An overview of DeFi, 0x Protocol, 0x API

Guest Lecture @ UC Berkeley

BLOCKCHAIN
AT BERKELEY

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👋

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SFPython 🇮🇹 🚴

What you will learn today

- A brief overview of DeFi
- A deep dive inside of 0x Protocol
- 0x API - the community owned liquidity API
- Workshop: learn how to swap tokens in your web-app using the 0x API
- Homework 📕

All forms of value will be eventually represented as tokens

ERC-20

Voting Power

MKR 0X

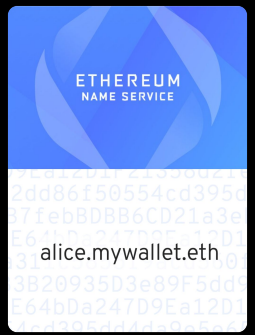
Stable Coin

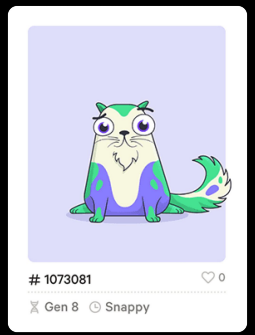
USDC DAI

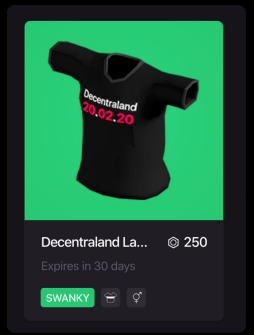
Personal Tokens

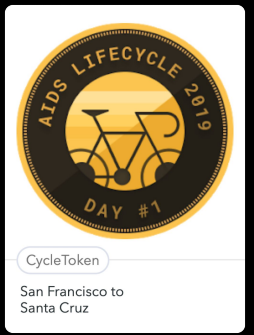
$BOI $TOM

NFT (ERC-721)





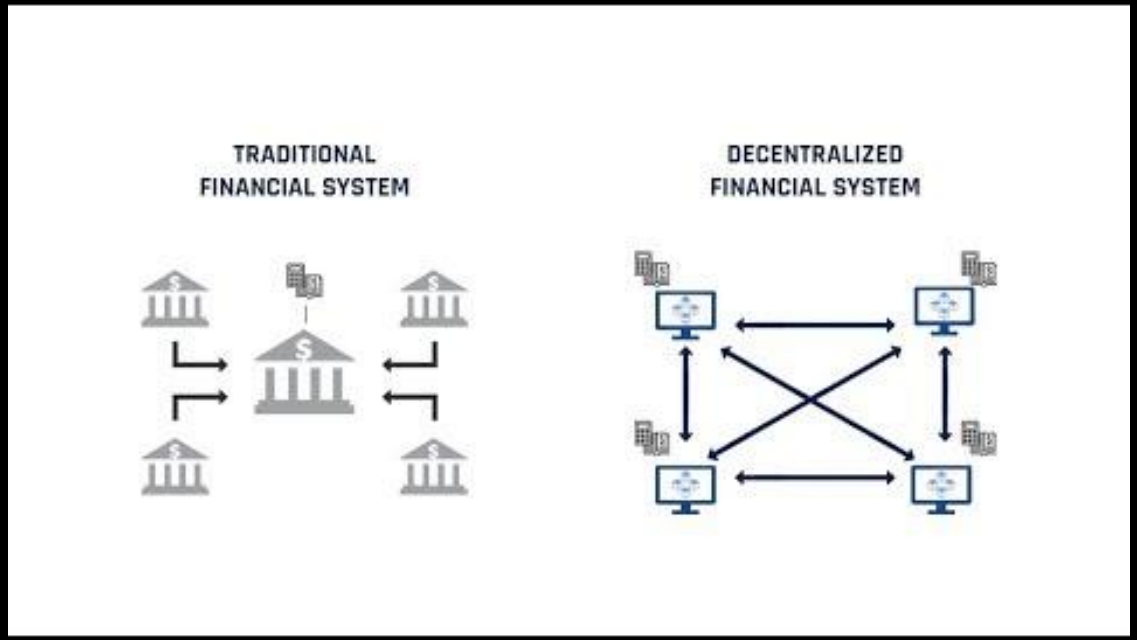




A brief overview of DeFi

Financial services on the Blockchain

What is DeFi

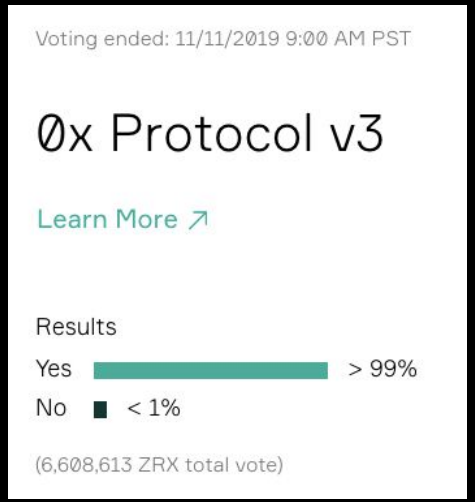

TRADITIONAL
FINANCIAL SYSTEM
DECENTRALIZED
FINANCIAL SYSTEM

Users hold custody of their own funds

Users don’t push their funds into a decentralized financial service, instead they give a smart contract an “allowance” to pull funds out.

Governance of financial services

DeFi apps create voting mechanisms that ensure accountability to users, allowing them to suggest, debate, and drive the direction of the product



Composability of DeFi apps

DeFi applications are composable relying on the base layer of the Blockchain. Within one single ETH transaction, you can interact atomicly with many applications.

- Build on the Progress of Others
- Build for interoperability
- Think “Money Legos”

Credits: https://our.status.im/whats-with-defi-and-money-legos/

Decentralized Exchanges - Trading ERC20 Tokens

Traditional Exchange

- Custodial: Risk of hacks
- Risk of downtime
- Location-based access
- Must pay to list your token

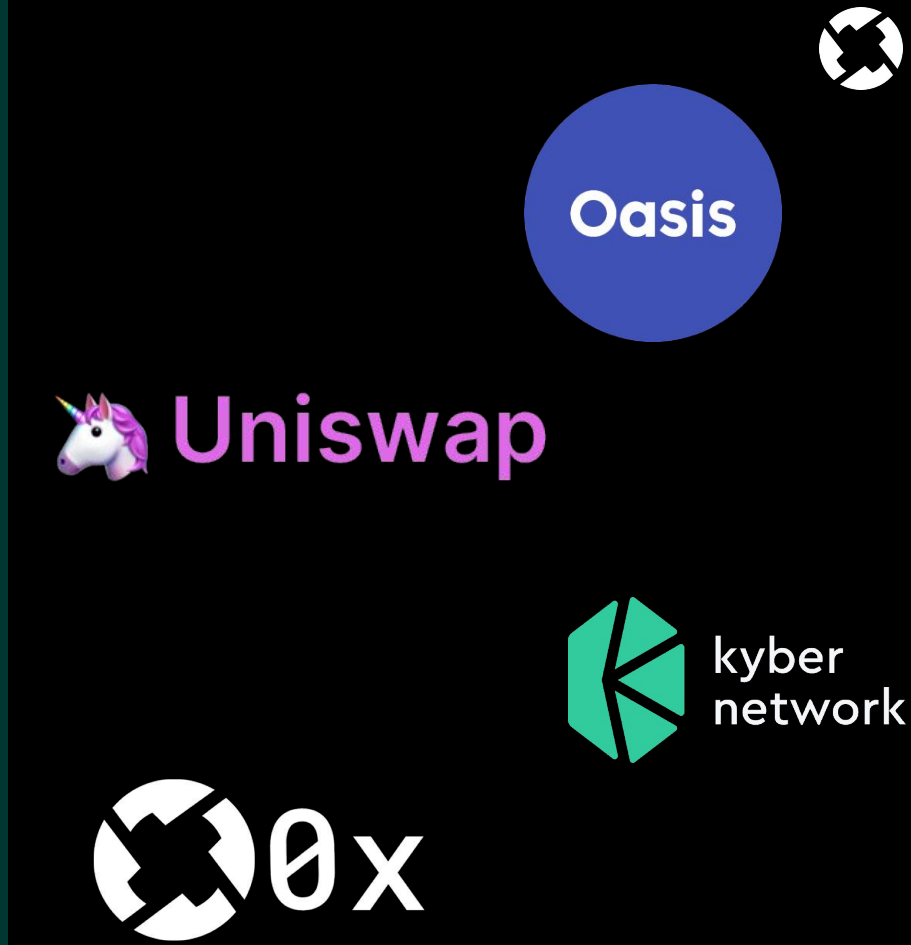
Decentralized Exchanges

- Transact peer-to-peer through open source smart contracts
- Self-custody
- Open globally
- Composability and interoperability
- All token supported, enabling the discovery of new markets

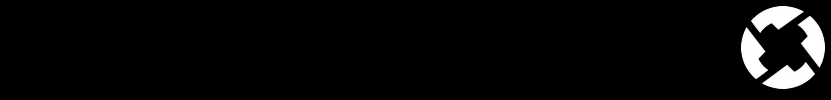
A brief overview of DeFi

Notable DeFi products

Decentralized Exchanges



Lending and Borrowing



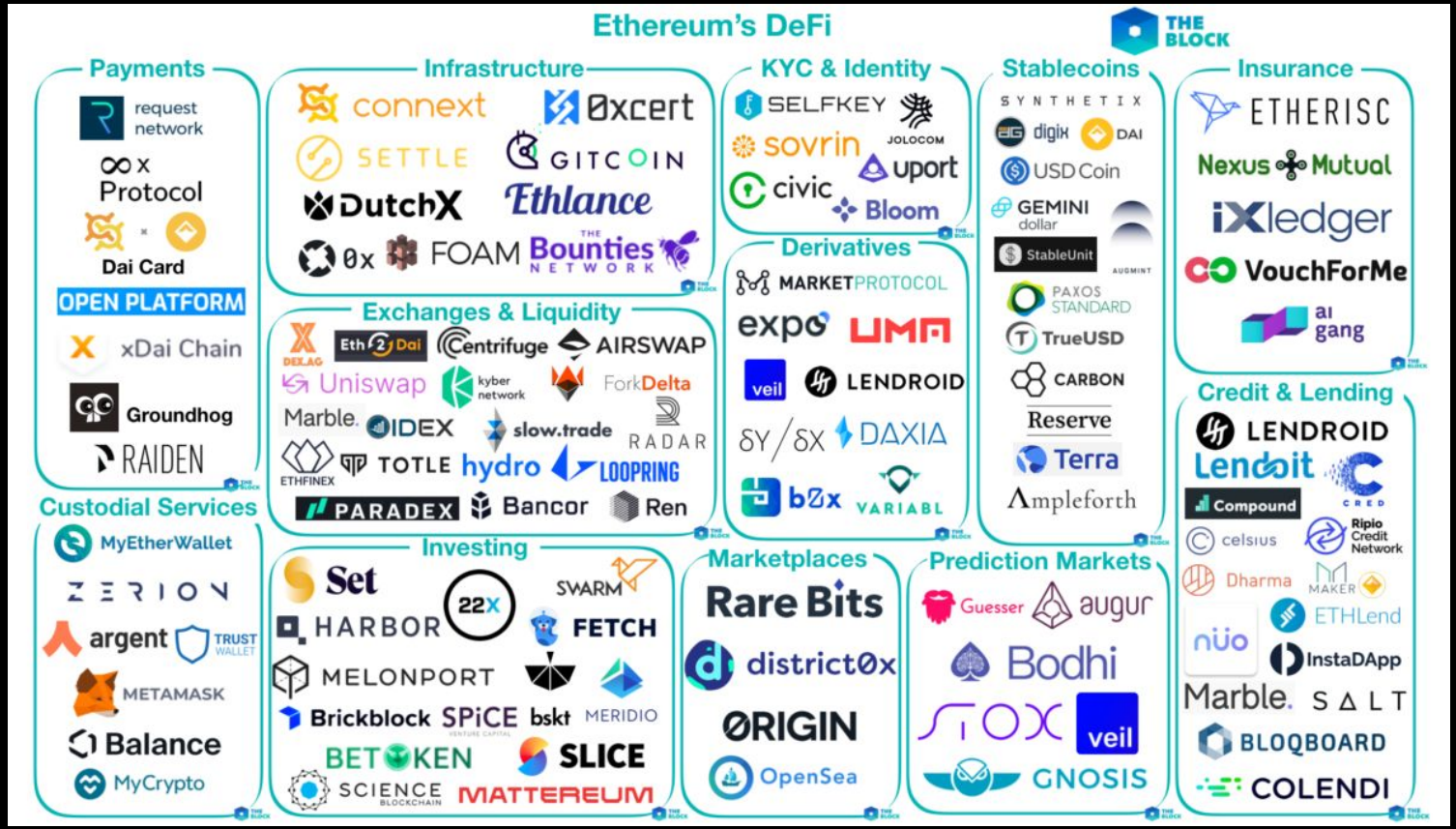
Dharma

Stablecoins

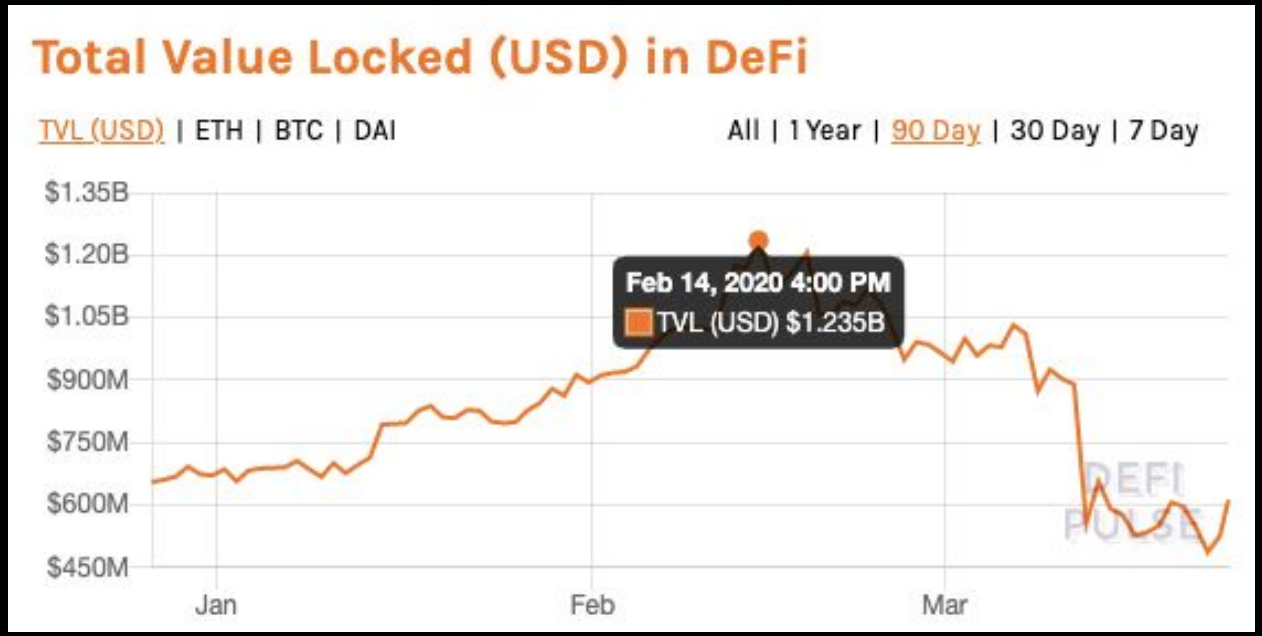
Fiat on/off ramps

coinbase

So many more apps and use-cases!



Value locked in DeFi smart contracts and protocols



Working in the DeFi space

- Very challenging! Priorities constantly shift and require adapting quickly
- Very fast paced, the space is very stimulating and requires a strong balance of short-term and long-term thinking.
- You get to work with some of the smartest people ever, you learn things that are not applicable to other server-based backend applications
- This space is just going to get bigger, joining now gives you a first-mover advantage
- Teams are very distributed, you are given a lot of independence

A deep dive into 0x Protocol
Decentralized Exchange

What is 0x?

What is 0x?

- Decentralized exchange protocol launched in 2017

- Supports different types of assets (i.e. ERC20, ERC721, ERC1155)

- Consists of modular building blocks, a system of smart contracts that allow for various order types and ways to settle trades

713K	$750M	30+
Total Transactions	Total Volume	Total Projects

Stats as of Sep 27, 2019

How 0x works:

"I'd like to trade my 1 ETH for 10 REP tokens"

- "Maker" (person with asset) signs a message indicating their trade conditions

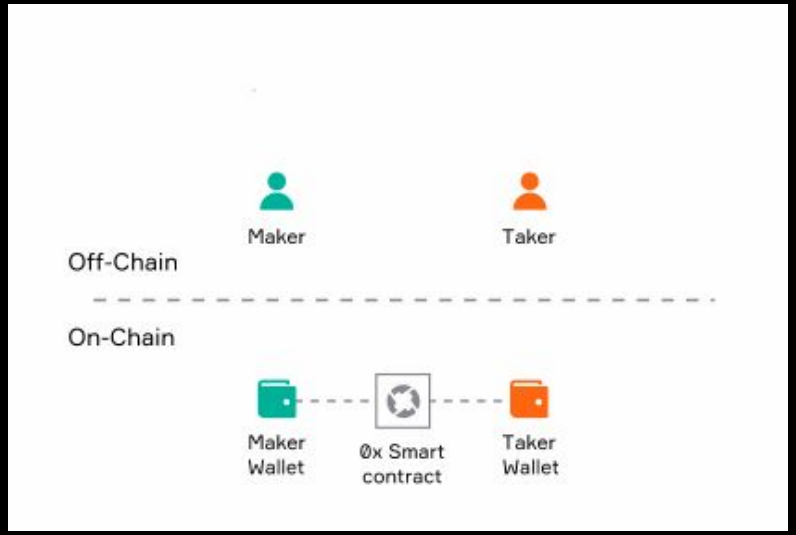
"I have 10 REP Tokens and will trade them for your 1 ETH!"

- "Taker" (person who wants maker's asset) agrees to trade their asset for maker's asset.
- Submits a signed message and executes transaction

Assets are atomically, trustlessly swapped

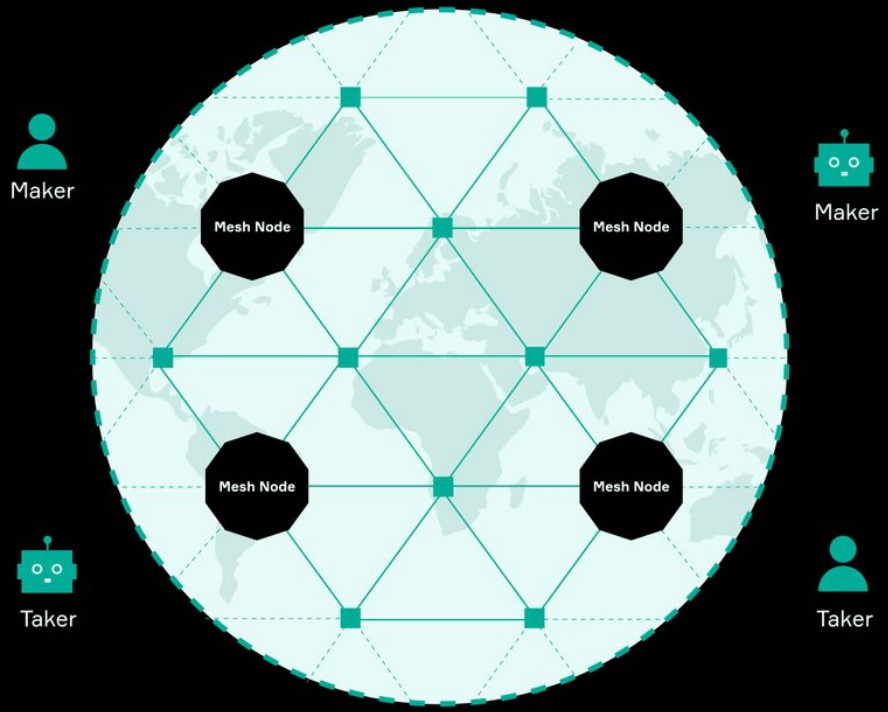
Background on 0x

Off-chain relay, on-chain settlement



Our bet: orderbook-style markets will continue to offer lower-spreads, better prices than alternatives

0x Mesh


Maker
Maker
Mesh Node
Mesh Node
Mesh Node
Mesh Node
Taker
Taker

Anatomy of a 0x order (V3)


```
{
    "signature": "0x1b96f3e145adadb3ba4049516bd3750f3960a168...",
    "senderAddress": "0x0000000000000000000000000000000000000000",
    "makerAddress": "0x478f2101cb714ad0eecc4d4dbcc4c1b07a9c6d93",
    "takerAddress": "0x0000000000000000000000000000000000000000",
    "makerFee": "0",
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DAI

WETH

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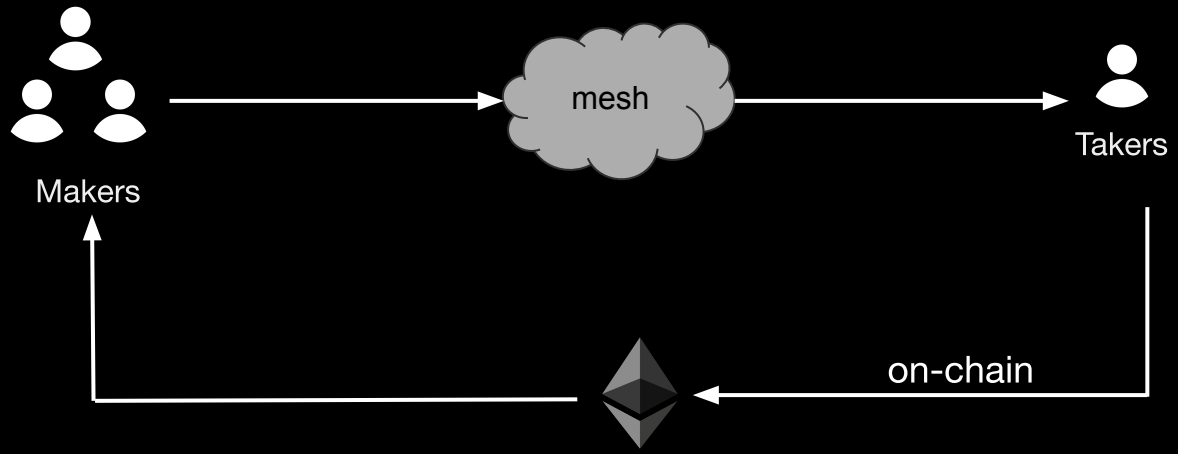
A deep dive into 0x Protocol

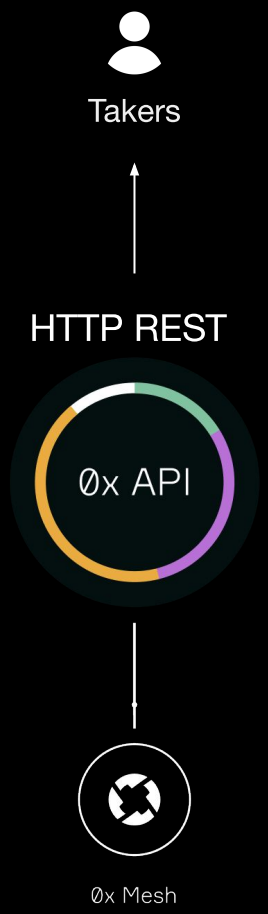
The 0x API

Challenges developers faced integrating with 0x

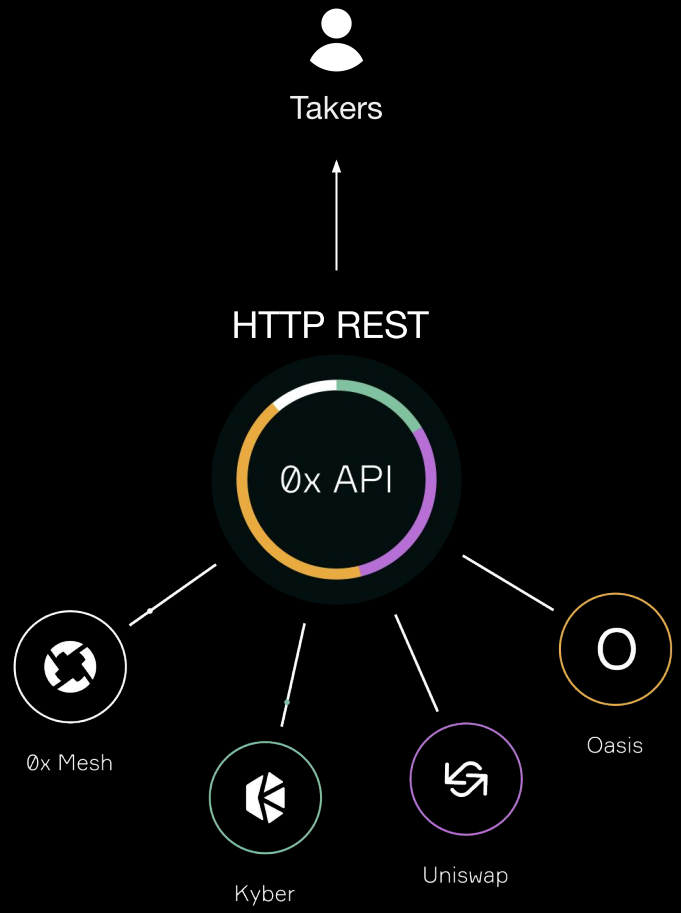
- Steep learning curve
- 0x Mesh requires teams to host more backend services ($$$)
- Developers will knowingly choose protocols with worse pricing in order to have a simpler developer experience

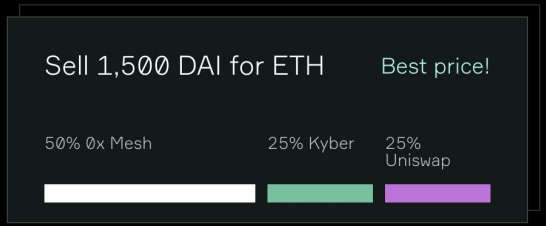


0x API

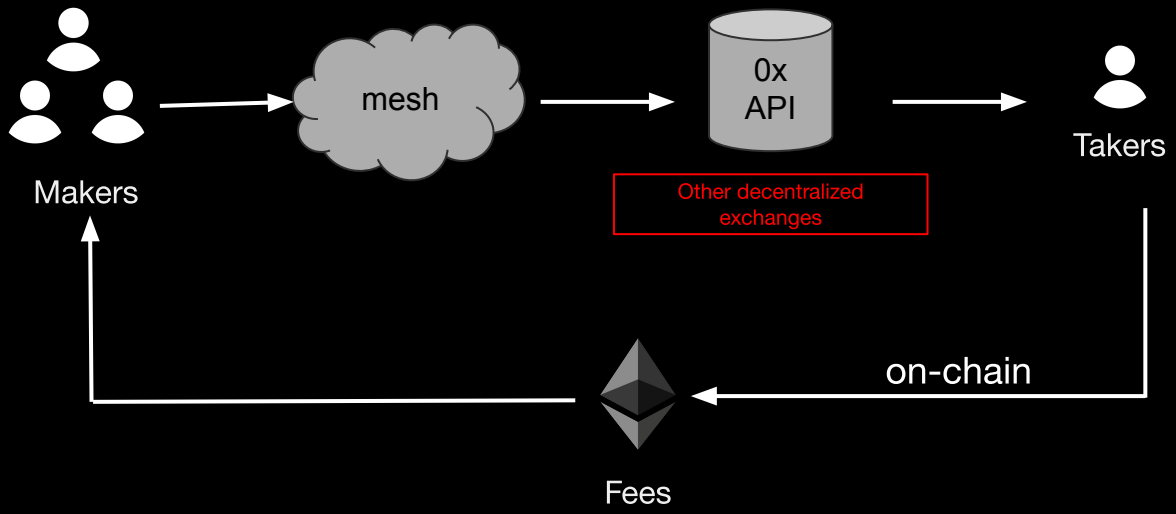


0x API


Takers
HTTP REST
0x API
0x Mesh
Kyber
Uniswap
Oasis


Sell 1,500 DAI for ETH
Best price!
50% 0x Mesh
25% Kyber
25% Uniswap

0x Liquidity Funnel - with 0x API



A deep dive into 0x Protocol
Workshop

Homework

1. Go through the recording of the workshop, and re-implement the exchange-like functionality that we built together.

Thank you!

Special thanks: Steve Klebanoff, Fabio Berger, Alex Towle, Danni Hu, Simon Guo, The entire 0x team!

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