



Panaverse DAO



Web 3.0 User Guide

Join the Future Now

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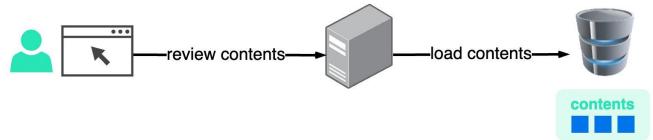


The future is already here.

Those who understand it will run the world.

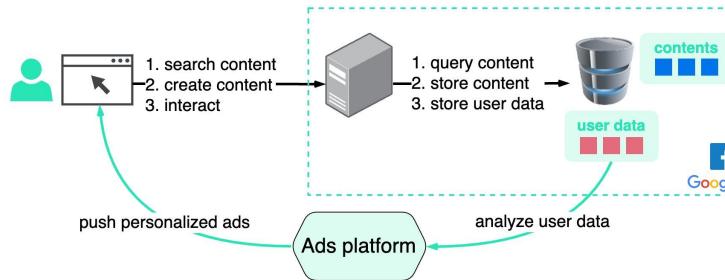
Here's are the key services and concepts that will get you up to speed, quickly.

Web 1.0 - Read Only

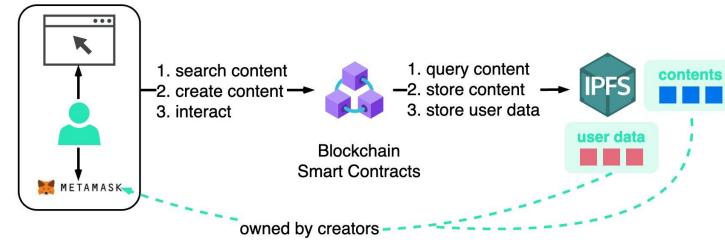


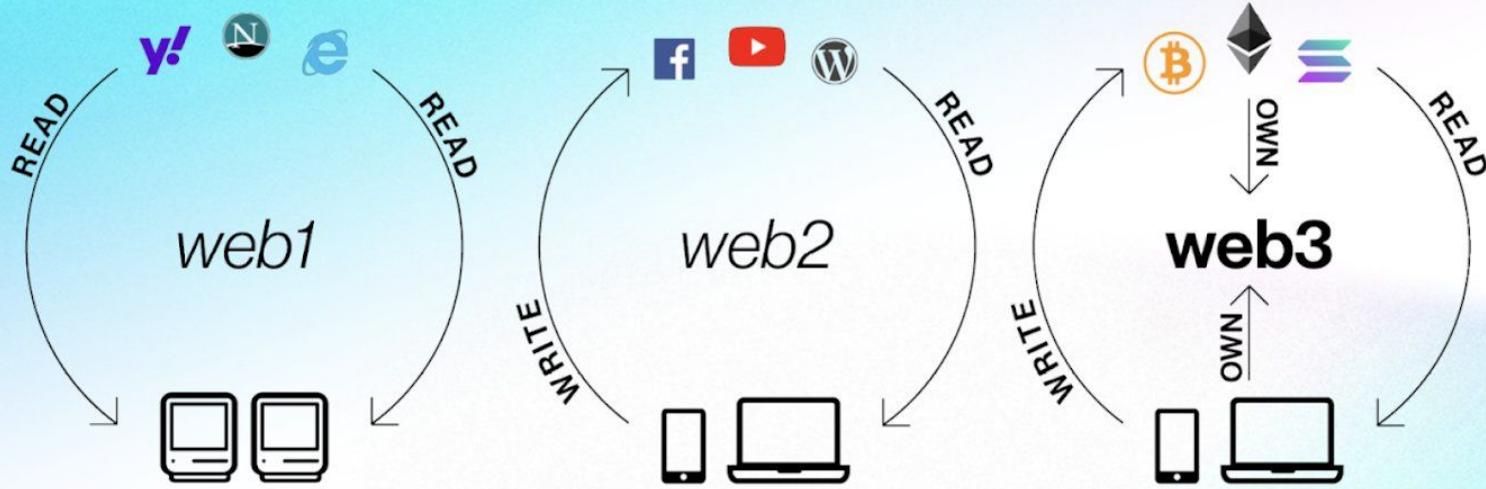
289

Web 2.0 - Read Write

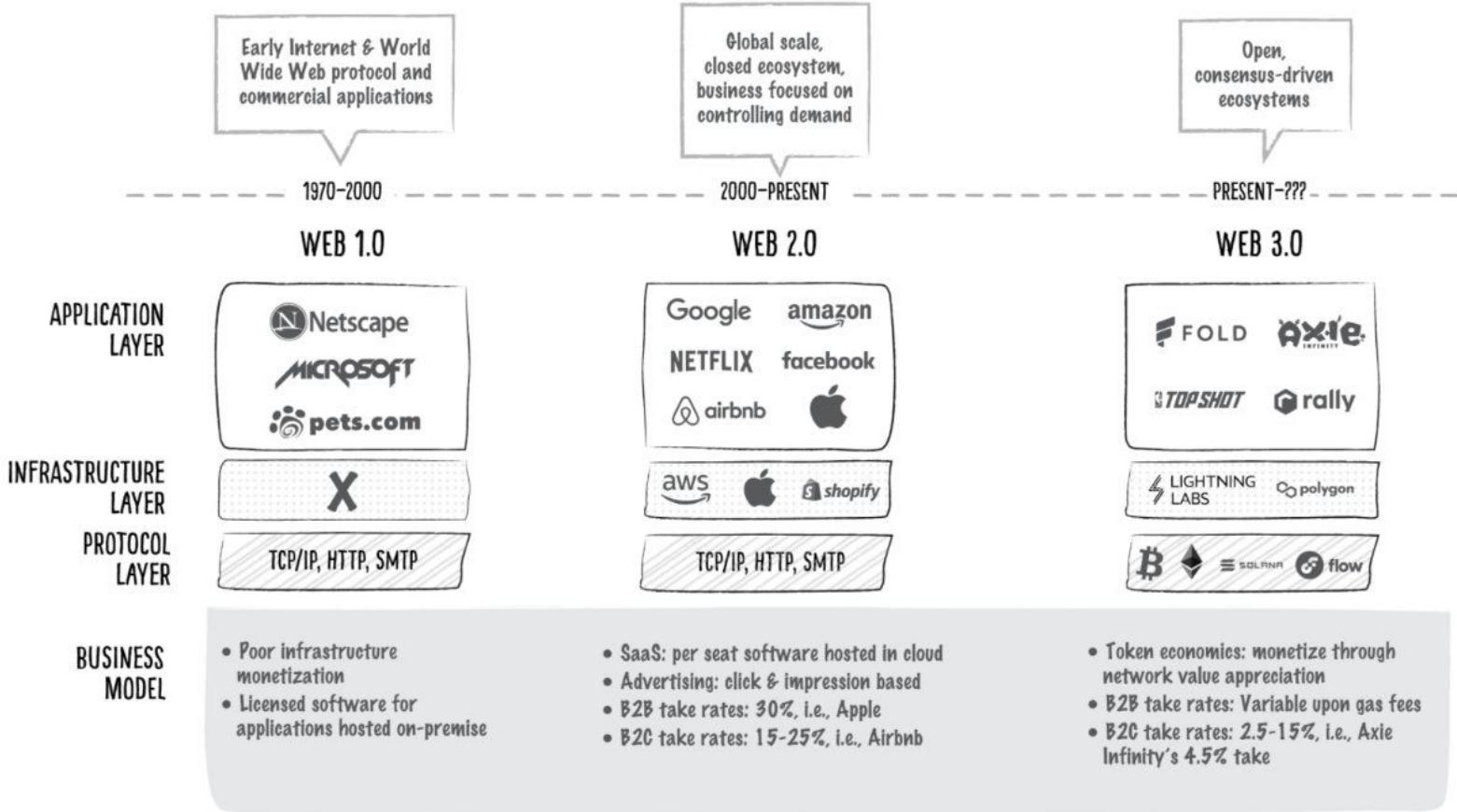


Web 3.0 - Read Write Own





**Web3 gives people property rights:
the *ability to own a piece of the internet***





Core Ideas of Web3



- **Web3 is decentralized:** instead of large swathes of the internet controlled and owned by centralized entities, ownership gets distributed amongst its builders and users.
- **Web3 is permissionless:** everyone has equal access to participate in Web3, and no one gets excluded.
- **Web3 has native payments:** it uses cryptocurrency for spending and sending money online instead of relying on the outdated infrastructure of banks and payment processors.
- **Web3 is trustless:** it operates using incentives and economic mechanisms instead of relying on trusted third-parties.

What do we mean by “blockchains are trustless”?

When we say blockchains are “trustless,” what we mean is that there are mechanisms in place by which all parties in the system can reach a consensus on what the canonical truth is.

Power and trust is distributed (or shared) among the network’s stakeholders (e.g. developers, miners, and consumers), rather than concentrated in a single individual or entity (e.g. banks, governments, and financial institutions).

Perhaps a more accurate way to describe blockchains is not as “trustless,” but as built on the basis of distributed trust: We are trusting everyone in aggregate.

Web 3.0 Simply Explained

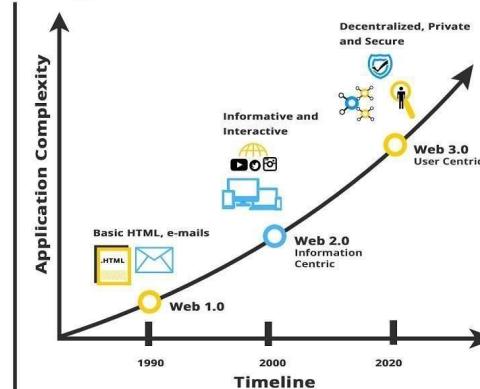
1 What is Web 3.0?

Web 3.0 is the 3rd generation of the internet where the devices are connected in a decentralized network rather depending on server-based databases.

The new internet is a user-centric, more secured, private and better connected.



2 The History of the Web



3 Web 3.0 Benefits

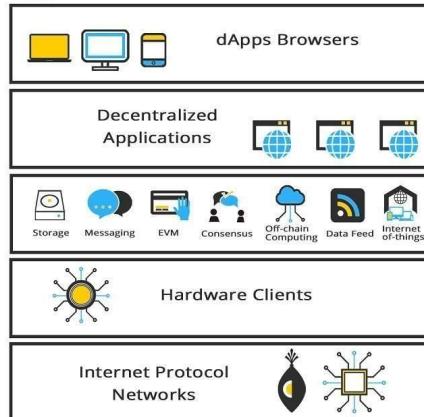


Anti-monopoly and Pro-privacy Secure Network Data Ownership Interoperability



No interruption in service Permissionless blockchains Semantic Web Ubiquity

4 Web 3.0 Stack



Web3 Careers

Rohas Nagpal



Smart Contract
Developer



Full Stack
Developer



Front-end
Developer



Token Economist



DeFi Analyst



Community
Manager



Social Media
Manager



Sales & Marketing
Manager



Blockchain Lawyer



Crypto Crime
Investigator



UI / UX Designer



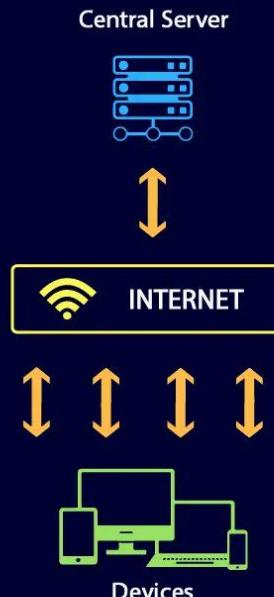
Product Manager



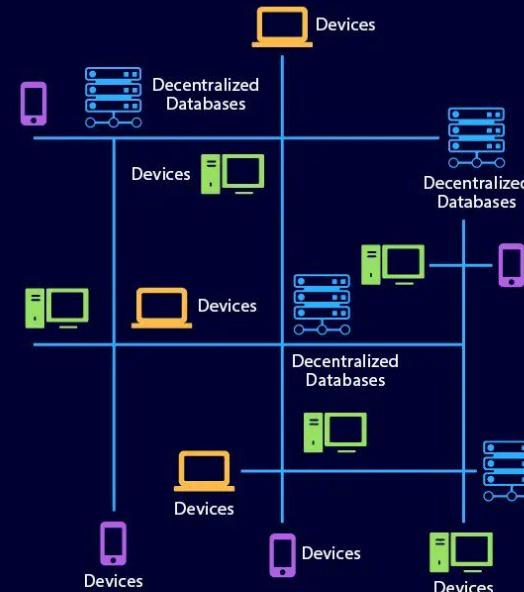
Project Manager

Centralized vs Decentralized Internet

BEFORE



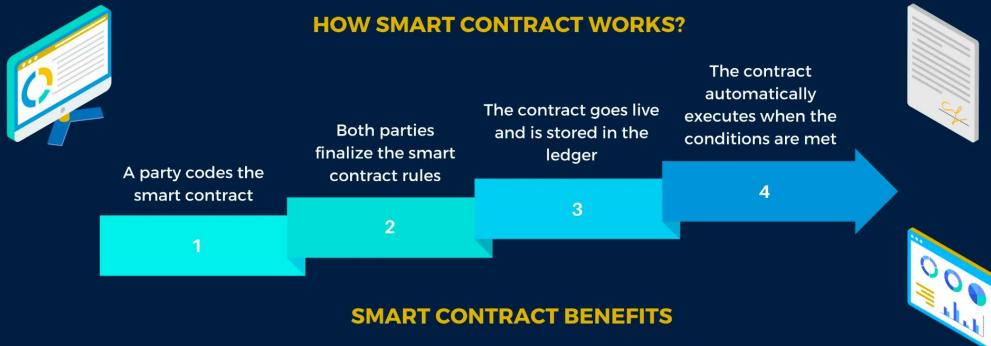
AFTER



WHAT IS A SMART CONTRACT?

A smart contract is a set of digital codes that is used to exchange assets including shares, money, or property without the need for any intermediates to function.

HOW SMART CONTRACT WORKS?



SMART CONTRACT BENEFITS



USE CASES



What is Ethereum?



- Ethereum was launched back in 2015 and is famous for being a decentralized and open-source proof-of-stake blockchain with smart contracts functionality.
- One of Ethereum's biggest strengths is its variety of use cases, and the list keeps on growing every year.
- As with Bitcoin, it is a large database of all the transactions conducted on the Ethereum Network.
- A database usually structures its data into tables, whereas a blockchain, as its name implies, structures its data into chunks (blocks) that are strung together.

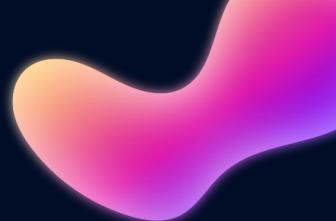


What is Ether (ETH)?

- Ether is the transactional token that facilitates operations on the Ethereum Blockchain network.
- While ether is the cryptocurrency of the Ethereum network, metaphorically speaking, it is more accurate to refer to it as the "fuel" of the network.
- Ether is the world's second-largest virtual currency by market capitalization; it is second only to Bitcoin (BTC) according to market value.
- ETH isn't just a speculative asset; it has actual value.



Ethereum Base Units



Think of the smallest unit of ether – wei – as a penny. It takes a whole bunch of wei to make an ether. 10^{18} wei, to be exact.

10^9 wei is a gwei. Gwei is most commonly used when talking about gas (network transaction fees). Rather than saying your gas cost is 0.000000001 ether you can say 1 gwei.

PWEI FOR THE PIGGY BANK

ETHER FOR THE BILLS

Most of those denominations aren't needed for the average enthusiast. The majority of transactions will use ether & gwei. Understand wei for technical cred and you should be set.



WEI

Basically imperceptible, digital dust. It's really only used for technical cases and writing code.



GWEI

Most commonly used for Gas (network transaction fees). You need a lot to really be valuable.



PWEI

Pocket change. More tangible than a Nano but not as valuable as an Ether.



ETHER

The most common denomination. In most substantial transactions you'll think in terms of Eth.

Each denomination has its own slang. Nicknames based off influential figures from the world of cryptography. A nod to founding figures the same way a \$100 bill features Ben Franklin. Not mentioned below are Ada Lovelace (KWEI), Charles Babbage (MWEI), and Nick Szabo (TWEI).



〈WEI〉

WEI

Wei Dai. Formulated the concepts of all modern cryptocurrencies.



〈SHANNON〉

GWEI

Claude Shannon. The Father of Information Theory. Codebreaker and crypto-analysis guru.



〈FINNEY〉

PWEI

Hal Finney. Cypherpunk master and the first human to receive a Bitcoin from Satoshi.



〈BUTERIN〉

ETHER

Vitalik Buterin. Wunderkind creator of Ethereum.



Ethereum Gas Fee



- Gas is essential to the Ethereum network. It is the fuel that allows it to operate, in the same way that a car needs gasoline to run.
- Gas refers to the unit that measures the amount of computational effort required to execute specific operations on the Ethereum network.
- Since each Ethereum transaction requires computational resources to execute, each transaction requires a fee. Gas refers to the fee required to conduct a transaction on Ethereum successfully.
- Gas fees are paid in Ethereum's native currency, ether (ETH). Gas prices are denoted in gwei, which itself is a denomination of ETH - each gwei is equal to 0.000000001 ETH (10⁻⁹ ETH).

<https://etherscan.io/gastracker>

Vitalik Buterin, co-founder of Ethereum, believes Ethereum will be able to process close to **1,00,000 transactions per second**. At present, it can do 25 per second.

The next stage is **sharding**, a process to reduce network congestion and increase transaction speed.

Sharding will create **64 different shards** so that the information of the blockchain is split up.

Ethereum Gas Tracker 🚀

Featured: Wallet-to-wallet instant messaging via [Blockscan Chat!](#)

Next update in 0s

Sun, 09 Oct 2022 11:57:20 UTC [Twitter](#)

Low 16 gwei
Base: 16 | Priority: 0
\$0.44 | ~ 10 mins: 0 secs

Average 17 gwei
Base: 16 | Priority: 1
\$0.47 | ~ 3 mins: 0 secs

High 19 gwei
Base: 16 | Priority: 3
\$0.50 | ~ 30 secs

Estimated Cost of Transaction Actions:

Action	Low	Average	High
② OpenSea: Sale	\$1.52	\$1.61	\$1.71
② Uniswap V3: Swap	\$3.91	\$4.15	\$4.40
② USDT: Transfer	\$1.15	\$1.22	\$1.29



Ethereum for Applications



- Ethereum will completely transform applications of all shapes and sizes.
- With a built-in scripting language and distributed virtual machine, **smart contracts** can be built to carry out all sorts of functions without the need for a trusted third party or central authority.
- Using its internal cryptocurrency, ether, nodes can be paid for their processing power in running these decentralized apps, and entire decentralized autonomous organizations (DAOs) will exist in an **ether economy**.



What is a Dapp?

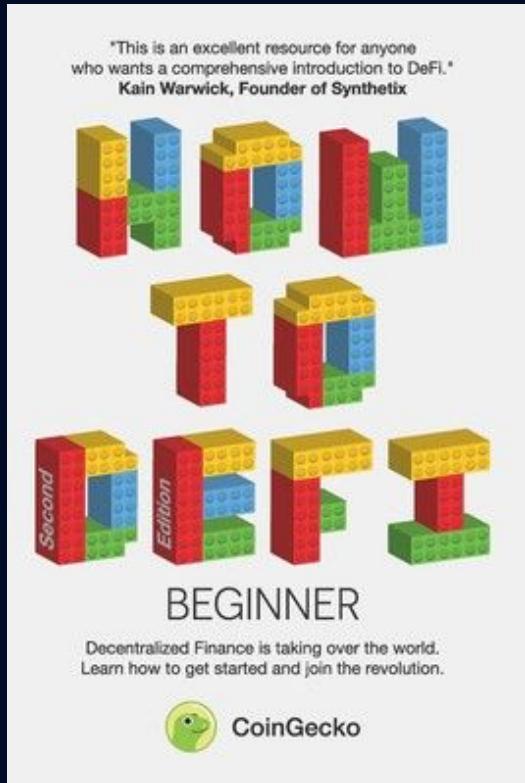
- A dapp has its backend code running on a decentralized peer-to-peer network. Contrast this with an app where the backend code is running on centralized servers.
- A decentralized application (dapp) is an application built on a decentralized network that combines a smart contract and a frontend user interface.
- On Ethereum, smart contracts are accessible and transparent – like open APIs – so your dapp can even include a smart contract that someone else has written.



Ethereum for DeFi

- Ethereum has given rise to a new constellation of “decentralized finance” or DeFi businesses and projects.
- Essentially the cryptocurrency version of Wall Street, DeFi aims to offer people access to financial services—borrowing, lending, and trading—with the need for legacy institutions such as banks and brokerages, which often take large commissions and other fees.
- Most DeFi apps are built on the Ethereum blockchain.
- Ethereum has a range of potential applications beyond cryptocurrency, experts say, such as facilitating real estate deals and international trade.

Summary From 'How To DeFi (Beginner)' Book



<https://blog.cryptostars.is/summary-from-how-to-defi-beginner-book-by-coingecko-23e0c001e0ad>



8 DeFi Key Categories



1. Stablecoins
2. Lending & Borrowing
3. Exchanges
4. Derivatives
5. Fund Management
6. Lottery
7. Payments
8. Insurance

#	NAME ↑↓	CHAIN	SECTOR	30D USERS ↑↓	TVL (USD) ↑↓	1 DAY % ↑↓
1	 MakerDAO	Ethereum	Lending	41,915	\$7.57B	-0.35%
2	 Aave	Ethereum	Lending	7,270	\$3.89B	-0.55%
3	 Uniswap	Ethereum	DEXes	203,403	\$2.90B	0.00%
4	 Balancer	Ethereum	DEXes	2,930	\$594.1M	-1.21%
5	 Curve	Ethereum	DEXes	4,606	\$541.7M	-0.10%
6	 dYdX	Ethereum	Derivatives	663	\$387.0M	-0.55%
7	 SushiSwap	Ethereum	DEXes	961	\$305.9M	-0.23%
8	 Euler	Ethereum	Lending	499	\$269.2M	-0.12%
9	 Flexa	Ethereum	Assets	2,897	\$109.5M	-0.00%
10	 Compound	Ethereum	Lending	3,441	\$100.4M	-0.66%



Ethereum for Global Trade and Commerce



- International trade is a \$16 trillion market that accounts for the exchange of capital, goods, and services across international borders or territories.
- Major trading companies around the world are recognizing the transformative impact of Ethereum blockchain technology in operating global supply chains, managing trade finance, and unlocking new business models.



REAL ESTATE ASSET TOKENIZATION



- Real estate is the world's most significant store of wealth. The total value of all the world's real estate stands at **USD 327 trillion**, a record high. To put that into context, the value of all gold ever mined pales by comparison at USD 12.1 trillion – just 4% of the value of global property.
- Tokenization of commercial real estate transactions will reduce transaction costs from 30% to 2%, entry barriers for investors from \$200,000 to \$100 and reduce the time for conducting operations from 1 month to 1 click.
- Asset Fractionalisation is the simple process of dividing an asset into smaller denominations so that many users can buy its partial ownership.
- We can apply to Assets such as **art, precious metals, real estate, private equity or debt positions**, etc.
- https://github.com/panacloud-modern-global-apps/defi-dapps-solidity-smart-contracts/tree/main/step20_real_estate_tokenization

\$20bn worth of crypto held by Pakistanis: Report

Report suggests potential to encash windfall gains of billions of dollars in crypto assets of Pakistanis, dual nationals

By Ahtasam Ahmad



What Is Public Key Cryptography?

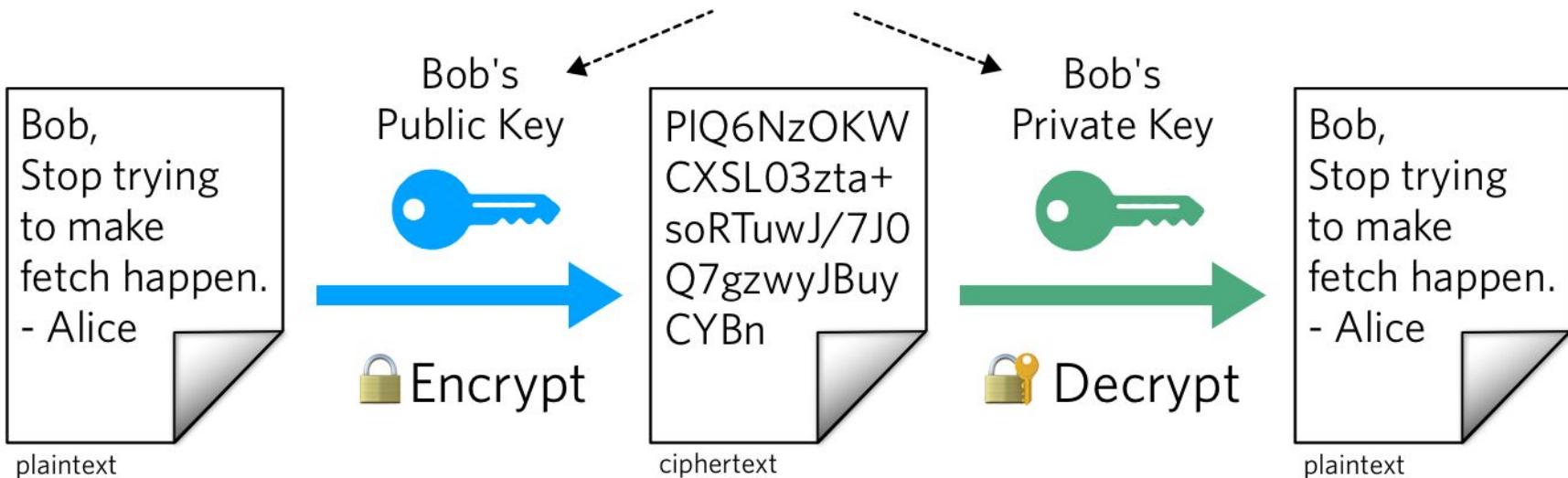


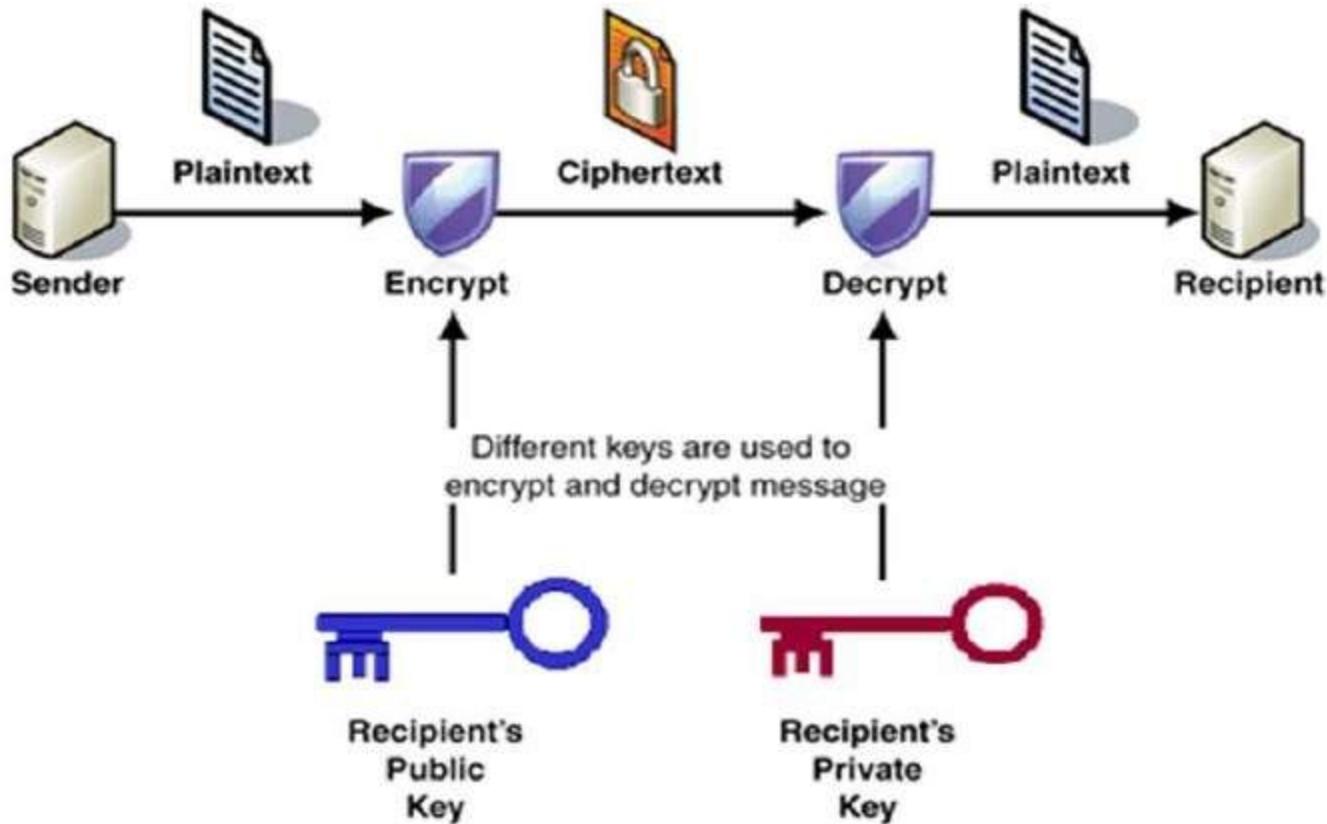
Public key cryptography, also known as asymmetric cryptography, uses two separate keys instead of one shared one: a public key and a private key.

Public key cryptography is an important technology for Internet security. Public key cryptography is a method of encrypting or signing data with two different keys and making one of the keys, the public key, available for anyone to use. The other key is known as the private key. Data encrypted with the public key can only be decrypted with the private key.

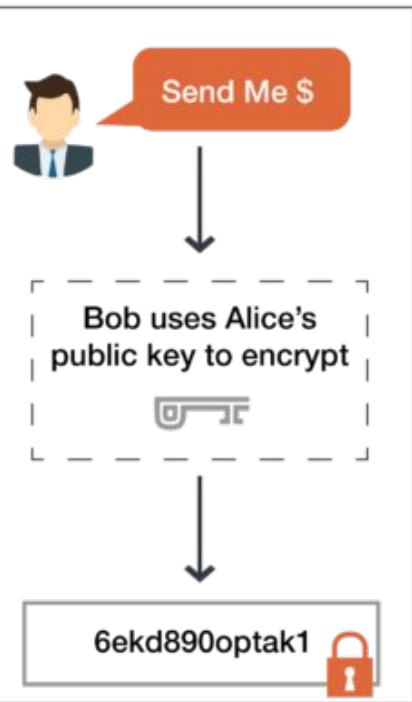
Public Key Cryptography

keys are different but
mathematically linked





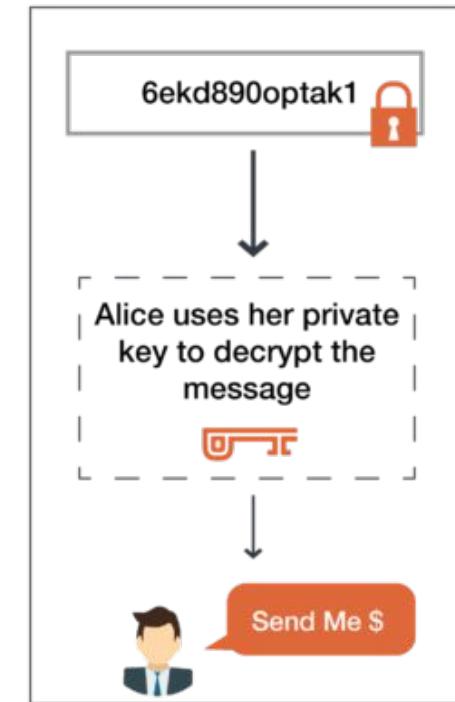
BOB



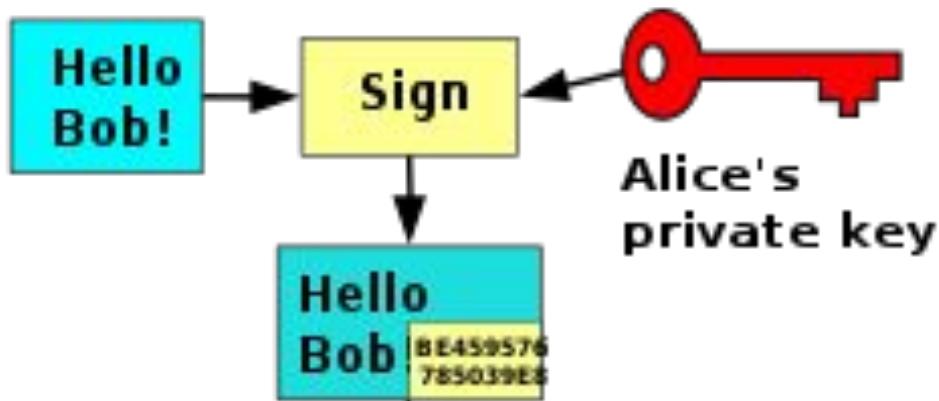
Servers



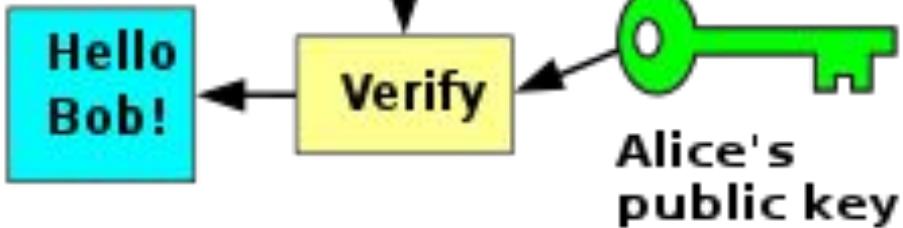
ALICE



Alice



Bob



What Is a Crypto Wallet?



Crypto wallets keep your private keys – the passwords that give you access to your cryptocurrencies – safe and accessible, allowing you to send, receive, and spend cryptocurrencies like Ethereum and ERC-20 Tokens.

A cryptocurrency wallet consists of a set of public addresses and private keys. Anyone can deposit cryptocurrency in a public address, but funds cannot be removed from an address without the corresponding private key. Private keys represent final control and ownership of cryptocurrency.

What Is MetaMask?



MetaMask is a cryptocurrency wallet that enables users to access the Web 3 ecosystem of decentralized applications (dapps). It also enables users to store Ether and other ERC-20 tokens.

Goerli Testnet

It is named after a train station in Berlin and is one of the largest and most active Ethereum test nets.



Pronunciation

<https://wwwdefinitions.net/pronounce/Goerli>



What is a Faucet?

Few developers want to spend real money when testing or deploying smart contracts. That's why testnet faucets are the ideal solution – you get free cryptocurrencies you can use to pay gas when deploying or testing smart contracts.



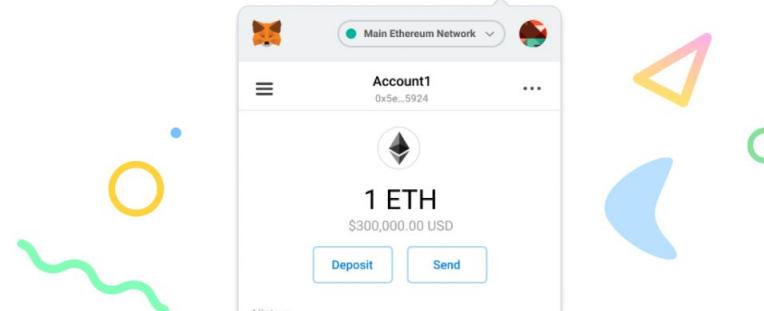
METAMASK

Features  Support  About  Build 



Chrome  iOS Android

Install MetaMask for your browser



- 1. Change to Goerli Test Network**
- 2. Create a testing account**
- 3. Copy Your Wallet Address**

The image shows the MetaMask wallet interface. At the top, it displays the network selection dropdown set to "Goerli test network". Below this is the "My accounts" section, which lists two accounts: "Panacloud" and "testing". The "testing" account is selected, indicated by a green checkmark icon. The balance for both accounts is "0 GoerliETH". Below the accounts are several options: "Create account", "Import account", "Connect hardware wallet", "Support", and "Settings". At the bottom of the interface, there is a summary of assets: "0 GoerliETH" followed by a right-pointing arrow.

The image shows the OpenSea marketplace interface. At the top, it displays the network selection dropdown set to "Goerli test network". Below this is the "testing" account section, which shows "0 GoerliETH". The main content area displays a collection of NFTs, with one item visible: "0 GoerliETH". Below the NFTs are three buttons: "Buy", "Send", and "Swap". At the bottom of the interface, there are tabs for "Assets" and "Activity", and a link to "Portfolio site".

Switch to Goerli

0xedb18BF93E9C135634F488D12C143909728F7109



I am human



Privacy - Terms

Send ether

Rules:

- ✓ Connect to your wallet
- ✓ Choose Goerli Test Network
- ✗ Access to only 1 request every 24h
- ✓ Wallet address balance must be lower than 0.5 GoerliETH

GOERLI FAUCET

Fast and reliable. 0.1 Goerli ETH/day.

To stop spam attacks draining the faucet, Alchemy accounts are temporarily required. [Signup for free here.](#) 

Enter Your Wallet Address (0x...) or ENS Domain

Send Me ETH

[Please signup or login](#) with Alchemy to request ETH. It's free!

Your Transactions

Time

-

Now you can donate your new Goerli ETH to the ape wildlife fund.

Support GoerliFaucet.com with a  Tweet

or

Follow your transaction on  Etherscan

The image shows the MetaMask wallet interface on the Goerli test network. At the top, there's a fox icon, a dropdown menu showing "Goerli test network", and a circular profile picture. Below that, it says "testing" and "0xedb...7109". There are three vertical dots on the right.

Not connected

testing
0xedb...7109

0.1 GoerliETH

Buy Send Swap

[Assets](#) [Activity](#)

Portfolio site

0.1 GoerliETH >



What is a Etherscan?

Etherscan, an Ethereum blockchain explorer, allows you to search the Ethereum blockchain for free.

Through the tool, you can see records of past transactions, smart contracts, wallets, gas fees, and other information related to the Ethereum network.



Goerli Testnet Network

All Filters

Search by Address / Txn Hash / Block / Token / Ens



Home

Blockchain

Tokens

Misc

Goerli

Transaction Details

[Overview](#) [State](#)

[This is a Goerli Testnet transaction only]

⑦ Transaction Hash: [0x6f3adfd205e68f64da9a51bcc86a7adf8d18e164eb7d15841b69b0de3f011c6d](#)

⑦ Status: Success

⑦ Block: [7732487](#) 18 Block Confirmations

⑦ Timestamp: 4 mins ago (Oct-08-2022 08:05:24 AM +UTC)

⑦ From: [0x631e9b031b16b18172a2b9d66c3668a68a668d20](#)

⑦ To: [0xedb18bf93e9c135634f488d12c143909728f7109](#)

⑦ Value: 0.1 Ether (\$0.00)

⑦ Transaction Fee: 0.000001963337208 Ether (\$0.00)

⑦ Gas Price: 0.000000000093492248 Ether (0.093492248 Gwei)

Click to see More

What is Uniswap?



- Uniswap is the largest decentralized exchange (or DEX) operating on the Ethereum blockchain.
- It allows users anywhere in the world to trade crypto without an intermediary.
- UNI, the governance token that allows users to vote on key protocol changes.
- Uniswap was one of the first decentralized finance (or DeFi) applications to gain significant traction on Ethereum – launching in November 2018.
- Numerous other decentralized exchanges have launched (including Curve, SushiSwap, and Balancer), but Uniswap is currently the most popular by a significant margin.
- Uniswap pioneered the Automated Market Maker model, in which users supply Ethereum tokens to Uniswap “liquidity pools” and algorithms set market prices (as opposed to order books, which match bids and asks on a centralized exchange like Coinbase) based on supply and demand.
- By supplying tokens to Uniswap liquidity pools, users can earn rewards while enabling peer-to-peer trading.
- Anyone, anywhere, can supply tokens to liquidity pools, trade tokens, or even create and list their own tokens (using Ethereum’s ERC-20 protocol).

Swap Pool Charts ↗

Swap



0.0001

ETH ▾

Balance: 0.1088 MAX

0.000150276

UNI ▾

Balance: 0.001504

1 UNI = 0.6654 ETH

Swap



Goerli test network



109

Connected

testing

0xedb...7109

0.1088 GoerliETH



Buy



Send



Swap

Assets

Activity

↳ Portfolio site



0.1088 GoerliETH



Goerli test network

testing → 0x68b...Fc45

New address detected! Click here to add to your address book.

<https://app.uniswap.org>

0x68b...Fc45 : MULTICALL ⓘ

 0.0001 GoerliETH

DETAILS DATA HEX

EDIT

Estimated gas fee ⓘ 0.0002465
0.000246 GoerliETH

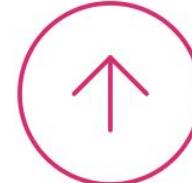
Site suggested
Likely in < 30 seconds

Total 0.0003465
0.0003465 GoerliETH

Amount + gas fee Max amount: 0.0003465 GoerliETH

[Reject](#) [Confirm](#)

X



Transaction Submitted

[View on Explorer](#)

Add UNI

[Close](#)



Goerli Testnet Network

All Filters

Search by Address / Txn Hash / Block / Token / Ens



Home

Blockchain

Tokens

Misc

Goerli

Transaction Details

[Overview](#)[Internal Txns](#)[Logs \(4\)](#)[State](#)

[This is a Goerli Testnet transaction only]

⑦ Transaction Hash: [0x880ad4f84b2fa5adc947aebe0bdff351126336a239a6179026c1de8b4c14d986](#)

⑦ Status: Success

⑦ Block: [7739688](#) 4 Block Confirmations

⑦ Timestamp: 1 min ago (Oct-09-2022 02:02:36 PM +UTC)

⑦ From: [0xedb18bf93e9c135634f488d12c143909728f7109](#)

⑦ To: Contract [0x68b3465833fb72a70ecdf485e0e4c7bd8665fc45](#)

└ TRANSFER 0.0001 Ether From [0x68b3465833fb72a70ecdf485...](#) To → [0xb4fbf27114314fb7b91a5ded3...](#)

⑦ ERC-20 Tokens Transferred: From [0x07a4f63f643fe3...](#) To [0xedb18bf93e9c1...](#) For 0.000150276161070885 Uniswap (UNI)

From [0x68b3465833fb7...](#) To [0x07a4f63f643fe3...](#) For 0.0001 Wrapped Ether (WETH)

⑦ Value: 0.0001 Ether (\$0.00)

⑦ Transaction Fee: 0.000169291501692915 Ether (\$0.00)

⑦ Gas Price: 0.000000001500000015 Ether (1.500000015 Gwei)



Goerli test network



0.1085 GoerliETH



Buy



Send



Swap

Assets

Activity

[Portfolio site](#)



0.1085 GoerliETH



100.000000000... DAI



0.00165 UNI



What is Binance?



- Binance is an online exchange where users can trade cryptocurrencies. It supports most commonly traded cryptocurrencies.
- Binance is a cryptocurrency exchange with the highest liquidity, and Uniswap can be considered its decentralized equivalent.
- Binance provides a crypto wallet for traders to store their electronic funds.
- The exchange also has supporting services for users to earn interest or transact using cryptocurrencies.
- Users can buy, sell, and trade crypto, choose options and futures trading, apply for crypto loans, earn passive income and more with a single login. These centralized products are easy-to-use and comprehend, and can be accessed using a web browser, desktop or mobile app.



Uniswap vs Binance?

- Uniswap v3 is the the largest decentralized exchange by trading volume, with more than \$1.7 billion worth of assets changing hands in 24 hours, according to data from Coingecko.
- However, Binance is the largest centralized crypto exchange with \$22.2 billion in trading volume over the same period. Coinbase, meanwhile, logged \$3.1 billion.
- Uniswap has four fee tiers: 0.01%, 0.05%, 0.30% and 1.00%. Depending on the pair you trade, you could be charged as low as a 0.01% fee or as high as a 1% fee.
- Stablecoin pairs like USDC/USDT on Uniswap have usually low fees while altcoin pairs tend to have higher fees, which you can check out on Uniswap's overview page.
- Binance, on the other hand, has very low trading fees starting from 0.10%.
- The research used a metric called market depth to compare liquidity across Uniswap v3 and the centralized exchanges. Market depth, a common method used to measure liquidity on exchanges, shows how much of one asset can be traded for another at a given price level. For an Ether/USD trading pair, a trader who executes a single \$5-million trade can save about \$24,000 on Uniswap v3 compared with Coinbase, according the research.



How to buy Ethereum in Pakistan

<https://www.techjuice.pk/how-to-buy-ethereum-in-pakistan/>

Compare crypto exchanges for October 2022

Exchange	Fees	Minimum Trade	Cryptos
Crypto.com	Maker: 0.04%–0.4%; Taker: 0.1%–0.4%	\$2	240+
FTX.US	Maker: 0%–0.1%; Taker: 0.05%–0.2%	None	20+
Binance.US	Maker: 0%–0.1%; Taker: 0.02%–0.1%	\$10	100+
Gemini	\$0.99 to \$2.99 under \$200 or 1.49% over \$200, and a 0.50% convenience fee	Varies	75+
Cash App	1.5% to 2.3%	\$1	1 (Bitcoin)
Coinbase	Maker: 0%–0.4%; Taker: 0.05%–0.6%	\$1	100+
Robinhood	0%	\$1	11
eToro	1%	\$10	20+
UniSwap	0.05%–1.0% + ETH gas fees	Varies	50,000+ pairs
Kraken	0.9% for buying stablecoins and 1.5% for any other coin. 3.75% + \$0.25 for card and digital wallet payment processing. 0.5% for online banking/ACH processing. 0.01% to 0.02% for margin. 0.01% to 0.05% for futures.	\$1	100+ BTC, ETH, AVAX, IDEX, MATIC, SOL, USDC, USDT, and many others.

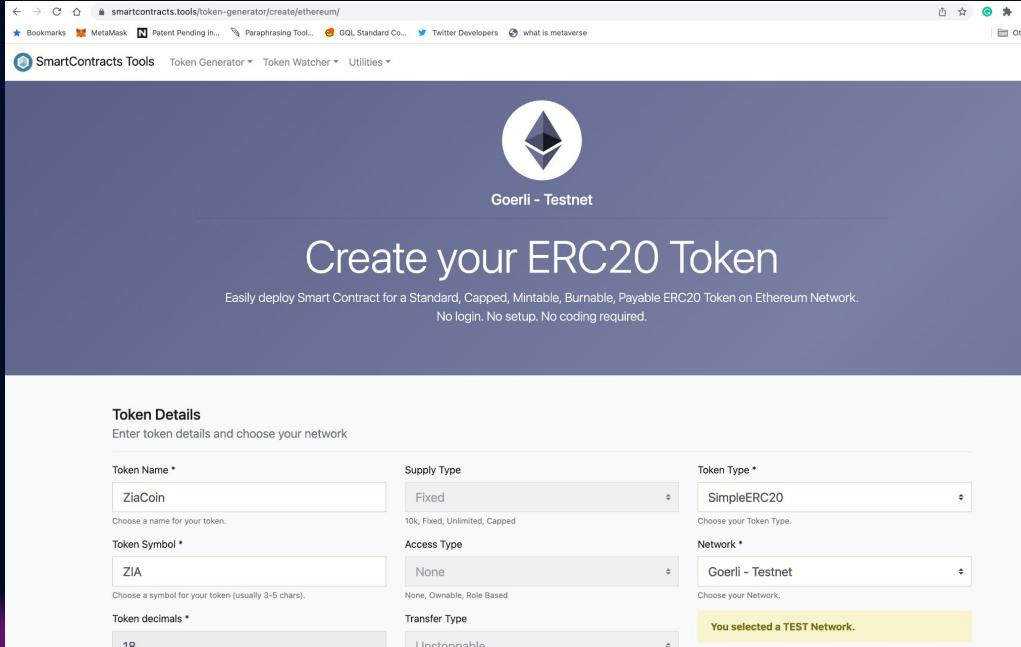


What is ERC-20?

- Ethereum Request for Comment 20 (ERC-20) is the implemented standard for fungible tokens created using the Ethereum blockchain. It is the technical standard used in many new tokens created using the Ethereum ecosystem.
- A fungible token is one that is interchangeable with another token—where the well-known non-fungible tokens (NFTs) are not interchangeable.
- It guides the creation of new tokens on the Ethereum blockchain so that they are interchangeable with other tokens used within smart contracts.
- Smart contracts were becoming more popular in 2015, but several issues needed to be addressed. Because anyone could make a token, many were being created. However, there wasn't a way to ensure that all of the different tokens could be created, used, or exchanged.
- Without a standardized methodology for tokens, every application would need its own token, and users would need to find a way to convert them back and forth between the hundreds of apps being developed.

Create Your ERC20 Token

Create your own ERC-20 token using your name on Goerli Testnet e.g. ZiaCoin
<https://www.smartcontracts.tools/token-generator/create/ethereum/>



The screenshot shows the "Token Generator" page of the SmartContracts Tools website. At the top, there's a header with the site's logo and navigation links like "Bookmarks", "MetaMask", "Patent Pending In...", "Paraphrasing Tool...", "GQL Standard Co...", "Twitter Developers", and "what is metaverse". Below the header, a large circular icon contains a stylized white diamond shape, with the text "Goerli - Testnet" underneath it. The main title "Create your ERC20 Token" is centered below the icon. A subtitle explains: "Easily deploy Smart Contract for a Standard, Capped, Mintable, Burnable, Payable ERC20 Token on Ethereum Network. No login. No setup. No coding required." The form section is titled "Token Details" and includes fields for "Token Name" (ZiaCoin), "Supply Type" (Fixed), "Token Type" (SimpleERC20), "Token Symbol" (ZIA), "Access Type" (None), "Network" (Goerli - Testnet), and "Transfer Type" (Unstoppable). A yellow message bar at the bottom right says "You selected a TEST Network.".

Token Details
Enter token details and choose your network

Token Name * ZiaCoin **Supply Type** Fixed **Token Type *** SimpleERC20
Choose a name for your token. Choose your Token Type.
Choose a symbol for your token (usually 3-5 chars).
Choose your Network.
None, Ownable, Role Based
Unstoppable

You selected a TEST Network.

TRACTS Tools Token Generator ▾ Token Watcher ▾ Utilities ▾

Checkout

Double check your information and start your transaction

Summary

0xedb18bf93e9c135634f488d12c143909728f7109

Tokens will be sent to this address

SimpleERC20

Token Type

ZiaCoin

Name

ZIA

Symbol

18

Decimals

10000000000

Initial Supply

10000000000

Max Supply

Transaction Cost

Gas Fee

Variable

Token Deployment

0 ETH

Total

0 ETH

CREATE TOKEN

[BACK TO BILLING INFORMATION](#)

Goerli test network

testing  New contract

<https://www.smartcontracts.tools>

CONTRACT DEPLOYMENT

DETAILS DATA

EDIT

Estimated gas fee ⓘ 0.00435189
0.00435189 GoerliETH

Site suggested
Very likely in < 15 seconds

Total 0.00435189
0.00435189 GoerliETH

Amount + gas fee **Max amount:** 0.00653867 GoerliETH

Reject Confirm

Making transaction...

Well! Transaction done!

Transaction Hash: [0x2f8b013a82f6575af9ca3ddd4a3b8c923ef51970bd7d6ce5bf68072f1c72044](#)

Your Token:

ZiaCoin (ZIA)

Address: [0x73bf59cE49925b3be66a1c3B0ed1bf9E0a5C23Bb](#)

Supply: 10000000000 ZIA



Add to MetaMask



View on Etherscan



Create Page

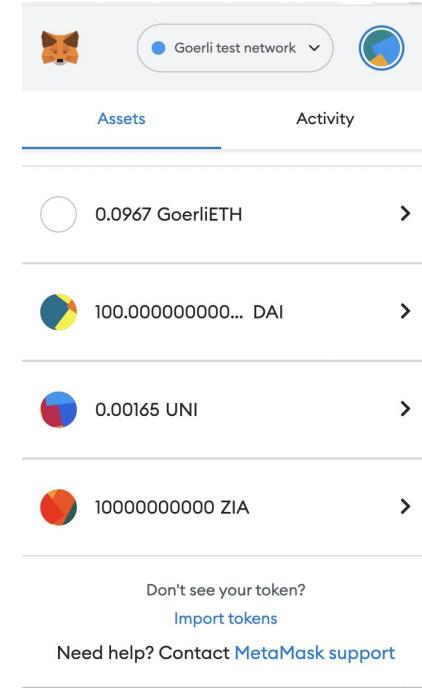
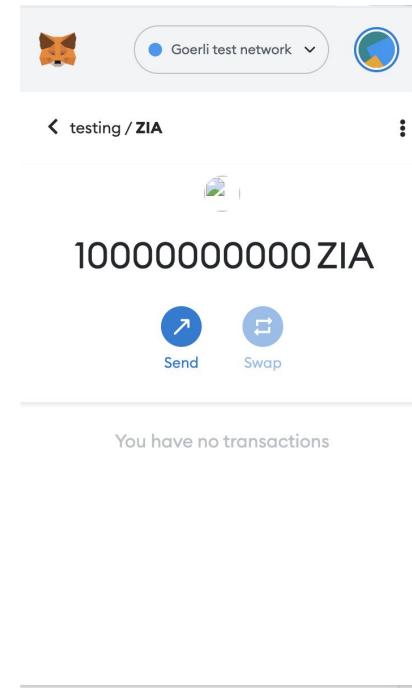
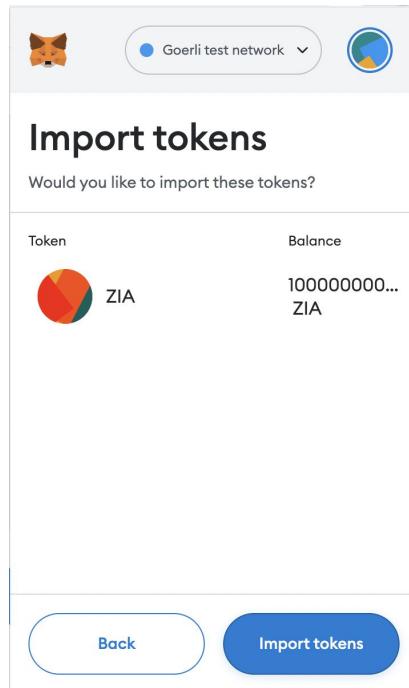
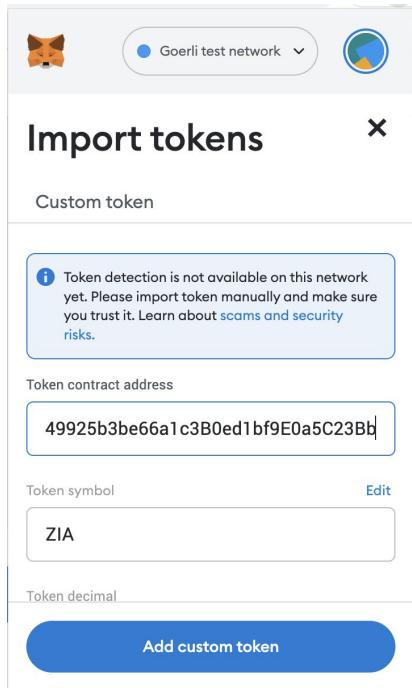
ZiaCoin (ZIA)

Contract Address: [0x73bf59cE49925b3be66a1c3B0ed1bf9E0a5C23Bb](#)

Transaction Hash:

[0x2f8b013a82f6575af9ca3ddd4a3b8c923ef51970bd7d6ce5bf68072f1c72044](#)

Importing Token in the Metamask Wallet





Goerli Testnet Network

All Filters

Search by Address / Txn Hash / Block / Token / Ens



Home

Blockchain

Tokens

Misc

Goerli

Token ZiaCoin ⓘ

Overview [ERC-20]

Max Total Supply: 10,000,000,000 ZIA ⓘ

Holders: 1

Transfers: 1

Profile Summary

Contract: 0x73bf59cE49925b3be66a1c3B0ed1bf9E0a5C23Bb

Decimals: 18

[Transfers](#) [Holders](#) [Contract](#)

A total of 1 transaction found

[First](#) [<](#) Page 1 of 1 [>](#) [Last](#)

Txn Hash	Method ⓘ	Age	From	To	Quantity
0x2f8b013a82f6575af9...	0x60806040	22 mins ago	0x000000000000000000...	0xedb18bf93e9c135634f...	10,000,000,000

[\[Download CSV Export \]](#)



Goerli Testnet Network

All Filters

Search by Address / Txn Hash / Block / Token / Ens



Home

Blockchain

Tokens

Misc

Goerli

Transaction Details

[Overview](#) Internal Txns Logs (2) State

[This is a Goerli Testnet transaction only]

⑦ Transaction Hash: [0x2f8b013a82f6575af9ca3ddd4a3b8c923ef51970bd7d6ce5bf68072f1c72044](#)

⑦ Status: Success

⑦ Block: [7744513](#) 129 Block Confirmations

⑦ Timestamp: 34 mins ago (Oct-10-2022 10:03:00 AM +UTC)

⑦ From: [0xedb18bf93e9c135634f488d12c143909728f7109](#) ⑦ Interacted With (To): [Contract [0x73bf59ce49925b3be66a1c3b0ed1bf9e0a5c23bb](#) Created] ⑦ ERC-20 Tokens Transferred: From [0x00000000000000000000000000000000](#) To [0xedb18bf93e9c135634f488d12c143909728f7109](#) For 10,000,000,000 ZiaCoin (ZIA)

⑦ Value: 0 Ether (\$0.00)

⑦ Transaction Fee: 0.003285987800705346 Ether (\$0.00)

⑦ Gas Price: 0.00000004932538061 Ether (4.932538061 Gwei)

[Click to see More](#)



What are NFTs?

- Non-fungible tokens (NFTs) are cryptographic assets on a blockchain with unique identification codes and metadata that distinguish them from each other.
- Unlike cryptocurrencies, they cannot be traded or exchanged at equivalency. This differs from fungible tokens like cryptocurrencies, which are identical to each other and, therefore, can serve as a medium for commercial transactions.
- NFTs (non-fungible tokens) are unique cryptographic tokens that exist on a blockchain and cannot be replicated.
- NFTs can represent real-world items like artwork and real estate.
- "Tokenizing" these real-world tangible assets makes buying, selling, and trading them more efficient while reducing the probability of fraud.
- NFTs can also function to represent individuals' identities, property rights, and more.
- Collectors have sought NFTs as their value initially soared, but has since moderated.

What is OpenSea?



- The world's first and largest digital marketplace for crypto collectibles and non-fungible tokens (NFTs). Buy, sell, and discover exclusive digital items.
- Is the first ever decentralized NFT marketplace built on the Ethereum blockchain and is currently the largest.
- OpenSea is a regionalized peer-based marketplace for trading rare and unique digital assets.
- Whether it's collectibles, arts, or gaming items developed on NFT (non-fungible token) technology and flow on the blockchain of Ethereum, an investor can buy, sell, and trade these on OpenSea.
- platform has over 1 million users in 2022.
- It has recently entered the Alexa 500 Most Visited Websites, with a total of 121.7 million views.
- Over 80 million different types of NFTs are available for trade on OpenSea.
- Over 80% of the free NFTs created on OpenSea are either fraudulent or spam.

testnets.opensea.io

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OpenSea Testnets

Search items, collections, and accounts

Explore Stats Resources Create

Cart icon

Explore, collect, and sell NFTs

Trending Top

24h

View all

COLLECTION	FLOOR PRICE	VOLUME	COLLECTION	FLOOR PRICE	VOLUME
1  Blockies - MGRf3kF8TG	0.60 ETH	2 ETH	6  Azuki - rIoDmotS4Z	0.38 ETH	0.89 ETH
2  MQBC1155	< 0.01 ETH	2 ETH	7  PrimeMonaLisaF	-	0.60 ETH
3  TestOS 103D	-	1 ETH	8  Doodles - zUqg9GmET7	0.35 ETH	0.35 ETH
4  Phase1Testing	-	1 ETH	9  Lender - P6qZGf9fjj	0.40 ETH	0.30 ETH
5  CryptoBeetles - 6Me17Ngsv7	-	1 ETH	10  Goerli-A - 1XR7kd2U8C	0.11 ETH	0.22 ETH

WhatsApp Web | Web 3.0 User Manual - Goog... | what is opensea - Google Se... | What Is OpenSea? The World's ... | OpenSea Statistics 2022: Us... | OpenSea, the largest NFT mar... | OpenSea, the largest NFT mar... | testnets.opensea.io

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Explore, collect, and sell NFTs

Trending Top

COLLECTION	FLOOR PRICE	VOLUME	COLLECTION
1 Blockies - MGRf3kF8TG	0.60 ETH	2 ETH	6 Azuki - rIoDmots4Z
2 MQBC1I55	< 0.01 ETH	2 ETH	7 PrimeMonaLisaF
3 TestOS I03D	—	1 ETH	8 Doodles - zUqg9GmET7
4 PhaselTesting	—	1 ETH	9 Lender - P6qZGf9fjj
5 CryptoBeetles - 6Me17Ngsv7	—	1 ETH	10 Goerli-A - 1XR7kd2U8C

My wallet

If you don't have a [wallet](#) yet, you can select a provider and create one now.

 [MetaMask](#) Popular

 [Coinbase Wallet](#)

 [WalletConnect](#)

 [Phantom](#) Solana

 [Glow](#) Solana

Show more options

Signature request

Account:

 testing

Balance:

0.096714
GoerliETH

Origin:



<https://testnets.opensea.io>

You are signing:

Message:

Welcome to OpenSea!

Click to sign in and accept the OpenSea Terms of Service: <https://opensea.io/tos>

This request will not trigger a blockchain transaction or cost any gas fees.

Your authentication status will reset after 24 hours.

Wallet address:

0xedb18bf93e9c135634f488d12c143909728f7109

Nonce:

584c66d6-7d01-4914-934a-84eb97f73452

Cancel

Sign

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OpenSea

testnets

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Explore, collect, and sell NFTs

Trending Top

COLLECTION	FLOOR PRICE	VOLUME	COLLECTION
1 Blockies - MGRf3kF8TG	0.60 ETH	2 ETH	6 Azuki - r1oDmots4Z
2 MQBC1155	< 0.01 ETH	2 ETH	7 PrimeMonaLisaF
3 TestOS 103D	—	1 ETH	8 Doodles - zUqg9GmET7
4 PhaselTesting	—	1 ETH	9 Lender - P6qZGf9fjj
5 CryptoBeetles - 6Me17Ngsv7	—	1 ETH	10 Goerli-A - 1XR7kd2U8C

My wallet 0xedb1...7109

Total balance \$126.87 USD

Add Funds

ETH Goerli 0.0967 \$126.87 USD



Search items, collections, and accounts

Explore Stats Resources Create



Create New Item

* Required fields

Image, Video, Audio, or 3D Model *

File types supported: JPG, PNG, GIF, SVG, MP4, WEBM, MP3, WAV, OGG, GLB, GLTF. Max size: 100 MB



Name *

Panaverse DAO Logo

External link

OpenSea will include a link to this URL on this item's detail page, so that users can click to learn more about it. You are welcome to link to your own webpage with more details.

<https://www.panaverse.co/>

Description

The description will be included on the item's detail page underneath its image. [Markdown](#) syntax is supported.

Logo of the Panaverse DAO

<https://testnets.opensea.io/assets/goerli/0xf4910c763ed4e47a585e2d34baa9a4b611ae448c/10751184310706239991382795273718322873231599781756762181812533941645749518337/>



Search items, collections, and accounts

Explore Stats Resources Create



Edit

Sell



☰ Description

By you
Logo of the Panaverse DAO

☰ About Untitled Collection #13914229

☰ Details

Untitled Collection #13914229



Panaverse DAO Logo

Owned by you 1 view

↗ Price History

All time



No item activity yet

🏷️ Listings

☰ Offers



Moved to the Miannet

→ ⏪ ⏹ opensea.io/collections

bookmarks  MetaMask  Patent Pending in...  Paraphrasing Tool...  GQL Standard Co...  Twitter Developers  what is metaverse

 **OpenSea**

My Collections

Create, curate, and manage collections of unique NFTs to share and sell. ⓘ

[Create a collection](#)

⋮



Panaverse DAO

<https://opensea.io/assets/ethereum/0x495f947276749ce646f68ac8c248420045cb7b5e/73782911227094328344895653986009542173456616826702744110379126603811542532097> Published Free on Mainnet



OpenSea

Search items, collections, and accounts

Explore Stats Resources Create

Edit

Sell

Panaverse DAO



Panaverse DAO Logo

Owned by [you](#) 1 view

Price History

All time



No item activity yet

Description

By [you](#)

The Logo of the Panaverse DAO

About Panaverse DAO

Details

Listings

Offers



OpenSea

Search items, collections, and accounts

Explore Stats Resources Create



-\$ 0.000
total volume --- floor price --- best offer 0% listed 100% unique owners

Items

Activity

Search by name or attribute

Price low to high



Make collection offer

Status



Updated 2m ago

1 item

Buy Now



On Auction



Price



Quantity



Currency



Panaverse DAO Logo

What are DAI and USDC?



- Dai is a stablecoin cryptocurrency on the Ethereum blockchain which aims to keep its value as close to one United States dollar as possible through a system of smart contracts and the decentralized participants which those contracts incentivize to perform maintenance and governance functions.
- Dai and USDC (US Dollar Coin) are widely considered to be some of the safest stablecoins. Here's why. Stablecoins tout some pretty attractive benefits. As a cryptocurrency that's pegged to an external asset (and therefore stable), stablecoins are framed as the best of both worlds between traditional currency and crypto.
- Unlike USDC, Tether and the majority of other major stable cryptocurrencies, DAI is decentralized, which means that no centralized organization controls the supply of new DAI in circulation.
- USDC and Tether have a reserve of actual US dollars, bonds and other securities that will "back up" every single unit of USDC and tether that exists, and is controlled by a centralized organization.



DAI – Reserves and Liquidity



- The situation of collateral with DAI is a bit different from USDC and relatively more complicated. DAI tokens are actually over-collateralized in the sense that for every DAI coin in existence, there's 150% of crypto assets backing it.
- Compared to other stablecoins which are backed by USD, DAI is backed by collateral on the Maker platform.
- The collateral is deposited with MakerDAO, which accepts a wide variety of coins, including: ETH, USDC, etc.
- The price of DAI is maintained through smart contracts, instead of having a central organisation to keep the price steady.
- This makes DAI a decentralised stablecoin, where it is not being controlled by a central entity.

Panaverse Stablecoin: TrueBlue

Stablecoins: Everything You Need to Know

<https://cryptobriefing.com/stablecoins-everything-you-need-to-know/>

Why DeFi Giants Aave, Curve May Want Their Own Stablecoins

<https://www.coindesk.com/layer2/2022/08/01/why-defi-giants-aave-curve-may-want-their-own-stablecoins/>

Panaverse DAO Plan Under Development: TrueBlue Coin

https://docs.google.com/presentation/d/1ZY43Sdr4AusDZ0duy1S_XmuUh1tllqnbk_IWVwlki2g/edit?usp=sharing

Challenge Assignment: Become a Liquidity Provider on Uniswap (Goerli Testnet)

Part 1: Provide Liquidity to a existing pool

Getting Started

<https://support.uniswap.org/hc/en-us/sections/8122851346573-Getting-Started>

Tutorial: How to Become a Liquidity Provider on Uniswap

<https://opensea.io/collection/panaverse>

Part 2: Create a New Pool and Provide Liquidity

Youtube tutorial on creating a liquidity pool and coin:

<https://www.youtube.com/watch?v=VPWoKAUsMfY>

[choose the v3 Pool].

Step 1: Get some GoerliETH to perform transactions

Step 2: Create your coin

Step 3: Go to uniswap, click on launch app and go to [pool]. And click on Add a pool.

Advanced requirement is that you create a pool of your own Tokens:

<https://tokpie.io/blog/how-create-pool-uniswap-erc20-pair/>

Publish Challenge Assignment: Become a Liquidity Provider on Uniswap (Goerli Testnet)

After you have completed the challenge submit the Your Token's Uniswap Pool URL on:

<https://docs.google.com/forms/d/e/1FAIpQLSdmDMFJNmqdQWNr5fKYrSoZ1u6MbZ4anHGU43uAqqX3j2TXKq/viewform>

Also Share:

Twitter and refer to @Panaverse_edu with hashtags #web3 and #uniswap

Like Facebook Page and post:

<https://www.facebook.com/panaverse.dao>

Facebook Group:

<https://www.facebook.com/groups/panaverse>

Panaverse Channels on Panacloud Discord Server:

<https://discord.gg/GqqDkBwJDr>



What is Aave? AAVE

- Aave is a decentralized lending system that allows users to lend, borrow and earn interest on crypto assets, all without middlemen.
- Its users do not need to trust a particular institution or person to manage their funds. They need only trust that its code will execute as written.
- It enables the creation of lending pools that enable users to lend or borrow 17 different cryptocurrencies.
- Its borrowers must post collateral before they can borrow. Further, they can only borrow up to the value of the collateral they post.
- Borrowers receive funds in the form of a special token known as an aToken, which is pegged to the value of another asset. This token is then encoded so lenders receive interest on deposits.
- A borrower may post collateral in DAI, for example, and borrow in ETH. This allows a borrower to gain exposure to different cryptocurrencies without owning them outright.



How does Aave work? AAVE

- Aave is perhaps best described as a system of lending pools.
- Participants deposit funds they wish to lend, which are then collected into a liquidity pool. Borrowers may then draw from those pools when they take out a loan. These tokens can be traded or transferred as a lender wishes.
- To facilitate this activity, Aave issues two types of tokens: aTokens, issued to lenders so they can collect interest on deposits, and AAVE tokens, which are the native token of Aave.
- The AAVE cryptocurrency offers holders several advantages. For instance, AAVE borrowers don't get charged a fee if they take out loans denominated in the token. Also, borrowers who use AAVE as collateral get a discount on fees.
- AAVE owners can further look at loans before they are released to the general public if they pay a fee in AAVE. Borrowers who post AAVE as collateral can also borrow slightly more.

[Aave Protocol](#) [Governance](#) [Docs](#) [Security](#) [FAQ](#)[Launch App](#)

AAVE LIQUIDITY PROTOCOL

**Earn interest, borrow assets,
and build applications**

\$ 8,029,619,604.71

of liquidity is locked in Aave across 7 networks and over 13 markets.

[Supply](#) [Stake](#) [Borrow](#) [Vote](#)Deposit your Aave into the protocol
and earn rewards for securing the
protocol



Global settings

Dark mode Off Testnet mode On

Language English

Ethereum Market Version 3

Net worth
\$0

Net APY 0 %

Your supplies

Nothing supplied yet

Assets to supply

 Show assets with 0 balance

ETHEREUM GÖRLI FAUCET

Hide —

Assets	Wallet balance	APY	Can be collateral	Supply	Details
ETH	0.0997309	0 %	✓	<button>Supply</button>	<button>Details</button>

Your borrows E-Mode DISABLED

Nothing borrowed yet

Assets to borrow

To borrow you need to supply any asset to be used as collateral.

Assets	Available	APY, variable	APY, stable	Borrow	Details
DAI	0	< 0.01 %	5.33 %	<button>Borrow</button>	<button>Details</button>
EURS	0	0.26 %	8.25 %	<button>Borrow</button>	<button>Details</button>
USDC	0	28.48 %	30.42 %	<button>Borrow</button>	<button>Details</button>
USDT	0	< 0.01 %	5.13 %	<button>Borrow</button>	<button>Details</button>

Ethereum Market Version 3

With testnet Faucet you can get free assets to test the Aave Protocol. Make sure to switch your wallet provider to the appropriate testnet network, select desired asset, and click 'Faucet' to get tokens transferred to your wallet. The assets on a testnet are not "real," meaning they have no monetary value. [Learn more](#)

Test Assets

Asset	Wallet balance	
 DAI	10.00K	<button>Faucet</button>
 EURS	0	<button>Faucet</button>
 USDC	0	<button>Faucet</button>
 Tether	0	<button>Faucet</button>
 AAVE	100.00	<button>Faucet</button>
 ChainLink	0	<button>Faucet</button>
 Wrapped BTC	0	<button>Faucet</button>

AAVE TESTNET Dashboard Markets Faucet More ...

0xed...7109 ⚙

Ethereum Market Version 3

Net worth \$0 Net APY 0 %

Your supplies

Nothing supplied yet

Assets to supply

Show assets with 0 balance ETHEREUM GÖRLI FAUCET

Assets	Wallet balance	APY	Can be collateral	Supply	Details
AAVE	100.00	0 %	✓	Supply	Details
LINK	1,000.00	< 0.01 %	✓	Supply	Details
ETH	0.0994849	0 %	✓	Supply	Details

Your borrows

E-Mode DISABLED

Nothing borrowed yet

Assets to borrow

To borrow you need to supply any asset to be used as collateral.

Assets	Available	APY, variable	APY, stable	Borrow	Details
DAI	0	< 0.01 %	5.33 %	Borrow	Details
EURS	0	0.26 %	8.25 %	Borrow	Details
USDC	0	28.48 %	30.42 %	Borrow	Details
USDT	0	< 0.01 %	5.13 %	Borrow	Details
LINK	0	< 0.01 %	—	Borrow	Details

Supply AAVE



Amount ⓘ

10

\$ 3.00K



Balance 100.00 MAX

Transaction overview

Supply APY

0 %

Collateralization

✓ Enabled

✖ < \$ 0.01 ⓘ

Why do I need to approve? ⓘ

Approve to continue

Supply AAVE

Supply AAVE



Amount ⓘ

10

\$ 3.00K



AAVE

Balance 100.00 MAX

Transaction overview

Supply APY

0 %

Collateralization

✓ Enabled

✖ < \$ 0.01 ⓘ

✓ Approve confirmed

Review approval tx details ↗

Approved

Supply AAVE

 All done!

You Supplied 10.00 AAVE

 Add aToken to wallet to track your balance.

 Add to wallet

[Review tx details](#)

Ok, Close

 Goerli test network

[Assets](#) [Activity](#)

[Portfolio site](#)

	0.0991 GoerliETH	>
	100.000000000... DAI	>
	0.001802015019... UNI	>
	10000000000 ZIA	>
	10 aAAVE	>



What is APY?

- APY is the actual rate of return that will be earned in one year if the interest is compounded.
- Compound interest is added periodically to the total invested, increasing the balance. That means each interest payment will be larger, based on the higher balance.
- The more often interest is compounded, the higher the APY will be.
- The APY on checking, savings, certificate of deposit, or crypto holdings will vary across product and may have a variable or fixed rate.

Annual percentage yield formula

$$\text{APY} = (1 + r / n)^n - 1$$

r = period rate

n = number of compounding periods

APY Example

If you deposited \$100 for one year at 5% interest and your deposit was compounded quarterly, at the end of the year you would have \$105.09. If you had been paid simple interest, you would have had \$105.

The APY would be $[1 + .05/4] * 4 - 1 = .05095 = 5.095\%$.

It pays 5% a year interest compounded quarterly, and that adds up to 5.095%. That's not too dramatic. However, if you left that \$100 for four years and it was being compounded quarterly then the amount your initial deposit would have grown to \$121.99. Without compounding it would have been \$120.

$$\begin{aligned} X &= D[1 + r/n]n^y \\ &= \$100[1 + .05/4]4^4 \\ &= \$100[1.21989] \\ &= \$121.99 \end{aligned}$$

where:

X = Final amount

D = Initial Deposit

r = period rate

n = number of compounding periods per year

y = number of years

staging.aave.com

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AAVE Dashboard Markets Faucet More ... 0xed...7109 ⚙

Ethereum Market Version 3

Net worth \$3.00K Net APY 0%

Your supplies

Balance \$3,000.00 APY 0% Collateral \$3,000.00

Assets	Balance	APY	Collateral
AAVE	10.00 \$3,000.00	0 %	<input checked="" type="button"/> Withdraw <input type="button"/> Supply

Assets to supply

Show assets with 0 balance [ETHEREUM GÖRLI FAUCET](#)

Assets	Wallet balance	APY	Can be collateral	Supply Details
LINK	1,000.00	< 0.01 %	✓	<input type="button"/> Supply <input type="button"/> Details
AAVE	90.00	0 %	✓	<input type="button"/> Supply <input type="button"/> Details
ETH	0.0991245	0 %	✓	<input type="button"/> Supply <input type="button"/> Details

Your borrows

E-Mode DISABLED

Nothing borrowed yet

Assets to borrow

Assets	Available	APY, variable	APY, stable	Borrow Details
DAI	1,500.00	< 0.01 %	5.33 %	<input type="button"/> Borrow <input type="button"/> Details
EURS	1,332.15	0.26 %	8.25 %	<input type="button"/> Borrow <input type="button"/> Details
USDC	1,500.00	28.48 %	30.42 %	<input type="button"/> Borrow <input type="button"/> Details
USDT	1,500.00	< 0.01 %	5.13 %	<input type="button"/> Borrow <input type="button"/> Details
LINK	50.00	< 0.01 %	—	<input type="button"/> Borrow <input type="button"/> Details

Challenge Assignment: Supply and Borrow Assets with Aave Protocol

Supply and Borrow Assets from the Aave Protocol (on a Testnet)

After you have completed the challenge submit the Your Transaction Ether Scan URL for both Supply and Borrow on:

<https://docs.google.com/forms/d/e/1FAIpQLSdmDMFJNmqdQWNr5fKYrSoZ1u6MbZ4anHGU43yAgqX3j2TXKg/viewform>

Also Share:

Twitter and refer to @Panaverse_edu with hashtags #web3 and #uniswap

Like Facebook Page and post:

<https://www.facebook.com/panaverse.dao>

Facebook Group:

<https://www.facebook.com/groups/panaverse>

Panaverse Channels on Panacloud Discord Server:

<https://discord.gg/GgqDkBwJDr>



What is a DAO?

- A DAO, or decentralized autonomous organization, is a blockchain-based organization that rewrites the rules on leadership and governance. It uses smart contracts to replace hierarchical structures. Moreover, it allows independent members of a community to vote on relevant issues, usually with the use of native tokens.
- DAOs have many different purposes and functions. For example, they can be used for the governance of Ethereum dApps. They can also be used to propose and decide on changes on any decentralized platform. Thus, they avoid centralized control among developers or owners. Moreover, DAOs also have a use case in gaming.
- The metaverse, with its vast interactive possibilities, has numerous opportunities for deploying DAOs. Therefore, it is important for anyone who is into blockchain development to know how to create a DAO.

Examples of DAO Tokens

DAO tokens are an important part of DAO design and an essential part when you create a DAO ecosystem. Some of the biggest DAO tokens in the blockchain space today are:

Aave – Aave (AAVE) tokens are used in the world's third-largest dApp and Ethereum's second-largest lending protocol. It facilitates lending and borrowing on the Aave platform, which already boasts having a TVL of \$13 billion.

Maker – Maker (MKR) is used in MakerDAO, DeFi's largest lending platform. It allows users to vote on MakerDAO's parameters, including business logic and risk management systems.

Uniswap – The Uniswap (UNI) token and DEX are widely popular. This platform has about \$10 billion in TVL currently and is the second-largest DEX on Ethereum. Users holding the UNI token can vote on new proposals. However, developers still have a significant say on Uniswap decisions, making it less decentralized than others.



What is Aragon?

- Aragon is an open-source software used to maintain and create decentralized autonomous organizations (DAOs) on the Ethereum blockchain.
- It offers users a built-in model for the collective management of its code.
- The Aragon network software has three main offerings:
- **Aragon client** – a toolkit for developers to create customizable online organizations that aim for more transparent group participation.
- **Aragon network** – an organization that supports the interactions between the platform's community of DAOs.
- **Aragon Association** – a non-profit that manages and allocates the funds raised from Aragon's token sale.



Aragon App New

Aragon Client Classic

DAO Experts

Developers ▼

Community ▼

About ▼

Resources ▼

Create your DAO

The new Aragon app and SDK are coming soon. [Sign up for early access](#)

Govern better, together. Build your DAO now.

Build your Decentralized Autonomous Organization on open-source infrastructure
with governance plugins.

Create your DAO

What is a DAO?

Need help? [Talk with us](#)

Need an expert? [DAO Experts](#)



Aragon App New

Next generation DAO platform that is
simple, modular and adaptable.

[Learn more >](#)



Aragon Client Classic

DAO platform for communities to raise
funds, pay contributors, govern
together and much more.

[Learn more >](#)



Aragon Voice

Gasless and universally verifiable
voting solution for web3.

[Learn more >](#)



Vocdoni

Secure, end-to-end verifiable, and
censorship-resistant voting solution
for your organization.

[Learn more >](#)



Ethereum

⚡ Connect account



Welcome to Aragon

Create your own organization in a few minutes!



Create an organization

Start your organization with Aragon



Open an existing organization

EXPLORE

 Aragon Governance	DEMOCRACY	
 BlankDAO	DEMOCRACY	
 Livepeer	DEMOCRACY	
 MyBit	DEMOCRACY	
 BrightID	DEMOCRACY	
 Lightwave	MEMBERSHIP	

Do you need more information about Aragon? [Visit our homepage](#)



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Create your own organization in a few minutes!



Create an organization

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EXPLORE

 Aragon Governance
DEMOCRACY

 BlankDAO
DEMOCRACY

 Livepeer
DEMOCRACY

 MyBit
DEMOCRACY

 BrightID
DEMOCRACY

 Lightwave
MEMBERSHIP

Ethereum

Connect account



USE ACCOUNT FROM



Metamask



Frame



Fortmatic



Portis



WalletConnect

[Don't have an account?](#)

Do you need more information about Aragon? [Visit our homepage](#)



Welcome to Aragon

Create your own organization in a few minutes!



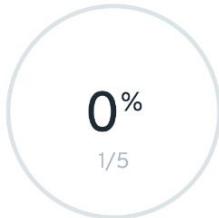
Create an organization

You need at least 0.2 ETH (you have 0.099 ETH).



Open an existing organization

Do you need more information about Aragon? [Visit our homepage](#)

 Oxedb1...7109
Connected to Goerli

1 Select template

- 2 Claim a name
- 3 Configure template
- 4 Review information
- 5 Launch organization

Select template

Create your organization with our pre-configured templates



Company

Use transferable tokens to represent ownership stake in your organization. Decisions are made based on stake-weighted voting.

[View details](#)

Membership

Use a non-transferable token to represent membership. Decisions are made based on one-member-one-vote governance.

[View details](#)

Reputation

Use non-transferable tokens to represent reputation. Decisions are made using reputation voting.

[View details](#)

We would love to get your feedback

Please fill in a [one-question survey](#) to help us improve and create better products.

[Rate my experience](#)



Types of Aragon DAOs?



Company

Use transferable tokens to represent ownership stake in your organization. Decisions are made based on stake-weighted voting.

Membership

Use a non-transferable token to represent membership. Decisions are made based on one-member-one-vote governance.

Reputation

Use non-transferable tokens to represent reputation. Decisions are made using reputation-weighted voting.



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Company



panaverse.aragonid.eth



Configure template



Review information



Launch organization

Claim a name

ORGANIZATION'S NAME

panaverse

.aragonid.eth



Aragon uses the [Ethereum Name Service \(ENS\)](#) to assign names to organizations. The name you choose will be mapped to your organization's Ethereum address and cannot be changed after you launch your organization.

Back

Next: Configure template



Company



panaverse.aragonid.eth



Configure template



Review information



Launch organization

Configure template

Choose your Voting settings below.

SUPPORT %

A horizontal slider with a teal track and a white circular handle. A text box to the right shows "50 %".

MINIMUM APPROVAL %

A horizontal slider with a teal track and a white circular handle. A text box to the right shows "15 %".

VOTE DURATION

1	Days	0	Hours	0	Minutes
---	------	---	-------	---	---------

The support and minimum approval thresholds are strict requirements, such that votes will only pass if they achieve approval percentages greater than these thresholds.

Back

Next: Configure template



Launching your organization

SIGNATURE PROCESS

Create organization
Signature successful



All done!
Your organization is ready

Get started

APPS

Home

Tokens

Voting

Finance

SYSTEM

What do you want to do?



Assign Tokens



Vote



Check Finance



New Payment

Challenge Assignment: Create DAO and Add Members

Create a Company DAO on Aragon Protocol (on a Testnet)

Add 3 or More Members, Create A Vote and Ask Your Members to Vote for it.

After you have completed the challenge submit the Your Transaction Ether Scan URL for DAO Creation on:

<https://docs.google.com/forms/d/e/1FAIpQLSdmDMFJNmqdQWNr5fKYrSoZ1u6MbZ4anHGU43yAggX3j2TXKg/viewform>

Also Share:

Twitter and refer to @Panaverse_edu with hashtags #web3 and #uniswap

Like Facebook Page and post:

<https://www.facebook.com/panaverse.dao>

Facebook Group:

<https://www.facebook.com/groups/panaverse>

Panaverse Channels on Panacloud Discord Server:

<https://discord.gg/GqgDkBwJDr>



What is a IEO?

- In traditional finance, a company might launch an IPO to raise capital, but in the decentralized world of crypto, how can projects fundraise for new token launches? Meet initial exchange offerings.
- IEOs take place on cryptocurrency exchanges. Having the initial listing on a trusted site lends a sense of validity to the new token, which may lead to people believing the exchange has vetted the project and ensured its legitimacy.
- The main difference is that instead of taking place on a random website, sales of new tokens take place on a trusted site. In the case of an IEO, that's a centralized crypto exchange, like **Binance**. For IDOs, that's a decentralized exchange, such as **Polkastarter**.



What is a IDO?



- An IDO is a crypto token offering run on a Decentralized Exchange (DEX). Liquidity pools (LP) play an essential role in IDO's by creating liquidity post-sale.
- A typical IDO lets users lock funds in exchange for new tokens during the token generation event. Some of the raised funds are then added with the new token to an LP before being returned later to the project.
- IDOs provide a cheap and simple way for projects to distribute their tokens.
- IDOs have been around for a while, but they are still evolving and providing new models like the Initial Farm Offering (IFO).

What is Polkastarter?



- It is a Decentralized protocol for launching new ideas and is the leading platform for crypto IDOs, or Initial Decentralized Offerings.
- Polkastarter is the Leading Web3 Fundraising Platform. The platform allows cryptocurrency projects to raise funds by setting up a swap pool based on a fixed purchase rate for tokens.
- Enabling backers to secure early blockchain investments in IDOs, NFTs and Gaming in a secure and compliant multi-chain environment across Ethereum, BNB Chain, Polygon, Celo and Avalanche.
- Polkastarter is a blockchain-based platform that facilitates the creation of cross-chain token pools and auctions.
- Initial-stage blockchain companies that want to generate cash and quickly distribute their tokens often choose this method.
- POLS is the native utility token of the Polkastarter platform and serves several functions within its ecosystem, including liquidity mining, governance, transaction fee payment, and participation in POLS-only pools.

Always make sure the URL is polkastarter.com - bookmark it to be safe.



Participate

Resources

Community

Launch with Polkastarter



Connect Wallet

Get early access to the ideas of tomorrow

Highly-vetted Web3 projects you can trust. Supported by industry-leading creators and funds.

Upcoming sales

Subscribe



RAISE CAPITAL ACROSS ALL MAIN BLOCKCHAIN NETWORKS



BNB CHAIN

SOLANA

Polkadot.

polygon

AVALANCHE

celo

\$49.7M

RAISED CAPITAL

111

IDEAS FUNDED

\$425M

PROJECTS MKT CAP

35,900

UNIQUE PARTICIPANTS



What is a IFO?



- Initial Farm Offerings (IFO) are a brand new type of token sale event popularized by Decentralized Exchange (DEX) platforms, IFO's are utilized as a fundraising event for upcoming protocols.
- It is a new type of token sale event popularized by Decentralized Exchange (DEX) platforms.
- PancakeSwap** is the most popular of them all, utilizing this unique fundraising event for upcoming projects.
- Initial Farming Offerings are a brand new type of fundraising activity that uses farming events to generate funds for participating projects.
- Users can participate in “pre-sales” hosted through DEX’s to get tokens before listing on respective exchanges.
- Typically the DEX teams will thoroughly vet projects before hosting official IFO’s.
- The IFO process benefits both new projects, Pancakeswap, and its users; the IFO allocates farming rewards for PCS users while also providing new projects an incentivized liquidity pool on PCS.
- This system allows sustainable yields to be generated for PCS users, and it creates initial liquidity for the respective token.

pancakeswap.finance/ifo

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PHISHING WARNING: please make sure you're visiting <https://pancakeswap.finance> – check the URL carefully.

PancakeSwap Trade Earn Win NFT ...

\$4.602 BNB Smart Chain Connect Wallet

Latest Finished

IFO: Initial Farm Offerings

Buy new tokens launching on BNB Smart Chain

How does it work?

Stake CAKE
Stake, Earn – And more!

FLEXIBLE APY: 2.87% Up to 61.40%

START EARNING

Connect Wallet

Auto Details

Token Vesting

WOMBEX

Start in 3 h 35 m

Public Sale

ON SALE 3,000,000 WMX
75% of total sale

Connect Wallet

Private Sale

ON SALE 1,000,000 WMX
25% of total sale

Connect Wallet

Max. CAKE entry: 0.000 ~(\$0)
Funds to raise: \$900,000
Price per WMX: \$0.3

Max. CAKE entry: 0.000 ~(\$0)
Funds to raise: \$300,000
Price per WMX: \$0.3

Challenge Assignment: Fundraising for New Web3 Projects

Create a Google Slide Presentation targeting Entrepreneurs who are starting a Web3 project and want to raise funds for it. Advise them on what are the different alternative available and which one they should choose and why.

After you have completed the challenge submit the Presentation URL on:

<https://docs.google.com/forms/d/e/1FAIpQLSdmDMFJNmqdQWNr5fKYrSoZ1u6MbZ4anHGU43yAggX3j2TXKg/viewform>

Also Share:

Twitter and refer to @Panaverse_edu with hashtags #web3 and #uniswap

Like Facebook Page and post:

<https://www.facebook.com/panaverse.dao>

Facebook Group:

<https://www.facebook.com/groups/panaverse>

Panaverse Channels on Panacloud Discord Server:

<https://discord.gg/GqgDkBwJDr>



What is ENS?



- The Ethereum Name Service (ENS) is a distributed, open, and extensible naming system based on the Ethereum blockchain.
- ENS's job is to map human-readable names like 'zia.eth' to machine-readable identifiers such as Ethereum addresses, other cryptocurrency addresses, content hashes, and metadata.
- ENS has similar goals to DNS, the Internet's Domain Name Service, but has significantly different architecture due to the capabilities and constraints provided by the Ethereum blockchain.
- Like DNS, ENS operates on a system of dot-separated hierarchical names called domains, with the owner of a domain having full control over subdomains.

ens.domains

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ENS

Governance Community Team Jobs Docs EN Go to app

ENS swag at devcon Bogota
If you are going to Devcon, register at [swag.ens.domains](#) to get your personalised ENS swag! →

Decentralised naming for wallets, websites, & more.

SEARCH REGISTER MANAGE

2 of 3

EN

ENS Yourname.eth Search

ENS Y

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Goerli Network (0xA31...17Ca)

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A printed copy of the ENS constitution and its signers is now available in hardcover and →
ultra-limited edition of 50



**ETHEREUM
NAME SERVICE**

 zia.eth

EN ▾

[Search](#)



Search names or addresses

EN

Search

**ENS constitution book now available**

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0xedb...7109

• Goerli Network

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zia.eth



Register

Details

Subdomains

Increase registration period to avoid paying gas every year



1 year



0.219 ETH

Registration Period

Registration price to pay

0.219 ETH + at most 0.001 ETH gas fee = at most 0.220 ETH

Estimated Total (Price + Gas). The gas price is based at 2 Gwei

Registering a name requires you to complete 3 steps

Notify Me

* Favorite the name for easy access in case you close out of your browser.

1

Request to register

Your wallet will open and you will be asked to confirm the first of two transactions required for registration. If the second transaction is not processed within 7 days of the first, you will need to start again from step 1.

2

Wait for 1 minute

The waiting period is required to ensure another person hasn't tried to register the same name and protect you after your request.

3

Complete Registration

Click 'register' and your wallet will re-open. Only after the 2nd transaction is confirmed you'll know if you got the name.

Request To Register



Search names or addresses

EN

Search



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0xedb...7109

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Disconnect

zia.eth



Register

Details

Subdomains

My Account

Favourites

FAQ

About

You'll be able to manage your name soon.

* Favorite the name for easy access in case you close out of your browser.

Notify Me

1

Request to register

Your wallet will open and you will be asked to confirm the first of two transactions required for registration. If the second transaction is not processed within 7 days of the first, you will need to start again from step 1.

2

Wait for 1 minute

The waiting period is required to ensure another person hasn't tried to register the same name and protect you after your request.

3

Complete Registration

Click 'register' and your wallet will re-open. Only after the 2nd transaction is confirmed you'll know if you got the name.



Step 1



Step 2



Step 3

Click register to move to the 3rd step

Register

← → ⌂ 🔒 app.ens.domains/name/zia.eth/register

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EN Search

 ENS |

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A printed copy of the ENS constitution and its signers is now available in hardcover and ultra-limited edition of 50 [→](#)

 0xedb...7109 • Goerli Network [Disconnect](#)

zia.eth  [Register](#) Details Subdomains

You've completed all the steps, manage your name now!

* Favorite the name for easy access in case you close out of your browser. [Notify Me](#)

1 Request to register
Your wallet will open and you will be asked to confirm the first of two transactions required for registration. If the second transaction is not processed within 7 days of the first, you will need to start again from step 1.

2 Wait for 1 minute
The waiting period is required to ensure another person hasn't tried to register the same name and protect you after your request.

3 Complete Registration
Click 'register' and your wallet will re-open. Only after the 2nd transaction is confirmed you'll know if you got the name.

Step 1 Step 2 Step 3

 [Remind Me](#) [Manage name](#)  [Set As Primary ENS Name](#)

This screenshot shows the final step of registering the ENS name 'zia.eth'. It displays three steps: Request to register, Wait for 1 minute, and Complete Registration. The 'Complete Registration' step is highlighted with a green bar. The user's wallet address '0xedb...7109' is shown on the left, and a sidebar on the left includes links for My Account, Favourites, FAQ, and About. The top navigation bar shows the URL 'app.ens.domains/name/zia.eth/register' and various browser tabs.

app.ens.domains/address/0xedb18bf93e9c135634f488d12c143909728f7109

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0xedb18bf93e9c135634f488d12c143909728f7109

[View on Etherscan](#)



Disconnect

My Account

Favourites

FAQ

About

Primary ENS Name (reverse record): not set

This designates one of your ENS names to represent your Ethereum account and act as your cross-platform web3 username and profile. You can only have one Primary ENS Name per Ethereum account and can change it at any time.

Select one of your ENS names

Only ENS names that point to your Ethereum account can be set as your Primary ENS Name.

Cancel

Save

Registrant

Controller

Remind Me

Extend Selected

Expiry Date



zia.eth

Expires 2023.10.23 at 15:52 (UTC+05:00)





Search names or addresses

EN ▾

Search

Primary ENS Name Release Details Not Set

This designates one of your ENS names to represent your Ethereum account and act as your cross-platform web3 username and profile. You can only have one Primary ENS Name per Ethereum account and can change it at any time.

Select one of your ENS names

Only ENS names that point to your Ethereum account can be set as your Primary ENS Name.

Cancel

Save

0xA31...17Ca
• Main Network

Disconnect

My Account

Favourites

FAQ

About

Registrant

Controller

Remind Me

Extend Selected

Expiry Date



panacloud.eth

Expires 2024.09.06 at 03:31 (UTC+05:00)



ziakhan.eth

Expires 2024.09.06 at 03:38 (UTC+05:00)



panaverseco.eth

Expires 2024.09.08 at 16:44 (UTC+05:00)



Challenge Assignment: Register Your Domain at ENS Service

Register Your Personal Domain at ENS Website on the Goerli Testnet

Also Share:

Twitter and refer to @Panaverse_edu with hashtags #web3 and #ens

Like Facebook Page and post:

<https://www.facebook.com/panaverse.dao>

Facebook Group:

<https://www.facebook.com/groups/panaverse>

Panaverse Channels on Panacloud Discord Server:

<https://discord.gg/GggDkBwJDr>



What are SoulBound Tokens SBTs?



- The SoulBound Tokens are the non-transferable tokens representing a person's identity utilizing the technology of blockchain.
- Soulbound tokens are just permanent, non-transferable NFTs, meaning that they can't be given away or taken from your private blockchain wallet.
- This could include work history, medical records, and any information that develops an entity or a person. The wallets that issue or hold this type of record are known to be the particular Souls.
- Individuals can have multiple souls or wallets representing different segments of their lives. Such as, you can have credential sources for your specific history of work and a medical soul, which is referred for the records related to health.
- The SBTs and the respective souls allow you to develop a significant verifiable, digital Web3 reputation for your experience and actions.
- SBT will be a token that will be non-transferable as well as one of a kind. The platform of NFT represents only the property and assets, whereas the SBT will represent an entity's reputation or a person.
- Unlike NFT, SBTs have zero monetary value; once issued, they cannot be traded in someone's wallet.



Use cases of SBTs?

- **Education History** - Your University can be a soul issuing of the SBTs, and you would particularly like souls on the receiving end. The SBT would effectively store your credentials, proving that you hold legitimate qualifications and are a member of that respective University. Simply said, SBT can function as required proof of your attendance at the University.
- **Job applications** - Hypothetically, as a job applicant, you can submit all your prior work activities history and the certificate of professionalism utilizing the official SBTs the previous institutions and companies accounted for. These particular SBTs can function as valid proof of the number of skill certificates.
- **Health records** - Switching the healthcare providers or doctors can be generated utilizing SBTs that hold your medical records. In theory, the SBT can replace the traditional slow procedure of filling out the documents with paperwork identifying the medical history and going from side to side with someone on your phone.
- **Banks** - It enables people to create verifiable online reputations based on previous deeds. This may simplify monitoring a user's history of decentralized finance (DeFi) borrowing and loan disbursements.



How do Soulbound Tokens work?

- Yes, anyone can say they went to Harvard by marking it as their alma mater on Facebook.
- But with SBTs, Harvard's "Soul" (aka their private wallet) would have to grant your "Soul" (aka your private wallet) an SBT of a diploma for you to be able to effectively make that claim. In this respect, SBTs can be distributed amongst members of a group or institution as proof of affiliation. This would make it next to impossible for people to claim false credentials.
- However, what happens when a person or organization sends your Soul an SBT that you don't want? SBTs are permanent, so are you stuck with them forever?
- Ideally, no. For the system to work effectively, the team stated that it must include features that let individuals hide an SBT from public view or destroy it. However, since the system doesn't exist yet, the actual mechanics of this remains unclear.

0x...817Ca

Wallet Connected! 🎉

You do not yet have a Masa soulbound identity

Create identity

masa

0x...817Ca

Name your soul

Claim your soul name to identify your web3 soulbound identity

Soul name*

zia.soul

Available

Registration period

- 2 years +

Payment asset

ETH

Registration price

0.008917708396816888 ETH

Claim your soul

masa

0x...817Ca

Hi zia.soul, get started! 🎉

[See in OpenSea](#)

Use your soulbound identity to unlock the power of web3 🚀

Build soul links! 🚧

Link credentials to your soul to unlock
the power of web3



Soul names

Register soul names that are
tradable on OpenSea

Available



Credit score

Generate a soulbound
decentralized credit score

Available

Use your soul! 🌟

Unlock the power of web3 with your
soulbound identity



Souldrops

Access souldrops and
rewards

Coming soon



Defi loans

Access and fund defi loans with
your soulbound identity

Coming soon

Import tokens to your wallet



What is a Hardware Wallet?



- Hardware wallets are one of the most secure methods for storing cryptocurrency.
- A Hard Wallet is a physical storage device that stores private keys, tokens, or cryptocurrencies. These devices may be flash drives or hard disk drives. Hard Wallets are usually more secure than soft wallets because of its physical offline nature and portability.
- Although hardware wallets are very secure, they are not suitable for everyone, especially not for inexperienced users. Typically, a hardware wallet is cumbersome and includes relatively complex operations and settings that are not beginner-friendly. A hardware wallet user has to back up their information regularly in case of loss, theft, or destruction.
- However, if it is peace of mind that you are after and you don't require the flexibility that comes with hot wallets, then a hardware wallet is usually the best solution.

How to Use a Hardware Wallet?

Every hardware wallet is a little different, but the steps are generally the same:

1. Connect the hardware wallet to a computer or smartphone
2. Upon setting up the device, you will need to set a PIN code to add an additional layer of security on the device
3. The app of your hardware wallet will provide you with a wallet address (public key) for sending and receiving crypto
4. When you send tokens from your hardware wallet to another address, confirm the transaction by physically inputting the PIN on the device
5. Wait for confirmation of the transaction



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LEDGER

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17,686.48 PKR

VAT and duty not included



1469 Reviews



Matte Black

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Tech specs

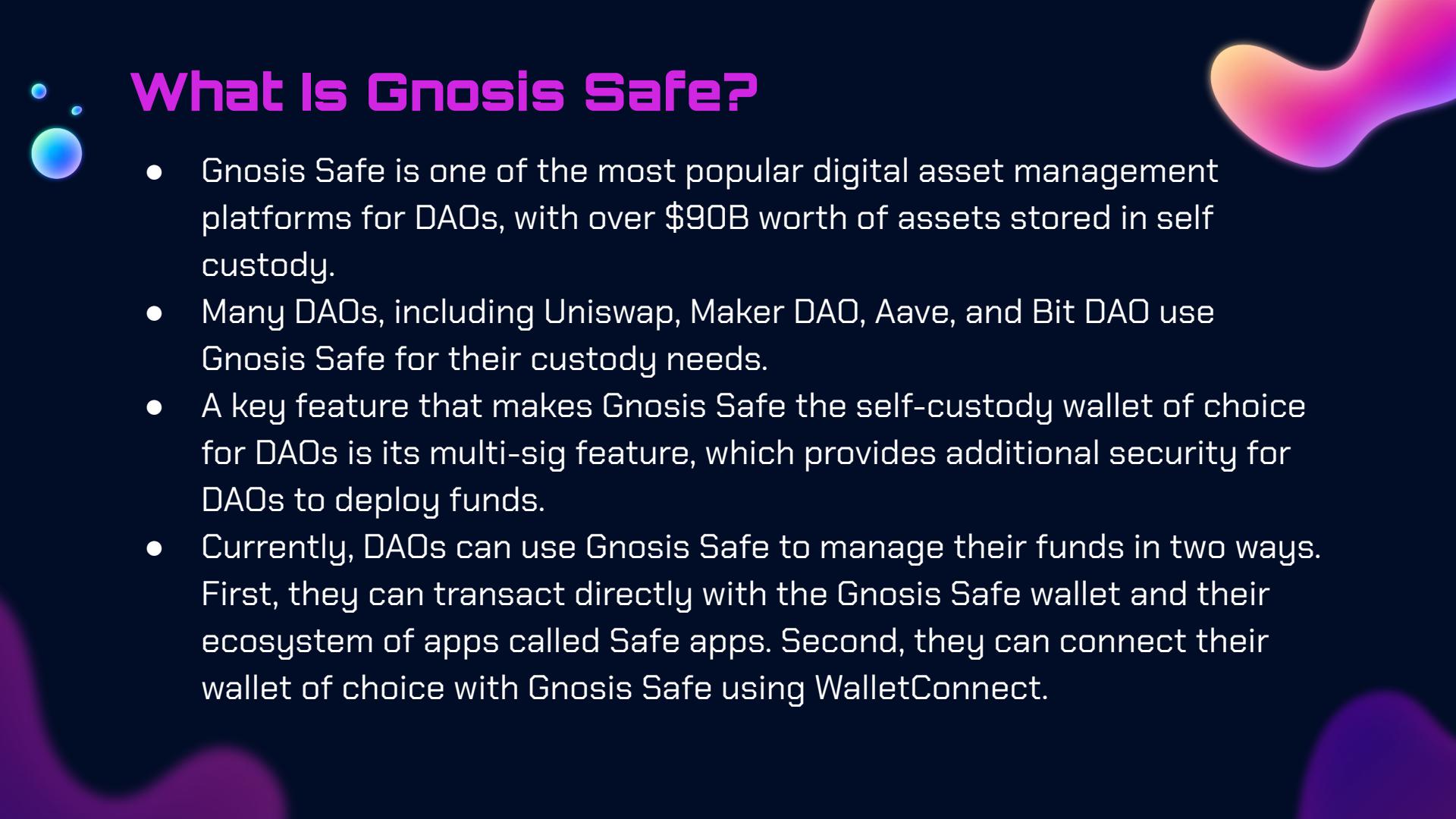
+



What Is Multisignature Wallets (Multisig)?



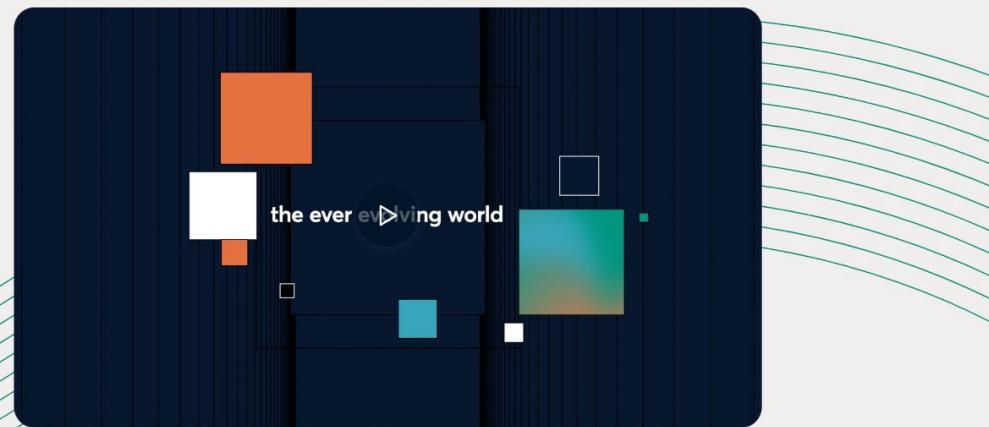
- As the name clearly implies, multisig wallets are crypto wallets that need multiple signatures.
- You would need two or more private keys for signing and sending a transaction with multisig wallets.
- The most promising advantage of using multi-signature addresses implies the possibility for two or more users to sign documents as a group.
- The co-owners and the signatories for shared wallets are termed as 'copayers.'
- Improved security with multisig wallets as they store private keys in different locations.
- All co-payers associated with the wallet can view the details of different transactions and funds in the wallet.
- Multiple co-payers have to sign a transaction for sending funds from a multisig wallet, thereby enhancing its security.



What Is Gnosis Safe?

- Gnosis Safe is one of the most popular digital asset management platforms for DAOs, with over \$90B worth of assets stored in self custody.
- Many DAOs, including Uniswap, Maker DAO, Aave, and Bit DAO use Gnosis Safe for their custody needs.
- A key feature that makes Gnosis Safe the self-custody wallet of choice for DAOs is its multi-sig feature, which provides additional security for DAOs to deploy funds.
- Currently, DAOs can use Gnosis Safe to manage their funds in two ways. First, they can transact directly with the Gnosis Safe wallet and their ecosystem of apps called Safe apps. Second, they can connect their wallet of choice with Gnosis Safe using WalletConnect.

The most trusted
platform to manage
digital assets on
Ethereum

[Get in touch](#)[How it works](#)



What is a Blockchain?

- A blockchain is a distributed database or ledger that is shared among the nodes of a computer network. As a database, a blockchain stores information electronically in digital format.
- One key difference between a typical database and a blockchain is how the data is structured.
- A blockchain collects information together in groups, known as blocks, that hold sets of information. Blocks have certain storage capacities and, when filled, are closed and linked to the previously filled block, forming a chain of data known as the blockchain.
- All new information that follows that freshly added block is compiled into a newly formed block that will then also be added to the chain once filled.
- A database usually structures its data into tables, whereas a blockchain, as its name implies, structures its data into chunks (blocks) that are strung together. This data structure inherently makes an irreversible timeline of data when implemented in a decentralized nature. When a block is filled, it is set in stone and becomes a part of this timeline.



How Does a Blockchain Work?



A Visual Blockchain Demo, Watch Video

https://www.youtube.com/watch?v=_160oMzbIY8

How Hash Works, learn by doing it:

<https://andersbrownworth.com/blockchain/hash>

How Block is mined, learn by doing it:

<https://andersbrownworth.com/blockchain/block>

How a Chain of Blocks is put together, learn by doing it:

<https://andersbrownworth.com/blockchain/blockchain>

Distributed Blockchain demo:

<https://andersbrownworth.com/blockchain/distributed>

Public / Private Keys and Signing

Watch Video

https://www.youtube.com/watch?v=xIDL_akeras

Tokens, learn by doing it:

<https://andersbrownworth.com/blockchain/tokens>

Coinbase Transactions, learn by doing it:

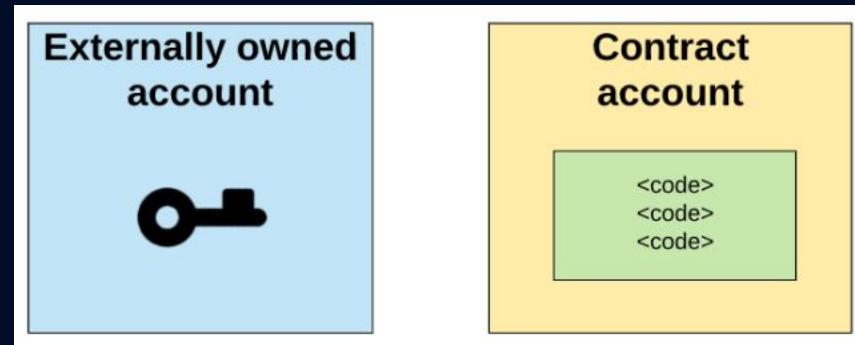
<https://andersbrownworth.com/blockchain/coinbase>

Addresses

One of Ethereum's foundational technologies is *cryptography*

Two types of Accounts

1. Externally owned Accounts (EOA)
2. Contract Account

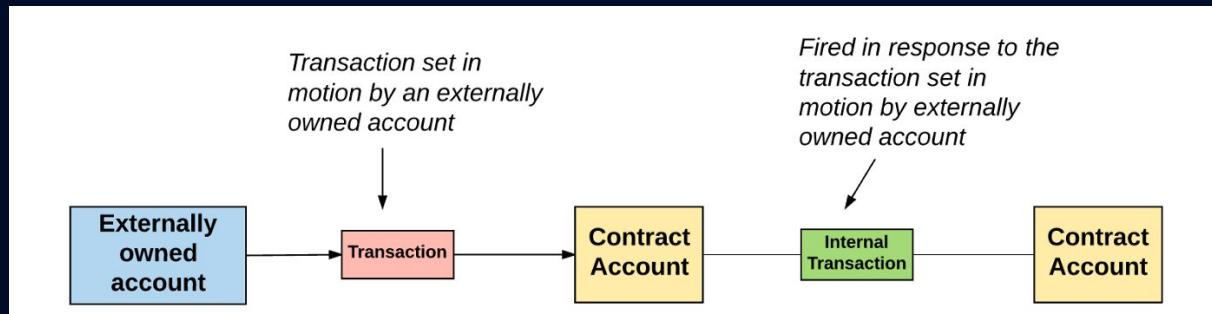


Ownership of Ether by EOAs is established through

1. Digital private keys,
2. Ethereum addresses, and
3. Digital signatures

Addresses

- An externally owned account can send messages to other externally owned accounts OR to other contract accounts by creating and signing a transaction using its private key.



- Unlike externally owned accounts, contract accounts can't initiate new transactions on their own

• .Keys



Private keys are not used directly in the Ethereum system.

- ◆ Account addresses are derived directly from private keys.
- ◆ Private key uniquely determines a single Ethereum address, also known as an account.

Access and control of funds is achieved with digital signature

- ◆ Ethereum transactions require a valid digital signature to be included in the blockchain.
- ◆ Anyone with a copy of a private key has control of the corresponding account and any Ether it holds.
- ◆ Contracts account are not backed by public-private key pairs



Public Key Cryptography and Cryptocurrency



In Ethereum, we use public key cryptography (also known as asymmetric cryptography) to create the public–private key pair.

Together, they represent an Ethereum account by providing, respectively, a publicly accessible account handle (the address) and private control over access to any Ether in the account and over any authentication the account needs when using smart contracts.

The private key controls access by being the unique piece of information needed to create digital signatures, which are required to sign transactions to spend any funds in the account. Digital signatures are also used to authenticate owners or users of contracts

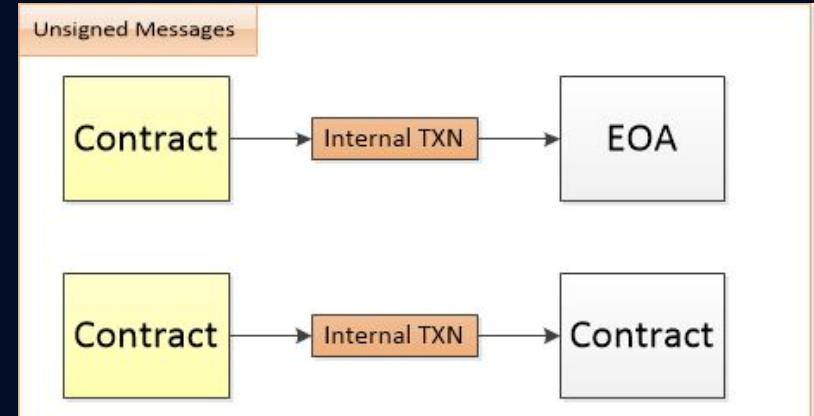
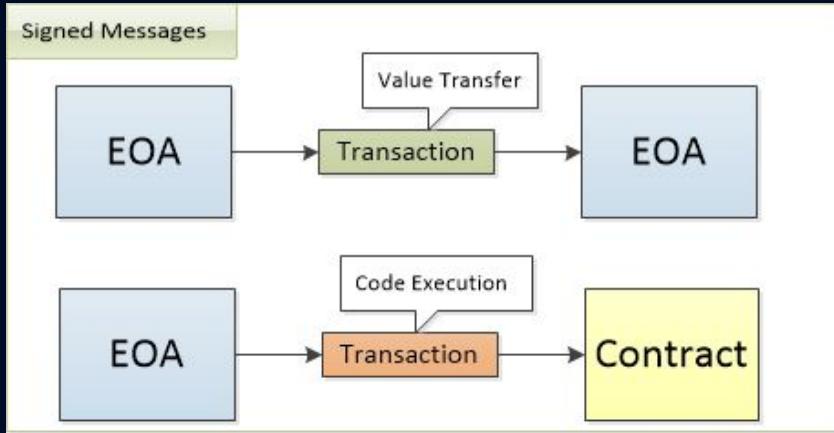
Ethereum transaction is basically a request to access a particular account with a particular Ethereum address



Transactions

- Transactions are **signed messages originated by an externally owned account (EOA)**, transmitted by the Ethereum network, and **recorded on the Ethereum blockchain**.
- Transactions are the only things that can **trigger a change of state**, or **cause a contract to execute** in the EVM.
- Ethereum is a global singleton state machine, and transactions are what make that state machine "tick," changing its state.
- **Contracts don't run on their own.** Ethereum doesn't run autonomously. Everything **starts with a transaction**.

Type of Transactions





Transaction Structure



Nonce	A sequence number, issued by the originating EOA, used to prevent message replay. This number represents the number of transactions sent from the account's address
Gas Price	The price of gas (in wei) the originator is willing to pay
Gas Limit	The maximum amount of gas the originator is willing to buy for this transaction
Recipient	The destination Ethereum address
Value	The amount of ether to send to the destination
Data	The variable-length binary data payload
v,r,s	The three components of an ECDSA digital signature of the originating EOA



Digital Signatures



- Every Ethereum transaction, apart from its actual payload, contains a signature – a cryptographic proof that the transaction was created by the private key holder. A signature is unique for each [payload, private key] combination.
- They are used to prove ownership of an address without exposing its private key.
- This is based on mathematical formulas. We take an input message, and a private key, we get a number as output, which is the signature.
- In order to verify a message, we need the original message, the address of the private key it was signed with, and the signature itself.

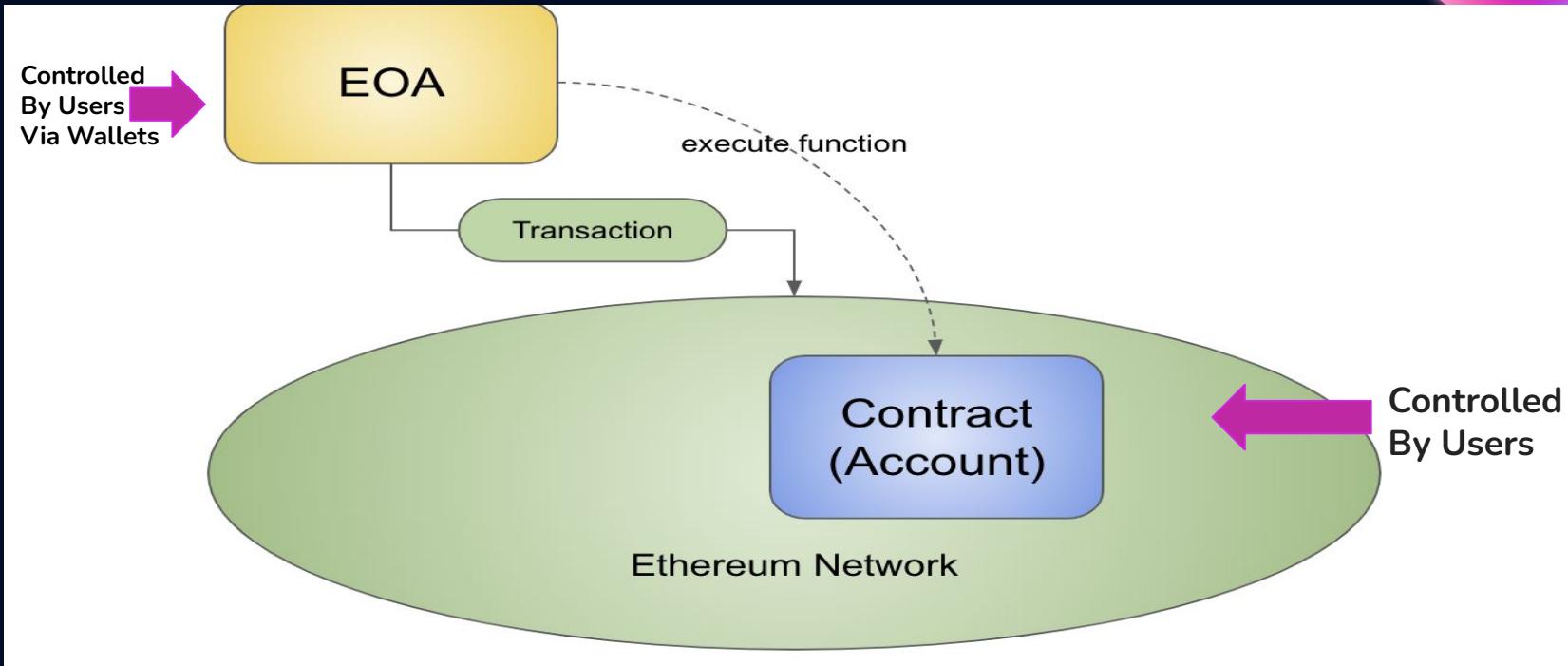


Smart Contract



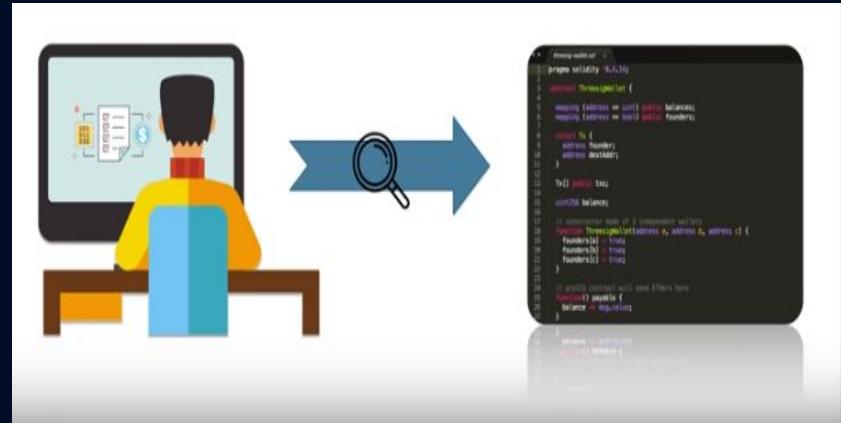
- When smart people hear the term “smart contracts”, their imaginations tend to run wild
- A smart contract is just a **fancy name** for code that runs on a blockchain, and interacts with that blockchain’s state.
- A smart contract is a **piece of code** that is stored on an blockchain, triggered by blockchain transactions and which reads and writes data in that blockchain’s database.

Smart Contracts & Solidity



Smart Contract

- Computer Program
- Immutable
- Deterministic
- EVM Context
- Decentralized World Computer



In the 1990s, cryptographer Nick Szabo coined the term and defined it as “a set of promises, specified in digital form, including protocols within which the parties perform on the other promises.”



Life Cycle of a Smart Contract

- Written in a **high-level language**, such as **Solidity**
- Compiled to the low-level **bytecode** that runs in the **EVM**.
- **Deployed** using a special *contract transaction*
- **Contract Address can be used** in a transaction as the **recipient** for **Sending funds** to the contract or **calling** one of the **contract's** functions
- **Contracts only run if they are called by a transaction**
- Contracts never run “**on their own**” or “**in the background**.”
- Smart contracts are not executed "**in parallel**" in any sense

Smart Contract Execution

- **Can call another contract** that can call another contract, and so on,
- **First contract** in a chain of execution will always have been **called by a transaction from an EOA**
- **Recorded only if all execution terminates successfully**, otherwise **Roll Back**
- **Failed transaction is still recorded** as having been attempted,
- **Ether spent** on gas for the execution **is deducted from originating account**,
- Otherwise has **no other effects on contract or account state**

Deleting a Smart Contract

- Contract's code cannot be changed
- By Removing the code and its **Internal state (storage)** from its address,
 - Leaving a blank account.
- Executing an EVM opcode called **SELFDESTRUCT**
- Costs “**negative gas**,” a gas refund (Incentive for releasing network resources)
- **Does not remove the transaction history** (past) of the contract.
 - IMMUTABILITY
- SELFDESTRUCT capability will only be available if the contract to have that functionality.





Solidity

- Created by **Dr. Gavin Wood**
- **Explicitly for writing smart contracts**
- The main "product" of the Solidity project is the **Solidity compiler, solc**,
- Converts programs written in the Solidity language to **EVM bytecode**.
- Each version of the Solidity compiler **compiles a specific version of the language**.

Use Case 1: Contacting External Service

Smart Contract that changes its behavior in response to some external event.

First User Case:

An agricultural insurance policy pays out conditionally based on the quantity of rainfall in a given month.

Because source is outside the blockchain, there is no guarantee that every node will receive the same answer.

Possible Solution (But Not Allowed):

The smart contract waits until the predetermined time, retrieves the weather report from an external service and behaves appropriately based on the data received.

• Use Case 1: Contacting External Service

Problem:

Because the source is outside of the blockchain, there is no guarantee that every node will receive the same answer. Since the smart contracts are executed independently by every node.

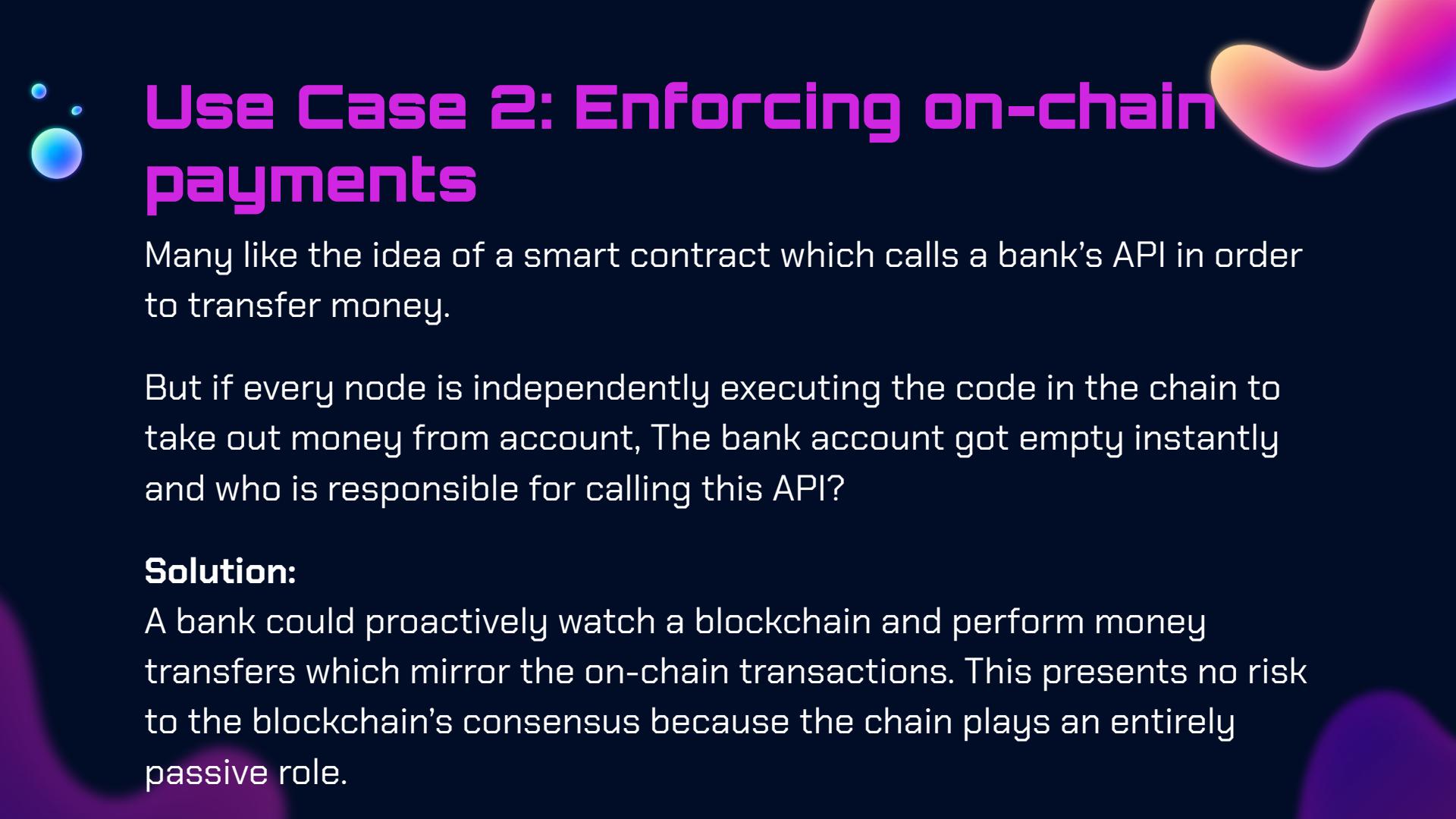
Perhaps the source will change its response in the time between requests from different nodes, or perhaps it will become temporarily unavailable. Either way, consensus is broken and the entire blockchain dies.

Use Case 1: Contacting External Service

Workaround:

Oracle pushes the data onto the blockchain rather than a smart contract pulling it in.

Instead of a smart contract **initiating the retrieval of external data**, one or more trusted parties (“**oracles**”) **creates a transaction** which embeds that data in the chain. Every node will have an identical copy of this data, so it can be safely used in a smart contract state computation.



Use Case 2: Enforcing on-chain payments

Many like the idea of a smart contract which calls a bank's API in order to transfer money.

But if every node is independently executing the code in the chain to take out money from account, The bank account got empty instantly and who is responsible for calling this API?

Solution:

A bank could proactively watch a blockchain and perform money transfers which mirror the on-chain transactions. This presents no risk to the blockchain's consensus because the chain plays an entirely passive role.



Important Observation



1. Both use cases require a **trusted entity to manage** the interactions between the blockchain and the outside world. **This creates centralization**
2. An oracle which provides external information is simply writing that information into the chain. And a service which mirrors the blockchain's state in the real world is doing nothing more than reading from that chain. In other words, **any interaction between a blockchain and the outside world is restricted to regular database operations.**

2. Enforcing on-chain payments

Smart Bond:

The idea is for the **smart contract code to automatically initiate the payments** at the appropriate times, avoiding manual processes and **guaranteeing that the issuer cannot default**.

Of course, in order for this to work, the funds used to make the payments **must live inside the blockchain** as well, **otherwise a smart contract could not possibly guarantee their payment**.

The above makes a smart bond is either **pointless for the issuer**, or **pointless for the investor**.

2. Enforcing on-chain payments

From an **investor's perspective**, the whole point of a bond is **its attractive rate of return, at the cost of some risk of default**.

And **for the issuer**, a bond's purpose is to **raise funds for a productive but somewhat risky activity**, such as building a new factory.

There is **no way** for the **bond issuer to make use of the funds** raised, while simultaneously guaranteeing that the investor will be repaid.

It should not come as a surprise that the **connection between risk and return is not a problem that blockchains can solve**.

3. Hiding Confidential Data

The biggest challenge in deploying blockchains is the radical transparency which they provide.

10 banks set up a blockchain together, and two conduct a bilateral transaction, this will be immediately visible to the other eight.

Wrong Assumption:

Every Smart contract is owner of its data and it has full control over it. It's impossible for other Smart Contract to read data directly.



3. Hiding Confidential Data



- If one smart contract can't access another's data, have we solved the problem of blockchain confidentiality?
- Does it make sense to talk of hiding information in a smart contract?

WHY?

The data is still **stored on every single node** in the chain. It's in the memory or disk of a system which that participant completely controls. And there's nothing to stop them reading the information from their own system, if and when they choose to do so.

What smart contract are for?

Blockchains enable data disintermediation, and this can lead to significant savings in complexity and cost.

In a peer-to-peer financial ledger, each transaction must preserve the total quantity of funds, otherwise participants could freely give themselves as much money as they liked.

The Ethereum Method

All modifications to a contract's data must be performed by its code.

To modify a contract's data, blockchain users send requests to its code, which determines whether and how to fulfill those requests.

The smart contract for a financial ledger performs the same three tasks as the administrator of a centralized database:

1. Checking for sufficient funds,
2. Deducting from one account and
3. Adding to another.

Ethereum-style smart contracts offer greater flexibility.



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The Web 3.0 & Metaverse Team

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A screenshot of a computer monitor displaying a web page. The page has a green header with white text that reads "Certified Web 3.0 and Metaverse Developer: A Nationwide Program in Karachi, Lahore, Islamabad, Peshawar, and Faisalabad". Below the header, there is smaller text: "Getting Ready for the Next Generation and Future of the Internet - Join a 13 Trillion Dollar Industry with 5 Billion Users". The main content area is white with black text: "Certified Web 3.0 and Metaverse Developer: A Nationwide Program in Karachi, Lahore, Islamabad, Peshawar, and Faisalabad". At the bottom, there is a blue button with white text that says "APPLY FOR ADMISSION NOW".

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