Solv Protocol and NFT Financialisation

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Introduction

Non-Fungible Tokens (NFTs) have experienced an unprecedented amount of growth, traction, and value creation over the past 2 years, with 'blue chip' collections such as Bored Ape Yacht Club and Crypto Punks becoming well known and desired by the crypto native community. In their simplest form, NFTs provide verifiable authenticity, ownership, and scarcity over a distinct, digitally-native good or asset. For the most part, these properties are facilitated by the popular ERC-721 token standard.

We are currently witnessing the beginning of a new wave of growth for the NFT sector; NFT Financialisation. We can break this movement down into two distinct categories:

- The use of NFT token standards in Decentralised Finance (DeFi); and
- Using NFTs in DeFi to enhance liquidity, utility, and yield.

This intersection of NFTs and DeFi is currently in its infancy, but contains immense potential over the next few years as innovative solutions are launched and adopted by the market.

In this report, we will provide a broad outline of the current market in both of these categories and spotlight Solv Finance (SOLV), a portfolio project of Apollo Capital.

The Use of NFT Standards in Decentralised Finance

NFT token standards are useful in DeFi simply because they are able to store more information than fungible token standards. The most prominent use of NFT standards in DeFi is in Uniswap V3, where ERC-721 tokens are used to represent a liquidity position rather than ERC-20 tokens in Uniswap V2.

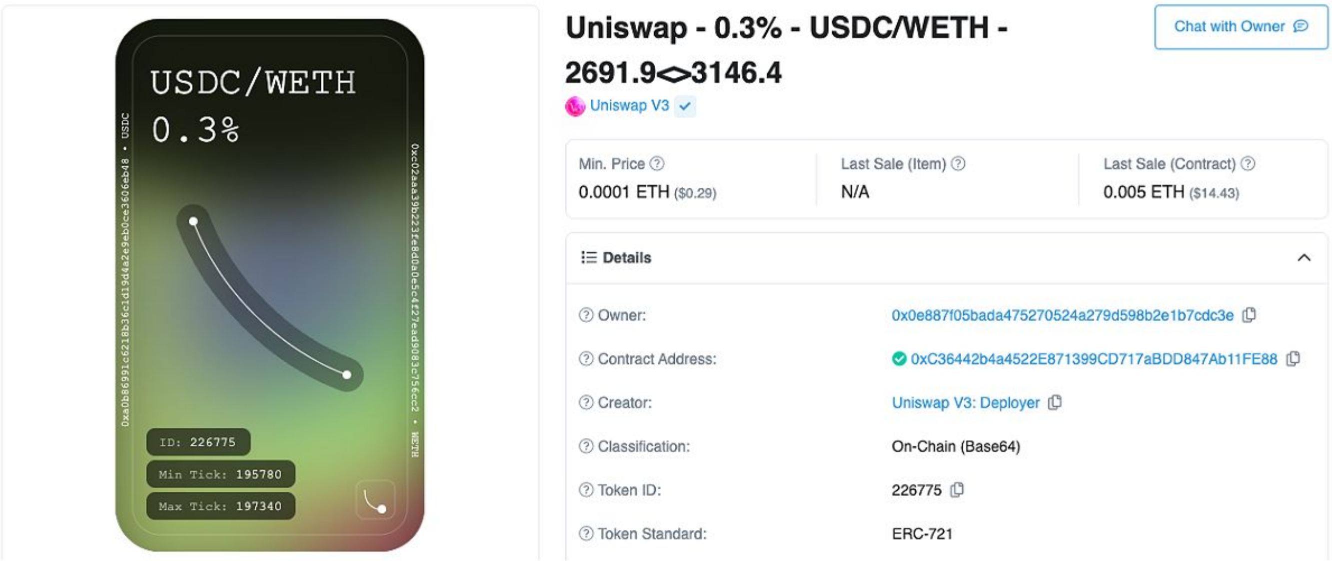
To understand why Uniswap's use of the ERC-721 standard is so significant, let's cover how the ERC-20 standard was first used to enable liquidity provisioning to an Automated Market Maker (AMM).

Uniswap V2 Liquidity Position Example (ERC-20)

The above screenshot shows all of the liquidity inside the Uniswap V2 USDC/WETH (WETH is equivalent to ETH) liquidity pool. When an individual user provides liquidity to this pool, their funds are mixed with all other liquidity providers. To keep track of who owns what amount of the US$278 million in the pool, users are issued an ERC-20 token when they deposit. This fungible token is unable to store information that is unique to each individual liquidity position, but entitles the user to their share of the liquidity pool. When users withdraw their liquidity, their tokens are burned and their liquidity is returned to their wallet, leaving other user positions unchanged.

The above screenshot of Etherscan shows the total supply of the ERC-20 token (UNI-V2) used to represent the assets within the USDC/ETH liquidity pool.

Uniswap V3 Liquidity Position Example (ERC-721)



The above screenshot is of a Uniswap V3 liquidity position, and the data in this ERC-721 states that:

> - The fee for using this liquidity is 0.3%;
> - The liquidity is for the USDC/WETH trading pair;
> - The liquidity can be used for trades between the price range of $2,691.9 - $3,146.4. Being able to define a price range is what Uniswap refers to as 'concentrated liquidity';
> - The amount of liquidity owned by the holder of the NFT (not shown in this screenshot).

Uniswap V3 is widely recognised as an innovative breakthrough for the popular AMM model as it allows greater flexibility for liquidity providers and reduced slippage for traders. While Uniswap V3 may not be perfect, it has demonstrated the potential benefits that can be achieved when applying non-fungible token standards in decentralised finance.

Solv Protocol

Solv Protocol is pushing the "Financial NFT" space forward by creating a brand-new token standard, EIP-3525, as an infrastructure-level solution. In itself, the creation of a new standard is a benefit to the general use of NFT standards in decentralised finance. However, the team at Solv are dedicated to promoting and driving the use of their ERC standard by developing innovative products and partnering with well known DeFi protocols.

Solv Protocol's New Token Standard: EIP-3523

EIP-3525 is a token standard for non-fungible tokens that have fungible operations, these are known as Semi-Fungible Tokens (SFTs). Semi-Fungible Tokens are able to store more data than a fungible token while still retaining the benefits that fungibility can offer. Solv Protocol currently has three live products using this standard, all three have launched with a promising amount of early success. As the market begins to understand the possibilities of NFT Financialisation, it is not hard to imagine Semi-Fungible Token standards being applied more broadly for financial use cases.

Solv Protocol Products

Vesting Voucher

The Vesting Voucher is an NFT that allows native tokens to be locked within it and vested over time. Vesting Vouchers can be easily bought and sold on the open market, either partly or in full due to the fungibility capability of the EIP-3525 token standard. Creating these vouchers also requires no coding for the average user.

Vesting Terms

> - Amount: number of tokens locked in the NFT.
> - Vesting type: liner, one-time, or staged (predetermined intervals).
> - Maturity date: date in which all tokens will be released (end of the voucher).

Protocols can utilise vesting vouchers for fundraising and managing token allocations in a way that was previously not possible. As Vesting Vouchers are entirely on-chain and splittable, a marketplace for unvested tokens can easily be formed by market participants.

Currently, unvested token allocations are usually traded in private markets through brokers with the public having little to no access. These markets can sit in a grey area as protocols may not wish to have their SAFT agreements publicly traded.

Solv Protocol's Vesting Vouchers main benefits:

> - Low technical requirements from protocol teams selling vouchers;
> - Access to funding through Initial Voucher Offering (IVO), where anyone can participate;
> - Instant OTC market, entirely on-chain and accessible to all participants;
> - Airdropping vouchers with vesting schedules can promote longer term alignment for recipients, in contrast to traditional airdrops where users tend to sell tokens instantly.

Convertible Voucher

The Convertible Voucher also utilises the capabilities of EIP-3525 to offer a product that is superior to other offerings on the market. The Convertible Voucher is used for protocol-to-investor primary market offerings. Convertible Vouchers differ from Vesting Vouchers in two key ways:

- Convertible Vouchers vest entirely at maturity, rather than over time;
- The number of tokens paid out by a Convertible Voucher at maturity is dependent on the token's price at expiry.

Example:

This voucher has:

- Face value of $10,000.
- Bond range: $5 - $10.
- Maturity date 31 December 2022.

This means that there are 2,000 SOLV tokens locked in this NFT, but the number of tokens claimable at maturity depends on the price of SOLV at that time. The number of tokens paid will be the face value divided by the token price, with upper and lower bounds to this formula.

Convertible Vouchers enable projects to fundraise in an open, fair, and transparent manner. This way of fundraising also does not have some of the negative impacts as outright token sales while still providing investors with an opportunity to sell their position on the secondary market. Convertible Vouchers are highly customisable, making it possible for a DAO to create the perfect financial product for its unique needs, and to establish its own derivative market.

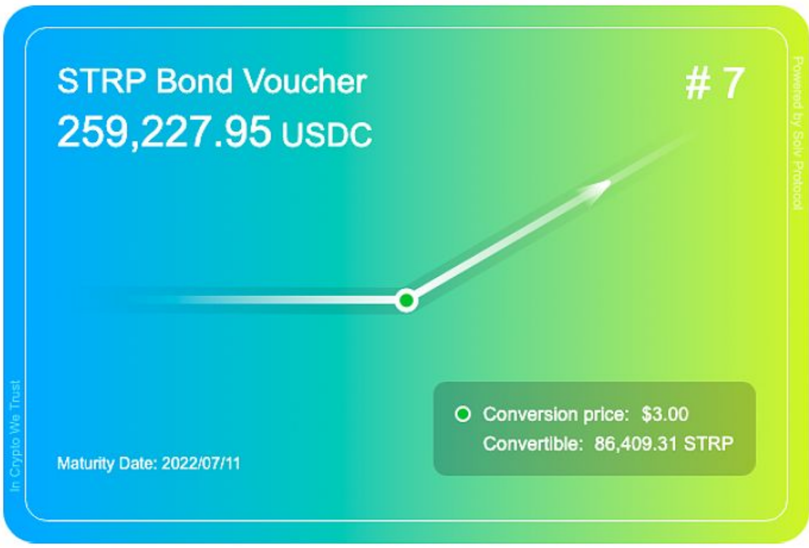
Bond Voucher

Solv's Bond Vouchers allow DAOs to access debt markets in an on-chain and market-driven way. Bond vouchers are pioneering a credit bond market in DeFi, allowing DAOs to obtain sustainable liquid assets by leveraging a mix of credit and collateral. Though the specific bond offering is unique to each DAO, generally bond vouchers are:

> - Zero-coupon, with the face value and interest being paid out entirely at maturity;
> - Have an embedded call option to further incentivise participation from investors; and
> - Are collateralised by the DAO's native token.

The proceeds of a Bond Voucher sale are managed by multiple parties and have an intended purpose. This intended purpose is laid out to potential investors before the offering goes live; DAOs are usually raising debt to supply liquidity for their native token. For a DAO, providing liquidity with debt is likely to be more cost effective than incentivising the market to supply liquidity through governance token rewards.

While there are other lending protocols in the market, no other offering is quite as attractive for DAOs as Solv Protocol's due to their distinctly crypto native approach and instant investor liquidity. Established under collateralised lending protocols such as Maple Finance primarily cater to institutions, source pooled liquidity from the open market, and do not incorporate a bond-like mechanism for lenders.



The above voucher will pay 259,227.95 USDC to the holder on 11 July 2022.

Traction & Adoption

While it is still early days for Solv Protocol, their Bond Vouchers and Convertible Vouchers have already helped Unslashed, Perpetual, and Strips Finance to raise $1 million, $3 million, and $2 million, respectively. Upcoming Bond Voucher Offerings include Naos, Impossible Finance, Synfutures, Perpetual, DODO and Izumi. The current Total Value Locked (TVL) in Solv Protocol is $53.0 million. This TVL is made up of both established and new protocols and DAOs.

After speaking with the team at Solv Protocol, Apollo Capital invested into their seed round in June 2021. Our discussions and research lead us to believe that financial NFTs would develop into an important part of the DeFi market.

NFTs in Decentralised Finance

NFTX

NFTX is a platform that aims to create a liquid market for illiquid NFTs. NFTX achieves this in a relatively simple way, NFTs of the same collection and similar value (e.g. floor-priced Crypto Punks) are deposited into a vault and depositors receive an ERC-20 token (vToken) that represents a 1:1 claim on a random NFT from within the vault. As the fungible tokens minted from deposits are collateralised by an equal amount of NFTs in the vault, the ERC-20 should trade for the same price as the NFTs, with price being maintained by arbitrageurs.

NFTX Benefits

Yield Generation for Collectors
Users who deposit into a vault can use the minted ERC-20 tokens to provide liquidity to an Automated Market Maker (AMM). This liquidity position is able to earn trading fees and token rewards (if applicable).

Instant Liquidity for Sellers
NFT holders with floor priced assets are able to use NFTX to mint and sell the ERC-20, enabling them to not have to list their NFT on the open market and risk negative price fluctuations while the NFT is offered to the market.

Buyer and sellers can trade fractions of an NFT
Sellers are able to sell a portion of their ERC-20 token and access liquidity while maintaining price exposure for the rest of their investment. Buyers are also able to gain price exposure to 'blue-chip' NFTs without having to purchase a whole one, this can be helpful for smaller investors or NFT investors looking to diversify.

NFTX Statistics:

- Total Value Locked: US$27.1 million.
- Fully Diluted Valuation: US$33.8 million.
- Active users (last 30 days): 2150.

NFT Lending Protocols

NFTfi

NFTfi is the leading lending protocol for NFTs. Users are able to utilise NFT assets as collateral for secured wETH and DAI loans from liquidity providers in a peer-to-peer and trustless manner. Borrowers and lenders negotiate terms on the open marketplace through listing, bidding and offering. Deal terms to be negotiated are; borrow amount, term length & interest rate. When a loan is accepted, the lender receives a promissory note which enables foreclosure by the lender if the loan is not paid back by the borrower in time.

Benefits of NFTfi:

- Open marketplace where borrowers and lenders compete to find optimal deal terms.
- Lenders can earn at attractives rates and even profit in the case of default the deal terms are favourable.
- NFTfi is the most liquid open market for NFT lending.

NFTfi stats:

- US$148 million total loan volume (wETH & DAI).
- US$5.9 million raised from VC's in 2020 and 2021. Launched in May 2020.

Arcade

Arcade is another NFT lending protocol that utilises an open market to match lenders and borrowers. Currently borrowers can only request new loans through Arcade's OTC service, giving NFTfi an edge over Arcade in terms of permissionless usage. Arcade's main point of difference is their focus on 'Bundles' of NFTs as collateral rather than singular NFTs. Another key difference is the fee structure (2% of principal vs 5% of interest on NFTfi).

Platform Stats

Loan Volume	Number of Loans	Default Rate	Weighted APR
$20M	88	2.27%	17.63%

Benefits of Arcade:

- Users can bundle NFTs together to be used as collateral, giving them greater borrowing potential
- Lenders can earn at attractives rates and even profit in the case of default

Arcade stats:

- US$20 million total loan volume.
- US$17.75 million raised from VC's in 2021.

JPEG'd

JPEG'd is a platform aimed at giving NFT holders access to debt capital. The debt positions created on JPEG'd differs from those on NFTfi and Arcade as depositors mint a stablecoin (PUSd) against the value of their NFT. This stablecoin can be used in yield farming to earn the JPEG'd native token or sold for a more circulated stablecoin to be used in DeFi.

Benefits of JPEG'd over NFTfi and Arcade:

- Users are able to gain instant and permissionless liquidity against their NFT assets.
- There is no duration for the loan, meaning users can hold their position indefinitely.
- Interest on loans is very low at only 2% p.a.

Risks and disadvantages:

- PUSd can potentially de-peg or be exploited, causing problems for liquidity providers.
- Heavy reliance on price oracles, making only the biggest NFT collections viable and safe for inclusion.
- Premier digital art NFTs (e.g. 1-of-1 pieces) are unable to be supported due to this price oracle reliance.
- The current liquidation threshold is 33%, this means that if you are not careful and get liquidated you incur a very large cost (at least 66% loss). The liquidation mechanism can be found in the JPEG'd documentation

JPEG'd stats:

- Total Value Locked: US$8.0 million.
- Fully Diluted Valuation (JPEG): US$94.2 million

NFT Lending Liquidity Protocol

MetaStreet

MetaStreet is a liquidity routing and scaling solution for NFT collateralisation (lending) platforms. Once live MetaStreet will convert peer-to-peer NFT-backed loans into aggregated debt pools of yield with the ultimate goal of enabling diversification for lenders and allowing NFT owners to get loans more easily due to increased market liquidity.

The protocol will offer a variety of algorithmic capital vaults that generate diversified yield through automated underwriting, aggregation and execution of NFT-backed loans. The protocol promises to accelerate the adoption of NFT lending protocols by simplifying the liquidity provision process for users. This is very useful as providing liquidity on NFTfi and Arcade can be complex and risky for the average investor. Pooled capital will also enable smaller lenders to participate.

MetaStreet stats:

- US$14 million raised in seed & initial liquidity capital in February 2022.
- Largest DAI liquidity provider on NFTfi.

Conclusion

The protocols and products outlined in this research report are early stage with strong growth potential and considerable risk. NFT Financialisation presents a considerable opportunity for market participants as the two key sectors of the crypto market collide (NFTs and DeFi).

We believe that Solv Protocol has a unique opportunity to create value in underexplored areas of decentralised finance through their novel token standard and we are excited to be actively supporting them through their journey.

While Apollo Capital does not have active positions in the other protocols mentioned in this report, we continue to actively monitor developments within the ecosystem as these protocols fall into the 'NFT & Metaverse Infrastructure' segment of our investment thesis.