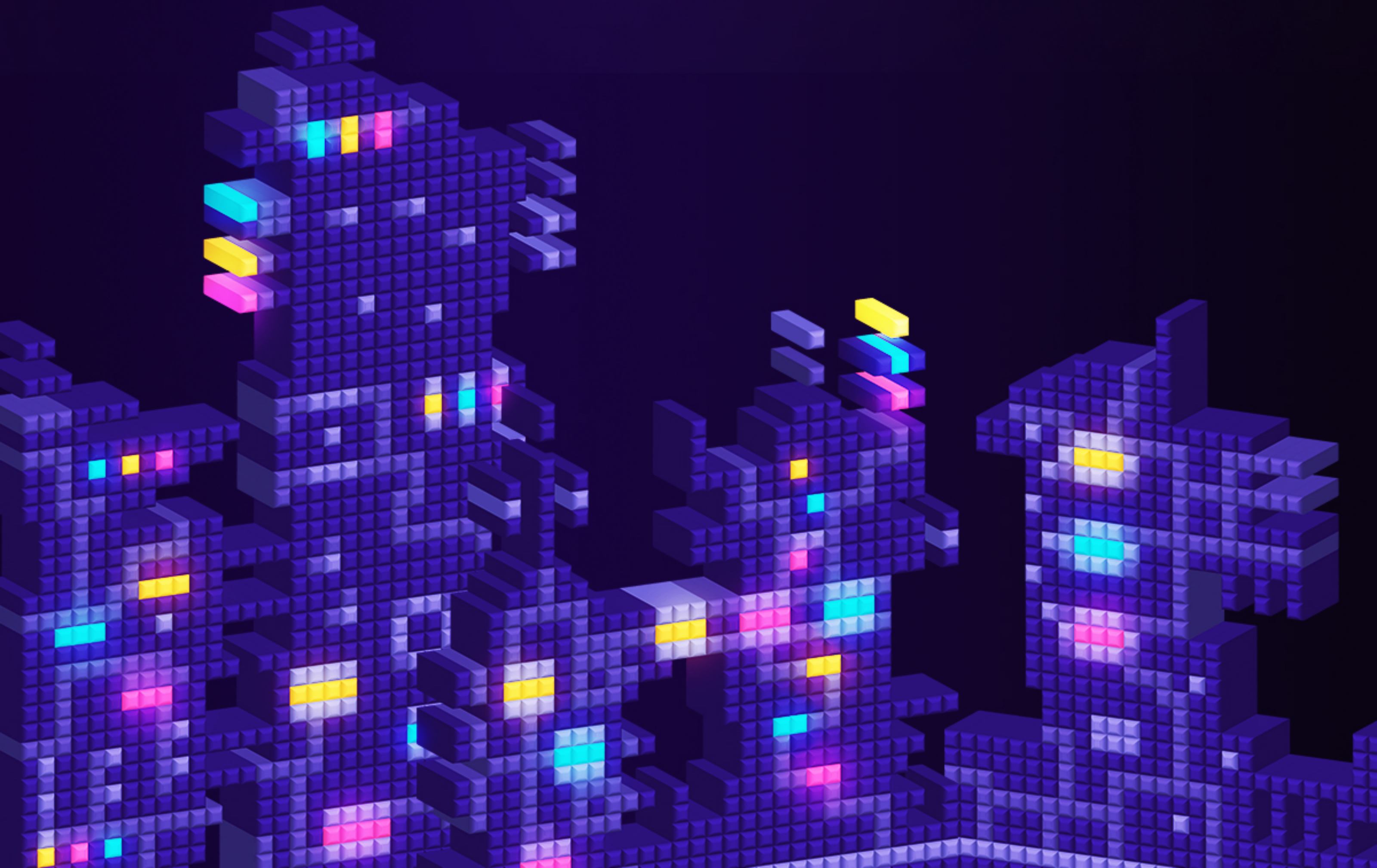# LOLLIPOP WHITE PAPER

LOLLIPOP GENERAL CHAPTER

This whitepaper explains features of Lollipop as a decentralized finance (DeFi) ecosystem. It includes DEX (Decentralized Exchange) with AMM (Automated Market Maker) arbitrary pairs between ERC20s, "flash swaps" that allow traders to receive assets and use them elsewhere, LPOP (Lollipop Token) as a utility token and its distribution, Stake protocol which rewards Lollipops community members for having a long-term mindset locking up their LPOP tokens, Lollipop NFT as unique tokenized representations of digital files to be traded, and LPOP orbiting tools to provide economic movement, engagement and liquidity (Tokenomics).

INTRODUCTION

Investors and traders applied to the cryptocurrency market which was brought about by the blockchain networks. Launched in January 2009, Bitcoin offers an online currency that is secured without any central authority. There are no physical bitcoins, only balances associated with a cryptographically secured public ledger. Before 2014, cryptocurrency users had to wait an indefinite amount of time to buy or sell their tokens/coins because there were no significant exchanges that would allow users to buy tokens from promising projects outside available DEX token pairs.

Introducing Ethereum blockchain network in 2013, by Vitalik Buterin, enabled deployment of permanent and immutable decentralized applications. These enable users to interact with the network through the programmable part of the blockchain called Smart Contracts. This led for Decentralized finance (DeFi) applications paying transaction to authenticator nodes in fee with a Gas Price unit over a Gas Limit of operation. This let the Uniswap, an open-source protocol, to become the main trading protocol. It operates primarily DEX (Decentralized Exchange) to bring price equilibrium by an AMM (Automated Market Maker). Other platforms emerged due to this.

The Ethereum network's success led to the need for decentralized market operations. Binance Chain (BC) was launched by Binance in 2019 to focus on fast facilitation, decentralized trading, in hope to achieve the full operations of a decentralized market.

3

Limitations of the blockchain system makes it rigid and Smart Contracts could congest the network in a system optimized for fast trading. Scalability is a big hurdle for blockchain development. That's where Binance Smart Chain (BSC) comes in. BSC (BNB Chain - rebranded in 2022) is a blockchain network that runs in parallel to the BC. Unlike BC, BNB Chain boasts Smart Contract functionality and compatibility with the Ethereum Virtual Machine (EVM). The design goal here was to leave the high throughput of Binance Chain intact while introducing Smart Contracts into its ecosystem. BNB Chain has emerged as a low-fee Smart Contract blockchain using Smart Contract functionality compatible with Ethereum, allowing developers to build native decentralized apps (DApps) or port DApps from Ethereum.

The latest success story of a Smart Contract is the creation of non-fungible token (NFT) proposal called EIP-721 (Ethereum Improvement Proposals 721) which is a non-interchangeable unit of data stored on a blockchain, that can be sold and traded. NFTs, uniquely identifiable, differ from blockchain cryptocurrencies and tokens, such as Bitcoin. Types these are associated with digital files such as photos, videos, and audio.

The Lollipop ecosystem enters in this current moment in which blockchain networks allow decentralized operations that are stable to allow advanced financial applications and highly complex market operations. Initially managed by the Lollipop core team, the operations, its core purpose is to grow the Lollipop community.
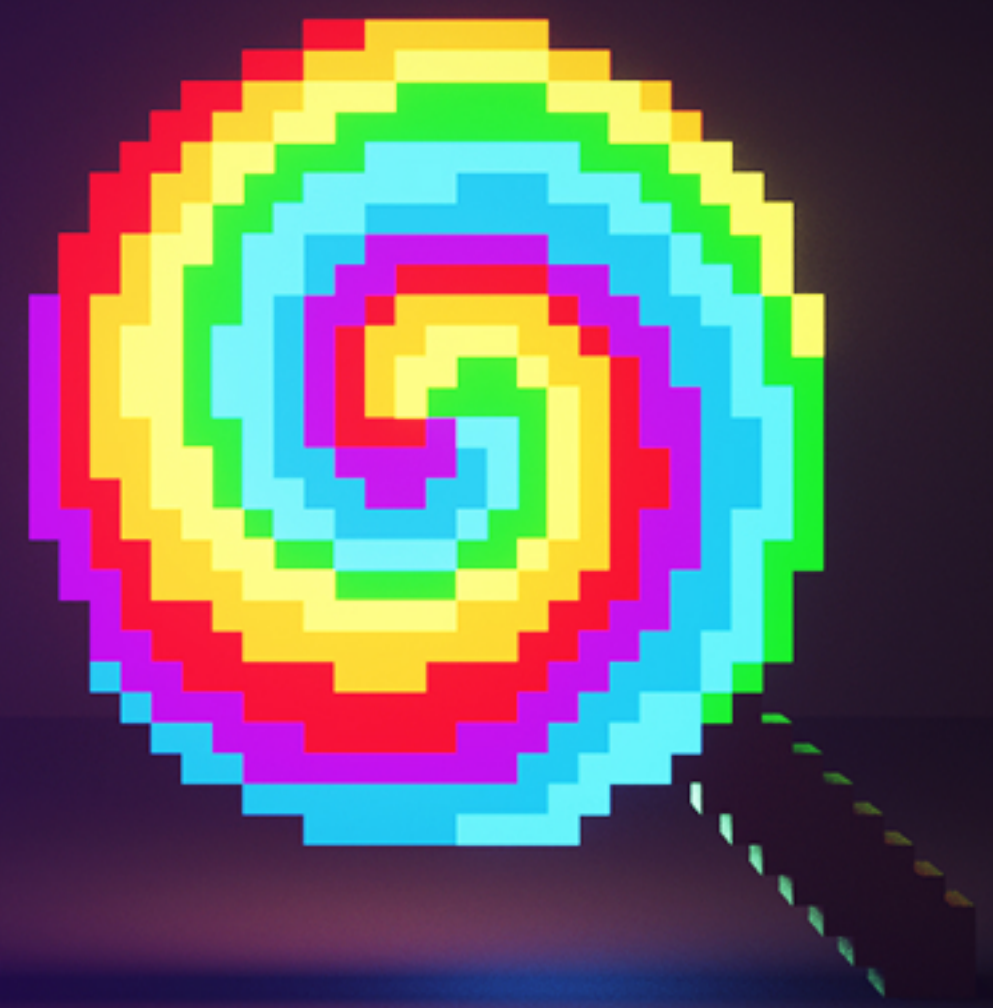
The ecosystem proposal has a platform token appreciation system (e.g., LPOP), AMM-based DEX, auditable savings deposit and accumulation systems, community member reward system, participation increment tokens (Power-up tokens), blockchain games, auctions, NFTs and marketplace.

ABOUT LOLLIPOP

Every day, new technologies are being researched and developed by engineers and enthusiasts in the Blockchain and Crypto industry. The cutting-edge products based on such new technologies are continuously being released to the public. Such rapid development and release of new Blockchain and Crypto products make it difficult for the ordinary user to follow. Products continuously being released and eliminated shortly thereafter, create a situation where ordinary people are hesitant to participate.

🍭 Lollipop is an NFT marketplace where ordinary users can participate easily and actively.

🍭 In the future, when the metaverse will be spread all over the world, Lollipop will work closely with many metaverses and will be built with the motto "easy to use and easy to participate." Lollipop will enable NFTs to be used by a wide range of users in both real and metaverse environments.

🍭 We believe that the cutting-edge nature of the current crypto industry is what is preventing the industry from flourishing.

🍭 Lollipop integrates the currently divided NFT market through cross-chaining to form one large market. We believe that "casual participation by the general public" is key to raising the level of the NFT market to new heights, and for this reason we are dedicated in establishing a user-friendly platform.

Lollipop - NFT Interoperability Platform - seeks to provide the ultimate solutions for creation, distribution, and management of NFTs. The current situation and challenges in the NFT industry are:

- 🍭 The NFT industry grows rapidly to the point of not providing a compatible solution to the market, causing each provider to offer their NFT on multiple platforms.

- 🍭 The NFT market is in a turbulent state, and creators and users don't know which NFT tool to use.

What happens without Lollipop's NFT solution:

- 🍭 Creators/Sellers: Want to sell their NFTs at the highest possible price, but don't know where to advertise them.

- 🍭 Users/Buyers: The lack of a market makes it difficult to find fair prices, preventing the purchase of NFTs.

Lollipop solves all these problems!

- 🍭 An innovative cross-chain NFT solution updated for the NFT world.

- 🍭 Lollipop is an NFT solution interoperable via cross-chain integration with NFT markets.

This transitioning to the LPOP DAO will be developed in several stages:

Stage 1

Project members will be referred to as innovators, and development and marketing will be promoted by the team of Innovators. The project will also invite industry and financial experts to participate as advisors (guests) at conferences and other events.

The DEX and each function of the DEX will be released accordingly, together with the White Paper. The development of the NFT platform will also be launched. New features and new token releases for the DEX will also be made during this stage.

### Stage 2

Develop and release the NFT platform.

In addition, the governance, and protocols for the transition to DAO will be discussed, and the transition process will be initiated based on advisor and community input.

Create an operating team to manage the NFT platform.

Stage 3

Transition to DAO. As the operation is shifted to community management, the decision-making and authority are shifted from the original innovators.

Advisors will be transferred to community proposals and management.
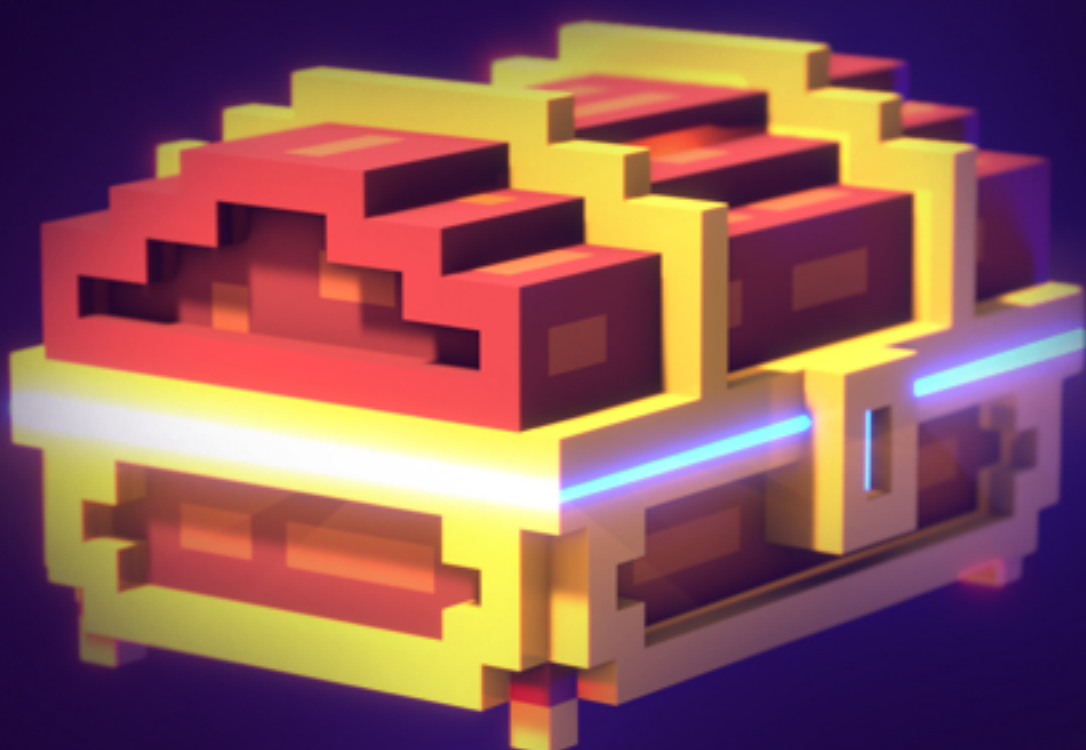
DECENTRALIZED APPLICATION – WHAT IS DEFI?

DeFi – Decentralized Finance – is a broad definition that has emerged in recent years, and which characterizes the offer of financial applications that are encoded in Smart Contracts and that run in layers on top of blockchain technology.

In a decentralized way, that is, without a central authority, users can carry out the most diverse transactions in the financial market with a DeFi application.

How do DeFi apps work?

To use a DeFi application, the user needs to follow initial steps:

- Choose the blockchain network to use the DeFi application

- Set up a decentralized wallet like Metamask on your device

- Acquire, obtain, or earn the token from that network, for example in the case of BNB Chain, the user needs the BNB token to start using it

- Use the network token to pay fees on each transaction that the DeFi application registers on the blockchain

UTILITY OF LPOP TOKEN

Utility tokens are decentralized assets that allow access to certain products or applications. Lollipop's token, LPOP, allows users to access the platform's applications and functionalities. The LPOP token has its market value linked to the Automated Market Maker (AMM) system. This means LPOP will be used to operate automatic rewards on the Lollipop Ecosystem, and investors will get compensation in the form of LPOP based on a unique redistribution mechanism.

LOLLIPOP ECOSYSTEM

The Lollipop environment was created to be a cross-chain DeFi and support the market for Lollipop NFT Marketplace development. Lollipop Ecosystem is a set of DApps, it offers AMM-based DEX, LPOP token, NFT trading, Staking, Farming, Auction, Instant Buy, and Community Rewards. Lollipop engages the cryptocurrency and token communities by making its UI (User Interface) interactive by building familiarities within the blockchain framework. This creates big opportunities for education and earning in the ecosystem community of users (features to easily gain revenue). The Lollipop team of developers are continuously releasing updates that boost the blockchain experience.

Anonymity – No Know Your Customer (No KYC) policy applied to security on DeFi apps work?

The last years have witnessed an evolution in the way blockchain technology is used by people and treated by authorities.

Exchanges and wallet custodians are now subject to the same rules as conventional financial tools when it comes to Anti-Money Laundering (AML), Counter Terrorist Financing (CTF) and Know Your Customer (KYC) protocols and requirements.

Accessing Lollipop

To access Lollipop, users must use one of the wallets supported by the platform (e.g., Metamask). Users are expected to keep their accounts safe and never share their account seed phrase or private key. If any of this information is lost or damaged, the Lollipop platform cannot guarantee that users' locked balance can be withdrawn.

The value of the ecosystem

For long-term success it is important that LPOPs distribution model is well-balanced, especially with regard to the balance between the LPOP token usage and the incentives given as user's rewards. Regardless of the dependency on LPOP token, Lollipop's DApps have the capability to manage any inflation balance.
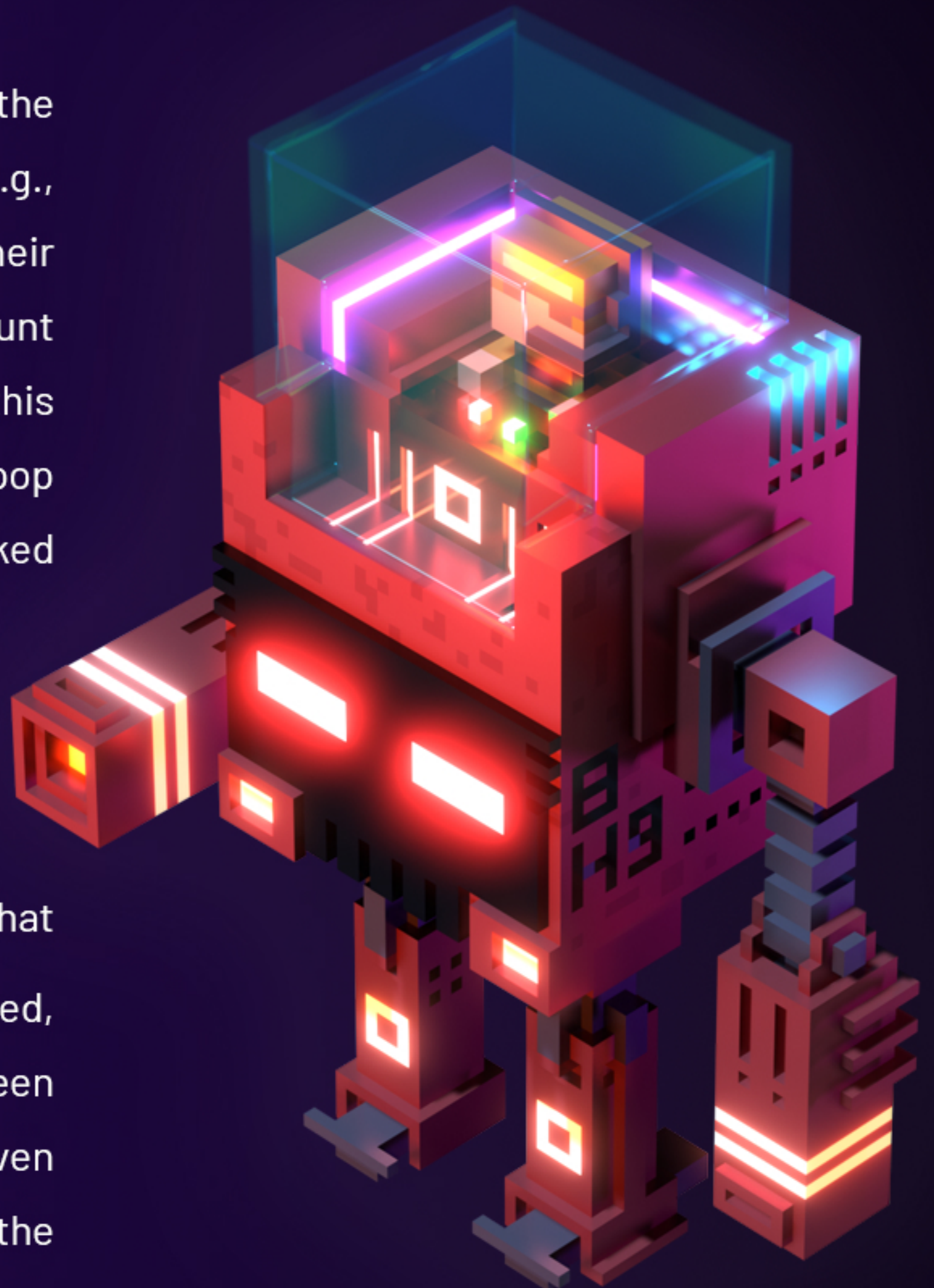
FEATURES OF LOLLIPOP
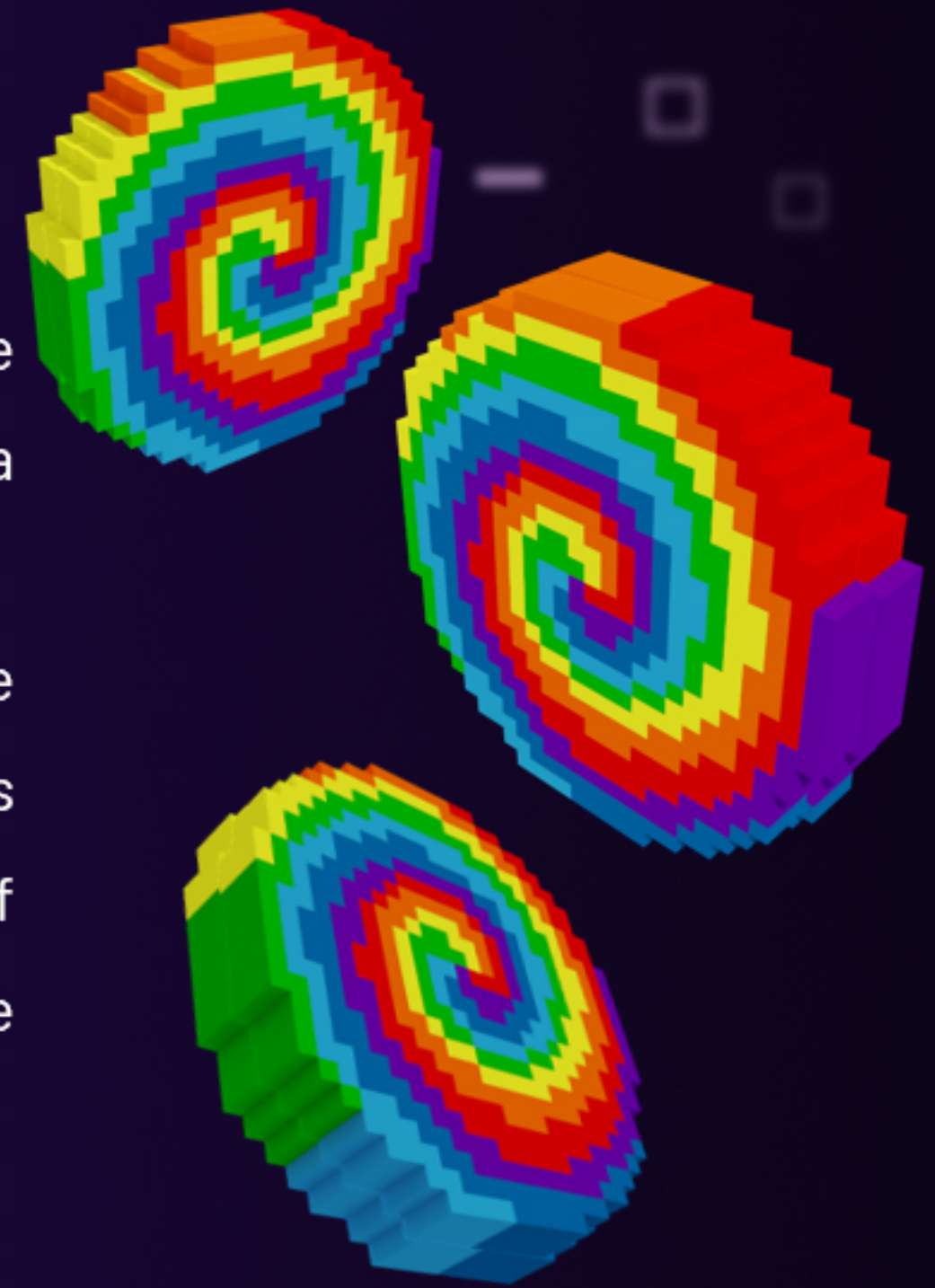
In the Lollipop Ecosystem, several packages work to create incentives for tokenomics action. Each package works as a built-in feature of Lollipop primarily for LPOP token circulation. The platform is made to enable new packages/features in the future, as the digital financial market is constantly changing. It is possible that some of the packages will be considered out of date in the future and will be replaced or even removed from the ecosystem.

LPOP Token

LPOP tokens are available to everyone, but it is recommended for investors to do research and understand the token market (AKA DYOR - Do your own research) before investing so that investors can answer precisely why they are buying LPOP and supporting the Lollipop project. In general, crypto assets are considered by economic experts to be a market that carries greater volatility and risks.

There are three known types of tokens, each with its own specific purpose. Depending on how the technology is, in some cases it has hybrid characteristics where it performs two or more functions:

- 🍭 Utility Token (Issuance: ICO): A token that can be exchanged for products and services.

- 🍭 Security Token (Issuance: STO): A security token which is a digital form of traditional security, such as an ownership position in a company, bonds, and/or other ownership rights.

- 🍭 Payment Token (Issuance: Managed): Issued in real-time and used online in predefined domains and/or payment environments like ecommerce and specific merchants.

AMM-based DEX (Swap) and Liquidity Pool (Swap LP)

With the recent surge of Decentralized Finance (DeFi), a variety of blockchain applications have emerged. With large accessibility, DeFi brings benefits such as greater transparency, enhanced security, and peer-to-peer global transactions among many other advantages. The underlying mechanics rely on smart-contract technologies and equivalents.

A crucial aspect of the DeFi application is the decentralization of asset exchanges. Until recently, exchanging digital and traditional assets were only feasible in classic systems that share an accepted and common design known as a continuous-limit order-book. Such an order-book consists of a list of all bids and offers from buyers and sellers in the system, i.e., prospective buyers place a limit buy order to purchase an asset at or below a specified price.

Fully decentralized exchanges are built upon protocols acting as Automated Market Makers (AMM). AMMs are algorithmic agents that provide liquidity in electronic markets, a topic that has been well studied in algorithmic game theory, and for which an early work is the logarithmic market scoring rule. The first fully decentralized exchanges for digital assets have been built around Constant Function Market Maker models (CFMM). The mechanism links two or more reserves of the different participating assets dynamically, relying on a driving constant function with specific properties. The liquidity available on the reserves and the CFMM function then jointly determine the market price of any two assets. Liquidity providers (LPs) in DEXs can generate revenues by providing their funds as liquidity to the DEX of their choice, which will allow traders to exchange the assets of interest. In other words, the liquidity provided will allow trading of the digital assets to be fully handled, in a decentralized manner, on the blockchain.

STAKE

DeFi staking is a practice that enables a user of a Decentralized Finance (DeFi) Platform to act as a validator for transactions or hold the token by being part of a group of investors. The investors keep the token because they believe in the token's appreciation over time and earn profit by doing so. DeFi staking has become one of the trendiest topics in the DeFi Market today for enabling token holders to generate passive income by staking their tokens.

The Lollipop Stake is a staking process that gathers pools of investments with lock term contract using a predefined APR (Annual Percentage Rate) earnings by interest paid at the end of the period.

There are two types of pools:

🍭 **Locked (during staking):** Investors cannot withdraw or collect earnings before the end of the staking period. After the period ends, users can choose to keep or withdraw and collect earnings.

🍭 **Unlocked:** Investors can withdraw at any time. In general, this type of pool has a short lifespan.
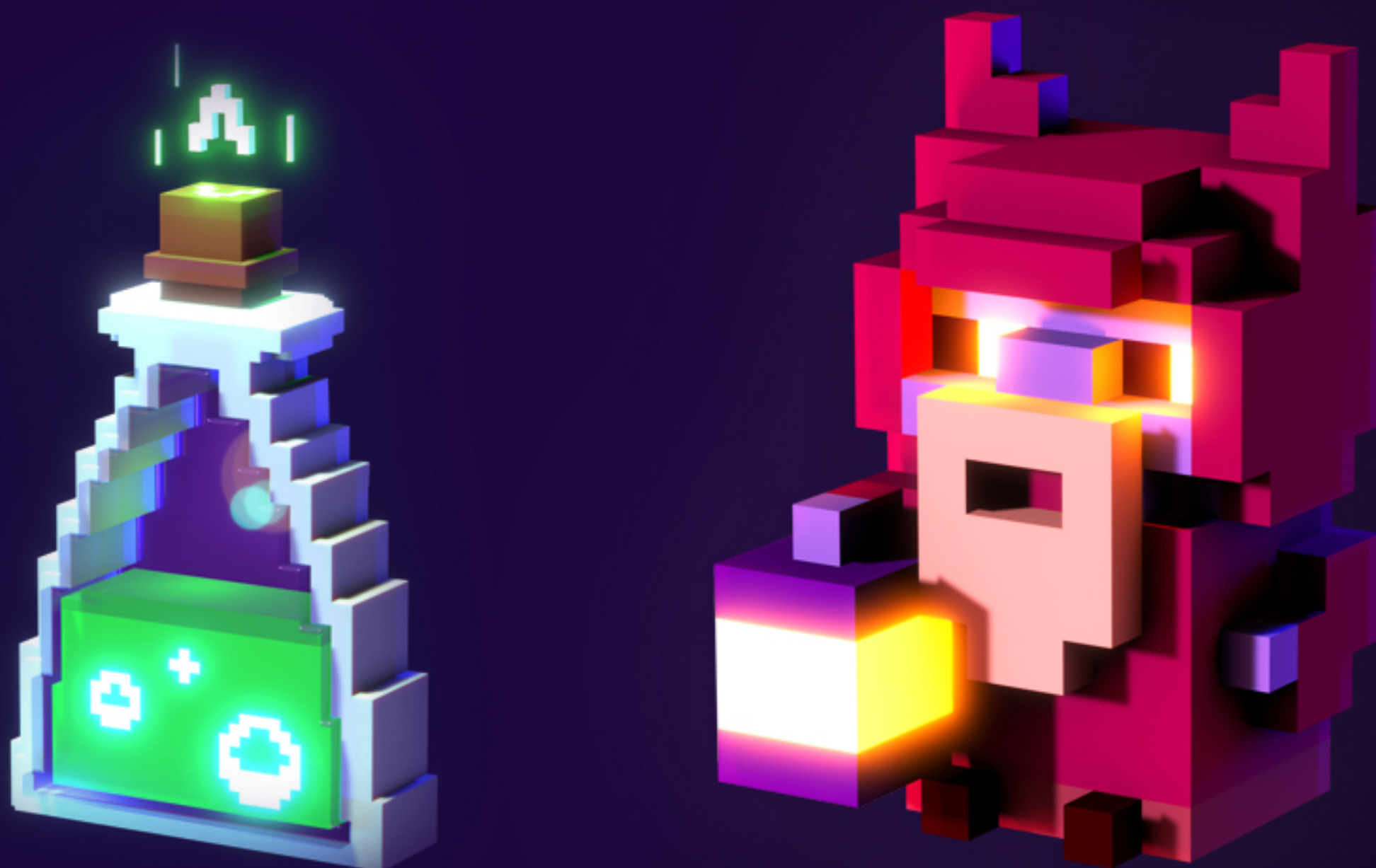
POWERUP TOKEN

LPOP token uses a circular economy through its internal mechanism which is based on users' activities/holdings with the intent to enhance active users. Lollipop has 3 Power-Up ERC-20 standard tokens to improve APY/API ecosystem earnings.

🍭 Standard (UPSTD): Basic/Default improvement.

🍭 Pink (UPPNK): Provides a differentiated gain.

🍭 Gold (UPGLD): It provides earnings far above the ordinary, usually aimed at a select group to obtain high levels of prizes.

Each Power-Up token yields a specific multiplier or boost for a limited time when used in specific DApps. The way to obtain Power-up tokens may vary from buying directly in Instant Buy, trading in DEX Swap or directly receiving from a holder.
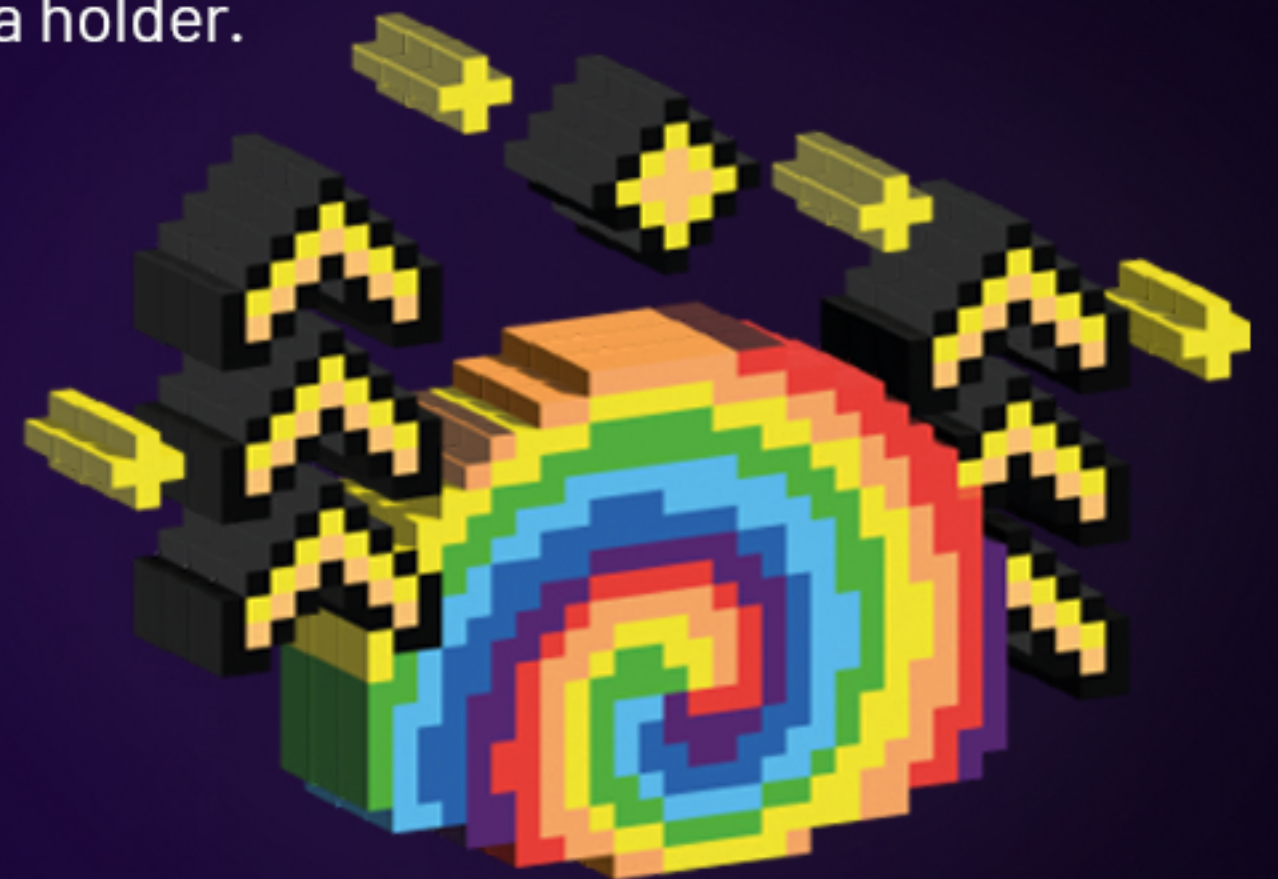
FARM

Yield farming in essence is a variation of investment strategy in DeFi that involves lending or staking your cryptocurrency coins or tokens to get rewards in the form of transaction fees or interest.

Lollipop Farm offers the participation of a set of staking pools for users that have balance in Liquidity Pool (AKA LP Staking - based on LP token balance) as a benefit for them for making tokens available to the liquidity platform. Staking LP tokens earned from supplying a DEX's swap liquidity allows users to earn double yield; one from liquidity and the other from staking rewards.

REWARDS

There is a set of rewards offered by the Lollipop ecosystem if you take part in and win certain games. Each reward is unique and requires specific types of activities to be performed by participants. It is a way of distributing ecosystem tokens to the community based on engagement and participation in the form of game-rewards. Each reward mechanism requires activities from certain participants to be eligible, i.e., deposit, withdrawals, bets, deselection activities and x amount of activation token.

INSTANT BUY

Instant Buy is the direct purchase operation at a pre-set price margin provided by the platform managers. If the platform administrator wants to encourage the acquisition of tokens from the Lollipop ecosystem by using AMM-DEX or other exchanges, it is possible to remove the availability of tokens in Instant Buy or increase the buy margin price. The contract will allow the purchase of tokens upon payment of specific tokens or cryptocurrencies.

AIRDROP

Airdrops involve blockchain-based projects sending out free tokens to members of their communities as part of a broader marketing initiative with the hope that recipients will be more inclined to engage with the corresponding project. Crypto users that frequently interact with new and existing platforms will likely receive an airdrop at some stage. In general, a crypto airdrop is issued to users in exchange for completing a certain task.

To qualify for Lollipop Airdrop, users must complete one or multiple small social tasks. The requirement for receiving crypto airdrops is to own a cryptocurrency wallet and completing certain tasks. One can't receive or claim an airdrop without having a wallet address. Tokens are sent directly from the Airdrop Smart Contract to the applicant's wallet.

GENERAL ASPECTS CONCLUSION

Of course, every financial investment tries to offer high profit and invariably carries risk at some level. Lollipop mitigated risks by using tightly linked DApps operating together while each application runs independently. This is made possible due to the decentralized operation by Smart Contracts. To be successful on the NFT Marketplace, it is important that the entire DeFi ecosystem can operate with consistent profit in LPOP for the community from the NFT trading.

LOLLIPOP TECHNICAL CHAPTER

This technical whitepaper explains a technical part of the Lollipop decentralized finance (DeFi) ecosystem operating decentralized applications (DApps) using ERC-20 Tokens, AMM protocols (Automated Market Maker mechanism), Yield Farming, Staking, NFT (non-fungible tokens), Games and Marketplace. These subjects have gained massive traction with the recently revived interest in blockchain and distributed ledger technology (DLT) in general. Instead of just matching the buy and sell sides as traditional centralized financial tools, DApps employ a peer-to-pool method and determine asset negotiation price algorithmically through a so-called conservation function. To facilitate the improvement and development of DApps, we created the first systematization of knowledge in this area. We first establish a main ERC-20 token (and a set of ERC-20 standard Power-up Tokens) in the AMM framework to activate the economics and formalize the system's state-space representation.

Where did this disruption come from?

To understand how finance DApps have become so important, we must look into the basics of blockchain technology. We will start with earning protocols (staking, yield farming, rewards, auction, NFT market) and the motivation of the users. For anyone who has heard of cryptocurrency mining or the environmental cost of NFTs, these folks are probably thinking of a proof-of-work system, which currently powers Bitcoin, Ethereum, and many other major cryptocurrencies.

To add transactions to the blockchain, computers perform resource-intensive calculations (the "work" in Proof-of-Work) and compete in the Distributed Consensus Mechanism of the blockchain to be the first to mine the block in exchange for a substantial reward.

The purest form of staking involves locking a s et amount of crypto assets to become a validator in a Proof-of-Stake (PoS) blockchain network. Unlike Proof-of-Work consensus algorithms, where ensuring transaction validity require a lot of energy-intensive computational work, PoS relies on validators that have vested interest in the success of a network through their staked crypto assets. In other words, validators must perform their duties diligently, otherwise they face the risk of losing a portion or even the entirety of their stakes. In addition, validators are eligible to receive staking rewards for creating and validating blocks, which further incentivizes good behavior.
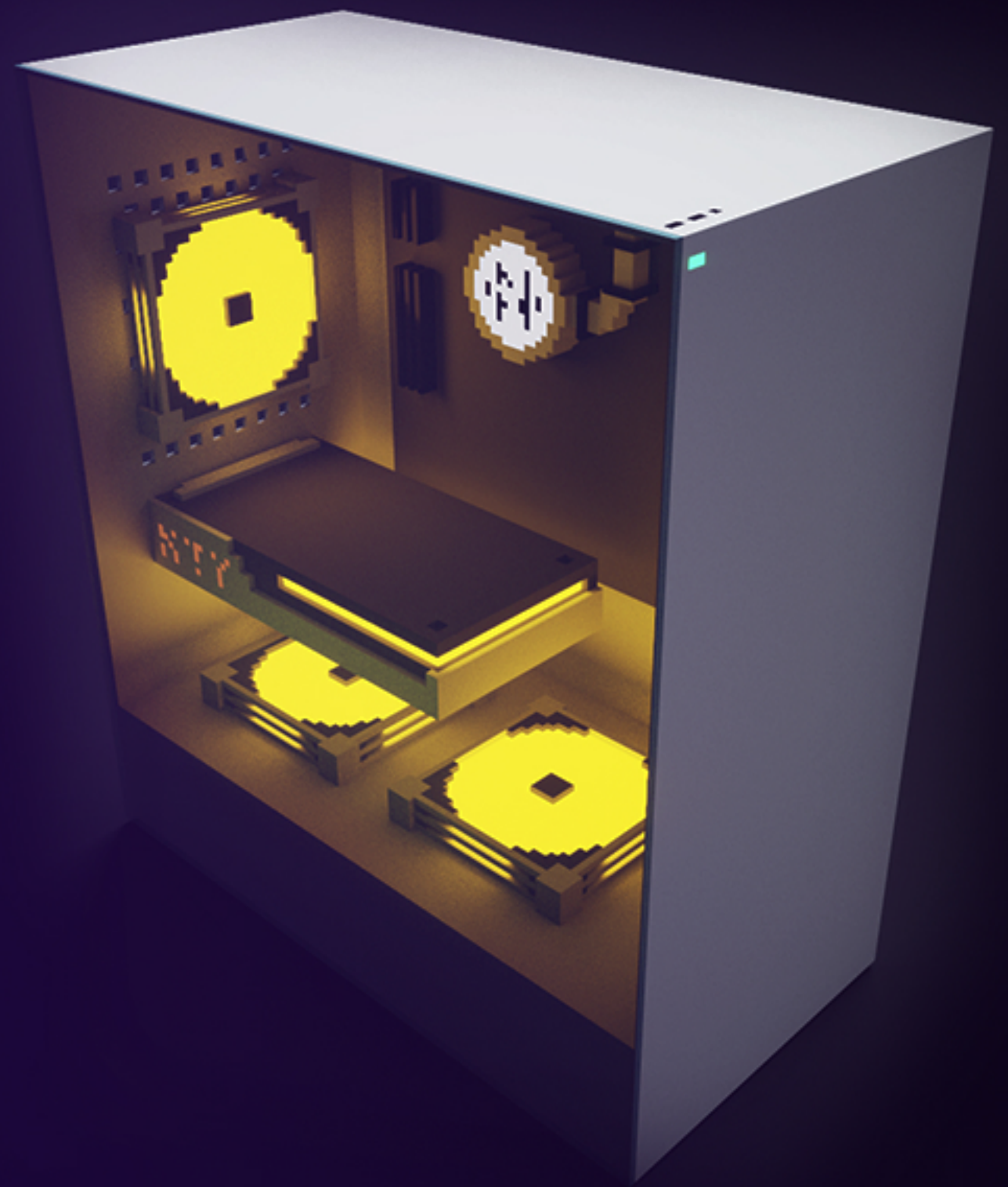
At its most basic level, the staking process boils down to an interested party posting a 'bond' (stake) to become a network validator, which in turn makes that party eligible for staking rewards. The problem with this direct approach to staking is that the stake requirement is often quite high. For example, to become a validator on ETH2's Beacon Chain, you need to post a 32 ETH, which is a hefty investment. Because of this, most individual investors are typically priced out of staking opportunities.

Understanding decentralized applications

This situation opened up an opportunity for staking service providers that allow people to circumvent the steep financial requirement. At first called staking pools, this type of service allows people to join forces with other crypto investors to raise staking capital. The system enables people to deposit any number of tokens to a staking pool and start earning passive income based on how much of the pool's total holdings their deposit accounts for. Alternatively, cryptocurrency platforms, both centralized and decentralized, started offering DeFi staking services in the model of decentralized application (DApps).

19

DECENTRALIZED FINANCE <DEFI> ON BLOCKCHAIN

DeFi (Decentralized Finance) is an open financial environment system with one or more DApps operating mainly on the internet.

DeFi vs traditional finance comparison table

DeFi	Traditional finance
You hold your money.	Your money is held by companies.
You control where your money goes and how it's spent.	You must trust companies not to mismanage your money, like lend to risky borrowers.
Transfers of funds happen in minutes.	Payments can take days due to manual processes.
Transaction activity is pseudonymous.	Financial activity is tightly coupled with your identity.
DeFi is open to anyone.	You must apply to use financial services.
The markets are always open.	Markets close because employees need breaks.
It's built on transparency – anyone can look at a product's data and inspect how the system works.	Financial institutions are closed books: you can't ask to see their loan history, a record of their managed assets, and so on.

To avoid risks, many DeFi users look for a good balance between decentralization security and centralization convenience. The centralization must also have good UI and UX for enterprise optimized DApps backed by professionals with years of experience in the tech industry.

LOLLIPOP TOKEN - LPOP

The Lollipop Ecosystem core token was deployed using the Solidity language (a high-level object-oriented language for implementing smart contracts). It is based on the ERC-20 (Ethereum Request for Comment Token 20) standard and is capable of being implemented on any Ethereum-based blockchain network.

The adoption of Solidity language is a great option for the community to understand what happens backstage of Smart Contract execution. Of course, some programming knowledge is required, but Solidity is a curly-bracket language influenced by C++, Python and JavaScript which facilitates the understanding of those who already know any of these well-known languages.

Despite this, it is important that a DeFi environment has a clear definition of which networks it should operate on. Each network has its own specific issues, such as transaction execution speed, number of nodes, consensus protocol, network layer, and so forth.

Tokens can represent virtually anything in Ethereum, for example:

- 🍭 Reputation points in online platform

- 🍭 Skills of a character in a game

- 🍭 Lottery tickets

- 🍭 Financial assets like a share in a company

Based on the definition that a contract is programmed in Solidity and that tokens can represent virtually anything on Ethereum, some basic rules need to be ensured. Definitions of how operations will work, name standardizing, token transfer standardizing, how tokens will be transferred and design rules around these principles is necessary.

The Ethereum Foundation created the Token Standards to ensure that Smart Contracts remain composite, for example when a new project issues a token it remains compatible with existing decentralized exchanges.

STAKE
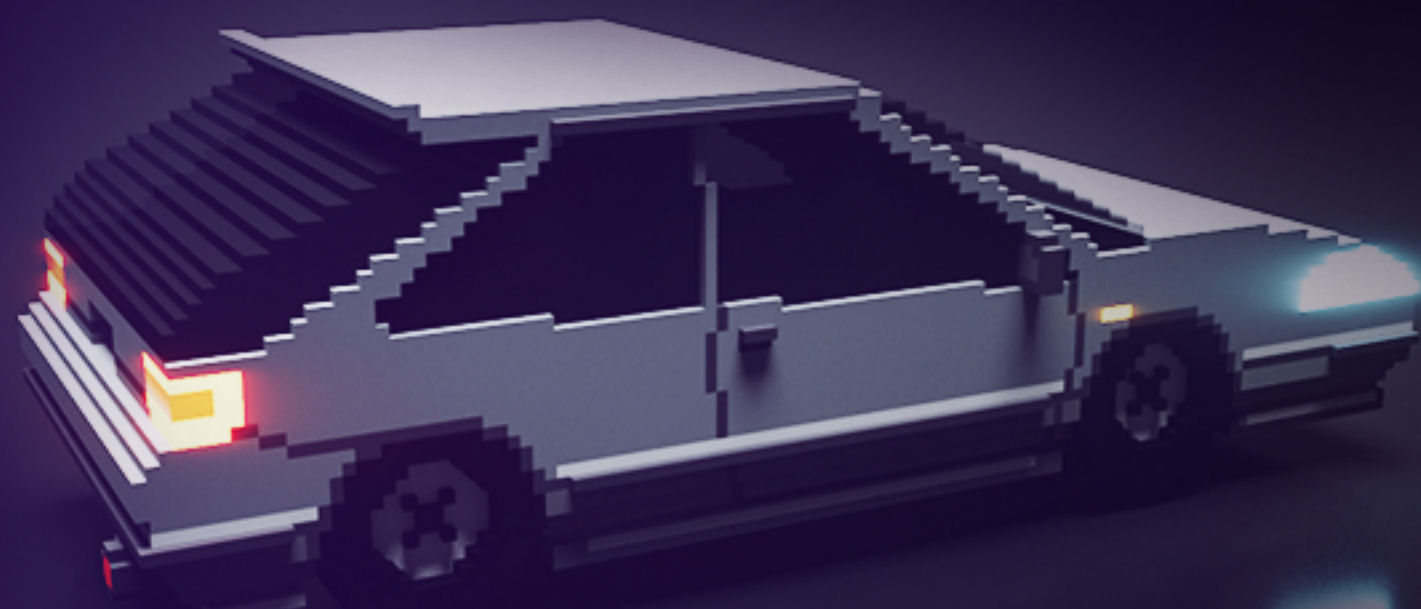
Lollipop Stake is a financial product that allows users to lend and earn interests using multiple stake pools. A stake pool is defined by the following attributes:

🍭 **Staking Period:** Time to apply the interest rate and expected return.

🍭 **APR (Annual Percentage Rate):** Percentage value representing yearly interest of pool.

🍭 **Expected Interest Rate:** Percent value calculated by the APR filled for the total period of the pool.

🍭 **Lock Policy:**

🍭 **Locked (during staking):** Investors cannot withdraw or collect earnings before the end of the staking period. After the period ends, users can choose to keep or withdraw and collect earnings.

🍭 **Unlocked:** Investors can withdraw at any time. In general, this type of pool has a short lifespan.

The staking protocol has interoperability with ERC-20 tokens and LPOP Token, Lollipop AMM-DEX and USD Pegged token to define the pool valuation in dollars. This way, the valuation of the pool can also be dynamically modified by several factors, whether internal or external to Lollipop.

AUCTION

LPOP auction is an auction on a decentralized platform governed by a protocol in a Smart Contract. This article shows an overview of how the auction process works and the problems we have solved with the blockchain-based system.

The basic process of an auction space works as:

- 🍭 Ownership of the product is checked by the auction holders.
- 🍭 A fee is paid for putting your product in the auction.
- 🍭 The bidders can view the products that are up for auction.
- 🍭 Bidders bid on the displayed products.
- 🍭 The person with the highest bid wins the product.

We use a real-life auction as a basis to build the Lollipop Auction:

- 🍭 **Trust for Authenticity**
- 🍭 **The consensus of the participants**
- 🍭 **Confidence in money transfer throughout the bidding process**

How does NFT work with Smart Contract development?

Smart Contract standards are called EIPs (Ethereum Improvement Proposals). Once approved by the developer community, they are implemented in the Ethereum virtual machine in new ERCs (Ethereum Request for Comments), and consequently updated in Blockchains that follow the same standard.

How are the assets representing each NFT stored?

On-chain storage

Storing metadata on-chain supports storing it on the blockchain. Lifetime storage is one of its biggest advantages, versus the higher gas costs and dependency on the selected blockchain network.

Off-chain storage

An alternative to on-chain, meaning that the metadata is stored outside of the blockchain, located on a public URL (Uniform Resource Locators) address. Cheaper gas costs and block-chain networks interoperability are its advantages, versus the dependency on such off-chain storage service to keep NFT safe.
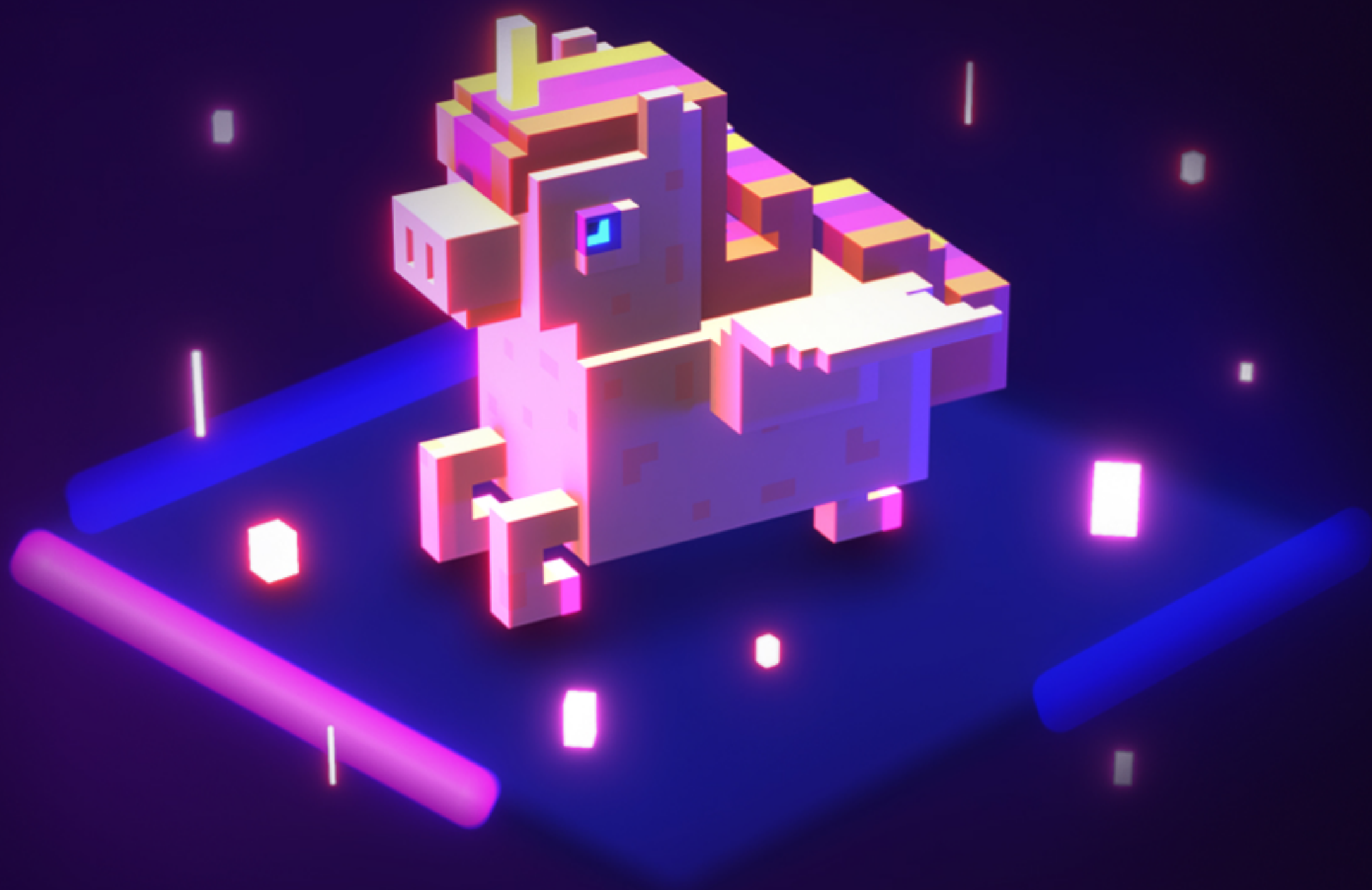
TECHNICAL ASPECTS CONCLUSION

The purpose of Lollipop DeFi is to create an open financial market, including an innovative NFT Interoperability Platform. Significant development and investment have gone into advancing the Lollipop ecosystem. Much of the technology in the Lollipop DeFi space is based on the trading system, resulting in a better outcome for members of the Lollipop community.

Smart Contracts have become a standard way to implement complex online interaction patterns involving the exchange of both cryptographic currency and data on blockchain in a unified and generalized manner. This approach was popularized by Ethereum, and examples include ERC20 token contracts, decentralized exchange contracts, and even contract-based games.

The technologies chosen for Lollipop make it possible to achieve these goals. With Ethereum-based blockchain networks, it is possible to develop financial applications using the Solidity language with data transparency, and guarantee the security of personal information through anonymity behind an online wallet, protecting user privacy.