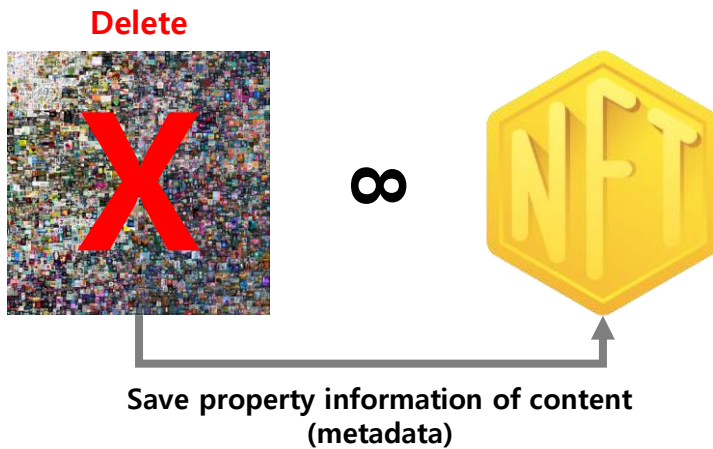
However, FATF cautions that the characterization of an NFT depends more on the nature and function of the NFT, rather than the terminology or marketing terms used to describe it. **NFTs may be VAs in some cases, such as when they are used for payment or investment purposes.** FATF therefore recommends that countries take a functional, case-by-case approach to determine whether an NFT (and any other similarly evolving digital asset) is in fact a VA.

III. Issues [3/4]

Terms of Use of Marketplaces

○ The Terms of Use published by NFT platform companies in South Korea clearly state that purchasing NFTs does not mean acquiring copyright rights.

Terms of Use(Upbit)

제 3조 (NFT 소유자의 권리)

1. NFT를 보유한 자에게는 "NFT 소유자의 권리"의 내용에 따라 NFT와 연계된 디지털 저작물을 이용할 수 있는 권리만이 부여됩니다. NFT는 저작권, 상표권을 포함한 지식재산권이나 초상권, 상품화 권리 등의 특정 권리 그 자체를 의미하지 않으며, NFT를 보유하는 것이 NFT와 연계된 디지털 저작물에 대한 보유 내지 디지털 저작물에 관한 저작권 등의 권리를 취득하는 것을 의미하지 않습니다.
2. "NFT 소유자의 권리"는 NFT를 적법하게 보유하고 있는 동안에만 행사할 수 있으며, "NFT 소유자의 권리"는 권리를 행사하는 시점에 해당 NFT를 보유한 자에게 인정됩니다. 타인에게 NFT를 이전한 경우, NFT를 양도한 회원은 "NFT 소유자의 권리"를 더 이상 행사할 수 없습니다. "회사"가 공식적으로 지원하는 방식이 아닌 방식 및/또는 관련 법령을 위반하는 방식으로 NFT를 이전받은 자에게는 "NFT 소유자의 권리"가 보장되지 않을 수 있습니다.

Terms of Use(Metapie)

제21조 저작권

1. 회사가 제공하는 서비스 및 관련 프로그램의 저작권은 회사에게 있습니다.
2. 회원은 서비스 이용 시 회사 또는 제3자의 저작권을 침해하여서는 안 됩니다.
3. 회사의 서비스 이용 승낙이 구매자에게 NFT가 생성된 원본(본 약관 제4조 가.항 4호 참조) 자체에 대한 지적재산권 및 소유권을 양도하는 것은 아닙니다 .구매자가 입찰에 참가하여 NFT를 낙찰 받은 경우 구매자는 판매자 혹은 원작자로 부터 NFT를 양도 받아 재양도와 전시 및 공유를 할 수 있지만 NFT가 생성된 원본 그 자체에 대한 지적재산권 및 소유권은 양도 받는 것이 아닙니다.

- **OpenSea states in its Terms of Use that the purchaser is responsible for verifying the legality and authenticity of the asset, and that OpenSea does not take any responsibility.**

Copyright Infringement

- NFT marketplaces do not provide a technical means to verify whether the issuer has copyright, ownership, etc.

(If the NFT marketplace does not confirm, the buyer must directly verify the NFT registered on all marketplaces. To this end, The terms and conditions must specify that members do not upload copyright infringements, and buyers must purchase NFTs wisely.)

There is no function to check whether the content that the Issuer intends to publish as NFT infringes copyright.

NFT Issuer

unauthorized capture

NFT minting

ethereum

NFT Marketplace

Purchase of copyright infringement

When purchasing NFTs, a common standard or policy that indicates rights such as copyright contained in NFTs is required.

NFT Marketplace needs to check copyright infringement

NFT Buyers cannot confirm whether the issuer holds the copyright of the NFT.

NFT Buyer

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IV. Future Direction [1/4]

NFT Copyright Guide in South Korea

- In order to issue NFT, transfer or use permission is required, and the information that the buyer needs to know must be presented in detail at the time of sale

- It is necessary to implement a function that can specify the rights (transfer, use permission), author name, and scope of use of digital contents held by the NFT seller

- In addition, it is necessary to implement a function that can classify users into authors, owners, buyers, etc., and permit transfer and use of rights

NFT Copyright Guide

NFT 거래 시
유의해야 할
저작권
안내서

Seller = Author

transfer of rights

- Clarification of transferred rights among author's property rights
  - Copy and transfer rights are required
  - Specify other transferred rights and conditions
- Indication of the name of the author
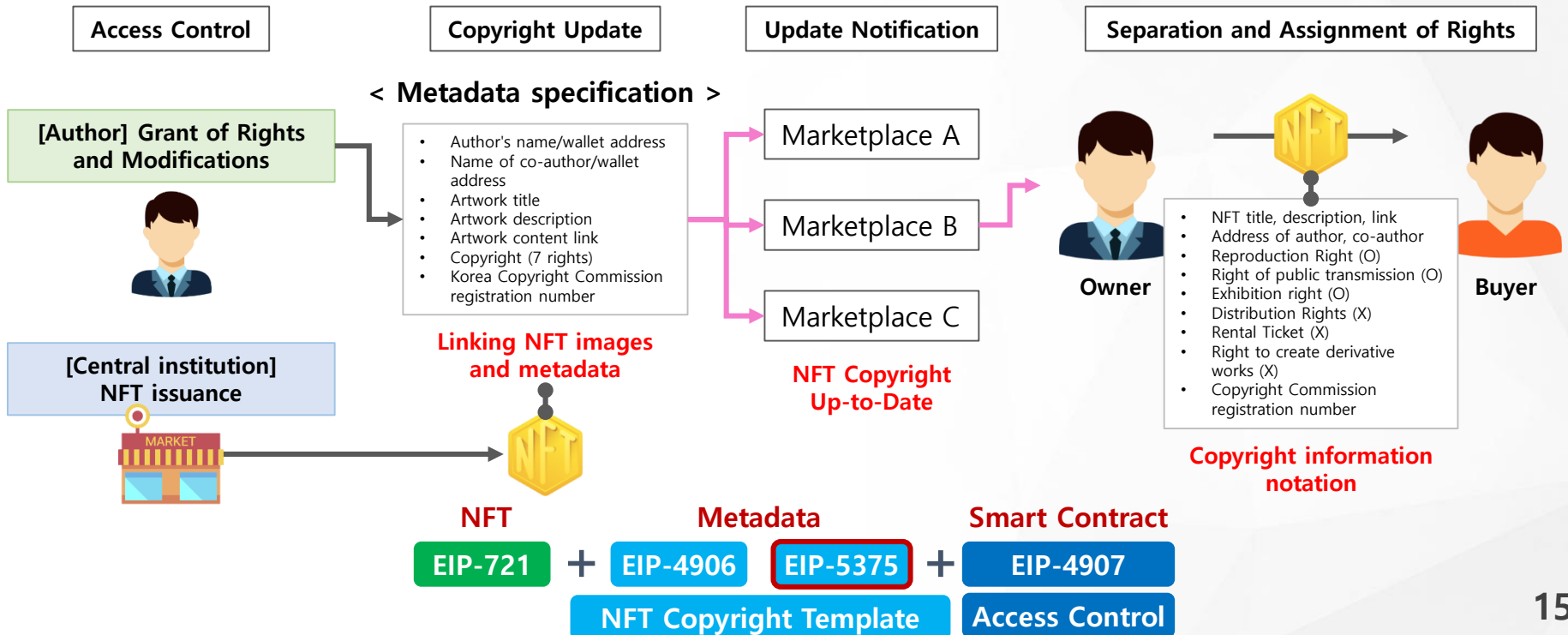
Seller ≠ Author

Permission

- Announce specific scope of copyrights
  - It is stated that the right to use is transferred to the repurchaser
- Notify conditions of sale

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Safe NFT Usage Standard in Korea

- We have prepared a standard that can mark the copyright of NFT

- We created an NFT copyright template and utilized ERC related to NFT

- EIP and metadata can be used simultaneously to comply with Korean copyright laws

- However, it has limited functionality when it comes to reselling NFTs

Access Control	Copyright Update	Update Notification	Separation and Assignment of Rights

< Metadata specification >

[Author] Grant of Rights and Modifications

Metadata specification:
- Author's name/wallet address
- Name of co-author/wallet address
- Artwork title
- Artwork description
- Artwork content link
- Copyright (7 rights)
- Korea Copyright Commission registration number

Marketplace A

Marketplace B

Marketplace C

Owner **Buyer**

NFT copyright notation:
- NFT title, description, link
- Address of author, co-author
- Reproduction Right (O)
- Right of public transmission (O)
- Exhibition right (O)
- Distribution Rights (X)
- Rental Ticket (X)
- Right to create derivative works (X)
- Copyright Commission registration number

[Central institution] NFT issuance

MARKET

Linking NFT images and metadata

NFT Copyright Up-to-Date

Copyright information notation

NFT **Metadata** **Smart Contract**

EIP-721 **+** EIP-4906 EIP-5375 **+** EIP-4907

NFT Copyright Template Access Control
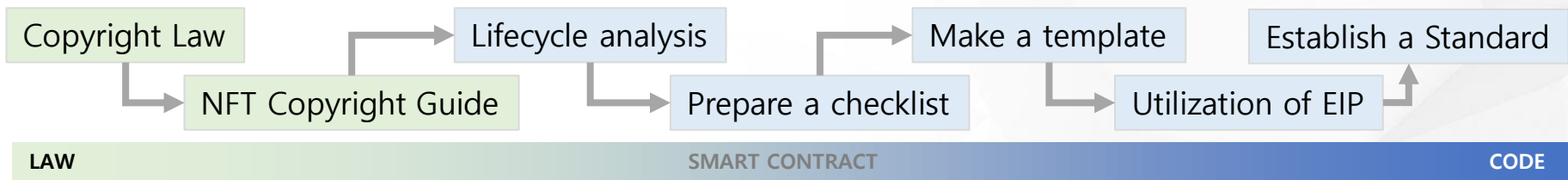
What we learned from this project

1 By analyzing the current copyright law and the NFT market ecosystem, a 'Safe NFT Usage Standard' is prepared to protect users

| Copyright Law | → | Lifecycle analysis | → | Make a template | Establish a Standard |

Copyright Law → NFT Copyright Guide → Lifecycle analysis → Prepare a checklist → Make a template → Utilization of EIP → Establish a Standard

LAW ───── **SMART CONTRACT** ───── **CODE**

2 In order to apply the 'Safe NFT Usage Standard' to the actual market, the participation of a large number of market participants is required

NFT Seller
NFT Owner   MARKET   NFT Marketplace   NFT Company   NFT Buyer

3 This standardization study is the first step towards creating a safe NFT ecosystem, and it is expected that a safe NFT market will be formed in the future by converging high-tech contract design, commercialization strategy, and international regulations and standards to fully guarantee the rights of creators.

Next Step : Research for NFT Image Similarity Verification Method

- Image duplication is detected through image recognition, and human models are continuously trained to improve accuracy

- Image hash technology can detect image changes such as contrast, saturation, and rotation, but technical support for copyright is insufficient.

4be2c3dddc223939

09c4c3bdd4623b79

Hamming Distance : 9

a10d8ef1c8c87d7a

09c4c3bdd4623b79

Hamming Distance : 15

OpenSea
@opensea

However, we've recently seen misuse of this feature increase exponentially.
Over 80% of the items created with this tool were plagiarized works, fake collections, and spam.

오전 8:26 · 2022년 1월 28일 · Twitter Web App

* Source : "Tag Archives: imaging Recognizing Cards - Finding the Match."2016.5.9

Thank You!

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Korea Internet & Security Agency