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Understanding blockchain, NFTs & smart contracts

2022 has started in much the same way as 2021 finished, with technology news largely dominated by stories relating to blockchain technologies such as NFTs and other cryptoassets. So, over the next few weeks, we are going to turn our focus particularly to these topics and take a look at the key legal and practical implications. In the meantime, let us begin where many get lost: with explanations of some of the main concepts.

Blockchain

Consider blockchain as the technological breakthrough that has thrust buzzwords like 'NFT' and 'cryptocurrency' into the mainstream. The tech world is excited about blockchain because it represents an advancement in the way that information is recorded and held.

Fundamentally a blockchain is a database, or ledger, of information. However, its technical composition means that users can have absolute confidence that the data being displayed is complete, accurate and, for all intents and purposes, infallible: once information is written onto a blockchain, it is (close to) impossible to change that information.

Blockchain also works on a distributed basis, which means that the ledger of information is not held in one, single location but concurrently on multiple computers across a network. As well as bolstering the network's security, this also means that any interested party can access an up-to-date copy of the information at any given time.

To use a very rudimentary analogy, picture a write-only Excel spreadsheet (where new cells can be added but existing cells not amended), of which a copy is held by every party that could want to view it.

NFTs

An NFT is a token (a form of digital asset) that exists on a blockchain (think of it as a cell on the previously mentioned spreadsheet).

These particular tokens are non-fungible (and therefore NFTs) in the sense that they are unique, with an individual identifying number: contrast that with Bitcoins – probably the most well-known cryptocurrency – which are fungible due to one Bitcoin being the equivalent of any other. It does not matter which Bitcoin you possess as they are all the same, whereas that is not the case with NFTs, which are unique.

To give a real-world example, a £10 note is interchangeable with any other £10 note (and is therefore fungible), however no diamond is exactly the same as another (and is therefore non-fungible). If this is all sounding a little too abstract, let us look at NFTs' most notorious real-life application to date: digital art.

Digital art existed long before NFTs hit the mainstream in 2021, but had an ongoing issue with evidencing ownership. After all, a digital image can be saved, copied or shared by anyone in just a few clicks. Proponents of NFTs claim that the technology has solved this problem.

By including in an NFT a URL link to the digital image, the artist could sell the NFT (that is the non-fungible token on the blockchain) and the buyer take ownership of it. The buyer would therefore own the digital asset that links to the image (whether or not they actually own the image is a topic for another article).

What is more, the artist could include further information in the NFT so that in the event the buyer re-sold the NFT, the artist would automatically receive a further royalty payment (more on that in the 'smart contracts' section below). The NFT therefore is not the digital art itself, but more comparable to a certificate of authenticity relating to the digital art.

Is an NFT simply digital art?

No! Any data can be contained within an NFT. It could be a domain name, tickets to a concert or sporting event, in-game items or even real estate deeds.

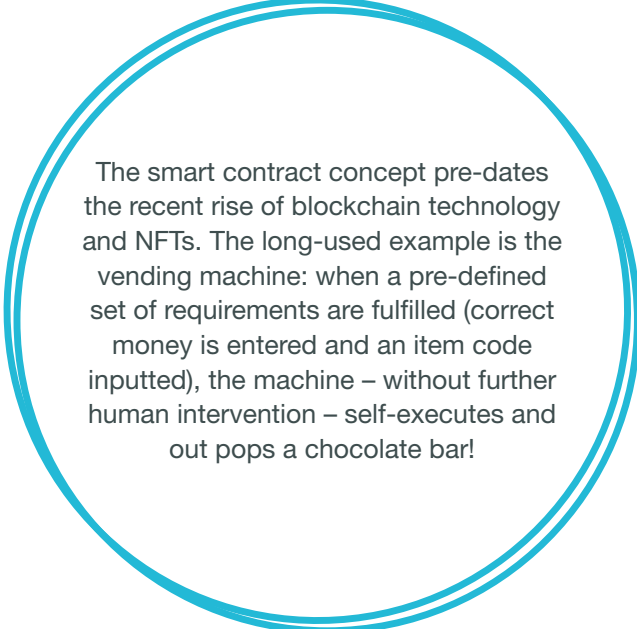
Smart contracts

A smart contract is a software program that executes automatically when a pre-defined set of requirements are fulfilled. Where such a software program fulfils a legal obligation, it is known as a smart legal contract. Insurance contracts are commonly used as an example use case for the smart legal contract – provided the requisite criteria are met, the smart contract kicks in and an insurance payout is made without requiring further human intervention.

A recent [Law Commission report](#) concluded that smart contracts are compatible with the existing principles of English law and are therefore capable of being legally binding. As a result, we can expect them over time to represent a modernisation of contracting, evolving the traditional approach in a manner comparable to electronic signatures.

The emergence of blockchain was a game-changer for smart legal contracts: by writing the underpinning code onto a blockchain, parties could trust that the intended automated consequences would be effected in a way that was not achievable through normal coding.

And now, smart contracts are being used to give NFTs added utility: for example, a smart contract could be written into an NFT that, upon that NFT being resold, automatically ensures that the original artist (of the digital image that the NFT links to) receives a royalty as a percentage of the onward sale.



The smart contract concept pre-dates the recent rise of blockchain technology and NFTs. The long-used example is the vending machine: when a pre-defined set of requirements are fulfilled (correct money is entered and an item code inputted), the machine – without further human intervention – self-executes and out pops a chocolate bar!

Concluding thoughts

Criticisms have been levelled at these technologies, such as the environmental impact the level of computing to power blockchain requires, or the ability for opportunists to steal original artwork, masquerade it as their own and mint it as an NFT to forever exist on the blockchain. What many appear to agree on though, is that in time new innovative use cases for these technologies will emerge (LawtechUK recently [published](#) a number of case study examples). Anticipating this, the Law Commission is undertaking a [project](#) to determine the extent to which the existing legal framework can accommodate these technologies, in particular digital assets. A formal consultation is expected in mid-2022, however interim comments suggest at least a degree of reform is likely to be introduced.