RESEARCH REPORT

UNISWAP

A Story-Based Walkthrough of Decentralized Exchange

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UNISWAP

[A DECENTRALIZED EXCHANGE APP – DEX -2018 **]**

[Trade charge : 0.03%]

WHAT IS UNISWAP

- Uniswap is the largest decentralized exchange (DEX) platform. Open source.
- Uniswap is also a cryptocurrency itself whose symbol is [UNI]. This protocol Operates on the Ethereum blockchain.
- It allows users anywhere in the world to trade/swap crypto(tokens)without an intermediary. It's an Automated Liquidity Protocol.
- Smart contracts built into its (Uniswap) protocol makes users to trade without any centralized authority. It is designed for token swaps / trades.

UNI?

- UNI is an ERC-20 token, built on the Ethereum network. A Uniswap cryptocurrency.

ERC -20 TOKENS?

- Set of 'Fungible' (each token in the set is indistinguishable from every other token in the set) digital tokens.
- Representation of an asset, right, ownership, access, cryptocurrency, or anything else that is not unique in and of itself but can be transferred.
- An ERC [**E**thereum **R**equest **C**omment] token is a standard for creating and issuing smart contracts on Ethereum Blockchain. A technical standard used to define how tokens behave on the Ethereum blockchain.

ERC -20 STANDARD

ERC-20 standard refers to a technical standard that defines a common set of rules such as how the tokens can be transferred, how transactions are approved, and the total supply of token

LET'S WALK THROUGH A STORY EXAMPLE

Imagine you are a farmer 'Vincent' from a couple thousand years ago. you farm only ORANGES and you wish to grow or buy some other juicy fruit like Apple. Remember you are back in 1000 years and there is no market, grocery shop, internet, apps nothing at all. Then how would you be able to get apples now?

Well you have a friend 'Cameron' who farms APPLES just like you do oranges, go ahead to his farm and ask some of his apples if you'll share your oranges in exchange. He happily agrees since he likes oranges and gives you his apples. You guys made a TRADE now!!

Was there any middle man or intermediary? tax? Any fees? You just traded with raw materials, obviously a COMMODITY EXCHANGE.

Now think back to 10 years ago !!.............

So, you feel like exchanging apples for your potatoes now, what would you do?

Probably sell those potatoes for some cash in market place then you'll go to a local fruit shop to buy how much of apples you be wanting using the cash you got. The cash is the currency here. Cash stays as paper, but your potatoes. They rot after a while so you decide to sell all the potatoes you have and save up some more cash to buy apples or any fruit whenever you want.

Here the currency comes in between, you don't have to reach your friend 'Cameron' directly who lives in other state or have a conversation with him. Instead you go to the grocery store which always keeps stocks of apples and other fruits. you just pay the supermarket a fee along with for your apples so that they can keep up their business.

Now your using CURRENCIES and paying FEES. Who is the intermediary here then? certainly the supermarket!!

As days pass the supermarket in your town now wants to make more money :)

So, what do they do? increase the amount of fees! They know you won't be able to travel to next state just to buy some fruits. They charge whatever they want.

NOW GETTING BACK TO **UNI**!

You don't really want to convert your potatoes into cash, then cash into apples, paying fees and all that right?

UNISWAP is exactly for what you want.

Uniswap exchange lets you swap any Ethereum token for any other Ethereum token and you pay a very small fee, It's the like the supermarket. You give them your potatoes they give you apples.

How do they do this?

They have this big warehouse of stocks with tons of apples and potatoes and other fruits. someone comes and buys majority apples leaving the stock have less apples. Now what? apples are in demand !! you go to buy apples for your potatoes, but now they increase their fee for your potatoes since apples are less in quantity. 2 potatoes for one apple, 4 for 2, 8 for 2 even 12 for 4……. until the apples are back in stock of more quantity. DEMAND AND SUPPLY.

Let's say your potatoes are Ethereum, and apples that you want to buy are pretty popular Ethereum tokens.

Now when you give your Ethereum to this UNISWAP which is like the supermarket in our story, they give you a fair market price of Ethereum tokens.

After you bought the tokens, the price of Ethereum tokens rise since the supply got reduced, meanwhile the price of Ethereum gets low because the Uniswap stock got more Ethereum as you traded Ethereum for tokens.

guy1 comes in to buy the tokens now obviously at a higher price since the tokens are in demand. So, he'll trade lot of his Ethereum for fewer token.

The stock is filled with Ethereum now. Guy2 comes into trade tokens for Ethereum now.

Basically, this is how the liquidity pool gets even with stocks [Ethereum and Ethereum tokens in Uniswap's liquidity pool]. This is exactly what an **AUOTMATIC MARKET MAKER [AMM]** is.

BUT WHERE DOES ALL THESE Ethereum AND Ethereum Tokens Coming from?

Firstly, the supermarket in UNISWAP where you traded is actually the LIQUIDITY POOL. A pool of Ethereum and Ethereum tokens

The price of Ethereum and Ethereum tokens are INDIRECLTY PROPOTIONAL

Which means that if Ethereum token goes high in price, Ethereum gets low in price. **Second,** we call the place where all these Ethereum coins come from "LIQUIDITY PROVIDERS" Because they provide the initial liquid assets to the pool. You can become a liquidity provider by giving your coins and tokens to the pool.

What do you benefit from being a Liquidity Provider?

Well as we said in the beginning the super market charges some fee. A small amount of fee to trade on UNISWAP. 0.03% fee you pay to trade goes directly to the **liquidity providers**, not the Uniswap protocol.

VERSIONS & EVOLUTIONS OF UNISWAP

V1: - 2018

Key features:

- Swaps were only between ETH -> ERC-20 Tokens
- You can't directly swap DAI -> USDC. You need to DAI-> ETH->USDC.
- Proof of concept for Automated Market Maker [AMM.]

V2: - 2020

V2? Why? Because traders wanted to swap tokens directly. Developers wanted better price tracking

Key features:

- DAI ->USDC.
- Price oracle introduced.
- Still had 0.03% fee, that goes to LPs -> liquidity providers.

- Uniswap can't go outside blockchain and fetch off-chain data, it uses its own internal trading activit**y** (from people swapping tokens in liquidity pools) to calculate real-time prices**.**
- In **v2**, they introduced **TWAP (Time-Weighted Average Price)** this calculates the average price over time (e.g. last 10 minutes) to make it harder to manipulate.
- DeFi protocols safely used Uniswap prices without needing a separate oracle like chainlink. No need to pull off-chain data.

Well everything levels up in digital and real world after sometime as needs and wants change. So, the Next version of Uniswap > -

V3: - 2021

Key features:

- Lps wanted to earn more efficiently. **Concentrated liquidity**: LPs can choose specific **price ranges** where they want to provide liquidity. Means they earn more fee.
- Fee tiers: 0.05%, 0.30%, 1.00%
- **Capital efficiency**: Less capital locked, more rewards.

V4: - upcoming (still under development)

Key features:

- Dev friendly, allowing them to customize.
- Hooks = Add Your Own Features. Hooks let developers plug in their own logic into Uniswap.
    - Change fees based on time of day (like Uber surge pricing)
    - Add "limit orders" (buy only if price hits a target)
    - Charge extra for fast swaps
- Singleton Architecture
    - All token pairs are inside **one main contract**, instead of separate contracts for each pair, unlike v3 where every token pair had separate contracts for each—this **reduces gas costs** and simplifies the system.

V4 is more like a developer's ground, DeFi playground where teams can build new kinds of features directly on top of Uniswap, without needing to copy or fork the whole protocol.

USECASES OF UNISWAP

Token Swapping

- Direct exchange of ERC-20 tokens from their wallets without intermediaries

Providing Liquidity

- Users can contribute tokens to liquidity pools and earn a share of transaction fees generated by swaps in those pools

DeFi Integrations

- Serves as a backend for other decentralized applications that require token swaps or pricing data.

Price feeds (on-chain)

- Other protocols use Uniswap data to know the real market price — based on actual trades, not guesswork.

Incentives

- Projects give tokens to users that provides liquidity to pool to help grow adoption.

SUMMARY

- Uniswap – Decentralized crypto exchange platform.
- ERC-20 Token – crypto token that defines set of rules for token creation, interaction on Ethereum network.
- Liquidity Pool – place where Users provide funds as tokens to facilitate trading and earn returns.
- Token swapper -You could be a token swapper and change your Ethereum for Ethereum tokens and pay 0.03% fee for that swapping.
- Liquidity Provider – The user who contribute funds. You could be a liquidity provider and earn a return on your investment by lending to the pool.
- Uniswap is just a code after all!! running on a server.
- Nobody regulates, no regulations, no tax. Completely decentralized.