

SIGNED

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Rethinking
the Everyday:

FUNGIBLE
NON
FUNGIBLE

重新思考虛擬與創作的關係





Rethinking the Everyday: FUNGIBLE NON FUNGIBLE

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Text by Steve Jarvis
Photographs courtesy of HKDI

Before 2021, not many people had considered ideas of "relative fungibility" as being important to the future of social and economic organisation. A year is a long time in the technology world, and not only did the acronym NFT simultaneously grab headlines in the technology, society, and business news, it was joined by another buzzword—the Metaverse. Whatever your age, and wherever your location, our lives are increasingly immersed in the digital world. There are many debates to be had about the merits of spending even more time online. Regardless, the seemingly inevitable transition from existing solely in the physical world, to working, learning, and socialising in virtual spaces, will bring with it great changes.

In this issue of *SIGNED*, we investigate the present and future possibilities for NFT, and what this all means for designers, and anyone with an interest in content creation, no matter its form and function. NFT are part of the complex and fast-moving technology of blockchain. A field characterised by technical jargon, acronyms, and unabashed boosterism. The following pages join a series of dots explaining the nature of NFT technology, how it is being currently used and developed, what is on the horizon, and what relevance this has to the future of design as a vocation.

NFT and the underlying blockchain and

cryptocurrency technologies promise to have as profound an impact upon social organisation as the internet has already accomplished. At the start of the 1990s, however, very few people anticipated the extent to which the internet would become integrated into our lives over the ensuing decades. At only a handful of years into its development, NFT are still considered a bit of an oddity catering to a niche market, with little practical use in people's daily lives. There is much to unfold in the coming decades for NFT and blockchain, but just as with creating in the real world, at every stage good design decisions will be needed to make the best of the opportunities these technologies provide.

Regardless of the medium and environment, defining needs, creating relationships, and solving problems in a practical and human-centred way is the core of Design Thinking. The virtual realm holds many unknowns, and educating the next generation of designers to think in this fast moving and fluid field is one of the greatest challenges facing HKDI. But it is also a fantastic opportunity, and we are confident of our ability to make meaningful contributions and look forward to being active in this new and exciting field of Design.

2021年前，多數人也未能預計「相對互換性」這一概念會對社會及經濟組織有重要影響。但一年於科技界而言是一段

相當長的時間——NFT的影響力滲透各行各業，元宇宙加入行列一起席捲各大報刊雜誌頭條。不論年齡、地點，我們的生活都愈發遭受數據世界的浸潤。我們是否應在網絡中投入更多時間還有待商榷，但我們正不可避免地從僅僅存在於現實世界，轉型至同時在虛擬世界中工作、學習和社交。一連串改變正在發生。

在本期《SIGNED》，我們調查 NFT 的現狀與未來機遇，並為設計師和內容製造者梳理出他們的生存之道。NFT 屬於區塊鏈的一部分——一項複雜並也高速發展的加密共享科技。接下來的內容將以點匯線，解釋 NFT 的機制、它如何被發展和運用、未來的創新機遇和它能在未來的設計行業扮演何種角色。

NFT、區塊鏈和虛擬貨幣將為社會結構帶來不亞於互聯網的影響。視角轉換，上世紀90年代初期，極少數人預測到互聯網在此後的二十年內會如此緊密地與我們的生活關聯。無獨有偶，在 NFT 發展的前幾年，它依然被認為是針對小眾市場的奇怪物種，與人們的日常生活脫節。未來數十年 NFT 與區塊鏈仍有巨大發展空間，但與在現實世界創作一般，好的設計決策在每一步都將是關鍵要素，能最大限度呈現出科技帶來的優勢。

不論媒介與環境，以一人為本和務實的角度確立需求、促成關係和解決問題都是設計思考的核心。虛擬世界仍有大量未知，教育下一代設計師在這快速又變幻莫測的行業中行進是 HKDI 面臨的最大挑戰之一。不過這也是一個絕佳的機遇，我們也有信心能夠做出有意義的貢獻，並期待在這設計的新一領域愈發活躍。

Rethinking the Everyday: FUNGIBLE NON FUNGIBLE 重新思考虛擬與創作的關係

Text by Steve Jarvis
Photographs courtesy of HKDI

The word "fungible" lived in a dusty corner of the English language until it was recently plucked from obscurity, and became associated with Non-Fungible Tokens (NFT)—one of the biggest information technology breakthroughs since the advent of the internet, or maybe even the printing press.

Look up "fungible" in a dictionary and it will go along the lines of, "something that is able to replace, or be replaced by, another identical item; mutually interchangeable." A commonly used example is government-issued money, but the same principle applies to digital currencies, such as Bitcoin, and any medium of exchange. Whether it be soft drinks or automobiles, mass-produced goods also have some degree of "fungibility" depending on how difficult, or expensive, or even possible, it is to find or create another.

What then is "non-fungible"? By extension, it is something that cannot be replaced by an identical item. Land is very non-fungible, but so too is an artistic creation. Both are considered unique assets, and their relative values are reached by consensus of the marketplace. For example, the Mona Lisa is deemed an artwork of immeasurable value, and the Louvre trustees would never be convinced to part with it in exchange for a very good print of the same artwork. Though, if by chance the painting did change ownership, it would take a very complex process requiring lots of trusted financial, security and transport intermediary organisations. A testimony to its uniqueness and scarcity.

For better and worse, we live in an era of highly fungible information abundance, where it is possible to endlessly copy and reproduce any digital image, text, sound, and at almost no cost. These are circumstances that defy non-fungibility. The inability to create "scarcity" and "uniqueness" has been a stumbling block for digital creators, denying them appropriate value for their labour. That is, until 2017 when a new internet buzzword was born with the acronym NFT. As we read in the following pages,

beyond the art market, this technology holds profound implications for the future of the economy and social organisation.

「同質化」一直屬於生僻用詞，直到最近被發掘，並被與非同質化代幣（Non-Fungible Tokens, aka NFT）關聯起來。NFT、互聯網時代、甚至印刷媒體時代以來最大的信息科技突破之一，正預示新時代的開端。

字典中對同質化的解釋是「可替代，或可以其它相似物品代替的物品。」政府發行的鈔票就是一個實例，但包括比特幣在內的虛擬貨幣概念也相通。大規模複製生產的產品都有同質化的特性。

以此為基礎，非同質化則代表無法被替代或替換的物品。土地、藝術作品皆可能有非同質性的特質。兩者都是獨特資產，又在市場上有一個相對公認的價值。

我們生活在信息爆炸的時代，可以持續無成本地複製與再製作任何圖像、文字、音頻，這是打破非同質化的案例。無法保有稀缺性和獨特性是虛擬內容創作者的絆腳石。他們的作品無法得到相匹配的價值，直到2017年 NFT 的出現。

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What is NFT?

NFT in a Nutshell

NFT stands for Non-Fungible Token. Put simply, it is a record of ownership contained within a unique piece of digital content, similar to the way a land deed determines who owns a piece of property. NFT "content" includes contract conditions, data, and procedural information such as ownership and transaction records, all of which is stored as an individual block of digital information. In turn, this block attaches itself to a much larger chain of blocks to become a unique and identifiable part of a massive digital ledger. This ledger is referred to as blockchain technology.

Protected by cryptography, blockchain technology securely stores and updates the ledger simultaneously over a massive network of computers, creating a permanent record that cannot be edited, deleted or otherwise deceived or manipulated. Blockchain first came to prominence with Bitcoin, the cryptocurrency designed to give a secure and open way to deal with money in the wake of the great financial crash of 2008. For all its highs and lows, Bitcoin has served as a large-scale proof of concept for blockchain technology, and within a few years of its operation, a second generation of blockchain emerged.

In 2015, Ethereum, a new generation of blockchain, was able to insert information and software programs when creating a block. Information-rich blocks allowed more data, digital "smart" contracts, and even executable programs to benefit from the security and immutability that characterises the blockchain. Smart contracts are pieces of logic expressed in code as contractual terms, that often involve money transactions. Ethereum is a self-contained application running on the same blockchain protocols that enable cryptocurrency, but it is much more comprehensive in what it can do, and who can derive benefit from it, and it serves as the base technology for NFT.

In theory, any piece of digital content can be minted into an NFT, from songs, photographs and works of digital art to tweets, memes, published articles and podcasts. When someone "mints" an NFT, they are creating a file, called a "token" that records the contents of the NFT and what automated processes it is capable of doing. The tokens not only store information of ownership and the online address of the asset, but can also hold information about what exactly the NFT is, and the conditions under which it can be bought and sold. An NFT can either be an entirely digital asset, or a tokenised versions of real-world assets, and being indicators of uniqueness they may also function as proof of authenticity and ownership.

Why is it important?

One problem with creating digital content with current internet technology is that the content creator rarely maintains control of their work, and if it is possessed by anyone it is generally by large corporations controlling social media and other content aggregators. Consequently, the value derived from creativity and accumulating personal data flows towards the central organisations that generate ad revenue and other income streams for large companies. NFT holds the promise of decentralising control of information and exchange. If accurate, this will allow creatives to financially benefit from their creative works, and continue to profit from its consumption and entry into the open market.

Just as Bitcoin was soon copied and spawned literally thousands of digital currencies, the second generation of blockchain has gone beyond Ethereum to encompass thousands of imitators opening up ever more fields of transactions and verification migrating onto the blockchain. These include decentralised applications in finance, social networks, insurance, identity and much more, and many of these are running on improved technology such as Solana and Cardano. Having said that, there are still many problems with this developing technology. Serious challenges, such as the energy consumed to maintain the network, slow processing speeds for database maintenance, the limited nature of applications currently available, and a milieu of legal issues are all yet to be solved as blockchain enters into its third generation.

The "blockchain" means many things to different people. For developers, it is a distributed encrypted database. For those in business and finance, it is a distributed accounts ledger that is behind the explosion in digital currencies. For technologists, it is the driving force behind the next generation of the internet. For others, it is a tool radically reshaping society and the economy taking us into a more decentralised world. Whichever way you view blockchain, it is undeniable that the implications of this technology are truly profound. Especially for designers, as it could be the most important new work opportunity to appear in recent decades.

This is all happening at the same time as other milestone technology innovations, such as Artificial Intelligence, Big Data, and the Internet of Things, are coalescing. It will be an age of Ubiquitous Internet where our daily lives are increasingly spent online, and blockchain and NFT will be critical to building the technological and institutional capacity to create this next version of the internet, Web.3.0, a greatly enhanced digital environment in the twenty-first century.

何為 NFT

NFT代表非同質化代幣。簡單來說，這是一種對於獨特虛擬內容所有權的證明，就像地契決定誰擁有某塊土地一樣。NFT內容包括合約條例、數據和過程信息。這些內容全部都以獨立小塊數據存儲。隨後，這些數據再被連接到一條更大的數據鏈上，並整體變成獨一無二和可辨識的巨大數據記錄。這個技術被稱為區塊鏈。

區塊鏈被加密技術保護，並能夠實時在數據記錄上的所有電腦網絡更新，創造出一個無法被修改、刪除或以任何形式操縱的永久記錄。區塊鏈最早因比特幣聞名——2008年金融危機中誕生的虛擬貨幣，被設計成一種安全公開的金融交易。歷經浮沉，比特幣成為了一個區塊鏈技術的大型證明。比特幣推出的幾年後，第二代區塊鏈就出現了。

以太坊是出現於2015年的新一代區塊鏈。它可以在區塊鏈中加入數據和軟件系統。這種區塊可以搭載更多數據、虛擬「智能合約」，甚至可實施項目，並使它們全部受益於區塊鏈的安全性。「智能合約」實則並不智能，也非合約。它們是以合約條例形式呈現的邏輯碎片，通常包含金錢交易。以太坊是一個自給自足的系統，與虛擬貨幣使用同樣的區塊鏈操作法則，但在能力上更加全面，能面向更多受益者。它也成為了NFT的基礎科技。

從音樂、照片、虛擬藝術，到tweets、memes、出版刊物和收音內容，理論上來說，任何虛擬內容都能成為NFT。當一個人鑄造NFT時，他是在創造一個叫做「代幣」的文檔。它可以記錄內容和此NFT可直接運作的過程。代幣並不僅僅存儲所有權和線上地址的數據，還包括此NFT的身份信息以及它交易的條件。一個NFT可以完全是虛擬財產，也可以是真實世界資產的代幣體現。NFT作為獨一性的指標，也能夠成為真實性和所有權認證的指標。

NFT的重要性

其中一個利用現有網絡進行虛擬內容創作的弊端是創作者極少能保持對於自身作品的掌控。收藏者多為相比之下更加大規模掌控社交媒體或其它內容集成的集團。作為代價，創意的價值和收集到的個人信息都到了少數中心組織手上。NFT承諾非集權化的信息管理和交流，這會使創作者獲得其應有的收益並持續在開放市場獲益。

就像比特幣一經推行便見證數以千計的同類虛擬貨幣緊隨其後一般，第二代區塊鏈也已經超越以太坊。目前上千個模仿者都連接至區塊鏈，其中包括去中心化的金融、社交媒體、保險、身分認證系統等。許多諸如此類產品都在依靠包括Solana和Cardano在內的更加優化的科技運轉。雖說如此，在區塊鏈逐漸邁入第三代之際，待解決的問題還有很多，例如維持程序的必要能源消耗、緩慢的處理時間以及所擁有程序的限制。

對於不同人，區塊鏈代表的意義也不相同。對於開發者，它是一個加密信息平台；對金融行業，它是在虛擬貨幣風暴背後的分散帳目；對技術人士，它是下一代互聯網的生力軍。對於其他人而言，它是一個重塑社會經濟型態的產品，帶領我們去向一個更加去中心化的世界。不論你如何看待區塊鏈，它都毋庸置疑是一項擁有顯著影響的科技。對設計師而言更是如此，它或許是幾十年來最重要的工作機會。

所有這些都在與其它里程碑式的創新一同發生，例如人工智能、大數據和互聯網。這會是一個互聯網無處不在的時間。我們的生活愈發多地在網絡中發生，區塊鏈和NFT會成為創造這一互聯網社會的主力。Web 3.0，它將會是本世紀出現的優化虛擬環境。

What can NFT do now?

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NFT Collectibles and Beyond

While NFT based on Ethereum had been in existence since 2017, it was in 2021, on the back of spectacular auction prices that caught the attention of the media, which saw a digital gold rush to this new asset class. A select number of massive windfalls from "flipping" newly-issued NFT in secondary markets has attracted a wave of copycat artists and speculators hoping to cash in on the boom. While ideally suited to the digital art market, a flood of new entrants in areas as diverse as gaming, sports, music, and even books, all rushed into the NFT market.

During 2021, cryptocurrency market fluctuations and an avalanche of underperforming NFT releases have served as a reality check, but NFT have gained enough acceptance and attention to ensure they will be a mainstay of the digital economy for the foreseeable future. As we will see later NFT are simply more than a way to identify and claim ownership over a digital work of art or creative endeavour, but first, it is important to cover where NFT have already made an impact.

NFT 的能力

2017 年在以太坊上就已存在 NFT，但還是到了 2021 年那個驚天拍賣價格，NFT 才吸引到了主流媒體的目光。虛擬淘金熱來到了這個新興資產。通過在二級市場轉手新 NFT 產品獲得橫財，這一生財之道吸引了那些想要大撈一筆的藝術家和圍觀者。雖然最初為虛擬藝術市場，後期也逐漸發展至遊戲、體育、音樂，甚至書籍。

2021 年中，虛擬貨幣市場波動巨大，一些比預期慘澹的 NFT 產品給大家也帶來了現實的一擊，但 NFT 依舊取得了足夠的接受度和關注度，證明了其在虛擬金融的可預見未來中的一席之地。我們在接下來的文章中將會看到，NFT 不過是一種辨別和宣示擁有權的證明。不過首先，我們需要向讀者展示 NFT 已經取得的影響力。

NFT ART NFT 藝術

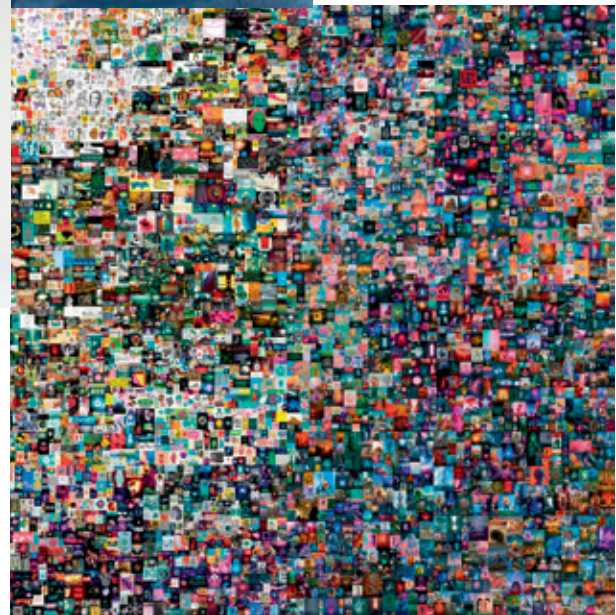
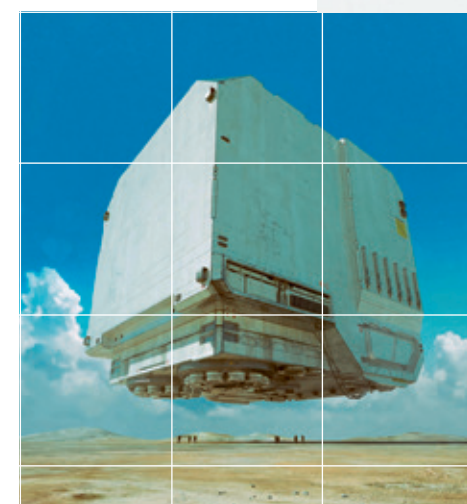
Beeple

Beeple is the alias of artist Mike Winkelmann, who works in the digital art and animation mediums. Famously prolific, he has been creating art every day of his life since May 1st, 2007, and posting it online for anyone to look at completely free. With millions of followers on Instagram and a bevy of collaborations with celebrities and high-end brand names, he is a well-known entity in digital art. When an NFT collage of his collected works, The First 5000 Days, sold for nearly USD\$70 million at a Christie's auction in May 2021, it was a landmark event for digital art, announcing the arrival of NFT as a legitimate and high-powered new market for art and other collectables.

Not only was the price tag of note, but the auction was done at Christie's, one of the world's premier auction houses, it was only sold as an NFT, with no accompanying physical object, and the payment was made in the digital currency—all of which signalled a shift in the possibilities for digital art and digital creators. Beeple's Everydays price shock made it clear that NFT will shape how digital art will licensed, sold, and resold in the future. In turn, this sparked a frenzy of interest in the NFT market, and a massive boom in NFT art collecting and subsequent sale of other artists NFT at Christie's, Sotheby's and an ever-growing number of online NFT marketplaces.

Beeple 是藝術家 Mike Winkelmann 的別名。他以虛擬藝術和動畫為創作媒介。這位多產的藝術家自 2007 年 5 月起就持續每天創作，並發布在網絡上供公眾免費觀賞。這逐漸積累成為百萬計的 Instagram 追蹤者、大量與公眾人物和奢侈品牌的合作產品以及虛擬藝術圈內的極高知名度。當他的虛擬作品 The First 5000 Days 在佳士得被拍賣出近七千萬美金高價時可謂是虛擬藝術界的至高時刻，也預示著 NFT 成為新藝術收藏行業時代的到來。

價格並非唯一值得矚目的部分，拍賣地點也獲得關注。佳士得是全球最權威的拍賣行之一，整個拍賣都未涉及有形物體，而是純粹的 NFT，購買貨幣也是虛擬貨幣。這些都展現了虛擬藝術和創作者未來的無限可能性。在 Beeple 的作品拍賣後，NFT 在作品認證和交易中的角色也被更廣泛接受。此時，NFT 開始收穫大量的來自外圍的興趣，更多作品在佳士得與蘇富比得到展示和拍賣。同時，更多的線上 NFT 交易市場也逐漸開放。





Crypto Collectibles

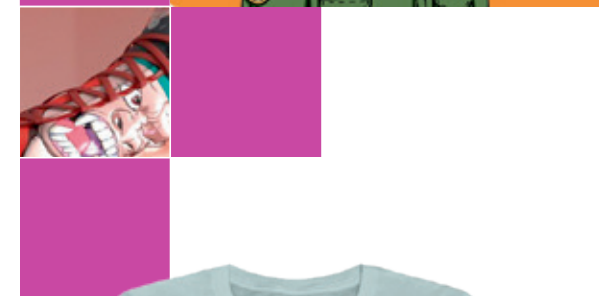
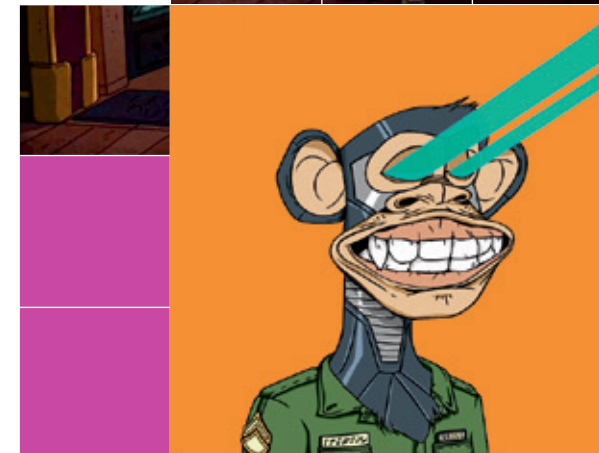
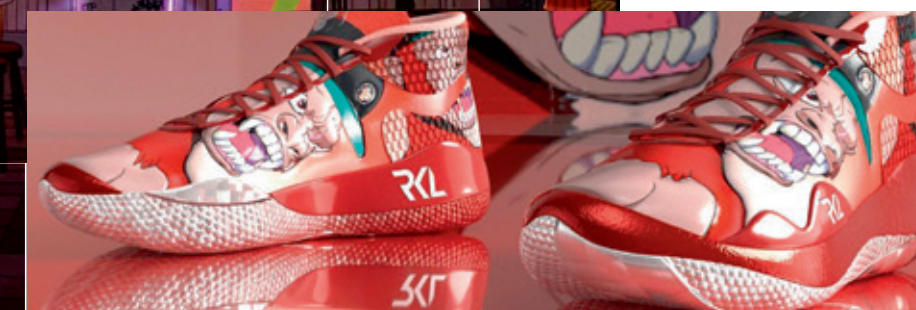
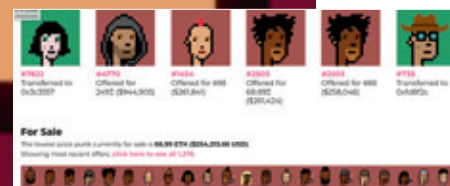
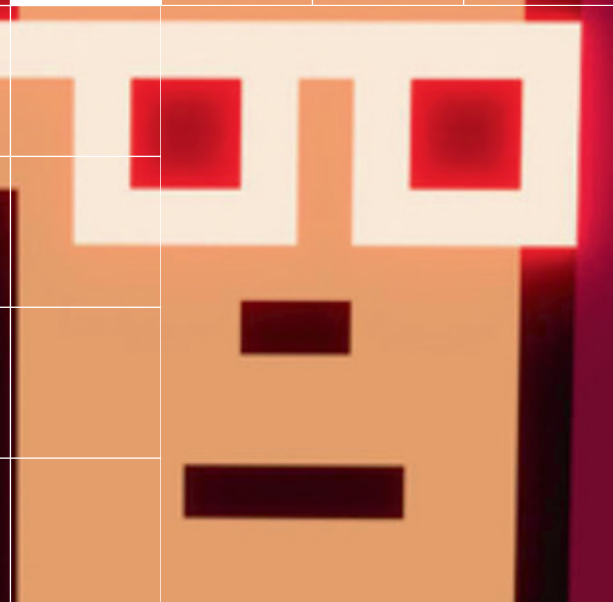
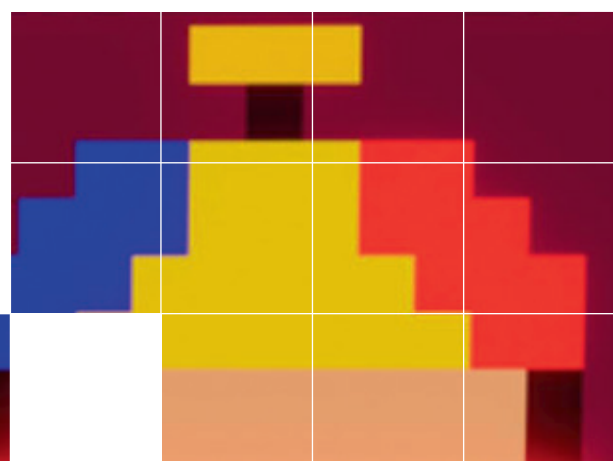
Cryptopunks

Producing 10,000 artworks is a monumental task for any artist, even a group of artists. However, the bar becomes much lower when the creation of each unique piece is done by computer program, mixing and matching variables to eliminate the chance of doubles. Welcome to "generative art" a 2017 invention by Larva Labs that used software to create 10,000 randomly generated pixel-based avatars as individual "Cryptopunks" using unique combinations of attributes such as hats, hairstyle and jewellery. This was the spark that launched the usage of NFT for crypto-collectibles. Each of these simple pixel-faced avatars has been created as an NFT token on the Ethereum blockchain, which serves as a deed of ownership.

Cryptopunks started as an experiment, and they were originally given away by the lab. By 2020, however, they had become sought after collectibles and they were fetching six figures in marketplaces, and then seven-figure sums at auction houses by the next year. It is hard to grasp exactly the appeal of these simple pixelated figures, but the fact they initiated the crypto art movement makes them historic, they are verifiably rare, and being owned by celebrities and business identities does bolster their desirability. Other people may intrinsically enjoy the artwork, or want to display it as an online avatar to feel like part of an exclusive club. Regardless, paying nearly USD 8 million for an 8-bit pixelated avatar signals that buying collectible NFT is as much about ostentatious displays of affluence, "Flexing" in blockchain jargon, as it is about the FOMO (fear of missing out) rush to capitalise on stratospheric rises in value.

對任何藝術家來說，製作一萬件藝術品聽上去都不是一件易事。但2017年，Larva Labs使用軟件製作了一萬件隨機形成的像素人像。Cryptopunks運用獨一無二的內容組合，包括帽子、髮型和珠寶製成人物頭像。而這也促成了NFT作品收藏的開端。

Cryptopunks以實驗為開端，最初也以贈送形式流通。2020年卻成為大家最渴望的藏品，價值高至6位數——第二年升至7位數。如果要確切說出這些像素小人的魅力有些困難，但它們開啟了虛擬藝術運動這一點就足以被載入史冊。它們的可追溯性造就了稀缺性，名人的爭相購買也加深了公眾對它們的嚮往。不少人會因想要成為某個小眾群體的一部分而去購買。為一個8像素小頭像支付近800萬美金是富有的象徵、對區塊鏈科技如魚得水的證明，也是害怕錯過升值機會的人為緊貼流行的舉動。



Bored Ape Yacht Club (BAYC)

Never has a boring NFT been so attractive. The Bored Ape Yacht Club (BAYC) is a collection of 10,000 unique Bored Ape NFTs, and another example of generative art. However, it is more than a simple jpeg piece of art. Rather, an owner's Bored Ape doubles as a Yacht Club membership card to the BAYC Virtual Swamp which is home to this decentralised community, and your ape unlocks members-only access to club perks.

BAYC has become more than just a piece of art, as it has expanded into merchandise with special deals for BAYC owners, and real-life events such as a recent yacht cruise party in New York—where the admission was proof of ownership of a BAYC. The BAYC are not only objects of desire, but also of utility, they give a purpose and use case for owning the NFT. The BAYC branding is strong. A slew of investors, collectors, and celebrities have joined the owners' ranks, further heightening desire for entry into this "club" as a way of flexing the individual's wealth or social status.

Where BAYC has pushed the boundaries of NFT collectibles is in the area of intellectual property ownership, and what this allows owners of BAYC to do. Distinct from the usual practice for NFT, where the owner does not get the intellectual property rights to their purchase, the BAYC actual own their apes in all senses of the word. Having the commercial rights to their unique Bored Ape has led to a brisk secondary market, as well as an array of physical products such as t-shirts, hats, skateboards, and even beer!

BAYC是一萬件獨特Bored Ape NFT系列。它的特別之處在於，它不僅僅是一張jpeg藝術品，還是一個通向虛擬猩猩沼澤俱樂部的鑰匙。

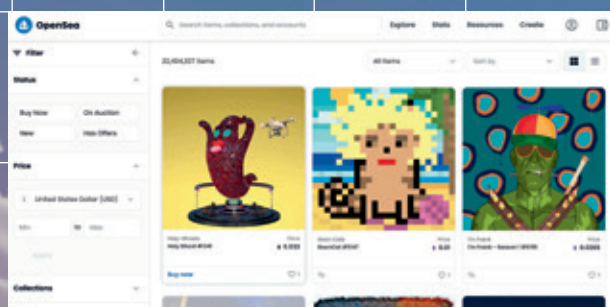
BAYC將藝術品與會員制購物、現實世界活動鏈接。它為NFT找到了收藏之外的意義。它的品牌形象非常堅固。投資者、收藏者、名人都加入了擁有者行列，為這個俱樂部增加了更多吸引力。

BAYC使擁有者擁有對其作品的完全知識產權。擁有者有權利發行自己作品的商務產品，包括服裝、滑板等，令它在二手市場中也充滿人氣。



THEME
Sotheby's
Fungible
Non
Fungible

Unnamed
52,81



NFT in the Marketplace

市場中的 NFT

As the profile of NFT have risen in recent years, so too has the number of options for purchasing these digital assets. Choosing the appropriate way to buy and sell an NFT depends upon the type of NFT, and its stage in the selling cycle. Here we introduce the three main ways to increase your NFT collection.

Direct Purchase from Artist or Publisher

This is a common way to buy collectable NFTs, such as Bored Apes, when first put on the market. They are released in NFT "drops" where a new NFT project, or iteration of an established project, is released onto the open market in batches. These drops are generally announced in advance, and the artists and companies behind the release often spend a lot of time and energy promoting the merits of the project in NFT-related online forums such as Discord or Telegram chat groups. Drops usually

take place on a first come first served basis for a fixed price, but auctions and reverse auctions are also possible.

The competition for NFT with good prospects is intense, sometimes with entire drops selling out in hours, or even less, with fans and speculators hoping to significantly increase their initial outlay once the NFT is able to be sold on the open market. These secondary markets in online galleries and digital exchanges are where massive profits can be made. For example, 10000 Bored Apes were snapped upon launch in April 2021 for a few hundred US dollars, only to be flipped at prices in the seven digits within weeks. Potential secondary market riches drives much of the speculation in NFT collectables.

NFT Marketplaces

Much like a cryptocurrency exchange, an NFT exchange

allows you to buy, sell and trade NFTs. It also makes it possible to upload and mint your digital soon-to-be asset as an NFT establishing it within a blockchain. Massive profits and media attention have led to rapid growth in the numbers of NFT marketplaces, but their fundamental processes are the same so it is easiest to understand using the example of OpenSea, the first and most established of the marketplaces. OpenSea operates in a similar way to eBay, but for the sale of NFT's. Like eBay, it is relatively easy to register for an Open Sea account and begin to resell your NFT's and purchase new NFT. Founded in January 2018, OpenSea is the first, and largest, decentralised marketplace for crypto goods, and sells digital collectables, game items, and other virtual goods secured by a blockchain.

On OpenSea, anyone can buy or sell these items using a smart contract, and these exchanges are permanently stored on the Ethereum blockchain and reflected in a user's personal cryptocurrency wallet. Astronomical prices for some collectables such as Bored Apes have gained much attention, but individual artists and creators are also able to mint their own work and establish online galleries for potential buyers to peruse. Items to be minted include collectables, game items, and many other types of digital goods, and smart contracts secure all transactions. When interacting with listed items, users have the option of either entering a bid or accepting the list price, similar to eBay's Buy Now function.

Auction Houses

Established auction houses, most famously Sotheby's and Christie's have for hundreds of years acted as trusted sellers; and both are trying their best to keep up with the changing auction landscape. A select few established digital artists, most famously Beeple, have reached stratospheric prices, and the auction houses generating such astounding numbers have fed into the NFT hype. But the media attention has also introduced vast numbers of non-technical people to blockchain technology and expanded the market. Established auction houses have also introduced a diversity of NFT products, from tweets to software code, introduced live bidding, as well as payment in cryptocurrency, and even created virtual auction houses in online virtual worlds.

自 NFT 知名度提升，選擇性也在增長。顧客選購 NFT 的方式要由 NFT 的品類和銷售週期來決定。接下來我們將介紹三種主要收藏方法。

直接從藝術家或出版方入手

最直接的購買方式。Bored Apes 最初也是通過這種形式流通。它們通常都是以一組 NFT 作品一同在預定時間 "drop" 在網絡上。這通常需要背後的藝術家和公司在前期做大量預告宣傳，比如在 NFT 相關論壇上。

人氣高的 NFT 的定時發售通常門庭若市，幾小時甚至幾十分鐘內就能售罄。過後當它們對二手市場開放時，價格通常可以大幅增長。這些二手市場包括線上畫廊和虛擬交易中心。Bored Apes 最初定價幾百美金，轉頭便能在二手市場賣至七位數。二手市場經常在 NFT 收藏中採取投機手段。

NFT 市場

NFT 交易類似虛擬貨幣，但是在 NFT 市場，你也可以在區塊鏈上傳並製作自己的 NFT。大量的利潤和媒體關注度令 NFT 市場的數量大幅增長，但它們的操作流程都大同小異。OpenSea 是最早並且也是最具規模的 NFT 交易平台，成立於 2008 年，致力於搭建去中心化的虛擬產品市場，其中包括虛擬藏品、遊戲物品以及其它通過區塊鏈加密的虛擬物品。它的操作類似 eBay，加入方法非常簡單。

在 OpenSea，任何人都可以通過智能合約買賣產品。這些交易過程會被永久記錄在以太坊區塊鏈上並反映在用戶的虛擬貨幣銀包中。一些天文數字的產品，例如 Bored Apes，吸引了不少目光，但是獨立藝術家也能夠鑄造自己的作品，建立自己的畫廊並獲得潛在購買者。與 eBay 十分相似，買家可以在賣家未定價時參與競拍，也可以接受賣家定價進行交易。

拍賣行

知名拍賣行，例如蘇富比和佳士得，都各自有幾百年的歷史和深厚的公眾信用度。兩者在今天都在嘗試改變拍賣行的型態。少數參拍虛擬藝術家，Beeple 或許是其中最知名的，他們的作品都達到了天價。拍出如此驚人價格的拍賣行自然就接受了 NFT 熱潮。另一方面，媒體報導也令相當一部分對區塊鏈技術不了解的人士加入並擴充了市場。拍賣行也在介紹不同的 NFT 產品，從 Twitter 信息到軟件編碼，競拍形式也加入了直播競拍、虛擬貨幣支付，甚至一度創作了虛擬世界的虛擬拍賣行。

Alternative NFTs

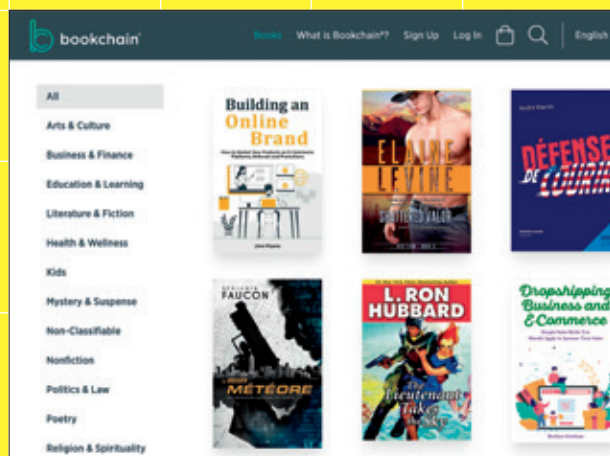
另類 NFT

The introduction of NFT has undoubtedly changed the art market, but blockchain technology is set to exert its influence in all manner of creative endeavours. As with art, NFT provide a way for creators to gain greater control over their work and more ways to financially benefit. NFT smart contracts will help authenticate work, track provenance, and allow creators to benefit from royalties when their works change hands in the open market. As more forms of creative content transition to digital environments ever more options will arise. Here we

introduce just a preview of what will be possible in the near future.

NFT 顛覆了藝術市場，但區塊鏈對生活的影響遠不止於此。NFT 在藝術領域為創作者提供更多保障和經濟來源。智能合約能夠鑑定真偽、溯源並令創作者在作品每次轉手時都能獲得一筆收入。當更多的創意內容轉到虛擬環境，更多機會便會湧現。我們在這裏介紹的 NFT 皆是未來它無限可能中的一小部分。

Books

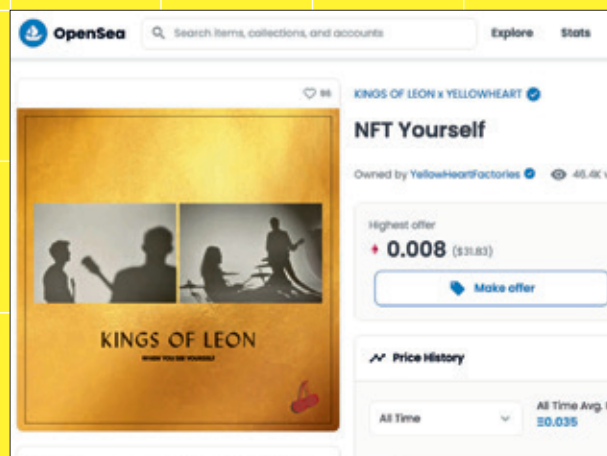


Novels, non-fiction, and comics are all starting to appear as NFT on OpenSea and other exchanges, as well as a growing number of dedicated NFT book markets. Authors have the ability to maintain high degrees of control of their works, limit production runs, include special offers such as signed copies, meeting authors or event access, as well as give people the chance to own parts of the book and artwork. Start-ups such as Bookchain already offer full-package NFT services in this area. Self-publishers are attracted by the product control and income opportunities available, but even major publishers such as Marvel Comics have started to enter the NFT market. <https://www.bookchain.ca/books/all>

書籍

小說、記實、漫畫都經 OpenSea 以 NFT 形式出現，甚至市面上已經出現了專為 NFT 書籍而搭建的流通平台。作者能夠對自己的作品擁有高度掌控權，可以限制製作時長、加入特別版本、舉辦線下活動等，也可以讓讀者擁有書籍的一部分。包括 Bookchain 在內的初創公司已經在這一領域提供全套 NFT 服務。自主出版人會被產品所有權和收益吸引，但包括 Marvel 在內的主流出版公司也加入了 NFT，想要從中分一杯羹。

Music



Whether it is record labels or services such as Spotify, the music industry is notorious for powerful intermediaries that control the industry, and take the lion's share of profits. It is forecast that NFT will enable musicians to bypass the middlemen and sell directly to their fans, as well as retain artistic control and offer unique ways for fans to flex their loyalty with physical and digital exclusives. In March 2021, the Kings of Leon became one of the first bands to release an album as an NFT with a variety of bonus tokens including a special album package, front row seats at live events, and others for exclusive audio-visual arts. <https://opensea.io/assets/0x557430421f8f3ed0a92aca211f1c05ad7b606288/0>

音樂

音樂製作公司和包括 Spotify 在內的音樂服務公司都能凸顯出音樂行業作為企業領頭的特質。初步估計 NFT 能夠讓音樂人越過中間人直接將作品賣給歌迷，同時保留對作品的控制。2021年3月，樂團 Kings of Leon 成為第一批發行 NFT 專輯的樂隊，同時還送給購買者一系列驚喜福利，包括現場演出的前排票。

Film



Quentin Taranatino earned himself a lawsuit from Miramax when he tried to sell Pulp Fiction outtakes on OpenSea, but Hollywood studios saw the direction things were heading and are now selling clips and assorted collectables from their movies. However, the greatest opportunities could be for small and independent moviemakers that can offer NFT-based privileges and unique collectables as incentives for investing in their projects. This Kickstarter for movies concept has already begun, with the upcoming movie Zero Contact, starring Anthony Hopkins, which offers NFT holders the chance of a walk-on role and opportunities to be edited into the film. <https://vuele.io/>

影視

導演 Quentin Tarantino 嘗試將自己的知名影片 Pulp Fiction 內從未曝光的片段放在 OpenSea 售賣，卻為自己惹來一場對 Miramax 的官司。不過自此以後，無論影視公司或是獨立製作人都紛紛瞄準了在 NFT 市場上售賣作品周邊的路線，以 NFT 為基礎的福利和獨特藏品來吸引更多投資和目光。Zero Contact 就是一部這樣的作品。這部由 Anthony Hopkins 參演的影片為 NFT 擁有者提供一次參演機會，或許會被剪進正片。

Sports



Physical excellence is also set to make its mark in the NFT space. In early 2020, the developer of CryptoKitties, Dapper Labs, released NBA TopShot, a project to sell NFT collectables of NBA highlight clips as a digital form of player trading cards. The project has brought in hundreds of millions of dollars in sales for the company, and even more for owners in the secondary market. NBA TopShot's success has already seen football (soccer) enter into the NFT market, with more sports soon to follow. <https://nbatopshot.com/>
<https://sorare.com/>

體育

體育在 NFT 空間也能佔有一席之地。2020年初，CryptoKitties 的開發者 Dapper Labs 發行了 NBA TopShot，一個以售賣 NBA 精彩視頻片段作為虛擬選手交換卡片的 NFT 項目。此項目為公司帶來了幾百萬美金的銷售額，而 NBA TopShot 的成功已吸引足球界加入了 NFT 行列，陸續應有更多運動界項目跟隨其後。



NFT Gaming

NFT 新玩法

Blockchain 2.0 became possible by storing information and even software applications on individual blocks within the blockchain. "Smart contracts" determine what each block is capable of doing, and dApps (decentralised applications) provide an intermediary service with the necessary authority to carry out the terms of the contract. Like an application on your phone or a web service, dApps are software applications. The difference is dApps run on the blockchain and have all the security, immutability and provenance inherent in this decentralised and open technology.

Combining NFT assets with dApp decentralised applications will make it possible to replicate much of the functionality currently found on the internet, albeit with an added layer of trust and autonomy to carry out secure and verifiable actions via dApps. While there are undeniable teething problems establishing blockchain ecosystems, this new functionality is predicted to serve as the foundation for a new digital business model. It is a business model designed specifically for the digital economy, one that provides all the essential elements allowing trusted and secure business transactions to take place, and an inbuilt payment system to ensure automatic and frictionless payment.

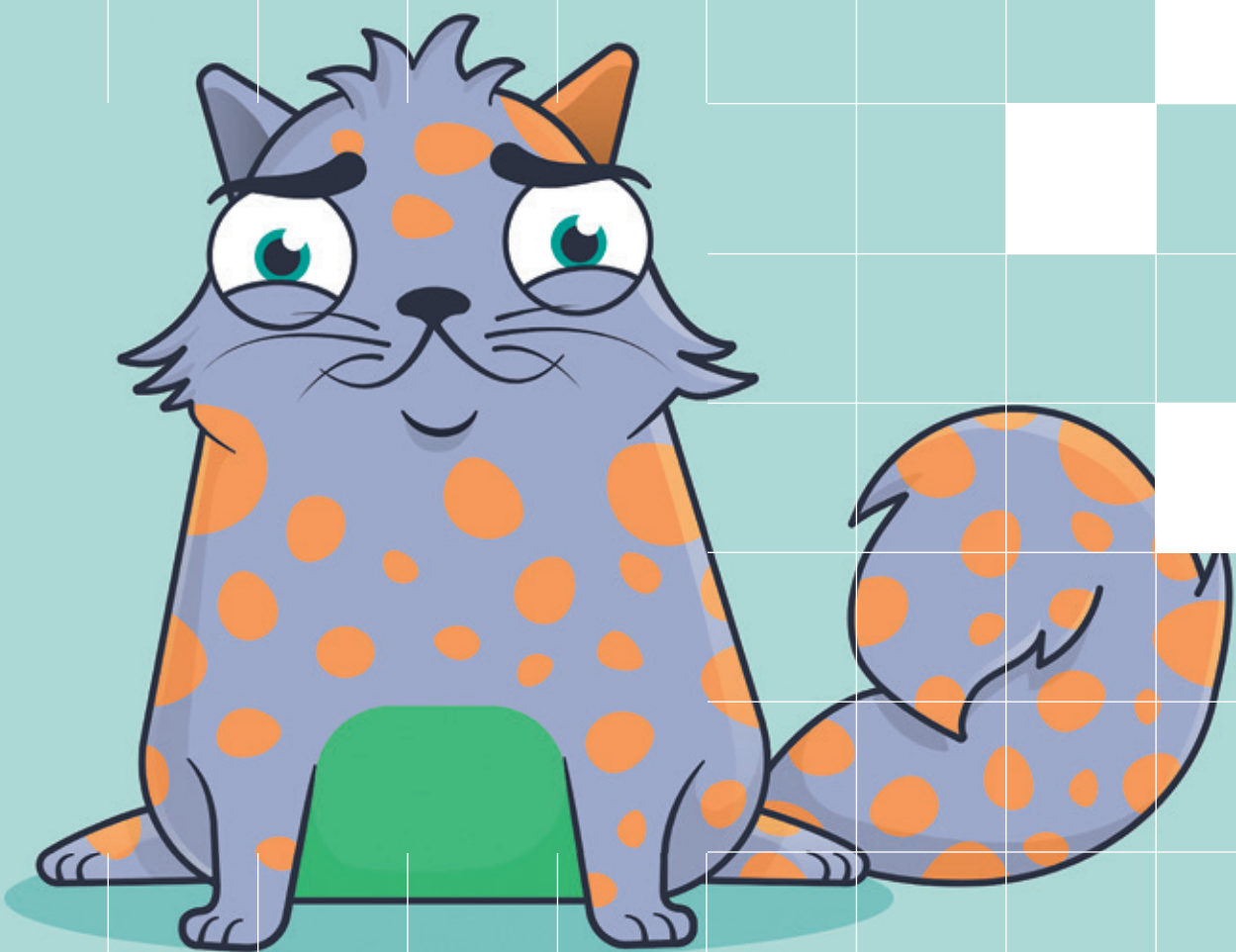
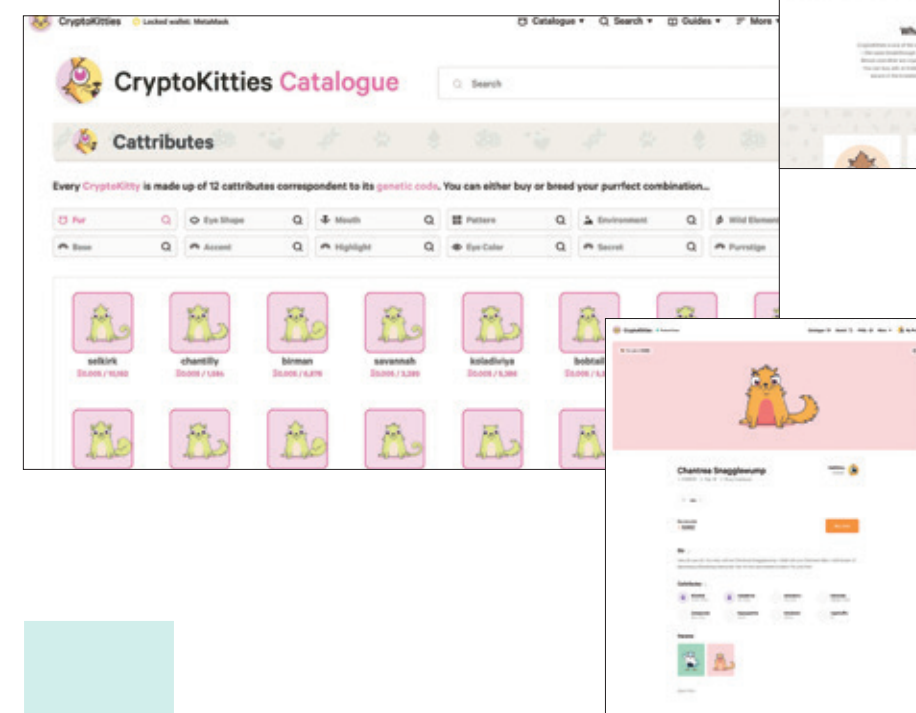
Having dApps running this digital economy opens a wealth of new and diverse uses for blockchain. DeFi, which stands for Decentralised Finance, is one notable usage which aims to disrupt finance and banking by decentralising who may

lend money, to whom, and under what circumstances. Social media, ride-sharing and many more Web 2.0 applications are similarly threatened. How well these and other applications can be realised will play out over the coming years, but we can get some idea of the future by looking at the gaming industry, that is already moving to the blockchain.

區塊鏈2.0能夠成形全靠數據區塊上存儲信息乃至軟件。智能合約決定了每一個區塊的功能，而dApps（去中心化程序）則作為中間項提供了權威和規則。就像一個電話程序或網站服務一樣，dApps是一種軟件程式。區別在於dApps依靠區塊鏈運行，擁有安全性、不變性和可溯源性。

將NFT資產與去中心化程序結合，就能複製目前大部分互聯網功能，外加更多對安全性的信任。當然，開始一個新區塊鏈環境無疑是複雜且充滿問題的，但這項新功能預計會成為未來虛擬商業模型的基礎，能夠提供所有安全高速交易所需的基本要素。

dApps運行虛擬經濟為區塊鏈又打開了一扇新的大門。DeFi，去中心化金融，是一個值得注意的領域。它將顛覆金融和銀行市場，對所有的借債信息實行去中心化管理。社交媒體、共享交通和更多其它互聯網2.0的程序同樣遭受威脅。未來幾年我們便能見證這些程序的發展進程，但是目前我們已經能從逐漸轉移到區塊鏈的遊戲產業看到一絲端倪。



CryptoKitties

CryptoKitties is an example of how to use NFT to gamify the collectables market, driving both popularity and profit. Emerging in late 2017, Crypto Kitties was one of the first games on the Ethereum blockchain. It is a collectables game, using a generative art process to create cute looking digital kittens, each with a unique set of features, dubbed "Cattributes" which are captured as an NFT. Dapper Labs, the company behind CryptoKitties, created a marketplace and a way to trade, and this is all wrapped up in the form of a dApp. Each of the characteristics and ownership of the kitties exists as a series of smart contracts on the blockchain and each kitty has its own unique genome. Players can auction off and purchase kitties as well as breed new generations of kitties from their own collection, rent kitties out for breeding, or put them up for sale on the CryptoKitties marketplace.

While there is no clear objective to the game, the chance to selectively and strategically breed new generations of kittens stimulates competition amongst players for the rare and desirable Cattributes which command lofty prices in the marketplace. The prospect of making a quick fortune drove a frenzy in CryptoKitties soon after launch, to the point they clogged up Ethereum blockchain operation, as desirable kitties started fetching USD 6-figure sums in the marketplace. For

many speculators, CryptoKitties had become an adorable version of Bitcoin, but a deeper change had also taken place. CryptoKitties was able to provide a mainstream usage for the Ethereum blockchain, and the game introduced new demographics and populations around the world to a technology commonly perceived as too technical and distant.

CryptoKitties是一個運用NFT來將收藏市場遊戲化的典型範例。它崛起於2017年，是最早在以太坊上出現的遊戲之一。它是一個收藏家遊戲，以生成藝術的創作過程來製作可愛的虛擬貓咪，每一隻都有不一樣的特點，叫做Cattributes，並被記錄為NFT。Dapper Labs，CryptoKitties背後的公司，成立了一個專門進行交易的市場。所有的這一切都在dApp上進行。每一個貓咪特點和所有權都存在於區塊鏈的一系列智能合約中，每一隻貓咪都有獨特的基因組。玩家可以拍賣或購買貓咪、培育新一代貓咪、出借自己的貓咪用於繁殖或賣出它們。

雖說這個遊戲沒有任何清晰的目標，有選擇性和策略性地繁育新一代貓咪刺激起參與者對稀有物品的競爭心理。賺快錢的可能性令CryptoKitties一經面世就掀起狂熱，價格直至6位數，甚至還一度阻斷了以太坊的運行。對很多人而言，CryptoKitties成為了一個可愛版的比特幣，但更深層的改變也由此發生了。CryptoKitties能夠為以太坊區塊鏈提供大量用戶，並且將更多的外行人介紹到了科技行業內。



NFT Gaming 2.0

遊戲 2.0

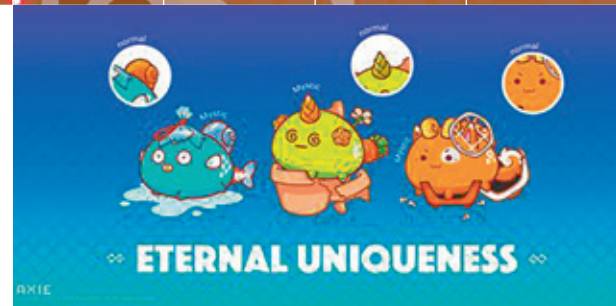
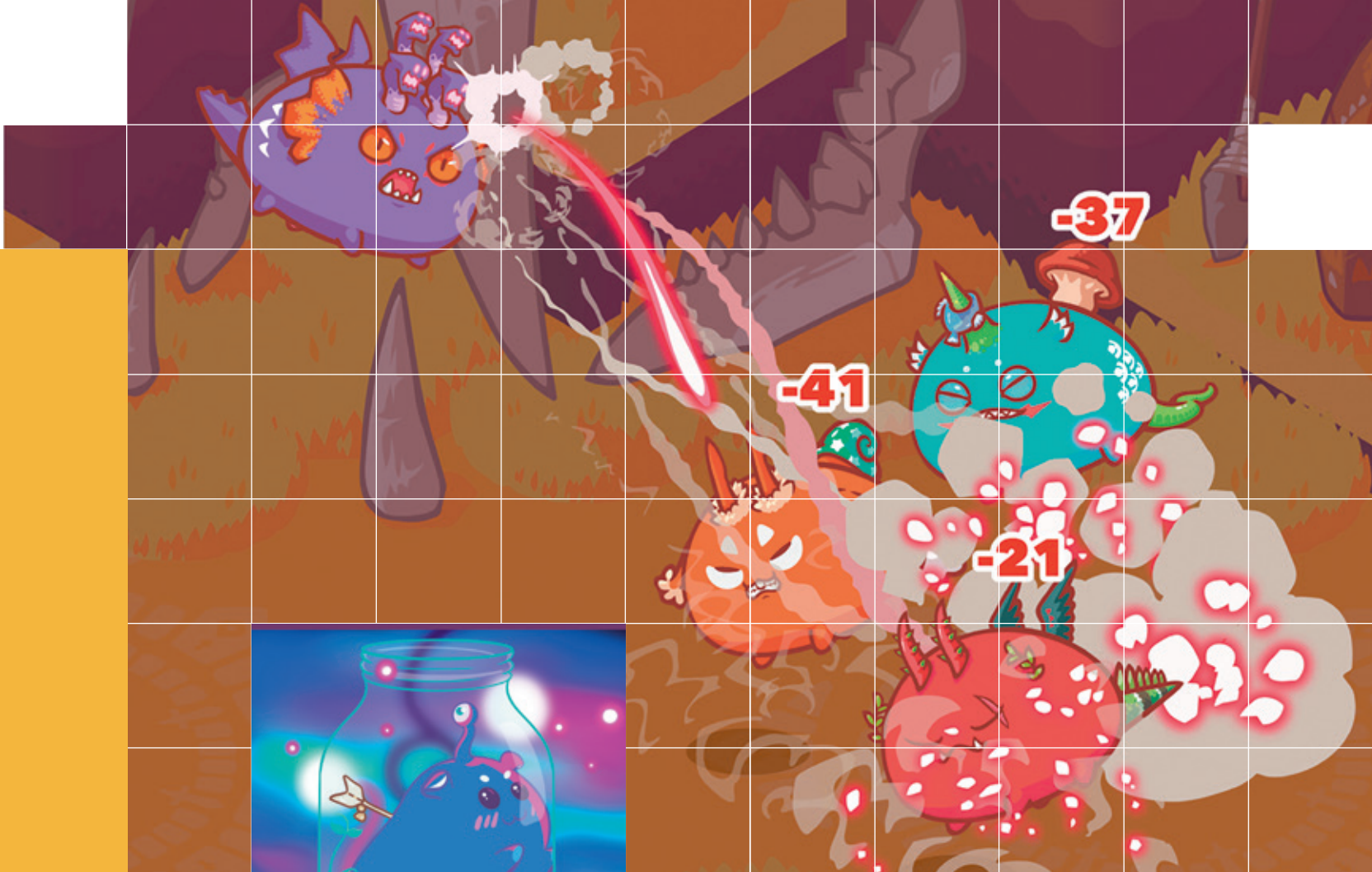
The gaming sector economy has traditionally been a strong and important driver of digital innovation. The market is very large, and has been for a long time, and has grown significantly with the addition of mobile platforms in recent years. The growth of E-sports has also allowed a small band of elite gamers to earn substantial incomes. However, many more players eke out a living on major online games such as Fortnite and Second Life by making and selling digital goods and accessories for other players, or getting paid to help clear a level or gain some advantage. Such financial options for gamers has popularised the concept of Play-2-Earn (P2E), and opened up a range of income options for people of all ages.

Gamers have been collecting virtual items for years, spending real money on their avatars and their experiences in the digital world. By incorporating blockchain payments P2E 2.0 has further increased ways to earn, and has made playing online games a viable source of income for some people. Typically, gamers are paid in the native currency of the game, which powers an entire in-game economic system. The additional step of converting game money to real money has significantly increased financial literacy of cryptocurrencies in order to cash out into a national

currency. In contrast to previous P2E games, where only the most competitive tournament players could earn from their passion, now gamers earn just by playing in the emerging crypto-powered version of P2E. No game better highlights the possible future of blockchain gaming than Axie Infinity.

遊戲產業經濟一向穩定，所以一直是虛擬創新的重要指標。市場一直相當龐大，並隨科技更新日益壯大。線上體育的增長令一小部分遊戲人贏得可觀收入。但是，更多的電競人員只是用在主流遊戲中製作和交易虛擬物品來維持開銷，或幫助通關來獲得收益。這也激勵了電競行業的P2E，有償遊戲，同時也開放了更多在遊戲中賺錢的方法。

電競人員一直都有收集虛擬物品。他們用真實貨幣購買虛擬角色所需的一切物品和體驗。在這一過程中加入區塊鏈支付，P2E便有了更多方式來增加收入，也令電競收入變得更加適合某些人群。通常電競人員被用遊戲貨幣支付，扶持了整個遊戲的生態系統。將遊戲幣轉成真實貨幣時，通過虛擬貨幣的介入增加了過程的簡易度。不同於以往的P2E遊戲的只有職業選手賺錢，業餘人士目前也可以在各種虛擬貨幣P2E中大顯身手。其中，最直接指向區塊鏈發展走勢的遊戲就是 Axie Infinity。



Axie Infinity



Inspired by Pokemon and Tamagotchi, and based on blockchain technology, Axie Infinity is a virtual gaming world full of adorable fantasy creatures called Axies which can be bred, raised and battled. The combat takes place between Axie, and the winners are determined by the type of Axie they are, and how their particular attributes stack up against their rival in battle. These attributes are part of the genetic code of each Axie, and breeding these creatures gives the progeny a healthy stir of the gene pool to come up with a new combination. Battles take place between teams of three Axie, and the winner earns a small amount of Smooth Love Potion (SLP) tokens, a form of game currency, which is needed to breed new Axie.

Axie Infinity was launched in 2018 by Skymavis, a Vietnamese start-up company. It was created as a response to the limitations of CryptoKitties and similar blockchain games that had difficulty in maintaining economic incentives for the long-term growth of the gaming ecosystem. The game is based on P2E, and rewards players for the time and effort they put into the game, rather than the conventional gaming model of extracting as much money from each player. The SLP can be swapped for cryptocurrency and real-world currency on a blockchain currency exchange, allowing players to earn an income from their gaming. Additional income can also be made selling Axie you have bred on the marketplace, as well as

trading other in-game assets including land, wearables, and in-game cryptocurrency tokens.

Depending on factors such as the power and attributes of your Axie and the amount of time spent playing, it is currently possible to earn anywhere from USD\$300 to USD\$1000 a month just from playing the game. Moreover, it is possible to farm out Axie for other people to play and take a cut of their earnings, and even sponsor players without the initial capital to purchase the essential Axie to start playing. Axie is more than just a game, it is also a social network, and for increasing numbers of people it is a job, one that is helping people in developing countries such as the Philippines cope with financial hardship brought on by the pandemic.

Using cryptocurrency as the payments system for games such as Axie automatically creates a business structure beyond the borders of any one country. A sign that the emerging digital economy is becoming a truly borderless global marketplace. The decentralised nature of such blockchain games, being run via dApp and associated technologies, is also fundamentally restructuring how the games are managed and how they develop over time. While a game such as Axie Infinity may start off as the domain of a single company, or core of developers, as the game grows in scale and becomes ever-more complex the

industry trend is to decentralise the operation and transition to community-led management of the ecosystem.

Players holding a game's digital assets as NFTs, as well as associated cryptocurrencies, allow them to go from being passive players in a game to becoming shareholders, with a financial stake in the future of the game. Not only do dApps facilitate the operation of a game, but they also allow player "shareholders" to directly contribute through proposal mechanisms and voting mechanisms that can build consensus on a particular standard or development. Increasingly being referred to as community-based gaming, it is a trend that will only grow stronger as the online gaming world blurs the line between real-life and virtual-life in the massive online Metaverses that are growing on the internet.

Axie Infinity 從千禧年大熱的 Pokemon 和 Tamagotchi 中獲得靈感，是一款養成和戰鬥的遊戲。它也建立在區塊鏈技術上，每一個戰鬥精靈 Axie 都有不一樣的基因組成。戰鬥勝利的一方會獲得遊戲中的代幣 Smooth Love Potion，是用來繁育新 Axie 的必需品。

Axie Infinity 在2018年被越南初創公司 Skymavis 推出。它發現了 CryptoKitties 以及其它類似遊戲所存在的漏洞：難以保持用戶長期的經濟激勵。這個 P2E 遊戲會根據使用時長和精力來獎勵

用戶。SLP 可以被換成虛擬貨幣和現實貨幣，Axie 以及它所擁有的配飾都可以被交易。

由於每個 Axie 的構成以及用戶使用時間不同，每人大概每天可以賺取300至1000美金不等。在遊戲中還可以讓他人帶自己的 Axie 去戰鬥，或贊助沒有能力購買 Axie 的新用戶。所以 Axie 並不只是一個遊戲，同時也是一個社交方式，更是一份工作。發展中國家如菲律賓正因 COVID 經歷金融困難的人能從中找到一點支援。

運用虛擬貨幣支付遊戲自動構成了一個超越任何國家界線的商業模式。新興虛擬經濟正在變成一個真正無國界的全球市場。去中心化的內核從根本上改變了遊戲的管理和開發。雖然一個類似 Axie Infinity 的遊戲是從一間公司的域名開始的，當這個遊戲開始增長並變得更加複雜，產業就會偏向運營的去中心化和生態系統的社區維護。

當玩家擁有以 NFT 存在的虛擬資產和其相對的虛擬貨幣，他們就從遊戲中的被動玩家變成了持股人，與遊戲的未來擁有了金錢層面的關係。dApps 幫助遊戲的運營，但它也幫助玩家直接通過投票和提議來共同制定發展計劃和水準。這些遊戲越來越多被稱為社區遊戲。當現實世界和線上遊戲世界之間的分隔越來越模糊，它是一個只會更加強大的潮流。



The Metaverse

元宇宙

Futurists speculate that, at some point in time, the digital world will become more important than the physical world for many people. The ability to earn an income with P2E and socialise remotely are pushing us closer to such a world, an idea captured in the recent technology buzzword the Metaverse. Late 2021 saw a breakthrough in public recognition of the term when the company formerly known as Facebook rebranded itself as Meta, and began repositioning itself to be a main player in this upcoming digital market segment. They, and many other corporations, are betting that the Metaverse will prove to be a form of social media on steroids.

In really simple terms, the Metaverse can be defined as an online world where people interact via avatars in a digitally shared space, and with an immersive and sensory richness impossible with conventional online experiences. It supports an economy, and has highly customisable environments for all manner of virtual interaction. Although, it is not entirely new, as there have been precursor versions of Metaverse around for nearly two decades. Second Life, released in 2003, is considered a proto-Metaverse, while Minecraft and later iterations such as Fortnite also feature the social-based gameplay at the foundation of the Metaverse.

Important innovations of the Metaverse include it being in real time, so being offline translates into missing events and interactions. It is also persistent, meaning it can't be reset like a game or rewind like a movie. Whether it is gameplay or digital purchases, whatever happens while in the Metaverse is permanent. The Metaverse will also span digital and physical worlds. The game Pokemon Go is a preview to this, and augmented reality is predicted to blend how we interact with virtual and physical space, and how these interactions can be represented in the online world.

Social media applications have long understood the importance of user-generated content, and this is expected to play a massive role in the creating Metaverse. Though, the scale and breadth of user experiences in Metaverse also means it will be beyond the capacity of any one organisation to create and control how it develops. This has instigated the emergence of community-led decentralised management structures, called Decentralised Autonomous Organisations (DAO), which are a collection of smart contracts and dApp created to manage and grow Metaverse ecosystems.

Because the playing community is engaged and invested in creating activities for each other, they are more likely to meet the needs of these communities and perpetuate a virtuous cycle of engagement with the Metaverse ecosystem. DAOs will provide an incentive for their members to create open and shareable resources, and can provide a fair system of decision-making without any hierarchy or centralised point of control. Moreover, this relatively new organisational model based on NFT communities distributes governance via voting power given to members, and streamlines how and why management and economic decisions are made.

有人說，在未來的某個時刻，虛擬世界會比現實世界更加重要。以P2E為職業和遠程社交都更進一步將我們推向那個目前被稱為元宇宙的世界。2021年底是元宇宙這個詞彙被廣泛認可的時間。Facebook更名為Meta並開始將自己定位在虛擬市場行業的主要玩家。他們同很多其他公司一樣，都賭元宇宙會成為一種更加瘋狂的社交媒體。

簡單來說，元宇宙是一個線上世界。人們用自己的avatar在一個虛擬共享空間中互動，其中的沉浸式體驗是普通網絡沒有的。元宇宙支持內部經濟，對任何虛擬互動都有訂製化內容。2003年推出的遊戲Second Life和Minecraft一起被大家當成元宇宙的前身。

元宇宙創新在於它是實時的。所以下線就等於失去活動和社交的機會。它也是持續的，無法重製或倒退。它也能像Pokemon Go一樣混合虛擬與現實。社交媒體一向知道用戶自發性內容的重要性。這對元宇宙來說也同等重要。當然，在元宇宙中它的信息量前所未有的巨大，所以也激發了社區為主導的去中心化管理模式(DAO)。

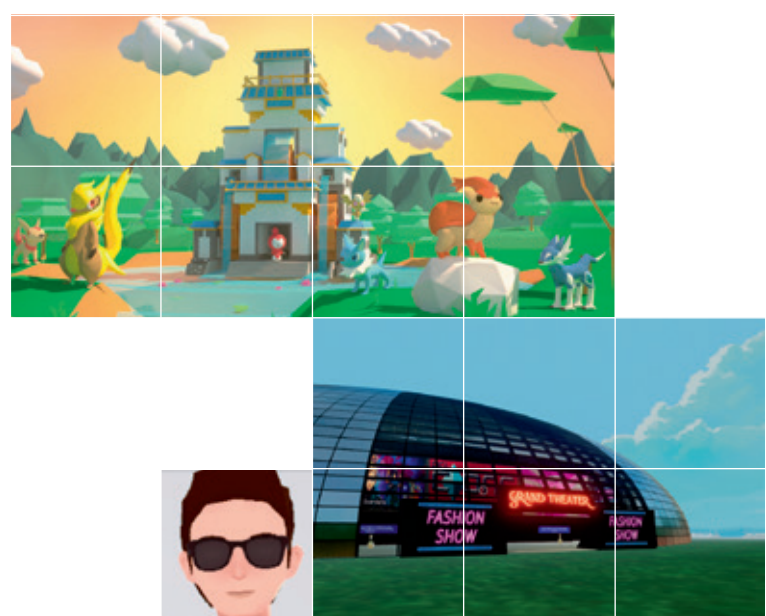
DAO為成員創作開源素材提供支持。這個以NFT為骨架的管理模式用投票來做決策，並梳理出管理和經濟決定如何落實。

THEME
Fungible
Non
Fungible



Metaverse in Practice

實踐中的元宇宙



Decentraland

Based on the Ethereum blockchain, this 3D virtual world is one of the best-known Metaverse projects. In Decentraland it is possible to create avatars and use voice or text to interact with other players and move freely within this virtual world, even without 3D glasses. Participants can buy property, visit buildings owned and operated by other entities, participate in activities and games, purchase avatar wearables, and attend a wide variety of events. Decentraland supports a virtual economy and all purchases and ticketing are made with Mana, the in-game cryptocurrency. Mana holders can also vote on any governance changes within Decentraland, making it an early example of a functioning DAO.

Virtual malls and diverse retail outlets are constantly coming online. Entertainment options are also rapidly expanding, and include Metaverse festivals, online concerts, as well as a burgeoning casino sector. There are even real digital jobs available for people to staff virtual casinos, and this seems to be just the tip of the iceberg for future employment potential. Other ways to generate income include using the Builder application provided by Decentraland to create infrastructure on their virtual land to use or rent out externally, or to invest in-world time creating digital assets.

基於以太坊區塊鏈，這個3D虛擬世界是最為著名的元宇宙項目之一。在Decentraland中，用戶可以創造虛擬人物在其中自由行動，並以語音或文字同他人互動。用戶可以購置房產、拜訪其他機構持有的屋苑、參與活動和遊戲、購買服飾等。Decentraland支持虛擬經濟，所有交易都以遊戲內虛擬貨幣Mana進行。Mana的持有者也可以在Decentraland內為政府投票。這也令它成為一個早期DAO例子。

虛擬購物中心和多樣的零售逐漸在網絡上增加比重。娛樂項目的數量也在快速增長，其中包括元宇宙節慶、線上演唱會和日益壯大中的博彩業。線上虛擬賭場甚至提供了真實員工的工作機會——這還只是未來就業方向的冰山一角。其他獲得收入的方式還包括運用Decentraland自帶搭建系統創造基礎工程，可供租賃、買賣和投資。

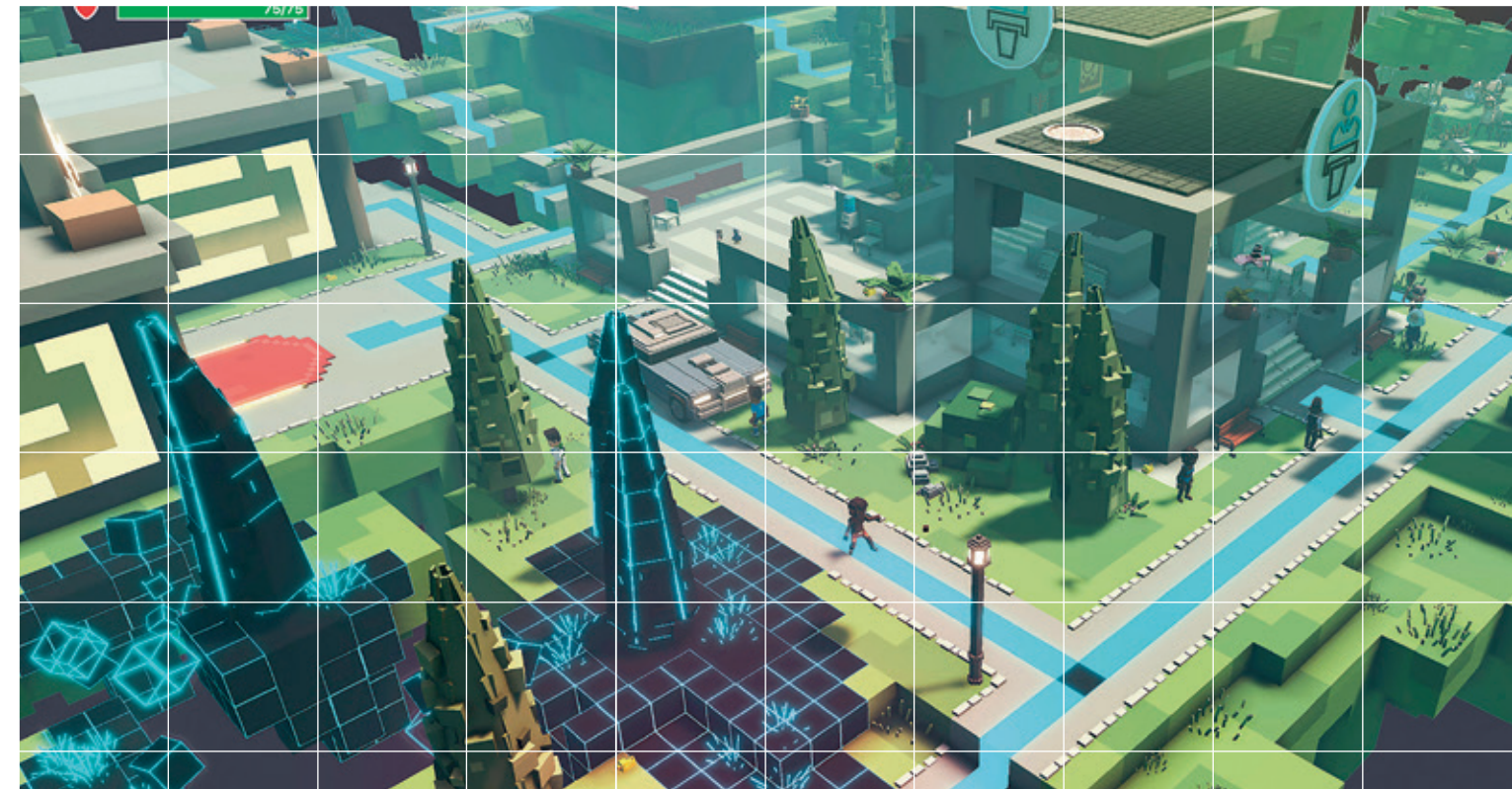
Sandbox

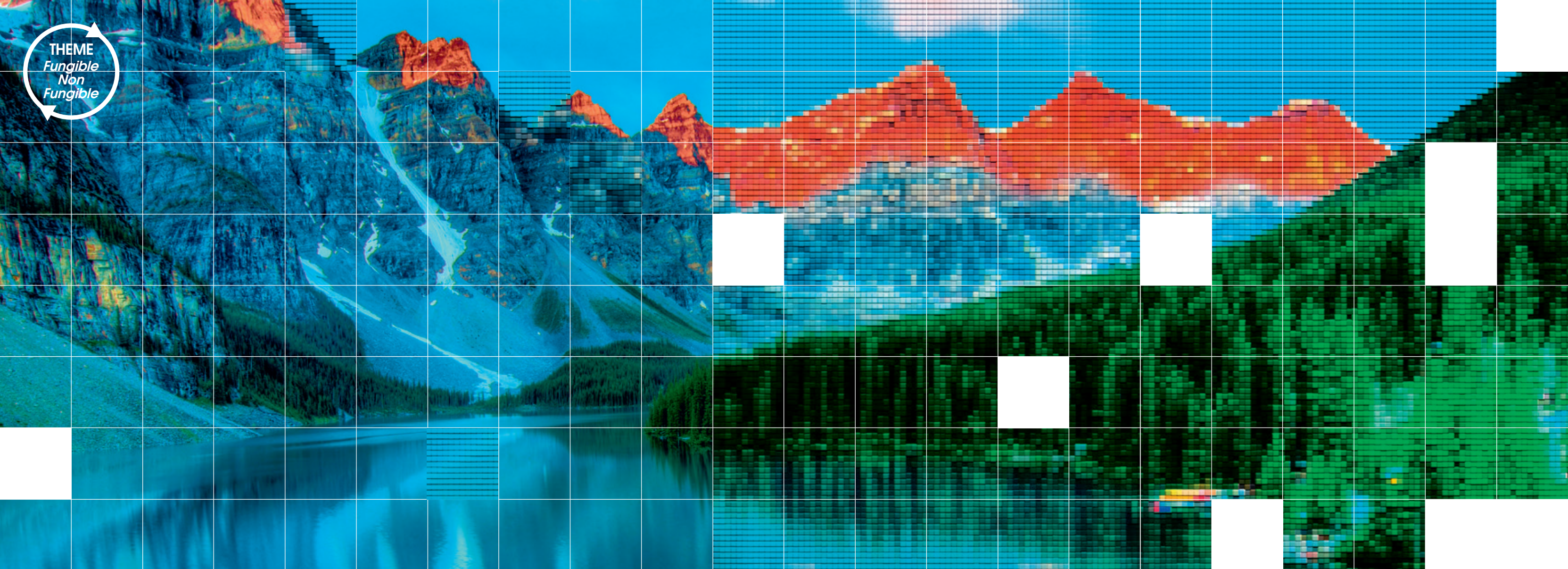
Sandbox is creating a full range of Metaverse functionality and has quickly become a prominent case study in blockchain gaming, attracting investors and players wanting to stake early claims on the 166,000 plots of virtual land NFT that make up this virtual world. Sandbox aims to establish itself as an entirely user-generated space, that goes beyond just creating buildings and developing land, and enables users to easily create entire games and gaming ecosystems to operate on their real estate. Users are free to create and edit their characters, and to buy land to build assets that can be shared, used or sold, or transferred between games within the Sandbox.

Landowners and holders of the in-game currency, Sand, can participate in governance decisions, and can exercise voting rights on key elements such as the Sandbox Foundation grants to content and game creators, as well as contribute to overall development direction. The Sandbox Foundation consists of over 100 people in 32 countries and operates as a DAO. The role of the Foundation is to support the ecosystem of the Sandbox, offering grants to incentivise high-quality interactive content & game production on the platform. To date, the Foundation is funding more than 15 game projects and granted 100+ artists to produce NFTs ahead of the public launch.

Sandbox創作了一套完整的元宇宙功能並快速成為區塊鏈遊戲的典型案例。它吸引了想要在16萬塊NFT土地中獲取一席之地之地的投資者和玩家。Sandbox的目標是令自己成為一個純粹由用戶搭建的世界。超越樓房和土地開發，它也讓用戶能夠在自己的土地上創作和操縱完整的遊戲生態。用戶可以製作和編輯他們的角色，還能購買和開發其後可分享、使用、交易或在Sandbox遊戲間轉移的資產。

土地所有者和Sand（Sandbox內的貨幣）擁有者可以參與政府決策，並可以在包括社區為創作者頒發獎金等活動時行使投票權，還能夠參與規劃整體發展方向。Sandbox基金會由32國超100人組成，並以DAO運行。基金會的角色在於扶持Sandbox生態，向高質量內容與遊戲創作者提供獎金。至今為止，基金會資助了超過15個遊戲項目和百餘藝術家。





Making the Metaverse

創作元宇宙

To create an entire virtual world is a significant feat, and at every step the age-old design parameters of form and function apply. As importantly, from a designer's perspective, building virtual worlds is just as real an experience as building in the physical world. There will be an enormous amount of design-related work to be had in creating the infrastructure, hardware, software, and content that will manifest the Metaverse and subsequent blockchain applications. What's more, being free of physical limitations, designing for such virtual worlds offers an attractive and rewarding field of work for aspiring designers.

Designing the Metaverse

Central to the concept of the Metaverse is the idea that virtual 3D environments are accessible, interactive, and take place in real-time. Future Metaverse "dwellers" will have a very immersive experience, something technologists are calling "extended reality" (XR) – a combination of augmented, virtual and physical realities. Maintaining non-fragmented user experiences over multiple platforms and Metaverse, and on multiple smart devices, is an extremely complex design challenge, and one that requires the solutions be human-centred. This virtual human experience combines social and technical aspects, and both areas are desperately in need of effective design thinking to create the best experiences possible.

It won't be until NFT breaks into the mass market in ways that

are easy and compelling that the technology will entrench itself in our daily lives. But when it does, designing how and why we navigate space in the Metaverse could become almost as important as it is in the real world. Whether you are an architect, or into fashion, furniture, graphic design, or whatever, there are a vast array of creatively designed inputs required to build and populate the Metaverse. Moreover, individualising user experience to stand out in the digital crowd and catering to the ever-expanding size and complexity of Metaverse will create an ongoing source of demand for design expertise.

Designing for the Metaverse

Beyond the virtual realm, NFT and blockchain have created a functioning market linking the digital and the physical. The implications are enormous. For example, in 2019, Nike patented a system called CryptoKicks, a service that will use NFTs to verify the authenticity of physical sneakers, and provide a virtual version for owners to make their online fashion statements. Metaverse will become like a massive antenna shop for established brands and niche market businesses, offering all manner of immersive and unique experiences wrapped up as NFTs. The corporate world is already staking out entertainment sectors and shopping malls in virtual space, and devising transition strategies. Whether it is for a start-up or a blue-chip corporate, companies will be filling design-related vacancies for the foreseeable future.

Designing things to be sold in the Metaverse, both virtual and in the NFT-linked real world, is also an area rich in opportunities for freelance and early-career designers, artists, and literally anyone with a creative disposition. For most creatives, the design processes already take place in a digital environment, whether it is CAD, Photoshop, or a dedicated application. Simply being able to upload software designs to the internet, or the Metaverse or whatever medium, offers a direct path to realising designs without the expense and complications of creating something physical. Combining blockchain and crowdfunding will allow raising capital from micro-investors using dApps and DOAs, and this could dramatically help get innovative projects off the ground.

創立一整個虛擬世界相當複雜，每一步都涉及到很多設計程序。對設計師而言，創建虛擬世界正如同創建真實世界。元宇宙中的基礎工程、硬件、軟件和內容都需要大量設計工作。去除了物理限制，設計虛擬空間會成為一個充滿吸引力又回報豐厚的工作領域。

設計元宇宙

元宇宙的中心概念是實時、可進入、可互動的虛擬3D環境。未來的元宇宙居民會得到沉浸式體驗。在數個平台上保持一致和有連續性的用戶體驗是一個極其複雜的設計挑戰，需要秉承以人為本的設計理念。它需要結合社會與技術層面，而兩者都正需要更好的設計思考。

NFT要想穩固其在日常生活中的位置，還需漫長時日和更簡潔精準的進入大眾市場的方針。當它成為人人生活中不可或缺的一部分時，設計如何在元宇宙中導航遊覽將會變得極其重要。你可能是建築師，或對時尚、傢俱、平面設計感興趣，都能為元宇宙帶來更加豐富充實的內容。個人化的用戶體驗在元宇宙中將會是首要因素，在日益壯大的群體中達到個性化設計將會持續需要設計專家的支持。

為元宇宙設計

超越視覺現實，NFT和區塊鏈創造了一個在虛擬和現實之間可以生存的市場。影響十分巨大。2019年，Nike取得了CryptoKicks的專利。它是一個運用NFT來證明真實鞋履的真偽的服務，同時也為擁有者提供一雙同樣的虛擬鞋。元宇宙會像是一個巨型直銷店鋪，為已有品牌和新興企業服務，提供沉浸式的獨特體驗。現實中的企業紛紛開始留意虛擬空間中的娛樂和購物設施，相信在不久的將來便會用設計相關產品填滿它們。

設計在元宇宙內售賣的產品，不論是完全虛擬或是以NFT形式與現實世界交集，都對年輕設計師、藝術家和任何對創意行業有興趣的人士是一個潛在機會。我們對CAD和Photoshop一類的设计軟件都已經耳熟能詳。將它們直接錄入互聯網或元宇宙，或任何其它媒介，都比在現實生活中製作它來得直接。隨着眾籌和區塊鏈的加入，來自微型投資人的DAPP或DOAs資本，可以幫助具前瞻性企業邁出第一步。



HKDI NFT Forum and Design Sprint 2021

The sudden spike in NFT interest, and its relevance for aspiring Design students, has not escaped the attention of Hong Kong Design Institute. Accordingly, HKDI held the NFT Design Sprint and Forum on November 26 and 29 respectively, moderated by Filip Ziolk, multimedia and creative industry expert and practitioner. The NFT Forum gathered four experts, each bringing unique insights into the breadth and depth of change being instigated by NFT and associated technologies. The forum concluded with a wide-ranging discussion of how NFT will affect business, consumers, and designers.



Max Moore
Director and Head of Contemporary Art Auctions of Sotheby's Hong Kong and Co-Head of Digital Art Sales for Sotheby's Worldwide
蘇富比亞洲區當代藝術主管及全球數碼藝術聯合總監 Max Moore

Sotheby's has accumulated a string of firsts in 2021—the first art sale at an auction house paid in cryptocurrency, auctioning the source code to the World Wide Web, re-creating their London premises in Decentraland, and setting a succession of new records for NFT artwork at auction. October 2021 saw the opening of Sotheby's Metaverse operations as a dedicated marketplace to buy, sell and display NFT assets. Currently, Sotheby's is mostly focused on fine art, but have an interest in other areas including sports, gaming and digital collectables.

The company is well-positioned to bridge both digital and physical worlds and to highlight interesting and thought-provoking works. Sotheby's interest in NFT has a strong upside, as the vast majority of artwork creators are new to their auctions, as are the bidders. Moreover, going digital significantly streamlines the auction process. Sotheby's is conscious of its role in educating traditional art investors in possibilities for the market, as well as providing opportunities and a platform for digital artists, and establishing procedures for carrying out trusted digital auctions.

蘇富比在 2021 年累積了不少「第一」——第一個運用虛擬貨幣交易的拍品、第一個拍賣萬維網源代碼的機構、在 Decentraland 上重建自己的倫敦總部、不斷在拍賣會上為 NFT 拍品創新高。2021 年 10 月我們見證蘇富比元宇宙的誕生，隨即它成為了專門交易 NFT 資產的地方。目前，蘇富比正專注於藝術品，但也著眼於體育、遊戲和數字藏品等領域。

NFT 的突發熱潮和對新一代設計學生的關聯都被香港知專設計學院收入眼底。學院隨後在 2021 年 11 月 26 日及 29 日分別舉辦 NFT Design Sprint 及 Forum，有多媒體及創意產業專家 Filip Ziolk 主持讓大家了解這科技潮流。在 NFT Forum，四位專家帶著他們的獨到見解前來加入討論，大家一起探討了 NFT 對未來商業、消費者和設計師的影響。

Ricky Choi
Smart Living Cluster Lead, Cyberport
數碼港智慧生活高級經理 蔡偉傑

Cyberport is Hong Kong's leading digital community. They support start-ups with incubation services and have an impressive track record in fostering companies in a wide range of digital sectors, including fin-tech, digital entertainment, e-sports, AI, and smart living. Choi exhorted students to align their studies with these very high digital growth areas, especially as they relate to the United Nation's Sustainable Development Goals and the emerging green economy rich with job opportunities. Choi is a big believer in solving the world's problems through innovation, and recommended making use of Cyberport's Entrepreneurship and Cyber Academy programs as effective ways to help students establish their businesses.

Cyberport is creating a universal NFT ecosystem to integrate blockchain and NFT into their existing communities, and are actively fostering collaboration within these communities. NFT are just beginning, and their potential applications could be transformative. Choi reminded the audience that NFT doesn't need to be a crypto business and that companies are currently too focused on art

pieces, and need to be creative about incorporating new tech possibilities into real-world issues. He believes there are many possibilities for daily applications for NFT, particularly in health and smart living.

數碼港是香港具領導地位的數碼社群。它為初創公司提供孵化服務並在互聯網金融、網絡體育、AI 和智慧生活表現卓越。蔡經理主張學生多關注具有較高數碼增長潛力的領域，特別是跟聯合國永續發展有共同目標的行業還有增長中的綠色經濟職業。他相信通過創新解決全球性的問題，並建議多利用數碼港的創業項目來幫助有需要的人成立自己的企業。

數碼港正在創立一個公開的 NFT 生態，將區塊鏈和 NFT 合併到已有的社群中。NFT 正起步，它的應用潛力是無限的。蔡經理提醒觀眾 NFT 不一定是一個虛擬商業，企業更應該考慮如何將這類新科技結合到現有的企業中。他相信 NFT 雖然目前深入藝術領域，未來將有機會發展至健康和智能生活方式中。



Raymond Hung
Co-founder and Chief Technology Officer of UCOLLEX
UCOLLEX 首席技術官及聯合創辦人 熊世賢

A product of the Cyberport ecosystem, UCOLLEX is a marketplace that sells unique and limited edition NFT for toys and pop culture collectables. The company aims to make NFT accessible for everyone by simplifying the process of creating, listing, and purchasing NFT. Hung fleshed out many of the technical aspects of NFT and blockchain, and what makes for success in this rapidly developing market. In summary, NFTs that have valuable uses, are created by trusted sources, show promise, and are associated with large blockchain markets, will have very strong prospects.

Hung is particularly optimistic about the potential for gaming and the emergence of play-to-earn for both players and creators. There are enormous opportunities for designers to use blockchain technologies to solve current problems in society. Although, as it is still in the early stages there are problems with adoption based on poor usability of NFT and complicated purchasing processes. However, he pointed to the entrance of major brands such as Nike and Jimmy Choo as evidence for the technology having strong long-term prospects, especially for people working in the fashion and design areas.

UCOLLEX 是一個數碼港生態衍生出的市場，主要銷售獨特和限定的 NFT 玩具及藏品。企業希望令 NFT 普及，所以它們簡化製作和售賣的流程。熊先生認為 NFT 的來源可信賴，又鏈接至整個區塊鏈市場，非常有價值並充滿潛力。

熊先生非常看好遊戲和 P2E 產業的發展，在玩家端和開發端都是如此。對設計師來說，區塊鏈賦予它們巨大的可能性來解決當下面臨的設計問題。雖然依舊在早期發展階段，NFT 的可用性和複雜的交易界面都有待改善，但他也指出如 Nike 和 Jimmy Choo 等大企業加入，足證這項科技在設計界有長遠發展的潛能。

Steven Gallagher
Professor of Practice in Law at the Faculty of Law, The Chinese University of Hong Kong
香港中文大學法律學院 Steven Gallagher 教授

Property law specialist Professor Gallagher gave a non-technologist perspective on the current state of NFTs, and the various challenges the technology faces in establishing itself. The law has struggled to come to grips with the ease of digital reproduction, and the emergence of NFT and digital ownership has complicated this even further. The benefits of NFT are real for artists, especially for those able to catch speculative interest, but it also allows them to reach more clients online, avoid gallery fees and agent fees, and have greater resale rights.

NFT problems are also real, and include the vast majority of NFT sales are at a very low price, high environmental costs, and some technologies may not adequately maintain their blockchain, meaning NFT could disappear. Legal issues include a lack of blockchain regulation and regulatory institutions, tax avoidance, jurisdictional issues, and criminal activities such as theft and fraud. All of which concern governments. The law is currently working through how to deal with NFT, and he believes the

technology is strong enough to ride out the bubble. There will be good investments opportunities, particularly for collectables, but the market may not be as rosy as people think now.

財產法專家 Gallagher 教授給我們展現了對 NFT 的非技術角度的看法，和一些技術在成立期間會面臨的問題。法律一直在數碼複製面前掙扎，NFT 的誕生無疑令它更加複雜。NFT 對於藝術家的優點顯而易見。如此，藝術家可以在線上遇到更多客戶，同時逃過了畫廊費用、仲介費用，甚至拿到更高的控制權。

NFT 的問題也是真實存在的。大量 NFT 交易都是低價高環經費，一些科技可能還無法完全扶持整個區塊鏈運營。法律方面，NFT 涉及區塊鏈無法被有效管控，引致刑事罪濫行。法律目前正在探討如何監管 NFT，但 Gallagher 教授認為科技已經強大到可以在其中安全發展。對於收藏來說，這裏有很好的機會，但整個市場不一定會有人們想像得那樣欣欣向榮。



Designing for a Non-Fungible World

為非同質化世界設計

Design for a Digital World

Digital art has proved an easy on-ramp to establishing blockchain applications. The market is small, affluent, technologically savvy, geared to self-promotion, and feeds on speculative investments—a set of core ingredients sufficient to establish NFT as a functioning system of exchange. Accordingly, artists are becoming optimistic about reaping rewards from their hard work. However, the NFT and blockchain currently in use are still in a relatively primitive stage of development, similar to what the internet was in the early 1990s. It is a niche technology with a promising future.

The signs are positive that blockchain, in whatever form and cryptocurrency valuation, is going to be an enduring technology. Timing has been fortuitous, as people are rapidly adapting to online work, education, and leisure environments, suggesting in the near future ever greater numbers of people will be having everyday social interactions on some form of the Metaverse. Gamifying this amalgamation of digital experiences will further ease entry into the Metaverse, as virtual worlds and avatar-based human interaction become established as the next form of everyday internet experience. So, for anyone interested in any aspect of game design, there seems a bright future ahead.

Where to for Digital Design?

If people are going to be living more of their lives in the digital realm, then enhancing their shared experiences while in this environment will be a rich source of work for designers. The limits of collaborative design practice will be reconsidered as analogue methodologies, such as social design or community design, are adapted to designing in the shared Metaverse. As a field of endeavour design will also undergo an intense flattening as creating the Metaverse and Web 3.0 becomes more accessible, generating participant-designers and virtual design communities that are able to endlessly customise their digital existence. Literally, anyone can become a designer.

NFT and blockchain have created a business ecosystem in which people can work and earn real money, that can be exchanged between the digital and physical world. Not only that, it is a technology inherently designed to be decentralised and democratic in its access to ownership, creation, and value. As we have seen with the case of Axie Infinity, this will have a massive

effect on who participates in this latest technology boom, and from where. Fortunately, the barriers to entry are as low as a smartphone and internet access.

Finally, and on a potentially profound level, being able to digitally clone real-world objects and places also holds potential for creating alternative uses and functions to emerge first in a virtual context. In fact, collaboratively building a proof-of-concept in Metaverse form could be a practical first step allowing more people input into creating visions of a socially and environmentally sustainable future.

設計虛擬世界

數碼藝術是進入區塊鏈的簡單門檻。市場小、投資大、被技術主導並傾向於自我宣傳，還依靠高風險投資——這些指標都令 NFT 成為稱職的交易平台。藝術家也對於這種模式更加樂觀。不過 NFT 和區塊鏈還在發展階段，就如同 1990 年代的互聯網。它是一個小眾科技，卻擁有巨大潛能。

區塊鏈在未來能承載很多。來得早不如來得巧，人們都正開始習慣於線上工作、教育和娛樂活動。在不久的未來，人們應該都會在某種元宇宙中開啟每日的社交。將這些虛擬體驗遊戲化正式簡化其進入門檻的重要步驟，因為虛擬世界和虛擬角色建立而成的互動正成為下一個日常網絡體驗。對於遊戲製作者而言，這毫無疑問是個好消息。

虛擬設計的未來

如果人們會投放更多時間在虛擬生活中，優化集體經歷會是設計師的重要工作。元宇宙的實驗性質將為多維度合作展開新的挑戰。當元宇宙和互聯網 3.0 更加唾手可得，設計會經歷嚴重扁平化，人們皆能有份參與設計自己的虛擬生活。任何人都是設計師。

NFT 和區塊鏈創造了一個新的商務型態，令人們賺取真實貨幣，同時又能在現實和虛擬世界相互對換。不止於此，它本質上就是把擁有權、創作及價值發展去中心化和民主化的技術創新。從 Axie Infinity 的例子中可以看出，它將會對參與這項技術熱潮的人帶來巨大影響。幸運的是，它的進入門檻與智能電話和網絡通訊一樣容易。

精準復刻現實中的事物，並在虛擬世界中發現它的額外功能也能激發出新的創意。或許在元宇宙中進行概念論證可以成為讓更多人開始為未來的永續生活提供創想的第一步。

