Title: General-purpose NFTs could be DRM done right: flexible contracts for digital goods
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In this post, I will speculate on possible uses for what GameStop seems to be on the verge of launching: a marketplace for general-purpose NFTs that can be associated with all sorts of digital goods, from images, to music, to whole video games. I will discuss what incentives there could be for creators, players and collectors to use such a marketplace.

Many ideas presented in this post have been discussed before and in other forums, but this is my way of organising my ideas and spark discussion. By no means do I believe to be an expert in the topics presented here, and I post to have these ideas challenged and discussed.

I will have a particular focus on video games as my primary point of interest for this discussion, partly because I think they stand to benefit most from this marketplace, partly because the post would be way too long if I looked at use cases with every digital good there is, and partly because most types of digital goods could be traded in ways I described for video games in sections 1 and 2 of the following.

This also assumes you have a basic understanding of what an NFT is, but if not, in one sentence: an NFT is a **tradeable, unfakeable, unique digital token**, making it ideal for use as a digital contract representing a single item.

0. Introduction: The free flow of information and the toughening of DRM

DRM has been around for a while in video games. Early examples of DRM came in the form of CD-keys that only allowed players to install a game if they entered the correct alphanumeric key, usually printed on a physical item that came with the original box. With most gamers having very little Internet connectivity, the key was only checked locally, so early implementations were very crude, with keys being reusable indefinitely on various computers. Some keys even worked with any copy of the game (the key 0123... could be used to install any CD copy of StarCraft on any computer, for example).

With Internet usage becoming more widespread and connection speeds increasing in the 2000s, easily defeated implementations of DRM were no longer sufficient for many developers. The rise of the BitTorrent protocol and various P2P sharing programs meant that copies of games could be widely distributed by anyone, with little companies could do to control access to their games. This need for access control gave birth to what we commonly think of when we think of "DRM": games that only work on certain platforms and require authentication with a central server before they can be accessed, or "always-on DRM", games that only work if the player is constantly connected to the Internet and communicating with a server owned by the game's developers.

DRM is almost universally hated by gamers. Even though most would agree that developers need to find ways to be paid for their work, current implementations of DRM are often too restrictive for users. For one thing, you don't always have Internet access, and you shouldn't need the Internet to play Single Player games. For another, you cannot sell or trade games you have finished or are no longer playing, since your entire library is associated with an account. You're also at the mercy of companies shutting off their servers and cutting access to video games you paid for, but never truly owned.

NFTs can help solve these issues for users, while also providing incentives for developers to implement their use in their games.

1. NFTs in contexts with no DRM or light DRM: the case of GOG.com, art NFTs and collectibles

If you're a PC gamer, you have probably heard of GOG.com. It is a website where developers can sell DRM-free games, which can be copied to all your devices and played without Internet access. If NFTs are a form of flexible DRM, why would a platform like GOG want to use them? I'll let the top of their "about" page (https://www.gog.com/about_gog) answer that one.

https://preview.redd.it/ha2ez8g7ei881.png?width=508&format;=png&auto;=webp&s;=ca2b2ed1ec7f77f5cf9c92ef103bb4bcf0c1020c

Many old school gamers, myself included, are also collectors. I love my old game boxes, and unique certificates of ownership for my games, without any relation to DRM, would be just great. These can be associated to anything, be it images, music from the games, or simply a certificate that certifies your ownership of this DRM-free copy of a game. The NFT copy could unlock a cosmetic upgrade in-game, for example, allowing the sale of various tiers of the same game, but this is entirely optional and probably against the spirit of “oldie” games (but more on tiered content later).

And if you think “this is dumb, why would anyone be interested in this”, well, it’s certainly not for everyone. But the fact that NFTs associated with fairly low-quality JPEGs, that don’t even give you ownership of the image itself, are currently somewhat popular with niche groups, despite massive price and accessibility hurdles, should show that actual easily accessible high quality art from video games that is actually registered uniquely to you for all to see, for example, would be interesting for a lot of people.

In this use-case, the NFT itself is not associated with usage restriction, it is just a certificate associated with a collectible digital good. This is the current use-case for well-known JPEG NFTs, and probably the least interesting one... but one that clearly already has a market, and one that will only get bigger.

This non-restrictive use of NFTs also has a bunch of other potential use cases with unique contracts for various digital media. GameStop is already hinting at it by having “meme lord” as a category to sign up as a creator. As an example, a unique NFT representing “Never Gonna Give You Up” minted by Rick Astley himself on the GameStop platform would almost certainly sell for millions, despite not giving the buyer rights to anything but the contract itself. In this category, people would buy things for “bragging rights” and not much else.

2. NFTs in contexts with medium DRM: CD Keys for the 21st Century, and a use case for small developers

Small developers don’t typically have access to the server infrastructure needed to distribute their games and implement their own DRM. They must rely on major platforms to do it for them, but these platforms take enormous cuts, between 25% and 30% for Steam. (https://www.polygon.com/22409511/microsoft-store-pc-revenue-share-steam-epic-games)

In an ideal world, small developers would make their games fully available over a peer-to-peer network, with access to the actual game being uniquely granted only to people who pay for them, while still allowing the game data itself to be sent freely by anyone. The problem with this model is that it is very difficult to both restrict access to a game, while also making it possible to be shared.

NFTs solve this issue, by being unique, impossible to falsify, easily tradeable and transmittable over the Internet. By selling the NFT instead of the game itself, and controlling access to the game content using the NFT, small developers no longer need to build or rent major infrastructure to distribute their games and provide DRM security, allowing them to skip the exorbitant fees they would otherwise have to pay.

There are technical hurdles to overcome to make this possible (using an NFT in your wallet to control access to a game is not trivial), but GameStop could offer tools to developers to make it easy to implement this with their games.

In this category, access to music, movies and various other digital goods could similarly be granted by using an NFT “key”.

3. NFTs in contexts with high DRM: tradeable, tiered products and the use case for major publishers

Established publishers are often cited as those who would be hardest to convince to join a third-party marketplace like GameStop's. Unlike smaller developers, they have their own servers to distribute games, implement online checks for DRM, and they may not be interested in relinquishing some of the control they have over their games by allowing players to trade them. However, I believe they would quickly realise how beneficial this new ecosystem could be for them.

To start, tiered editions have been AAA publishers' bread and butter for more than a decade now. At almost no cost to themselves, they can charge an extra $10-$50 for access to in-game cosmetics or tie-in items with other games. Many people buy they highest-priced editions just because they exist or for fear of missing out on limited-time items. Charging the highest price for a "tradeable" version of their games would be a great way to add yet another content tier when selling new games, and tradeable editions, while having a higher initial purchase price, might end up cheaper in the long run if they can be sold down the road to other players.

Beyond that, NFTs being inherently tradeable and tied to a cryptocurrency, it is very simple to implement ways of taking cuts from "used" digital game trades, with flexible percentages cut by GameStop and the developers. Interestingly, while I was writing this post, someone posted that their "8-man company" sold NFT games on the Wax blockchain, and wrote the following: "Each time an nft gets sold from my game on a secondary market, 4% of the price is taken by the market, and 5% comes back to my company. We're not even in the top 30 games on our blockchain and still average $7,000 per month in our secondary market fees." As you can see, the financial incentive to add a premium tier of tradeable digital games is apparent even for the big players.

4. Looking ahead: why the GameStop marketplace? NFTs as standard digital contracts, by use or by law?

Why would companies choose to trade over GameStop's marketplace instead of making their own? In short: GameStop's marketplace is on its way to becoming the very first marketplace for general-purpose NFT trading, and it will likely have much lower barriers to entry than other NFT marketplaces currently in use by using Layer 2 Ethereum solutions. These early advantages are likely to make it THE place to be for digital goods trading, due to network effects ("a phenomenon whereby increased numbers of people or participants improve the value of a good or service").

Looking forward and speculating further on the future of NFTs as a whole, I think they have the potential of becoming de facto standard digital contracts for the trade of any type of digital goods. Current "paper" contracts are given value by three things: they are very hard to falsify (signed, often in front of a notary), they have to be stored or written within a ledger (for consultation purposes by authorities), and they are enforceable (contracts have the force of law). NFTs currently equal or improve on paper contracts for the first two characteristics but fail on the third. Unfortunately, governments move very slowly to enact laws related to new technologies, so it might take some time before NFTs-as-contracts are legally enforceable. However, I do believe it will happen at some point, as their use for soft-enforcement for access to digital goods (the DRM applications described above) becomes more widespread.

Thanks for reading, and feel free to criticize any of the points have made!