Web3 and the Music Festival Sector

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In this presentation I will focus on an aspect of Web3 technology known as Non-Fungible Tokens (or NFTs). These digital assets offer a potentially rich source of revenue for events that are facing higher production costs and increased competition as festival promoters and artists alike try to claw back some of the lost revenue that they suffered during the pandemic. They also offer opportunities in relation to combatting secondary ticketing and ticket fraud, and in developing or enhancing a year-long engagement with festivalgoers.

What are NFTs?

NFTs offer proof of ownership over unique digital assets, such as a digital artwork, and overcome the challenge of replicability in the digital realm. As the music industry has found to its cost, a digital artefact such as an MP3 can be copied easily and will be more or less identical to the original. As such the original and the copy have little value in and of themselves. If I accidentally delete an MP3 I can download an identical copy of it. In contrast, an NFT confers and proves originality, hence it gains value due to it being a scarce commodity – there is only one original of that artifact that has proof of ownership. In that sense it is not replicable, hence the term non-fungible (something that is unique and cannot be directly replaced).

NFTs are bought direct from the issuer or via an NTF Platform such as OpenSea. Initially they needed to be bought using cryptocurrency, which required the purchaser to have an account with a cryptocurrency exchange such as Coinbase, and a cryptowallet downloaded to their smartphone. Cryptocurrency was then bought and transferred into the cryptowallet, which in turn was used to purchase NFTs from the platform offering them. Increasingly it is possible to use a credit card (rather than a cryptocurrency) to purchase NFTs, thus simplifying the process.

Proof of ownership is maintained through blockchain technology – a distributed network of computers that each holds identical information about transactions. When new transactions are added to a blockchain network they must be verified prior to them being accepted and the distributed network of computers updated. This verification is completed by what are known as data miners or data verifiers who solve complex cryptography to establish the validity of the block of data that has been sent. The distributed nature of blockchain, and the use of complex cryptography, is aimed at guaranteeing that the data held on the blockchain cannot be hacked or changed by nefarious actors, and should one node of the blockchain be compromised (for example, should a computer break down, or the company that owns it closes down), the full chain of data is still available and safe across all of the other nodes.

However, it is important to note that while NFTs are created on a blockchain (this is known as minting) and bought and sold on a blockchain, the NFT address key and the underlying digital asset to which it relates, may not actually be stored on a blockchain. Instead they may be stored on a server or in cloud storage. To access the underlying digital asset you need the NFT passkey that points to where it is stored online, and it can only be reached using that NFT passkey. Some NFT exchanges store the NFT passkeys and/or the underlying digital assets themselves on behalf of the purchaser on their own servers, which as we shall see is somewhat problematic. However, it is also possible to withdraw the NFT passkey to a personal digital wallet – typically stored on a smartphone. Of course, if you lose the smartphone, you lose access to the passkey and the digital asset that it relates to.

The technology underpinning NFTs has been available since at least 2014 when Vitalik Buterin and others set up the Ethereum Foundation, but only gained initial traction with the creation of digital collectibles such as CryptoKitties in 2017 and the Bored Ape Yacht Club in 2021 (Lambert 2021), followed by a number of high-profile digital artwork sales, including those offered by the music artist Grimes. The media focus in 2021/22 was on reporting the total value of such sales (for instance, Grimes' artworks sold for around $6 million) or on whether the NFT offers had sold out or failed to do so. The Ethereum blockchain has become one of the most popular for developers to use, and its associated cryptocurrency ETHER is one of the most commonly used and well-known after BitCoin. However, there are many different blockchains and cryptocurrencies available.

High profile sales have fuelled interest in the NFT sector, which saw considerable growth through 2021/22. Analysts at the Water & Music (2023) research network suggest that primary music-related NFT sales in 2021 generated around $86 million, rising to over $200 million in 2022, though the NFT market as a whole is much bigger, nearing nearly $25 billion in 2021. Excitement has also been fuelled by the use of smart contracts which allow, for example, the original issuer of the NFT to earn a royalty each time the NFT is resold.

Festival NFT examples

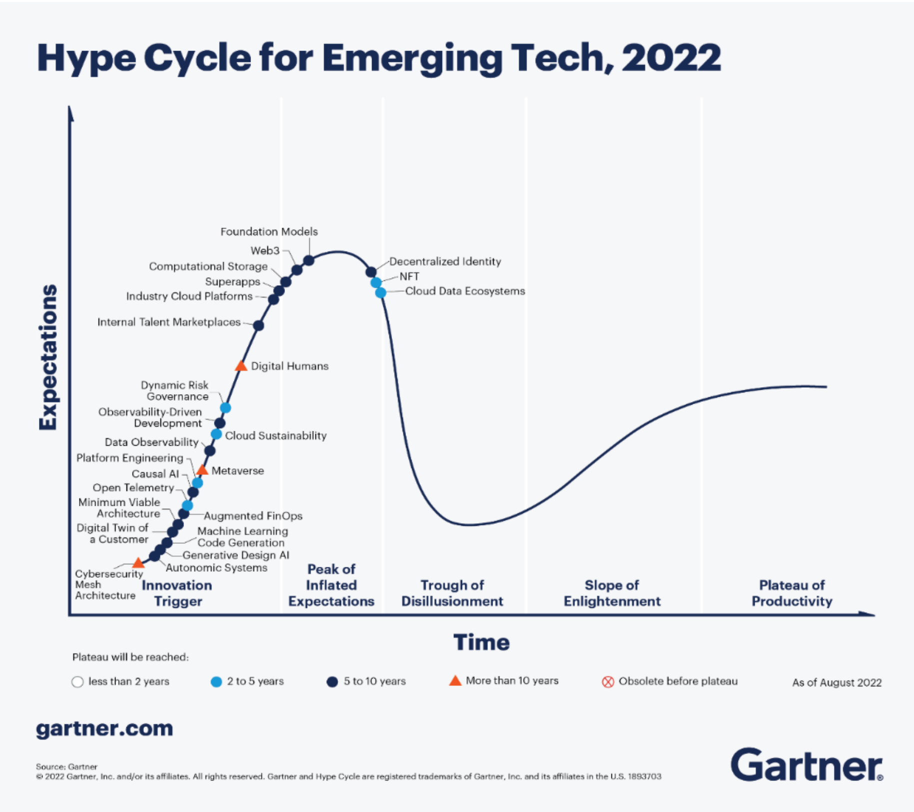
In relation to music festivals, NFTs first came to broader prominence when Coachella launched the Coachella Keys NFT collection in 2022 that reportedly raised around $1.5 million and included festival passes, on-site experiences and physical items. In the same year, Tomorrowland launched its Medallion of Memorabilia NFT collection which included digital collectibles, pre-sale ticket offers, giveways, secret areas and so on. If someone bought from all three collections on offer they could exchange the full medallion for free entry. Sweden's Way Out West festival launched the WOW Moments NFT, three of which allowed free entry for life, while the rest allowed festivalgoers to create their own personalised digital collectible, with the chance that it could be shown on the big screens during the festival. Other festivals experimenting with NFTs in 2022 include the Montreux Jazz Festival in Switzerland, the Grass is Greener Festival in Australia, and the Prambanan Jazz Festival in Indonesia.

While high profile and high value NFTs are often the target of speculative investors who may or may not have a particular interest in the artist or event that is minting the NFTs, NFTs have various other uses, such as ticket-gating, which I will discuss later in the presentation. Prior to that, I want to examine some of the barriers and issues that are likely to affect mainstream adoption of NFTs.

An overview of issues and barriers to mainstream adoption of NFTs

Firstly, the surge of interest in NFTs during 2022 represents what the US tech research firm Gartner refer to as the “peak of inflated expectations” in its Hype Cycle (see Fig 1), and its subsequent descent into the “trough of disillusionment.” (NOTE: the Hype Cycle was originally introduced by Gartner in 1995; for an overview see Dedehayir & Steinert 2016). This descent was sparked especially by the collapse of FTX Trading Ltd – a cryptocurrency exchange – in early November 2022.

Fig. 1. Gartner’s Hype Cycle for Emerging Tech, 2022 (Gartner, 2022)



FTX was not only a currency exchange but a centralized platform that stored NFTs on its servers (rather than more broadly on a blockchain). When FTX filed for bankruptcy the NFTs stored on the platform became 'disabled', meaning that the owners of those NFTs were no longer able to access them, unless they had previously withdrawn their NFTs to their own personal digital wallets. This issue will have affected owners of both the Coachella Keys NFTs and the Tomorrowland Medallion NFTs, as both events had partnered with FTX. Such an arrangement is problematic because it places a gatekeeping organisation between the purchaser and their NFT, and control of the NFT has to be managed through that gatekeeper.

One way around these issues is for NFTs not only to be bought and traded on a blockchain, but for the underlying digital asset to be stored on a distributed server – what is known as an IPFS (or Inter Planetary File System) platform such as that offered by Pinata – while the NFT address key remains stored and verified on a blockchain.

Media headlines regarding the volatility of cryptocurrency values, or their connections to organised crime groups, money laundering and so on, have not aided mainstream adoption of NFTs which are typically traded using cryptocurrencies. For example, you can view the variations in the value of the Ethereum cryptocurrency here:
https://www.coinbase.com/price/ethereum (accessed 22 June 2023).
Considerable variation can be seen, hence the value of an NFT bought using that cryptocurrency will also fluctuate considerably. This is perhaps why we have seen a turn towards lower value NFTs that can be bought using a credit card, yet offer a variety of what are referred to as 'utilities' – perks that come with ownership of the NFT such as early access

to ticket sales or "in real life" experiences. I will return to this point shortly, but it is worth noting here that generative AI (artificial intelligence) is often used to create hundreds or thousands of NFTs at a time, where each individual NFT has a unique design, and where different utilities may be assigned to them.

Security is another key issue, with regular reports of NFT scams and thefts seen in the media, including a phishing attack on the Bored Ape Yacht Club Instagram account in April 2022 that tricked NFT-holders into transferring nearly $2.5 million worth of NFTs to the hacker (for example, Hern 2022). Unfortunately, it can be very difficult to try to track and prosecute those responsible.

A final issue to cover here is environmental sustainability. In December 2020 the artist and technologist Memo Atken published an article called "The Unreasonable Ecological Cost of #CrytpoArt" and an associated website (which is no longer active) where the estimated carbon footprint of an NFT could be calculated. His article drew attention to the cryptography required to verify blockchain transactions using a system known as 'proof of work' which requires massive amounts of computation. Such computation relates both to the verification of the NFT and to the cryptocurrency transactions involved in the purchase and sale of them, with numerous blockchain 'miners' competing against each other to verify the transactions in return for fees or other awards. In response, a number of blockchains, including Ethereum, Solana and Polygon, moved to a 'proof of stake' alternative in 2022. Under this method, the miners, known as verifiers, must first lock up a significant portion of their own cryptocurrency to prove that they have a stake in keeping transactions accurate. The stake can be destroyed if the individual proves to be lazy or dishonest. Ethereum claims that this alternative model uses 99.95% less energy than the old system, thus addressing the issues raised by Memo Atken (see Ethereum 2022).

Mainstreaming NFTs at music festivals

In this final section I want to look at the potential of NFTs to become more mainstream – to move, in Gartner's terms, from the "trough of disillusionment" to the "plateau of productivity." I will discuss four key aspects in turn:

- Investment-focused NFTs
- Trading- and Fan-focused NFTs
- Ticket-gating
- Decentralised Autonomous Organisations (DAOs)

Investment-focused NFTs include high value digital artworks, animations and so on that will often come with additional utilities, such as lifetime event passes and on-site VIP experiences. These high value NFTs are out of reach of the casual festivalgoer, while security issues, currency volatility and so on are making them less attractive. Their potential perhaps lies more in line with the traditional patronage model that has been used by orchestras, opera companies and so on for many years, or for limited run issues that tap into the high wealth market, such as the digital art NFTs offered by the Montreux Jazz Festival, those offered by the Lucerne Classical Music Festival, or the Coachella Keys NFTs.

Trading-focused and fan-focused NFTs are digital collectibles that are of lower value, issued in greater numbers, and may be bought and sold by enthusiasts. They can be linked to artists performing at particular festivals, to the festival as a whole, or to memorabilia that incorporates the creativity of festivalgoers themselves. They may be personalised by individual attendees and available either in a digital form that can be displayed online, or turned into physical objects such as photo books, that can be sold as exclusive merchandise. There are a number of benefits. For instance, these NFTs can help to enhance community engagement and data capture related to a festival, particularly if linked to an NFT-gated community site such as those on the Discord platform where festivalgoers can interact with each other, and festival organisers can communicate directly with them. Revenues are generated via the sale of the digital collectibles themselves and by other merchandise offered throughout the year. Furthermore if the organiser includes a smart contract on their NFT they can take a percentage fee each time an NFT is traded between owners. Of course, this raises the question of whether the artists who play the festival should also get a cut of this additional revenue.

One of the most likely growth areas over the next two years is ticket-gating using NFTs. More festivals will adopt NFT-gated tickets because they help to control the ticketing market. Counterfeit tickets are prevented, while the identity and security of ticketing is enhanced. Data collection is also enhanced and booking fees could be reduced because NFTs can be sold directly to attendees rather than through a ticketing agency. Using smart contracts, the secondary market can be limited or capped in terms of resale price to prevent profiteering, while the organiser can once again take a cut of each resale. Festivalgoers are already comfortable with the use of digital ticketing through QR or barcodes on their smartphones, so there is less of a challenge of new technology adoption here, as NFT-gated tickets will be operated in a similar way through a smartphone. Different types of NFT ticket can be offered depending on the utilities to be included, which is similar to how arena shows and festival VIP tickets are currently managed. NFT tickets can also be used to ‘airdrop’ special offers, information and links to NFT holders before, during and after the festival, while the NFT can be used (depending on the level bought) to access exclusive areas of a site, to offer prize giveaways, hospitality packages, backstage access, meet and greets and so on. In other words a range of real world utilities that enhance the ticketing and festival experience. NFTs as digital collectibles could also be offered across the year, with the option of swapping them for full ticket entry, thus spreading the cost of the ticket across the year, making it potentially easier to buy.

Finally, there is the potential for festivals to adopt DAO (Decentalized Autonomous Organization) methods, whereby NFT holders can, via a blockchain become stakeholders of an event, complete with voting rights that help to direct the future of a festival – from its location to its line-ups, its prices, food offerings and so on. Croatia’s Circus Maximus is experimenting with this form of organisation, as is Festisia in the US – a project related to people associated with the Bonnaroo and Outsidelands festivals.

Conclusion

NFTs have had a lot of bad press in 2022, yet there is significant potential in mainstreaming the technology, particularly where this can extend on familiar concepts such as digital ticketing and VIP ticketing, and where further innovation in the utilities or perks that may be offered can be experimented upon. Some of the technical and security issues regarding centralised cloud servers can be overcome by using blockchain technology and IPFS more concertedly, though we may also see increased corporatisation of the NFT sector. For instance, Live Nation, AEG, Warners, Universal and other major music companies are already investing. This is in contrast to the freewheeling, open nature of blockchain enthusiasts, and this development of Web3 technology is reminiscent of the gatekeeping and privatisation seen across the current Web 2.0 internet.

As noted above, festivalgoers may be nervous of using cryptowallets, cryptocurrencies and so on, but these can be brought to a wider audience partly through NFT-gated ticketing, credit card rather than cryptocurrency purchases, and through giveaways that allow festivalgoers to use the technology at minimal risk. For instance the elrow Town festival in Madrid incorporated a cryptowallet into its mobile-based festival app and then gave away 50,000 NFTs (PremierEDM, 2022), while other events have included on-site experiences and treasure hunts to help demystify the technology and its value. Other issues regarding copyright, securities regulations, the lack of interoperability between different platforms and so on will also need to be addressed, but the sector has evolved considerably over the past couple of years in particular, and there is a lot more to come in this space.

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