

Introduction to DeFi

<http://blockchainNYC.io>



Welcome & Agenda

- Welcome & Introduction
- DeFi Basics and Road to DeFi
- DeFi & Institutions
- Case Study: MakerDAO
- Case Study: Uniswap with Financial Model Spreadsheet
- Case Study: Derivative Protocols Synthetix, Hegic and dYdX
- Q&A

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- The presenters are presenting in their personal capacity and do not necessarily express the views of their respective employers

Clemens Wan

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- 2.5 years at R3 leading global solutions architecture design and
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Logistics

- Hold questions till end, use “Raise Hand” button please
- Slide deck will be posted after session
- Let’s have fun!

What is DeFi?

- **Decentralized Finance** or “open finance” (i.e. “open source”)
- Traditional Finance.. Decentralized
- Re-interpretation & innovation
- New economic systems
- Complex & intricate

Why would I care about DeFi?

- Global
- Rapid settlement
- Unbanked
- Fractional (1/10000th of a penny?)
- Lower friction
- 24/7 market
- Zero to low infrastructure costs

Use Cases

- Tokens
- ICO / STOs
- Issuance & Asset Tokenization
- Stablecoins
- Money Markets & Yield Farming
- Exchanges
- Prediction Markets
- Oracles
- Derivatives

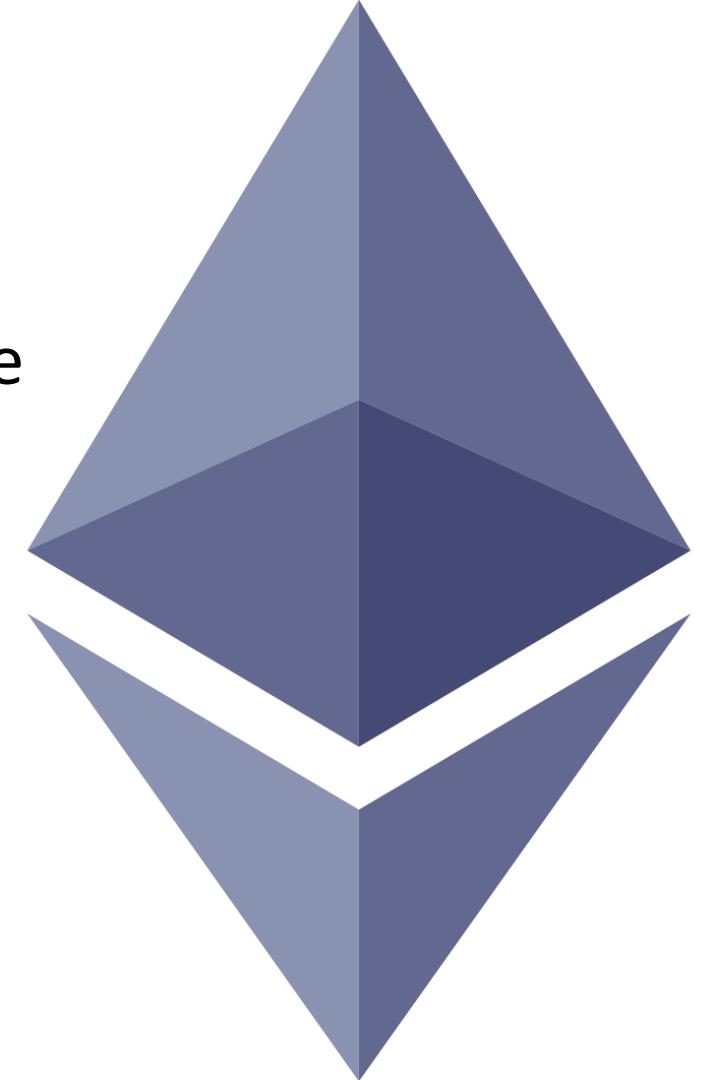
Turn back clock: Bitcoin

- Solved: Double spend
- Decentralization
 - No single point of failure
 - No single point of leverage
- Economic system of incentives / disincentives
- Blockchain
- Problem: Rigid data structure, non-Turing complete



Enter Ethereum

- Programmable money = defining behavior of value
 - Smart contracts
- Custom data structures
- Ether (or Eth) cryptocurrency



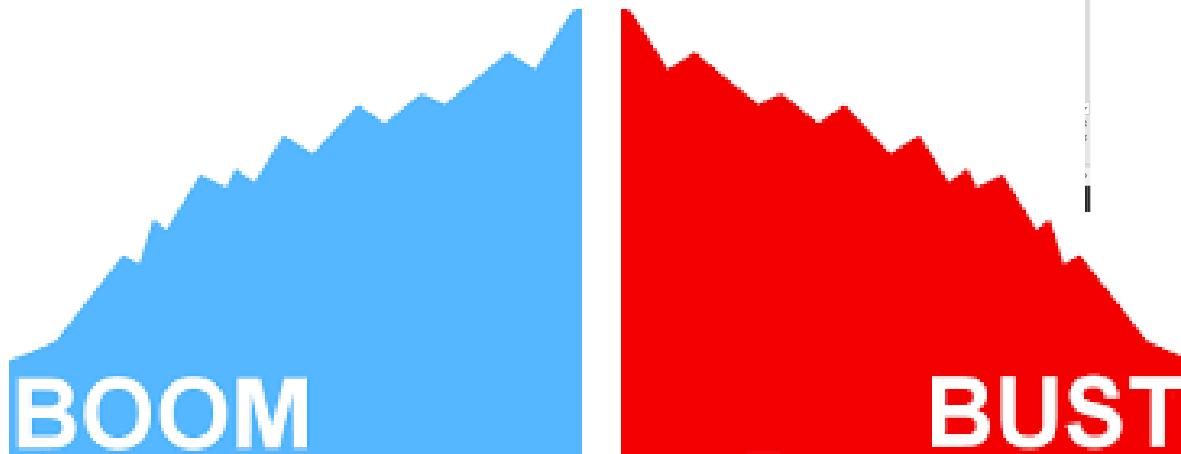
Use Case #1: Raising Capital – ICO / STO

- Initial Coin Offering (Crowdfunding)
- Issue tokens to raise capital for projects
- Allocation Table

Account (Address)	Tokens
09a...82b (Bob)	200,000
4fb...aa2 (Alice)	350,000
...	100,000
...	358

ICO Boom/Bust

- Regulatory guidance enters 2017-2018
- ICO scams 90%+
- Registered ICOs => STOs

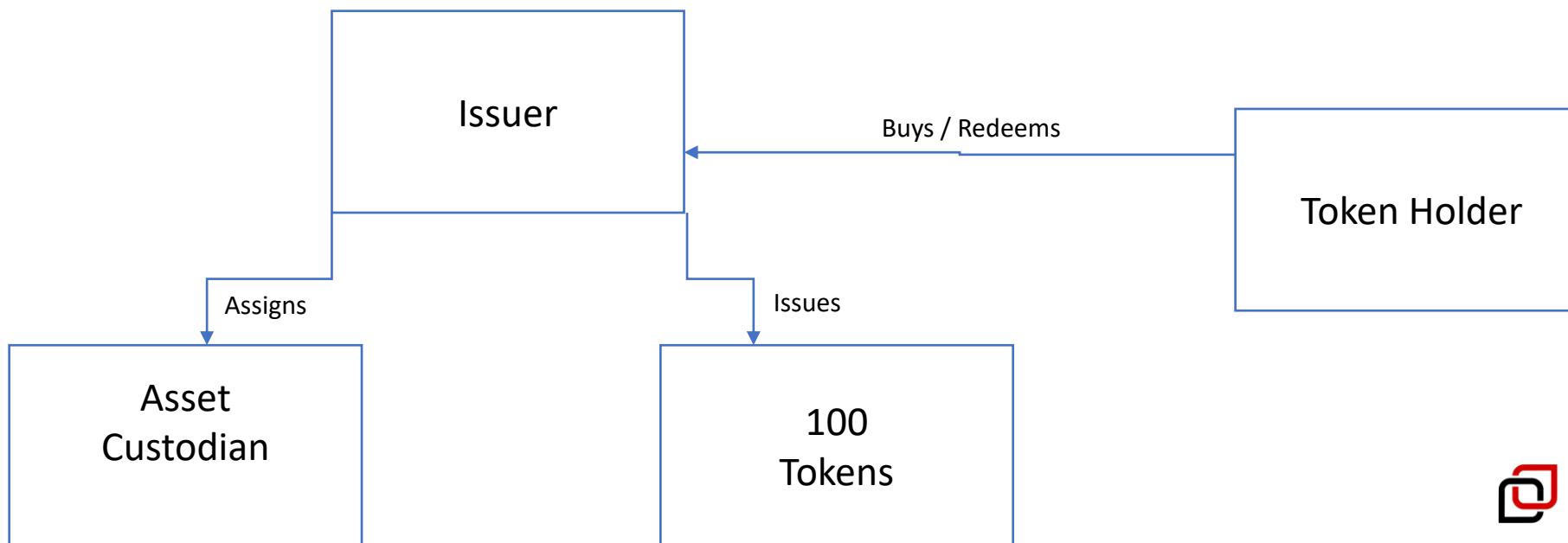


The screenshot shows a web browser displaying the 'Security Token Market - Home Page' at stomarket.com. The page features a header with the STM logo, a navigation bar with 'Trading Tokens', 'Market', 'News', 'Issuer Portal', 'Explore', 'Login', and 'Register' buttons. Below the header is a table titled 'Total Market Cap \$532,873,874.16'. The table lists 12 tokens with their logos, market caps, current prices, percentage changes, 24-hour volumes, exchanges, and price trends.

Token	Market Cap	Price	Change %	24H Volume	Exchange	Price Trend
Overstock Ⓜ️ OSTK	\$284,050,000	\$65.00	3.17%	\$520	tZERO	
tZERO Ⓜ️ TZROP	\$144,606,301	\$6.95	0.72%	\$11,120	tZERO	
Blockchain Capital Ⓜ️ BCAP	\$24,513,634	\$3.49	↔ 0%	\$454	OpenFinance	
AspenCoin (St. Regis) Ⓜ️ ASPD	\$23,220,000	\$1.29	↔ 0%	\$11,675	tZERO	
MERJ Exchange Ⓜ️ MERJ-S	\$21,015,781	\$2.42	↔ 0%	\$0	MERJ	
Tokensoft Ⓜ️ TSFT	\$16,000,000	\$1.99	↔ 0%	\$0	Tokensoft	
SPICE VC Ⓜ️ SPICE	\$8,295,395	\$0.98	0 2%	\$490	OpenFinance	
StartupBootCamp Ⓜ️ SBC	\$2,205,000	\$35.00	0 7.89%	\$1,750	Nxchange	
Lottery.com Ⓜ️ LDCC	\$2,139,384	\$0.05	↔ 0%	\$1,500	OpenFinance	
22X Fund Ⓜ️ 22X	\$1,543,370	\$0.30	0 40%	\$30	OpenFinance	
Minvest Limited Ⓜ️ MVSTS	\$1,520,000	\$1.00	↔ 0%	\$0	MERJ	

Use Case #2: Asset Tokenization

- Gold, Oil (Fungible)
- Real Estate (Non-Fungible)
- Token represents ownership / rights against the asset



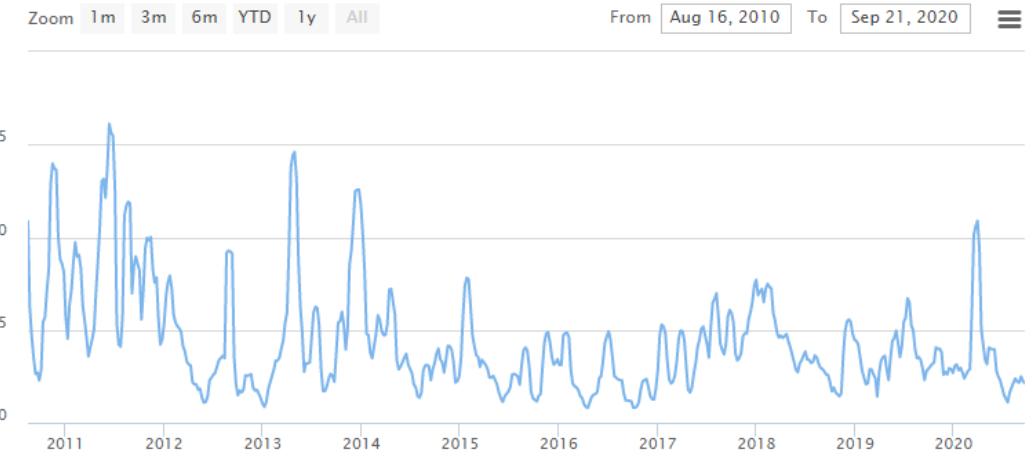
Issuance

- Issuance Platforms
 - tZero
 - Polymath
 - Harbor
- Manage investor, docs, compliance
- Liquidity is a problem

Use Case #3: Stable value

- Is it a currency?
- Currency
 - **Store of value**
 - Unit of account
 - Legal tender
 - Medium of exchange
- Psychological expectation of fixed value
- Implies zero or close to zero volatility

Bitcoin Volatility Time Series Charts



Ethereum Volatility Time Series



Use Case #3: Stablecoins

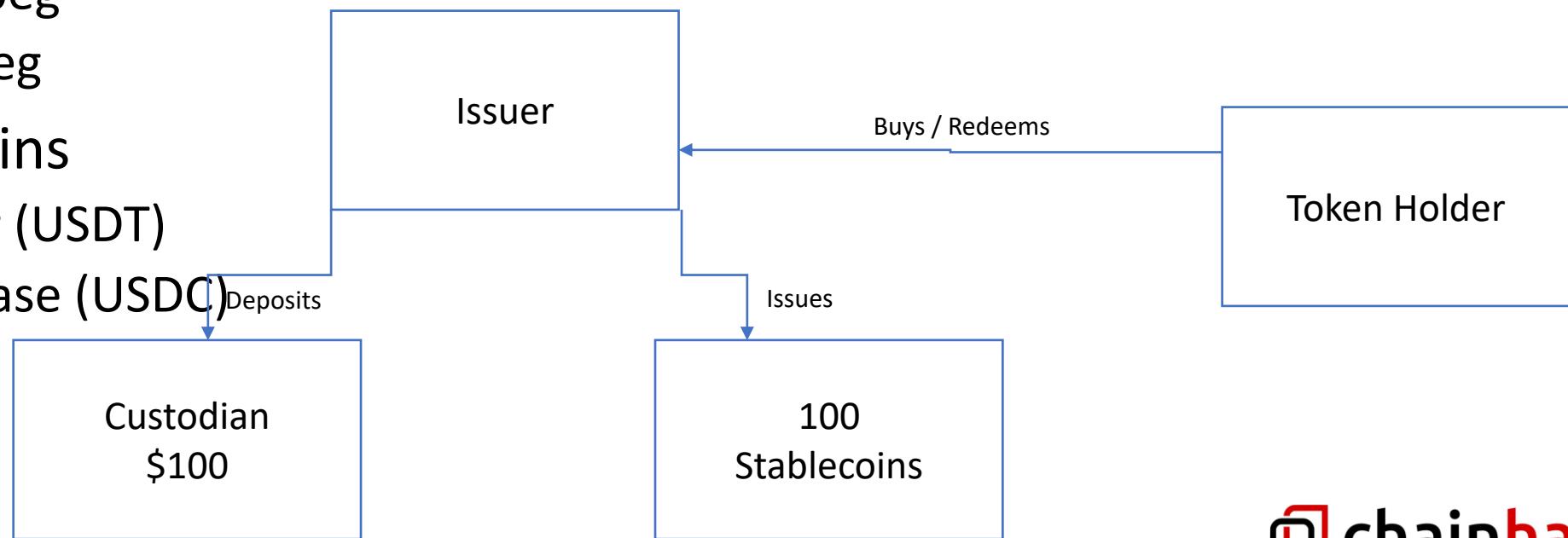
- Token with zero to low volatility

- Pegged to an asset pool

- Hard peg
 - Soft peg

- Stablecoins

- Tether (USDT)
 - Coinbase (USDC)

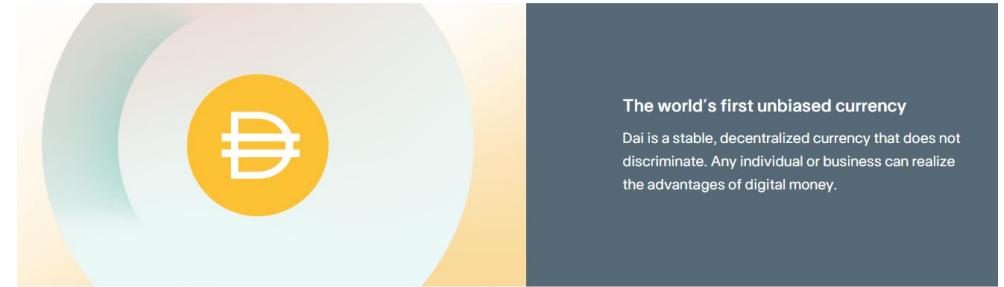


Types of stablecoins

- Fiat collateral
- Asset collateral
- Crypto collateral
- **Computational**

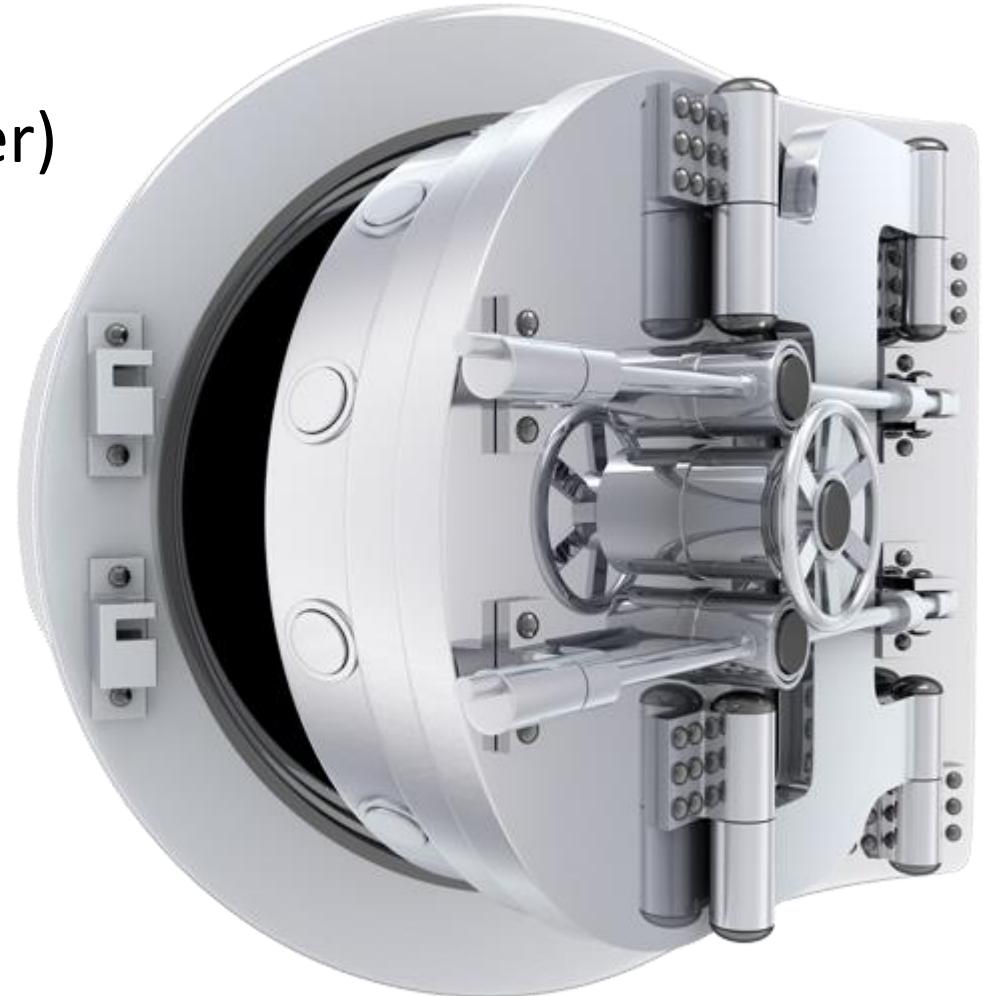
Decentralized Stablecoin

- MakerDAO
 - Founded 2015, launched 2018
 - Transparent crypto as collateral
 - #1 most active DeFi app on Ethereum
 - Two token system
 - DAI – Stablecoin
 - MKR – Governance (vote on risk parameter changes, i.e. debt ceiling, ratios) & fees



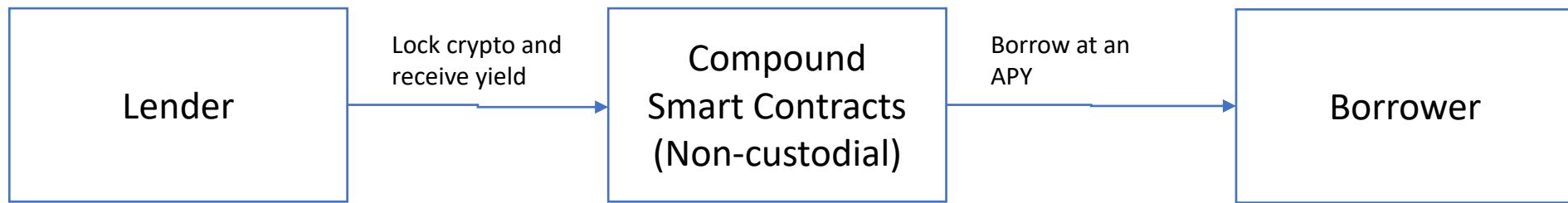
Use Case #4: Money Markets

- Cryptos can be staked (liquidity provider)
- Cryptos can be borrowed (borrower)
- APY
- Borrower must be a lender



Money Market Platforms

- **Compound** (backed by Coinbase, Bain Capital)
- Aave
- Dharma
- Celsius (Centralized)
- Many others



Return DAI + Interest fees denominated in MKR

Note: You are currently connected to the Kovan Testnet



Dashboard

Vote

0.0000

0x0b...0bB7

Supply Balance

\$0

Net APY

...

Borrow Balance

\$0

Borrow Limit 0%

\$0.00

Supply Markets

Asset APY Wallet Collateral



Basic Attention ...

0.21%

0 BAT



Dai Stablecoin

4.60%

0 DAI



Ether

12.69%

0.9532 ETH



USD Coin

10.58%

0 USDC



Tether

3.26%

0 USDT



Wrapped BTC

0%

0 WBTC

Borrow Markets

Asset APY Wallet Liquidity



Basic Attention ...

3.75%

0 BAT

\$202k



Dai Stablecoin

5.70%

0 DAI

\$11k



Ether

12.72%

0.9532 ETH

\$7k



USD Coin

11.72%

0 USDC

\$990,000,000...



Tether

9.49%

0 USDT

\$272k



Wrapped BTC

2.02%

0 WBTC

\$509,919,000...

Total Value Locked (USD) in Lending

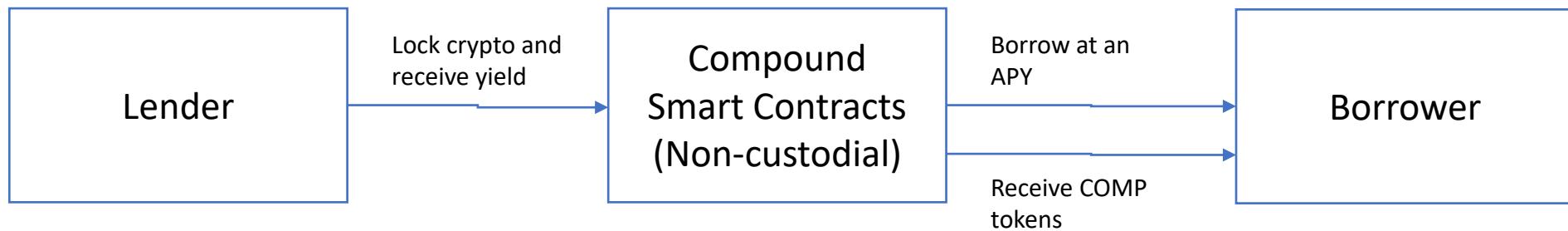
[TVL \(USD\)](#) | [ETH](#) | [BTC](#)

[All](#) | [1 Year](#) | [90 Day](#) | [30 Day](#)



Compound

- COMP tokens are sweeteners to borrowers (liquidity mining)
- ..which in turn induces lending (market making)
- **Borrowers can earn a positive net APY depending on COMP price**



Return DAI + Interest fees denominated in MKR



Last updated on September 1st: Matches the specifications in [Compound Governance Proposal #21](#), where emissions have been reduced by 20%.

Total Supply ↑↓	Annual Interest Received ↑↓	Total Borrow ↑↓	Annual Interest Paid ↑↓	Reserve Growth ↑↓	COMP Distributed / Year ↑↓	Total COMP Distribution ↑↓		
\$1,657,006,703	\$33,642,253	\$947,027,344	\$36,597,807	\$2,955,554	845,989	4.23M / 10M		
Calculate My Annual COMP Distribution								
Protocol ↑↓	Symbol ↑↓	Price ↑↓	Gross Supply ↑↓	Tokens to Supply ↑↓	Supply Rate ↑↓	Gross Borrow ↑↓	Tokens to Borrow ↑↓	Borrow Rate ↑↓
0x	ZRX	\$0.38	\$54,658,749	0	1.53%	\$15,671,500	0	11.14%
Augur	REP	\$13.64	\$4,260,620	0	0.00%	\$62,140	0	2.47%
Basic Attention Token	BAT	\$0.21	\$12,221,638	0	0.04%	\$333,160	0	2.81%
DAI	DAI	\$1.01	\$1,057,237,206	0	2.88%	\$818,013,564	0	3.94%
Ether	ETH	\$341.42	\$289,558,589	0	0.31%	\$31,788,809	0	3.15%

Use Case #5: Yield Farming

- Shopping your tokens to improve APY
- Platform Example: Yearn.finance



Dashboard



Vaults



Earn

Earn performs profit switching for lending providers, moving your funds between dydx, Aave, Compound autonomously.



Zap



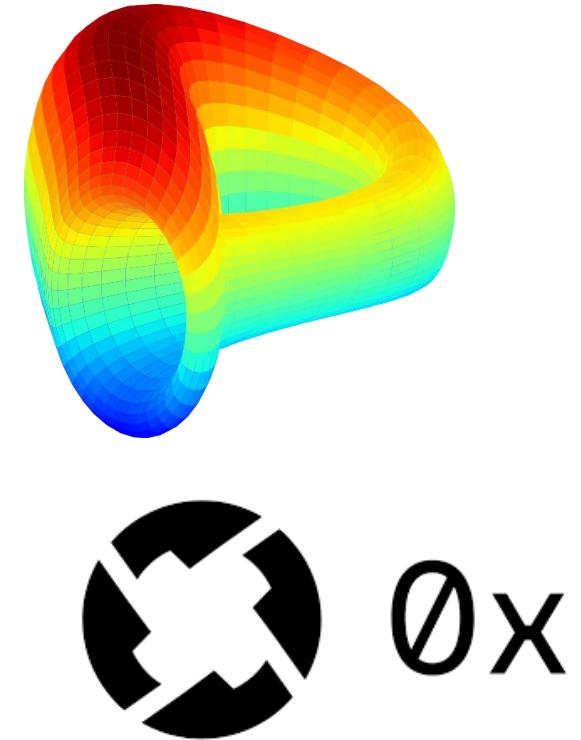
Cover



Stats

Use Case #6: Exchanges

- Centralized
 - Coinbase, Gemini, Binance, etc.
- Decentralized – DEX
 - IDEX (“semi” decentralized)
 - 0x Protocol
 - **Problematic!**
- Decentralized – AMM
 - Uniswap
 - Curve
- Maximize liquidity, minimize slippage and price impact



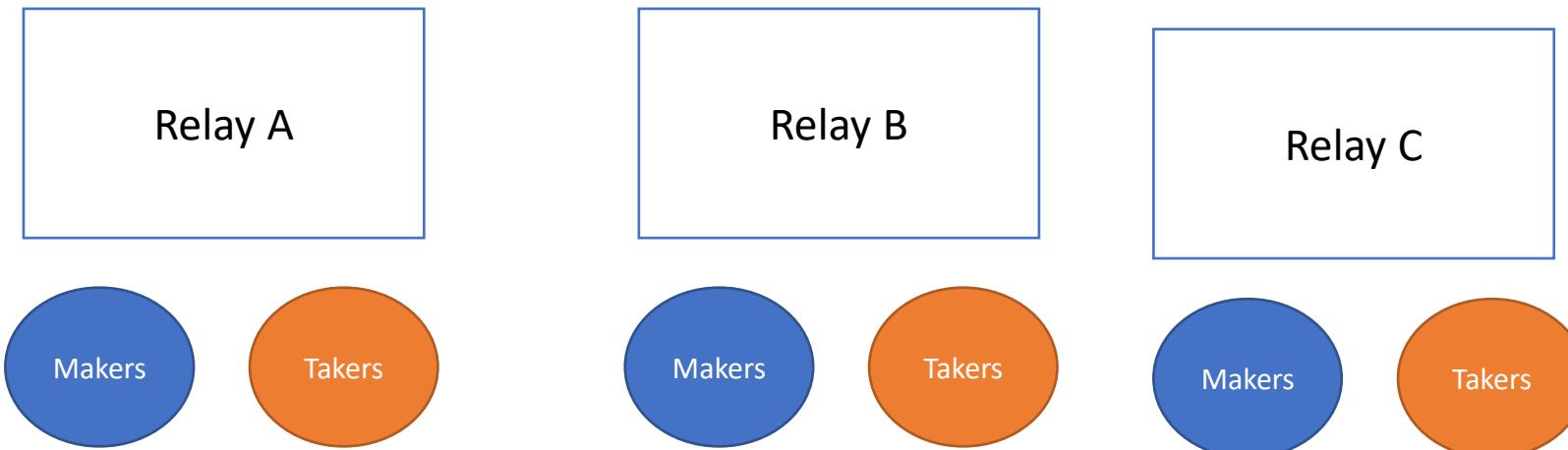
DEX

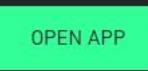
- No single global limit order book
 - Core of a centralized exchange
 - On-chain order book? Constant Function Market Makers? (CFMM)
- Makers
- Takers
- 0x (ZRX) Protocol and 0x Relays
- Pairs are swapped or traded

Abstract

We describe a protocol that facilitates low friction peer-to-peer exchange of ERC20 tokens on the Ethereum blockchain. The protocol is intended to serve as an open standard and common building block, driving interoperability among decentralized applications (dApps) that incorporate exchange functionality. Trades are executed by a system of Ethereum smart contracts that are publicly accessible, free to use and that any dApp can hook into. DApps built on top of the protocol can access public liquidity pools or create their own liquidity pool and charge transaction fees on the resulting volume. The protocol is unopinionated: it does not impose costs on its users or arbitrarily extract value from one group of users to benefit another. Decentralized governance is used to continuously and securely integrate updates into the base protocol without disrupting dApps or end users.

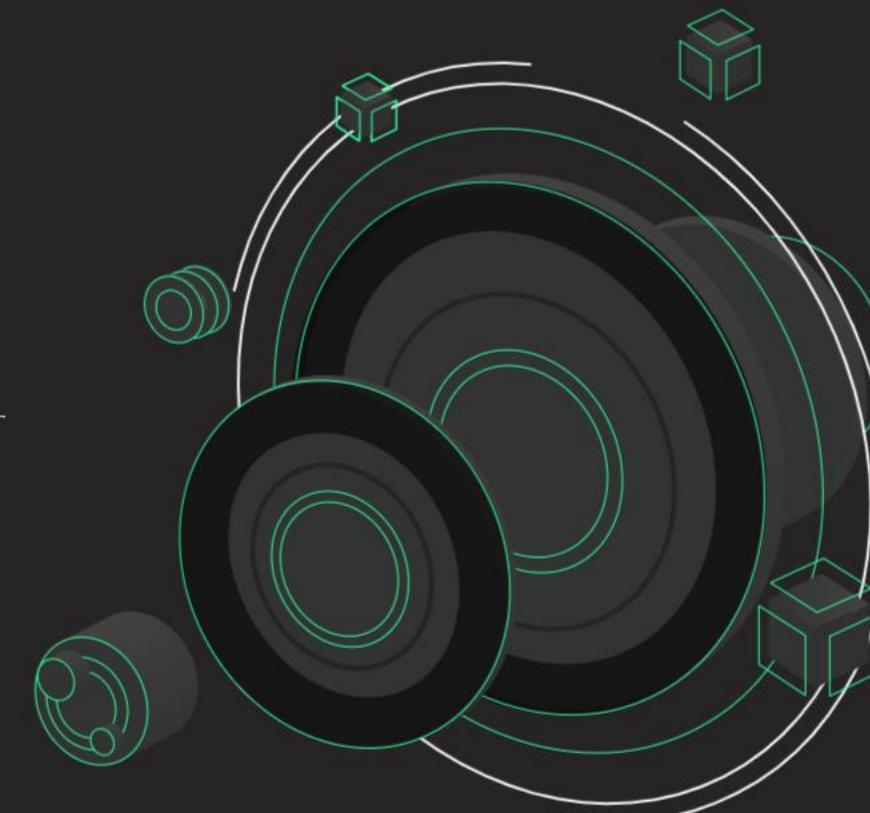
- Off-chain search and matching
- On-chain settlement
- Relays are pools of **makers** and **takers**
- Relays communicate with other relays
- ZRX awarded to relays





Wallet to Wallet Token Trading

The most secure way to trade ERC20 tokens directly from your Ethereum wallet.

[OPEN APP](#)

```
r = requests.get('https://api.radarrelay.com/v3/markets/WETH-DAI/book')
bat_weth_order_book = json.loads(r.text)
for bids in bat_weth_order_book['bids']:
    print(bids['price'])
```

```
PS D:\cryptopython> python .\ex25-0x-relays.py
465.883035519045112954
463.08773730593084227583
460.29243909281657159857
440
435
430
425
420
415
410
405
400
395
390
385
380
375
370
350
325
50
20
10
1
0.1
PS D:\cryptopython> ■
```

Use Case #7: Prediction Markets

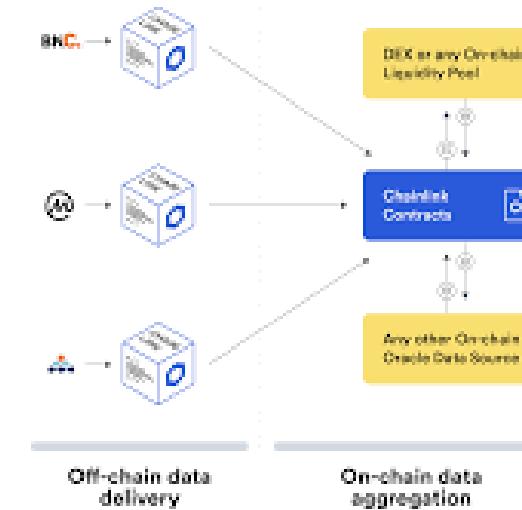
- Use of conditional logic
 - Will Tony Rerguson win by KO, TKO, decision against Charles Oliveira on October 12?
- Platforms
 - Augur
 - Gnosis
- Work like exchanges: Market Making
 - LMSR-AMM



The world's most accessible, no-
+                                                                   <img alt="

Use Case #8: Oracles

- Need for independent external data
- Adversarial nature of blockchain and actors
- Smart contracts need to be deterministic, hence cannot access external data that is non-deterministic
- Asymmetric information



Oracles

- Centralized third-party information source (NASD, Coinbase)
- Decentralized 3rd party
- Oracle is a provider of information or market data
- Platforms
 - Chainlink
 - Provable.xyz
 - Tellor
- Uses
 - Price Feed
 - Event results (i.e. Elections)
 - Randomness (Games)





Chainlink

Features

Solutions

Network

Docs

We are Hiring →

Join the Chainlink Hackathon 2020 and build the next generation of universally connected smart contracts. September 7 – 27th 2020. [Register Now.](#)

Your smart contracts connected to real world data, events and payments.

The Chainlink network provides reliable tamper-proof inputs and outputs for complex smart contracts on any blockchain.

[Chainlink Reference Data →](#)

Use Case #9: Derivatives

- Financially engineered

Uniswap

Token swapping



Uniswap

The Market Maker Problem

- Liquidity requires participants to be willing to buy and sell at certain prices
- Traditionally, this requires market makers and **limit order book**

Coinbase Limit Order Book for ETHUSD

```
PS D:\cryptopython> python .\ex13-coinbasepro-orderbook-level2.py
          bids           asks      sequence
0  [555.59, 2.83247664, 2]  [555.61, 0.10926729, 2]  11831827601
1  [555.58, 30, 1]          [555.7, 5, 1]          11831827601
2  [555.57, 5, 1]          [555.71, 2.7, 1]        11831827601
3  [555.56, 10, 1]         [555.72, 9.13608173, 1]  11831827601
4  [555.44, 5.166, 1]       [555.73, 109.63952887, 3] 11831827601
5  [555.43, 1, 1]          [555.74, 9.56984103, 2]  11831827601
6  [555.42, 21.05741465, 2]  [555.75, 3.1488, 1]        11831827601
7  [555.41, 16.0799415, 1]  [555.77, 9.57419245, 1]  11831827601
8  [555.4, 19.60916324, 1]  [555.81, 3, 1]          11831827601
9  [555.34, 3.059, 2]       [555.87, 3.95223297, 1] 11831827601
10  [555.33, 8.9048, 1]     [555.88, 6.9784, 2]        11831827601
11  [555.31, 12.5, 1]       [555.9, 15.14841146, 1] 11831827601
12  [555.3, 10, 1]          [555.91, 26.66928419, 2]  11831827601
13  [555.29, 3.95220227, 1]  [555.92, 0.12308263, 1] 11831827601
14  [555.28, 0.06, 1]       [555.93, 12.52060707, 2] 11831827601
15  [555.24, 18.408, 1]     [555.94, 0.01523634, 1]  11831827601
16  [555.18, 3.65, 1]       [555.95, 0.01338277, 1]  11831827601
17  [555.16, 19.07000371, 1]  [555.96, 0.01520698, 1] 11831827601
18  [555.09, 6.7944, 2]     [555.97, 22.63336342, 3] 11831827601
19  [555.07, 41.6453, 2]    [555.98, 0.01880821, 1]  11831827601
20  [555.01, 3.58, 1]       [555.99, 25.02066153, 2] 11831827601
21  [555, 27.562, 5]        [556, 1.0205847, 2]        11831827601
22  [554.97, 3.1488, 1]     [556.01, 3.36074984, 2]  11831827601
23  [554.93, 58.0955, 4]    [556.02, 0.01875652, 1]  11831827601
24  [554.91, 19.06235737, 1]  [556.03, 0.13035353, 1] 11831827601
25  [554.9, 0.46249022, 1]   [556.04, 0.0170001, 1]  11831827601
26  [554.89, 15, 1]         [556.05, 26.7892, 1]        11831827601
```

Eth Limit Order Book

I can sell eth at	I can buy eth at
	555.61
	555.7
555.59	555.61
555.58	
555.57	

```
PS D:\cryptopython> python .\ex13-coinbasepro-orderbook-level2.py
          bids           asks      sequence
0  [555.59, 2.83247664, 2]  [555.61, 0.10926729, 2]  11831827601
1  [555.58, 30, 1]          [555.7, 5, 1]          11831827601
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10 [555.33, 8.9048, 1]        [555.88, 6.9784, 2]  11831827601
11 [555.31, 12.5, 1]        [555.9, 15.14841146, 1] 11831827601
```

Applicable to any use case

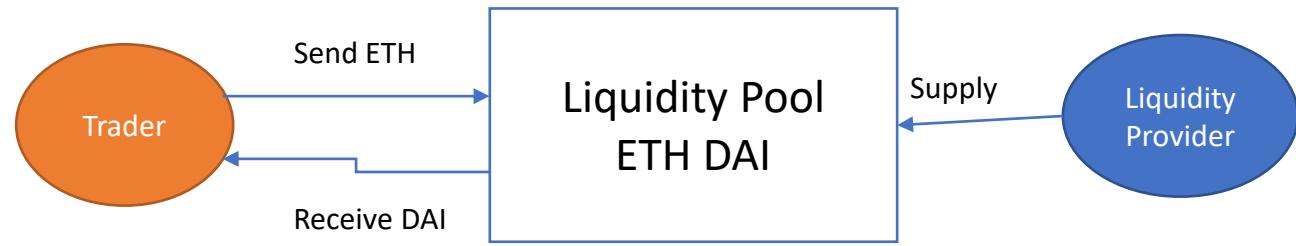
I can lend at	I can borrow at
	9%
	8%
6%	7%
5%	
4%	

Uniswap Protocol

- Two main functions
 - Add/remove liquidity
 - Trade (aka Swap)
- On-chain liquidity pools
- Faster matching
- Liquidity provider receives fees
- **Limit order book not required – Automated Market Making (AMM)**
- **CPMM (Constant Product Market Maker)**

Actors

- Liquidity provider
 - Puts up token pairs
 - Earns trading revenues
 - Faces **divergence** risk
- Trader
 - A swap is just a trade
 - Pays trading fees
 - You swap cash for stock when you buy equities
 - Swaps token
 - Faces **market** risk
 - i.e. Buy DAI using ETH

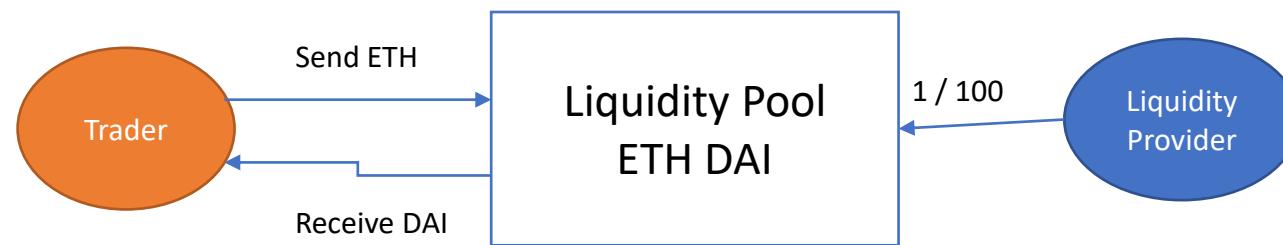


Exploring Constant Product Formula

- Market Prices:
 - Eth = \$100
 - Dai = \$1
- Example is based on
 - <https://pintail.medium.com/uniswap-a-good-deal-for-liquidity-providers-104c0b6816f2>

Liquidity Provider

- Initial Pool = 99 ETH, 9900 DAI
- LP provides 1 ETH, 100 DAI



Constant Product Formula

- Initial Pool = 99 ETH, 9900 DAI

$$X * Y = K$$

$$99 * 9900 = 980,100$$

Outcome

- Liquidity Pool is Now = 100 ETH, 1000 DAI
- LP owns 1%

	Eth Qty	Dai Qty	Mkt Value	Constant Product	Eth Liquidity	Dai Liquidity
Initial Pool	99	9900	\$19,800.00	980100	99	9900
Current Pool	100	10,000	\$20,000.00	1000000	100	10000

Constant Product Formula

- Liquidity Pool = 100 ETH, 10000 DAI

	Eth Qty	Dai Qty	Mkt Value	Constant Product	Eth Liquidity	Dai Liquidity
Initial Pool	99	9900	\$19,800.00	980100	99	9900
Current Pool	100	10,000	\$20,000.00	1000000	100	10000

$$\begin{aligned} X * Y &= K \\ X (\text{eth}) * Y (\text{dai}) \\ &= 100 * 10,000 \\ &= 1,000,000 \end{aligned}$$

Stake Valuation

- Suppose ETHDAI now = 120
- Market value of 1 eth + 100 DAI = \$220
- What is LP's value?
- **1% of liquidity pool at a value such that constant product does not change**

Pool Inventory		Price		LP market					
Eth	Dai	Eth in terms of Dai	Dai in terms of Eth	Constant Product	Eth Liq Pool	Token Liq Pool	Eth Redemeebale	Dai Redeemable	Value
100	10000	100	0.01	1000000	100	10000	1	100	\$200.00
100	10000	120	0.008333333333	1000000	91.28709292	10954.45115	0.9128709292	109.5445115	\$219.09

$$\begin{aligned}
 X &= 1,000,000 / 120 \\
 &= 91.28709
 \end{aligned}$$

$$1,000,000 = 91.28709 \times Y$$

$$Y = 109545.45$$

$$91.28709.. * 10954.45.. = 1,000,000$$

Pool Inventory		Price		LP market					
Eth	Dai	Eth in terms of Dai	Dai in terms of Eth	Constant Product	Eth Liq Pool	Token Liq Pool	Eth Redemeebale	Dai Redeemable	Value
100	10000	100	0.01	1000000	100	10000	1	100	\$200.00
100	10000	120	0.008333333333	1000000	91.28709292	10954.45115	0.9128709292	109.5445115	\$219.09

$$X * Y = K$$

$$X = \sqrt{1,000,000/120} = 91.28709 * 1\%$$

$$Y = \sqrt{1,000,000 * 120} = 10954.45 * 1\%$$

$$91.28709.. * 10954.45.. = 1,000,000$$

Liquidity Provider Stake Valuation

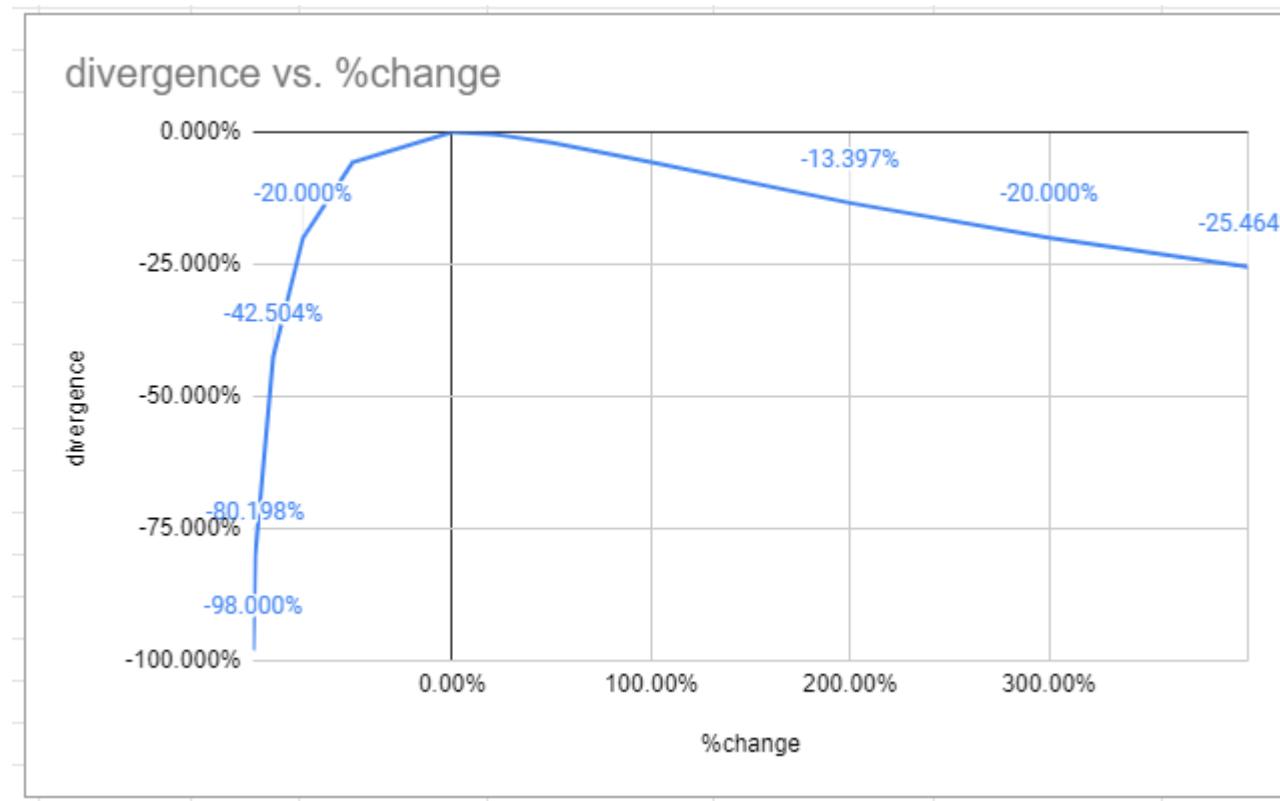
- .9128709 ETH
- 109.5445.. DAI

HODL vs. LP

- HODL = \$220
- LP = \$219.09
- Loss = ~ 91 cents or ~.414% loss

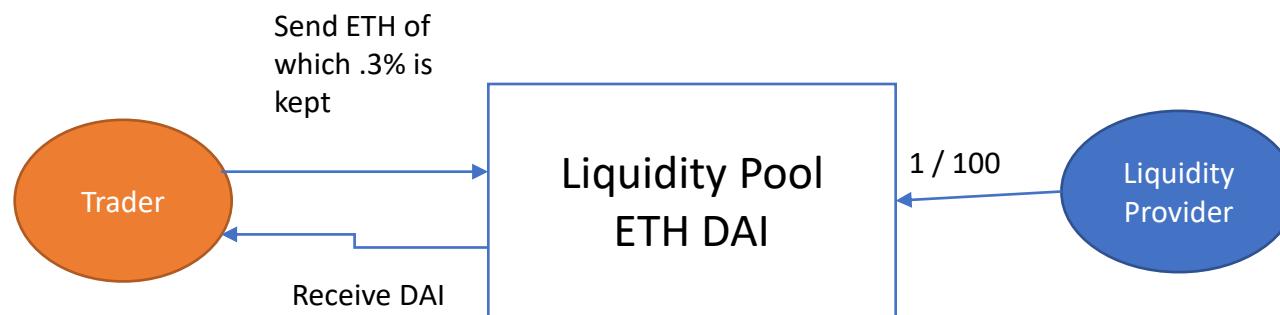
Price Swings Create Divergence Risk

Price (p0)	Price Now	price_ratio	% Change	Divergence
100	0.01	0.00	-99.99%	-98.000%
100	1	0.01	-99.00%	-80.198%
100	10	0.10	-90.00%	-42.504%
100	25	0.25	-75.00%	-20.000%
100	50	0.50	-50.00%	-5.719%
100	100	1.00	0.00%	0.000%
100	120	1.20	20.00%	-0.414%
100	125	1.25	25.00%	-0.619%
100	150	1.50	50.00%	-2.020%
100	200	2.00	100.00%	-5.719%
100	300	3.00	200.00%	-13.397%
100	400	4.00	300.00%	-20.000%
100	500	5.00	400.00%	-25.464%



Constant Product Updates

- Updates when:
 - After liquidity added
 - After liquidity removed
 - **Trading fees added**
 - **.3% trade**



⚠ Always make sure the URL is app.uniswap.org - bookmark it to be safe.



Swap Pool UNI Vote Charts[↗]

UNI

Connect to a wallet



From

1 ETH

To (estimated)

465.787 DAI

Price 0.0021469 ETH per DAI

[Connect Wallet](#)

Minimum received 463.4 DAI

Price Impact <0.01%

Liquidity Provider Fee 0.003 ETH

[View pair analytics](#)

⚠ Always make sure the URL is app.uniswap.org - bookmark it to be safe.

[Swap](#) [Pool](#) [UNI](#) [Vote](#) [Charts](#) ↗[UNI](#)[Connect to a wallet](#)

Liquidity provider rewards

Liquidity providers earn a 0.3% fee on all trades proportional to their share of the pool. Fees are added to the pool, accrue in real time and can be claimed by withdrawing your liquidity.

[Read more about providing liquidity](#)

Your liquidity

[Create a pair](#)[Add Liquidity](#)

Connect to a wallet to view your liquidity.

Don't see a pool you joined? [Import it](#).

Financial Model Spreadsheet

- <https://bit.ly/UniswapModel>
- <https://github.com/jamiels/uniswap-math>

Uniswap Smart Contracts

- UniswapV2ERC20.sol
- UniswapV2Factory.sol
- UniswapV2Pair.sol

```
contract UniswapV2Pair is IUniswapV2Pair, UniswapV2ERC20 {
    using SafeMath for uint;
    using UQ112x112 for uint224;

    uint public constant MINIMUM_LIQUIDITY = 10**3;
    bytes4 private constant SELECTOR = bytes4(keccak256(bytes('transfer(address,uint256)')));

    address public factory;
    address public token0;
    address public token1;

    uint112 private reserve0;           // uses single storage slot, accessible via getReserves
    uint112 private reserve1;           // uses single storage slot, accessible via getReserves
    uint32 private blockTimestampLast; // uses single storage slot, accessible via getReserves

    uint public price0CumulativeLast;
    uint public price1CumulativeLast;
    uint public kLast; // reserve0 * reserve1, as of immediately after the most recent liquidity event
```

Q&A

DeFi Topics & Technical Deep Dive

Comparing DeFi to existing infrastructure

Clemens Wan
Dec 12, 2020



Clemens Wan
Global Solutions Architect

What is “DeFi” - an intriguing and fertile field of innovation

Novel digital assets, registered on the Ethereum mainnet

Cryptocurrencies (~575 B\$ market cap)

Utility tokens (~20 B\$ market cap)

Digital company shares (a few B\$ market cap)

Digital bonds (a few 100 M\$ outstanding)

Stablecoins (~25 B\$ outstanding)

Central bank digital currencies (just starting, immense potential)

see [defimarketcap](https://defimarketcap.com) or [coinmarketcap](https://coinmarketcap.com)



Novel trading and lending models, based on immutable smart contracts

Automated issuance and servicing workflows, powered by smart contracts (several tens of B\$ outstanding)

- Atomic issuance vs payment.
- Atomic delivery vs payment.
- Automated dividend calculation.
- Examples: World Bank, SocGen, Santander.

Decentralized exchanges (~ 1 B\$ in daily trades)

- Decentralized price formation algorithms
- Decentralized matching of buyers and sellers.
- Atomic post-trade settlement with no counterparty risk.
- Examples: ConsenSys Markets, 0x protocol, Uniswap.

Decentralized lending (~ 15 B\$ outstanding)

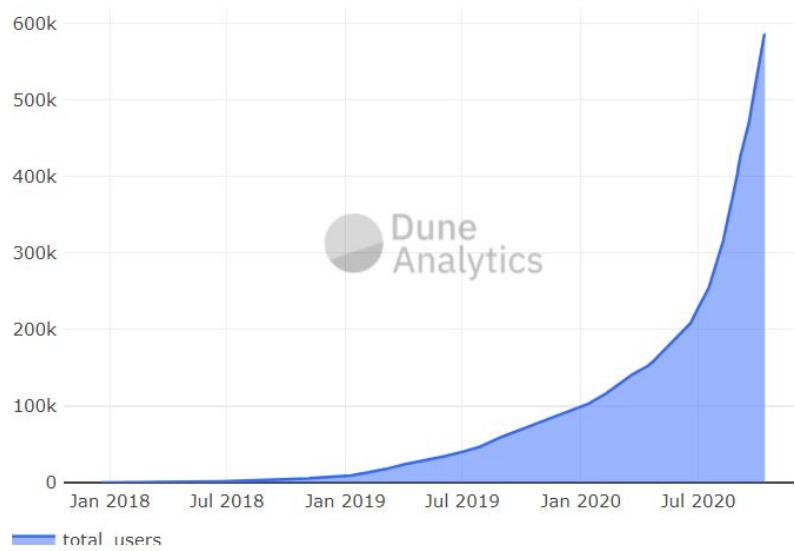
- Decentralized interest rate definition algorithms
- Decentralized matching of lenders and borrowers.
- Fully collateralized loans with no counterparty risk.
- Examples: Maker, Compound.

Almost 1MM DeFi users with \$15B+ in assets

DeFi Users

Total DeFi users over time

Users = unique addresses. Since a user can have multiple addresses the numbers below are overestimates. Source: Richard Chen @richardchen39



Collateral Deployed

Total Value Locked (USD) in DeFi



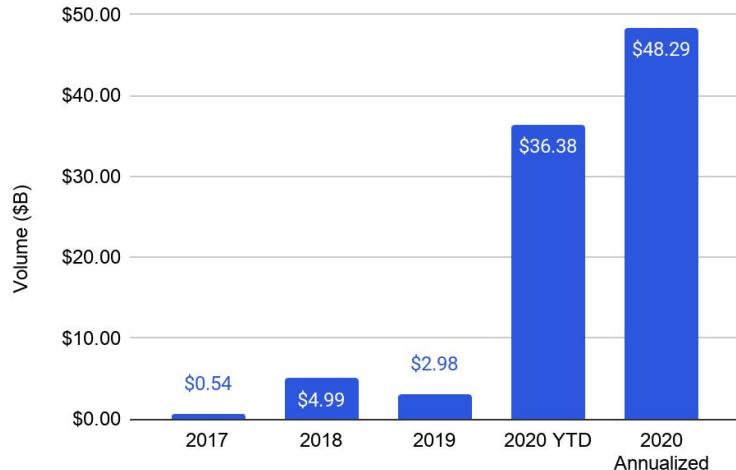
... and a bit of Yield Farming motivation...

- Lending (or providing liquidity) earns a yield
- Borrowing has an interest cost
- You earn 20% because someone wants to borrow it and pays 25%
- They borrow likely because they think capital appreciation will be 25%+
- Liquidity mining provides an additional incentive in the form of a protocol governance token
- This reduces the borrowing cost (25% less token reward)
- Depending on price action, borrowing cost could be negative



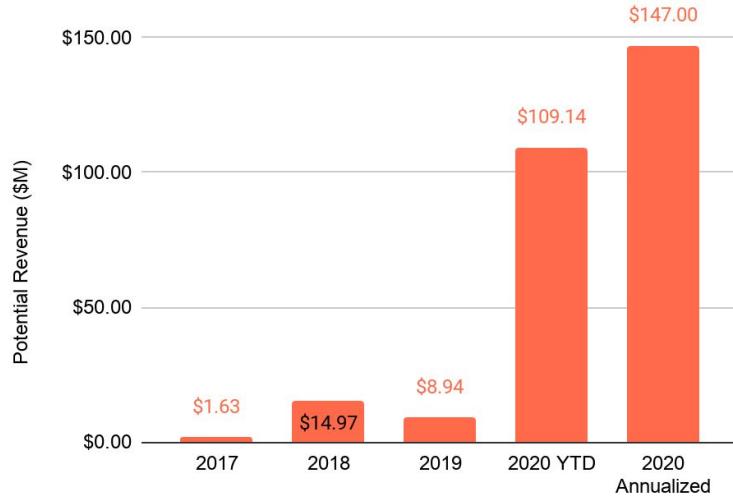
... resulting in DEX volume growing over 1,000%

DEX Trading Volume (USD)



YoY Growth	-	817.3%	-40.3%	1121.1%	1569.3%
------------	---	--------	--------	---------	---------

DEX Potential Revenues

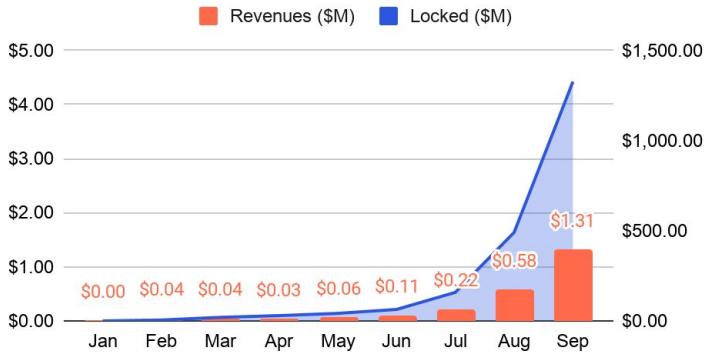


CAGR	349.9%
------	--------

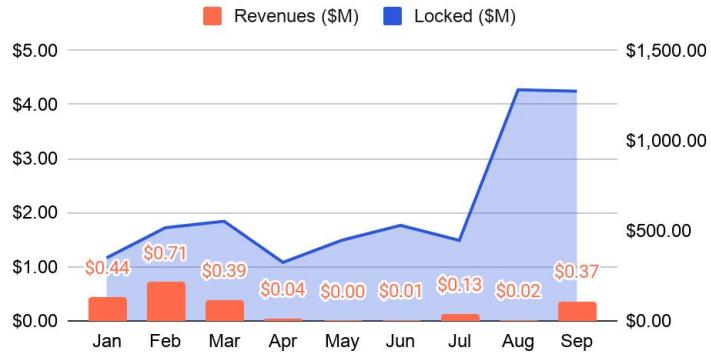
- 2020 has massive growth in DEX volume, with an annualized ~16x growth from 2019 to 2020.
- The numbers are still quite small relative to centralized exchanges. Uniswap recently overtook Coinbase in daily volume, but that is only one exchange.
- Revenue pool is split between exchanges and Liquidity Providers, with most of this revenue going to the latter.

... and Lending protocol explosive growth in Q3

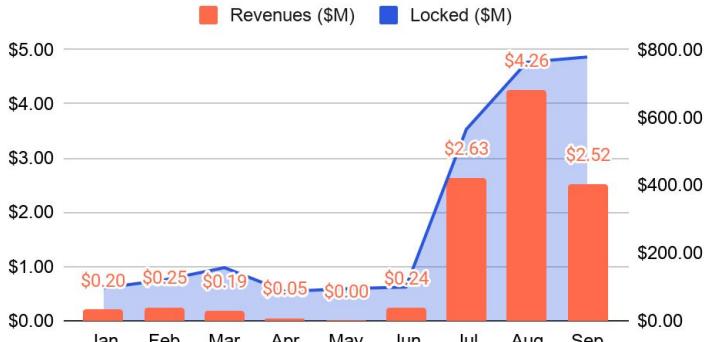
Aave



Maker



Compound



- Lending (esp. money market) protocols account for 38% of the TVL in Ethereum.
- 98% of Lending TVL is concentrated in the top 5 protocols, of which 87% is in the top 3 - Aave, Maker, Compound.
- TVL has grown ~650% since January this year.
- Total estimated revenues in 2020 (annualized) of ~\$23M

Packaged Financial Instruments (e.g., active fixed income funds)

Fund Interface

 **DAI**
DAI Stablecoin

Yearly Growth: **9.88%** on **936.12 DAI** Available to deposit: **10168.70 DAI**

Strategy: Currently Active: **DAICurve** Yearly Growth: **9.88%** Monthly Growth: **0.82%** Weekly Growth: **0.19%**

Statistics: Total Earnings: **19.74 DAI** Deposits: **916.38 DAI** Withdrawals: **0.00 DAI** Transferred In: **0.00 DAI** Transferred Out: **0.00 DAI**

Your wallet: **10168.6986 DAI** 936.1223 DAI (866.5309 yDAI)

0.00 0.00

25% 50% 75% 100% 25% 50% 75% 100%

Deposit **Deposit All** **Withdraw** **Withdraw All**

⚠️ Withdrawals might be subject to high slippage due to recent large withdrawal

Governance

Sign Up Log In  

all categories Categories Latest Top

Category Topics Latest

Projects 39 / week

The Projects category is a place where users can discuss projects and protocols that benefit and interact with the Yearn ecosystem.

General Chat 4 / week

Here you can talk about topics that don't fall into other categories.

Knowledge Base 1 / week

Contribute your knowledge to the community. Share howtos, tutorials, and other resources. Find answers in FAQ.

Resources & How-To's FAQ

Proposals 7 / week

When creating new post make sure you

Discussion Budget Strategies On-Chain Voting

Yield Farming Inception 49

Yield Farming Inception is the darkest place on forum.

Announcement 2 / week

The Announcement category is where team members put announcements, updates, release notes, and other insights.

Feedback 1 / week

Drop a line if you find something that can be improved.

Technical Discussion 37

A place for technical discussion on Yearn. Connect with other developers and ask questions about design and development.

YIP-52: Make Strategist Skin in Game Partner for Make Benefit of Glorious Brain of Yearn. *Voting open Nov 9-Nov 12 43 18h

Discussion yip snapshot voting

YIP-50: First step to contributors stash. *Voting open Nov 5-Nov 12 6 1d

Budget yip snapshot voting

Weekly Updates, Week Ending November 8th, 2020 0 2d

Announcement

Keep3r Posts Muted by Default 2 3d

Announcement

iEarn/Yearn name 6 1h

General Chat

Feb 2020 "hack" 0 2h

General Chat

Resource: Mainland China GitHub Mirrors and Registry Provisions 0 7h

Resources & How-To's

Create ETH 2.0 validator Vault 8 11h

Discussion

Yearn strategists recruiting 1

Important distinction between the protocol and the asset class

Asset

#	Name	Market Cap
1	Compound Dai Compound	\$1,016,466,965
2	Dai MakerDAO	\$901,705,006
3	Wrapped BTC Bitcoin	\$836,099,140
4	Yearn.finance Yearn.finance + Vaults	\$715,432,873
5	Curve Y Pool Curve	\$627,026,100
6	EthLend Token Aave	\$613,021,811
7	UMA Voting Token v1 ERC20	\$556,873,183
8	Synthetix Network Token Synthetix	\$530,002,960
9	Maker MakerDAO	\$443,963,538
10	Compound Compound	\$436,049,032
11	Uniswap WBTC/ETH Pool Uniswap V2	\$418,801,032
12	Uniswap ETH/USDT Pool Uniswap V2	\$397,558,769
13	Uniswap USDC/ETH Pool Uniswap V2	\$358,022,379
14	Compound Ether Compound	\$340,874,767
15	Uniswap Uniswap V2	\$328,713,420

Protocol

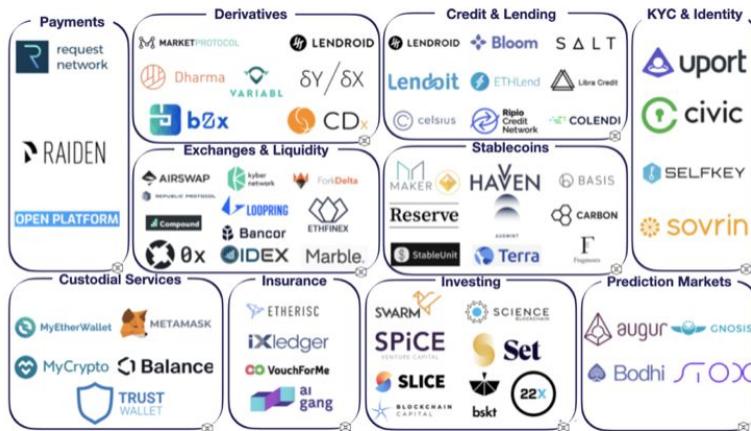
DEFI PULSE	Name	Chain	Category	Locked (USD) ▾	1 Day %
1.	Maker	Ethereum	Lending	\$1.89B	1.46%
2.	Uniswap	Ethereum	DEXes	\$1.87B	5.55%
3.	Aave	Ethereum	Lending	\$1.36B	1.97%
4.	Curve Finance	Ethereum	DEXes	\$1.29B	1.35%
5.	WBTC	Ethereum	Assets	\$889.8M	9.09%
6.	yearn.finance	Ethereum	Assets	\$837.4M	3.31%
7.	Compound	Ethereum	Lending	\$761.9M	6.68%
8.	Synthetix	Ethereum	Derivatives	\$598.8M	-0.87%
9.	Balancer	Ethereum	DEXes	\$435.5M	5.74%
10.	SushiSwap	Ethereum	DEXes	\$434.5M	-0.85%
11.	RenVM	Ethereum	Assets	\$247.7M	3.78%
12.	C.R.E.A.M. Finance	Ethereum	Lending	\$215.5M	3.44%
13.	InstaDApp	Ethereum	Lending	\$164.4M	0.94%
14.	Flexa	Ethereum	Payments	\$149.1M	-5.61%
15.	Nexus Mutual	Ethereum	Derivatives	\$68.6M	3.96%

DeFi replicates financial services on trustless infrastructure

THE BLOCK

Ethereum's DeFi ecosystem

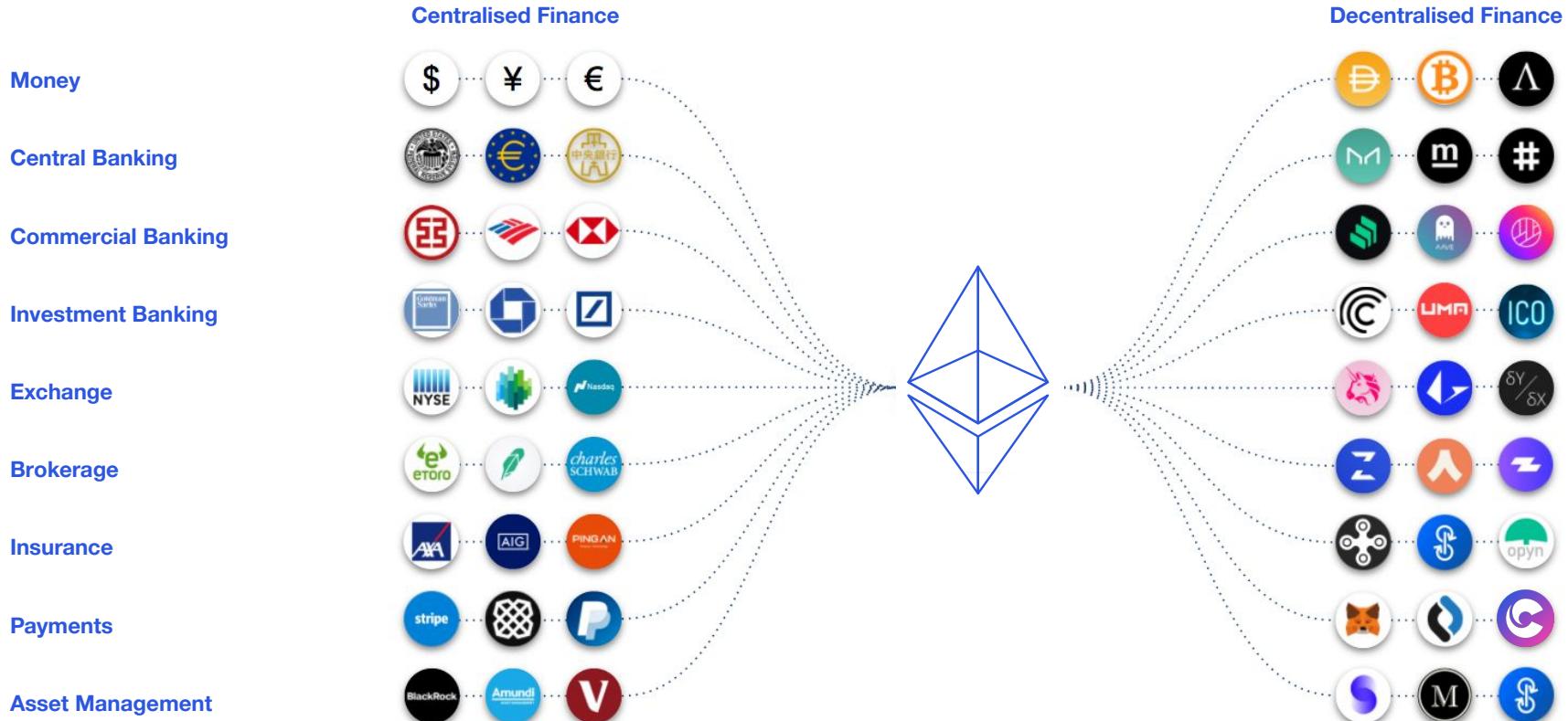
2018



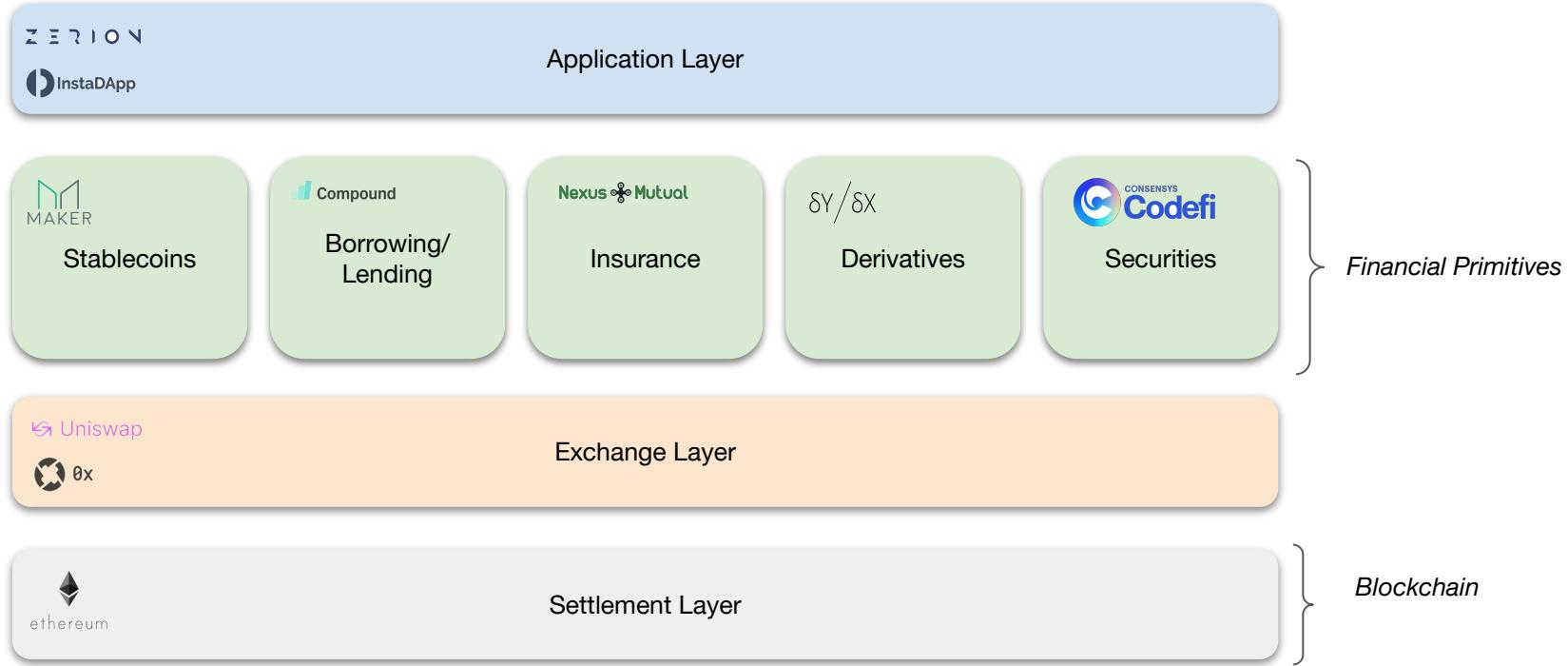
2020



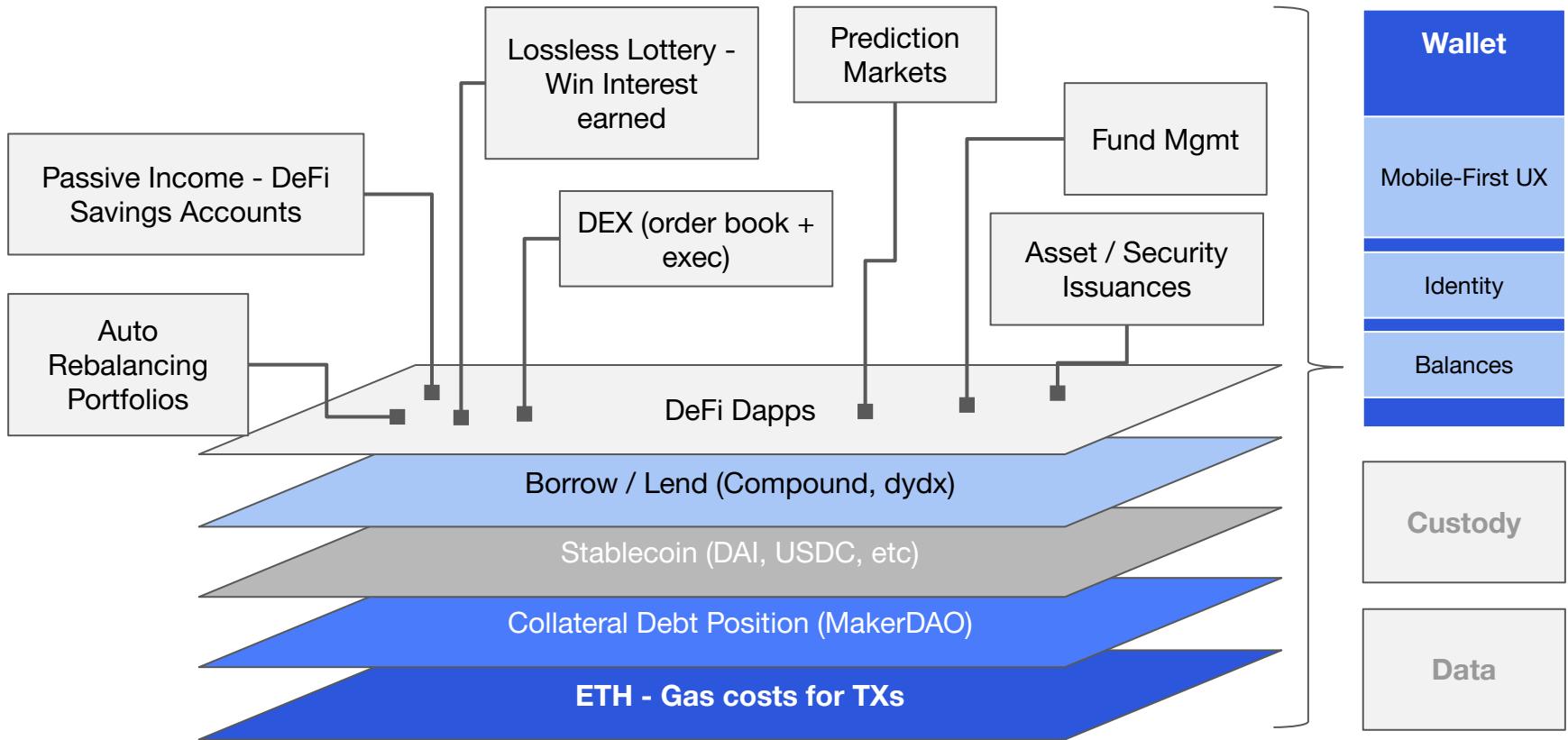
Protocols for every financial instrument and function



The DeFi Stack: a set of building blocks for the new financial age



Enabled DeFi design patterns



Payments processing – tech for making a payment

Worldpay - \$35 Billion



Welcome to RBS WorldPay

WorldPay

Help FAQs Security

Secure Payment Page

TEST MODE - this is not a live transaction

This payment page has been created by RBS WorldPay for . Please review your purchase details, then select a card or payment to proceed to the next page.

Limited FuturePay Agreement

Description	PhpWerx Billing Agreement
Individual payment amount	No limit
limit	
Payment number limit	No limit
Minimum interval between payments	No limit
Agreement cancellation possible	Any time

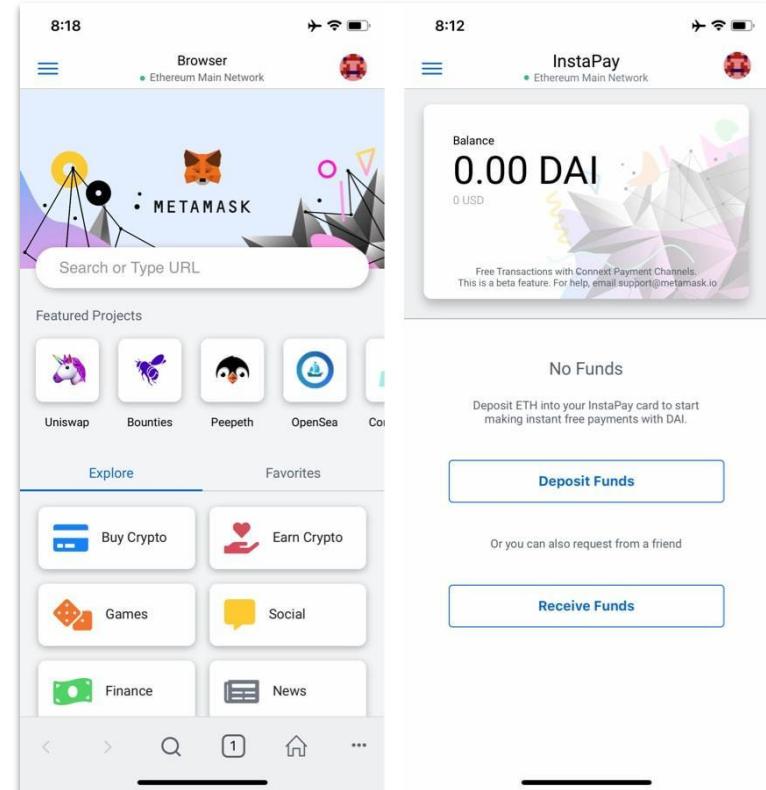
Select your payment method

MasterCard Visa American Express JCB Solo

Cancel

payments powered by **WorldPay**

Copyright (c) RBS plc 2010



8:18

Browser Ethereum Main Network

METAMASK

Search or Type URL

Featured Projects

Uniswap Bounties Peepeth OpenSea

Explore Favorites

Buy Crypto Earn Crypto

Games Social

Finance News

8:12

InstaPay Ethereum Main Network

Balance 0.00 DAI 0 USD

Free Transactions with Connect Payment Channels. This is a beta feature. For help, email support@metamask.io

No Funds

Deposit ETH into your InstaPay card to start making instant free payments with DAI.

Deposit Funds

Or you can also request from a friend

Receive Funds

Core Banking – tech for deposits and savings

Jack Henry - \$15 Billion

The screenshot shows a Core Banking System interface for a customer named Collette Sundell. The interface includes a header with the customer's name and a navigation bar with various links like 'Customer', 'Interest and Withdrawal', 'Statement', 'NFIFO', 'Exceptions', 'Historical', 'Revenue Opportunity', and 'Customer'. The main content area displays account details, balances, and transaction history. Key information includes:

- Customer Information:** Collette Sundell, 331 Rudey Road, Charlotte NC 28201.
- Account Details:** Checking account 100262475.
- Balances:** Available Balance + Bounce: \$34,979.32; Collected Balance: \$31,877.82; Current Balance: \$31,877.82; Hold Amount: \$0.00; Closing Balance: \$31,880.59.
- Interest:** Interest Rate: 0.612500 %; Interest Paid YTD: \$55.92.
- Previous Balances:** Yesterday's Balance: \$31,877.82; Last Statement Balance: \$34,499.14.
- Service Charge:** Service Charge Type: C - Charge; the account is to be assessed.
- Average Balances:** Average Collected Balance: \$32,939.35.

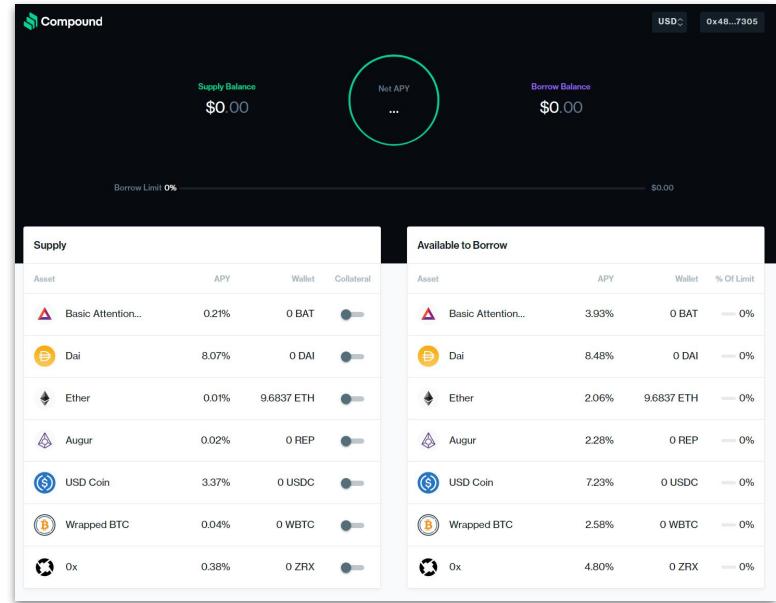
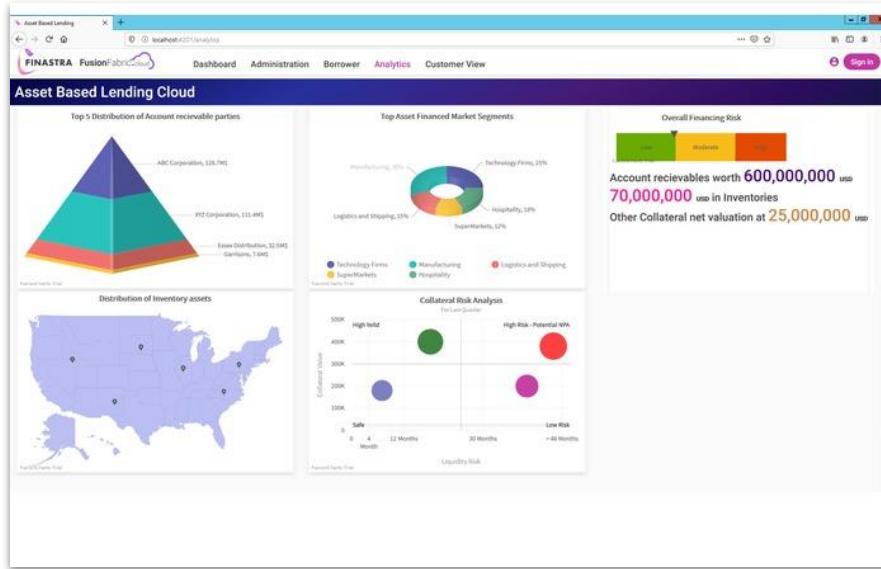
The interface is a standard web-based application with a light blue and white color scheme.

The screenshot shows a DeFi platform interface. At the top, there is a logo for 'MAKER' with a stylized 'M' icon. The main interface includes a 'Balance' section showing 100.05 DAI and \$100.05 USD, and a 'Dai Savings rate' of 5.00%. Below this are sections for 'Deposit' and 'Withdraw'. On the right, there is a 'Wallet balances' section showing DAI, SAI, ETH, and OMG balances, with buttons for 'SEND', 'MIGRATE', and 'SEND'. At the bottom, there is a 'Save Details' section showing total savings and supply details. The central part of the interface is a table listing various assets with their details:

Asset	Price	Reward	Adj. Reward	Market Cap	24h Volume	Total Staked	7d Price Change	Score
Tezos (XTZ)	\$ 2.68 (-11.19%)	5.63%	0.66%	\$1,896,708,188	\$241,176,011	79.46%		★★★★
Cosmos (ATOM)	\$ 3.18 (-13.11%)	8.25%	1.84%	\$601,311,549	\$171,587,895	71.85%		★★★★
Livepeer (LPT)	\$ 1.31 (-13.82%)	53.72%	15.10%	\$8,361,517	\$21,655	64.71%		★★★★
Decred (DCR)	\$ 16.8 (-9.56%)	8.33%	3.93%	\$188,098,419	\$30,121,548	49.35%		★★★★

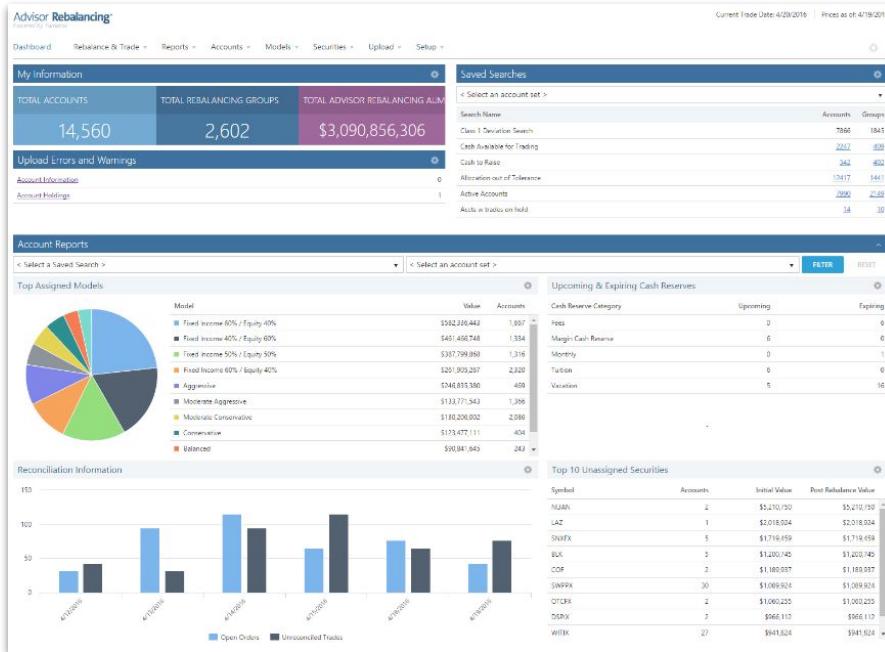
Lending / underwriting – tech for managing loan books

Finastra - \$5 Billion



Wealth Management – tech for trading and rebalancing

Envestnet – \$4 billion



Set | TokenSets

Resources | Company | Social Trader | Explore Sets | Sign In

TokenSets helps you easily

Manage Your Crypto

Enhance your portfolio with automated asset management strategies

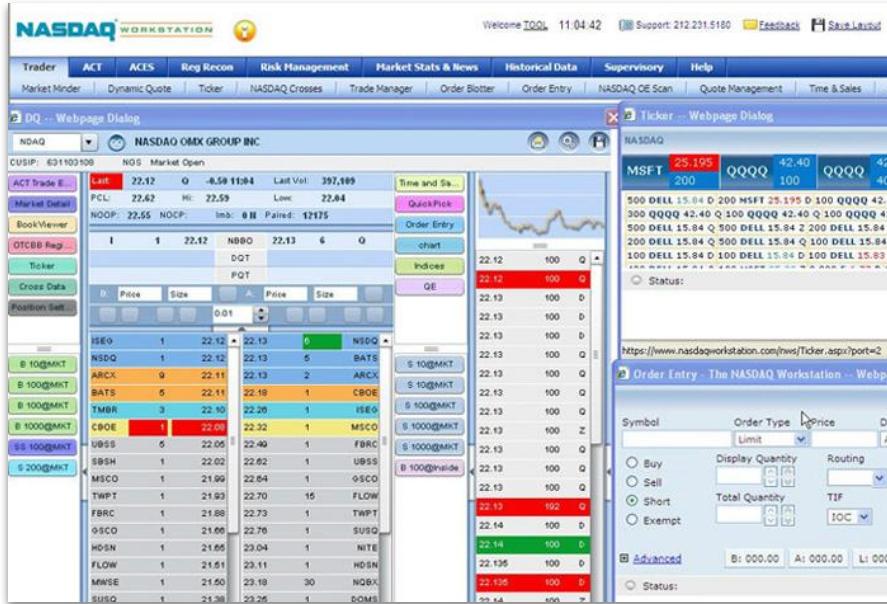
Get Started →

Name	Price	Change (1 Month)	Chart (1 Month)	
ETH 20 Day MA Crossover Set	\$206.60	↑ +0%		View
ETH 26 Day EMA Crossover Set	\$162.97	↑ +0%		View
ETH 12 Day EMA Crossover Set	\$161.72	↓ -5.69%		View
ETH RSI 60/40 Crossover Set	\$100.00	↑ +0%		View
ETH/BTC RSI Ratio Trading Set	\$98.85	↑ +3.00%		View

Explore More Sets →

Exchange & Clearing - tech and markets for asset exchange

Nasdaq - \$20 billion



 Kyber
network

KyberDeveloper

Seamless Token Swaps, Anywhere

Kyber is an **on-chain liquidity protocol** that aggregates liquidity from a wide range of reserves, powering instant and secure token exchange in any decentralized application.

[Read Protocol Paper](#)

 Swap Tokens ►
For End Users

 Build With Kyber ►
For End Developers

 List Your Tokens ►
For Token Teams

Derivatives - tech and markets for derivative exposure

Tradeweb – \$12 billion

The Tradeweb interface displays a dashboard with two pie charts: one for Asset Class (Multi, Corp, and others) and one for Event Type (Multi Px Up, Multi Px Down, and others). Below the charts is a table of recent events, each with a timestamp, event category, and description. The table includes columns for Curr Face, # Lots, # Repl., Event Category, Event Description, Event Received, Book Alert, and CUSIP Asset.

Curr Face	# Lots	# Repl.	Event Category	Event Description	Event Received	Book Alert	CUSIP Asset
\$62,645,000	48	49	Agency OUTLOOKWATCH Chg	Fitch rating watch Positive withdrawn	02/18/16 12:15 pm EST		05541VAE6 Corp
\$62,645,000	48	49	Rating UPGRADE	Fitch long term rating upgraded from A- to A+ eff 02/18/2016	02/18/16 12:15 pm EST		05541VAE6 Corp
\$59,125,000	21	23	Agency OUTLOOKWATCH Chg	Fitch rating watch Positive withdrawn	02/18/16 12:15 pm EST		05541VAF3 Corp
\$59,125,000	21	23	Rating UPGRADE	Fitch long term rating upgraded from A- to A+ eff 02/18/2016	02/18/16 12:15 pm EST		05541VAF3 Corp
\$50,000,000	1	1	Market Price DOWN	Market price change Down 5.9% from 67.92 to 63.92	02/05/16 06:00 pm EST		48125UXA5 Corp-SP
\$50,000,000	1	1	Market Price UP	Market price change Up 5.1% from 61.86 to 65.01	02/17/16 06:00 pm EST		48125UXA5 Corp-SP
\$50,000,000	1	1	Market Price UP	Market price change Up 3.7% from 66.54 to 69.02	01/26/16 06:00 pm EST		48125UXA5 Corp-SP
\$50,000,000	1	1	Market Price DOWN	Market price change Down 3.7% from 69.02 to 66.5	01/26/16 06:00 pm EST		48125UXA5 Corp-SP
\$50,000,000	1	1	Market Price UP	Market price change Up 4.8% from 57.86 to 60.64	02/12/16 06:00 pm EST		48125UXA5 Corp-SP
\$50,000,000	1	1	Market Price DOWN	Market price change Down 11.9% from 63.92 to 56.29	02/09/16 06:00 pm EST		48125UXA5 Corp-SP
\$50,000,000	1	1	Market Price DOWN	Market price change Down 3% from 82 to 79.5	02/09/16 06:00 pm EST		868536A... Corp
\$50,000,000	2	1	Market Price DOWN	Market price change Down 6.4% from 59.168 to 55.379	02/11/16 06:00 pm EST		78442FD... Corp
\$49,603,000	37	39	Market Price UP	Market price change Up 5.6% from 62.708 to 66.195	01/26/16 06:00 pm EST		23311VAD9 Corp
\$49,603,000	37	39	Market Price UP	Market price change Up 3.1% from 62.617 to 64.573	02/17/16 06:00 pm EST		23311VAD9 Corp

The UMA website features a header with links to About, Community, Docs, GitHub, Medium, and Twitter. The main content area has a title "Tokens and Derivatives to Trade Anything" and a subtext about UMA being a decentralized financial contracts platform. The Synthetix website features a title "SYNTHETIX" and a subtext "Decentralised synthetic assets". It shows sections for Fiat currency stablecoins (SUSD, SETH, SREP, SGB), Cryptocurrencies (long & short) (iBTC, iETH, iONB), and Commodities (SUS, SGB, 10x). A section titled "Introducing Synths" explains that Synths are tokens providing exposure to assets like Bitcoin, US Dollars, TESLA, and AAPL within the Ethereum blockchain.

UMA

About Community Docs GitHub Medium Twitter

Tokens and Derivatives to Trade Anything

UMA is a decentralized financial contracts platform built to enable Universal Market Access. Use UMA's self-enforcing contract design patterns and provably honest oracle mechanism to create your own financial products using standards like ERC20. [Read Our Whitepaper](#).

SYNTHETIX

Decentralised synthetic assets

NEW TRADE CRYPTO, COMMODITIES, AND FOREX ON SYNTHETIX EXCHANGE!

Fiat currency stablecoins

Cryptocurrencies (long & short)

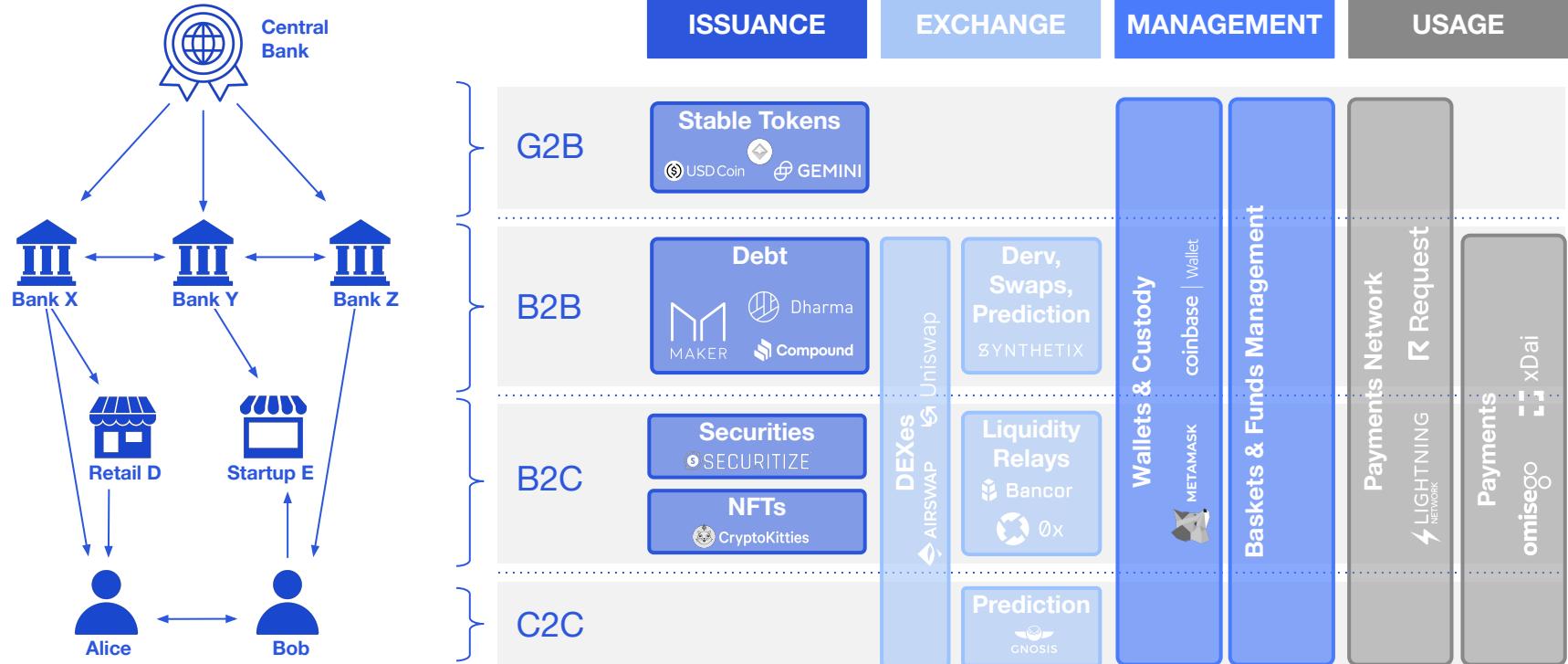
Commodities

And coming soon:

Introducing Synths

Synths are tokens that provide exposure to assets such as gold, Bitcoin, U.S. Dollars, TESLA, and AAPL within the Ethereum blockchain.

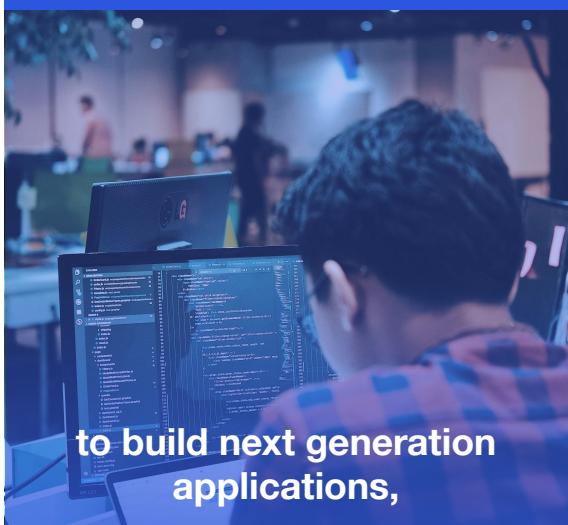
Learning from DeFi: adoption is all about the ecosystem



ConsenSys is the leading Ethereum software company

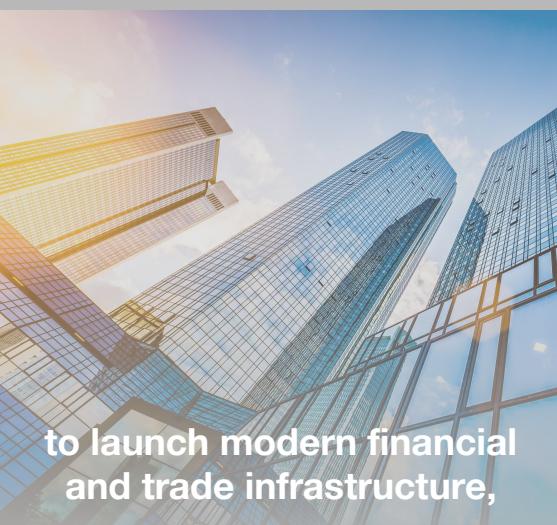
We enable

Developers,



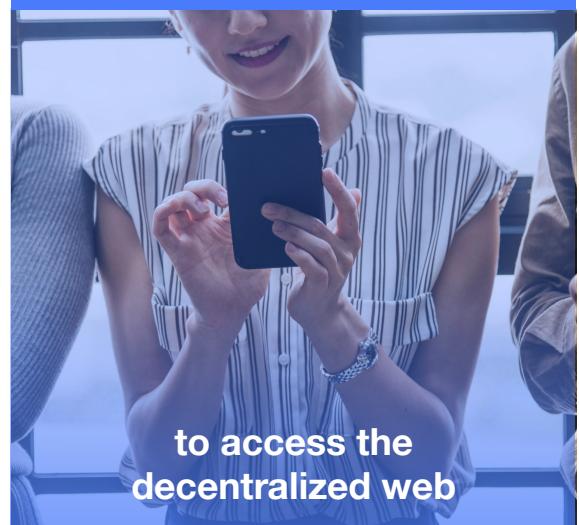
to build next generation applications,

Enterprises,



to launch modern financial and trade infrastructure,

and people worldwide,



to access the decentralized web

Using our market-leading product suite



INFURA

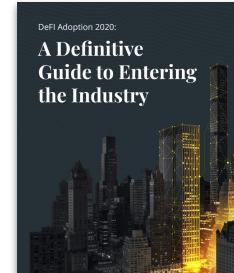
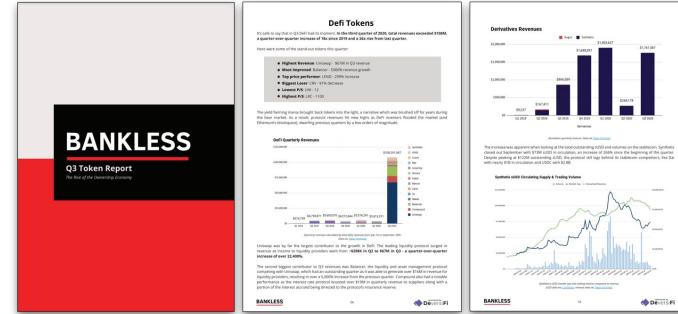


Additional Useful Resources

DeFi data points

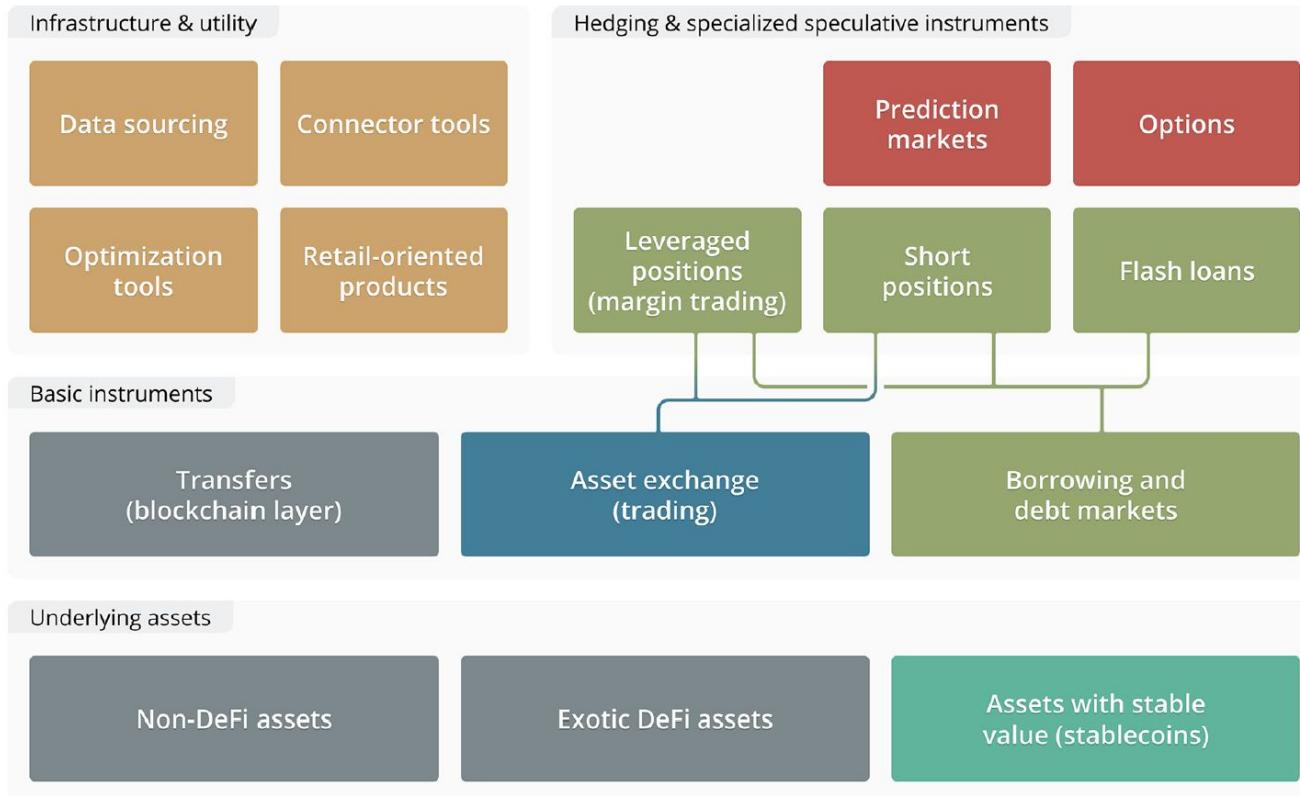
- DeFi Total Value Locked (**Protocol level**) on [defipulse](https://defipulse.com)
- DeFi Marketcap (**Assets level**) on [defimarketcap](https://defimarketcap.com)
- Another look at token projects on [Token Terminal](https://tokenterminal.com)
- DeFi lending/borrowing rates on [defirate](https://defirate.com)

Token Reports

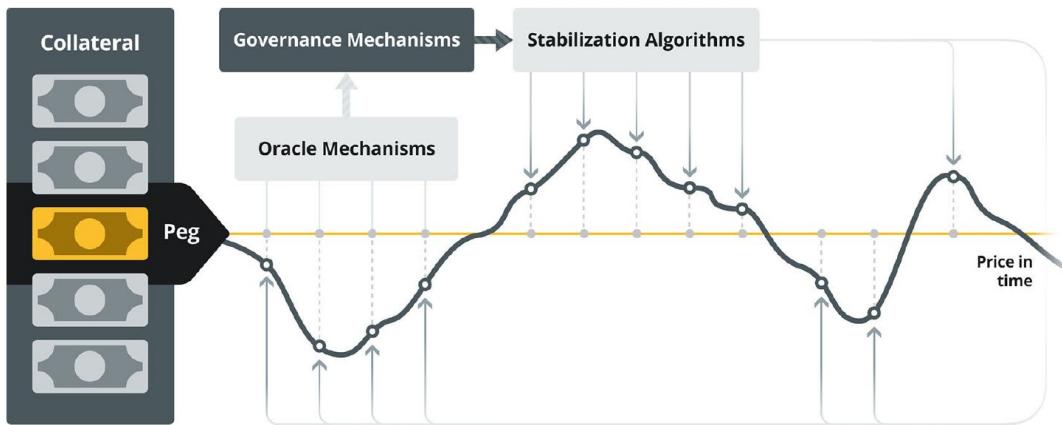


Case Study: Makerdao

DeFi Protocol Patterns



Underlying Assets: Stablecoins (CDP model)



A stablecoin is supported with three key components: oracle mechanisms that feed the market prices into the system, governance mechanisms that adjust the system's parameters in response to market events, and stabilization algorithms that adjust incentives for market participants to affect the stablecoin price and push it towards the peg.

Collateralized Debt Position (CDP) Model



Maker.DAO uses pure form of a CDP Stablecoin.

DAI created when user locks collateral into CDP. CDP is open for anyone. Owner of CDP can borrow stablecoins from or redeem them to get their collateral back.

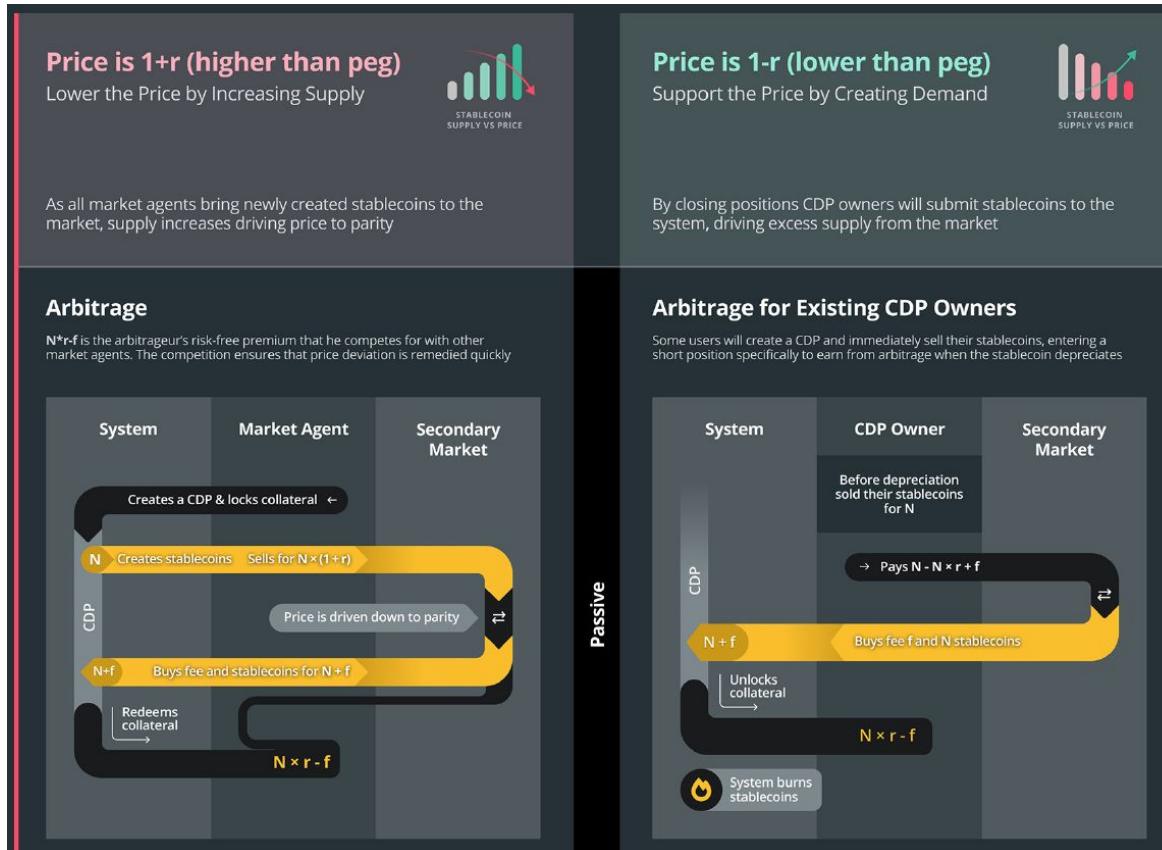
Since stablecoins are considered debt, the accrued interest rate (stability fee) is revenue distributed to platform stakeholders and insurance pools

SYNTHETIX

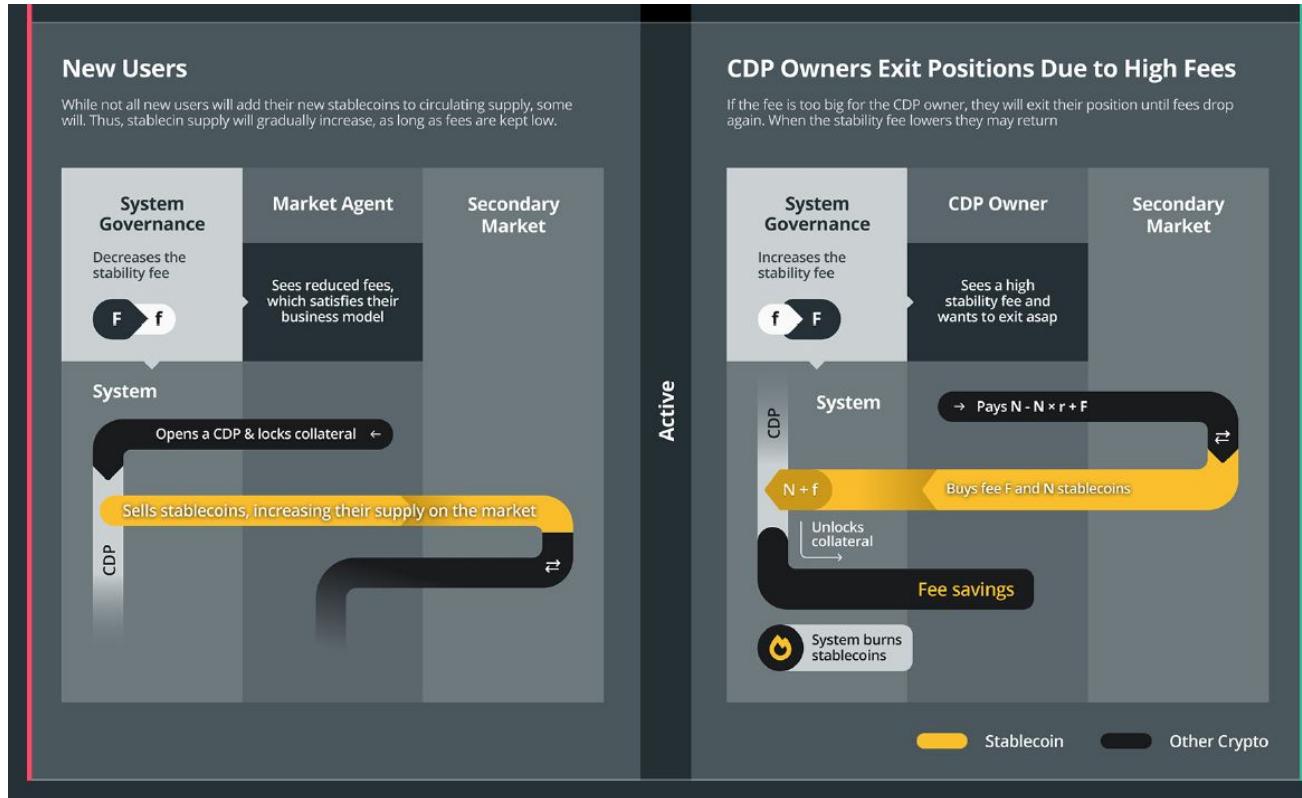
CDP owners issue multiple types of synthetic assets from the same collateralized position. Synthetics follow the price movements of assets they mirror (via oracle price feeds), but can be converted to other synthetics or burned at will with zero slippage and no need of a counterparty.

Staking is needed to obtain SNX. Then you can issue assets such as sUSD, sEUR, sETH or sBTC representing exposure to various markets. There are stable synths and volatile synths.

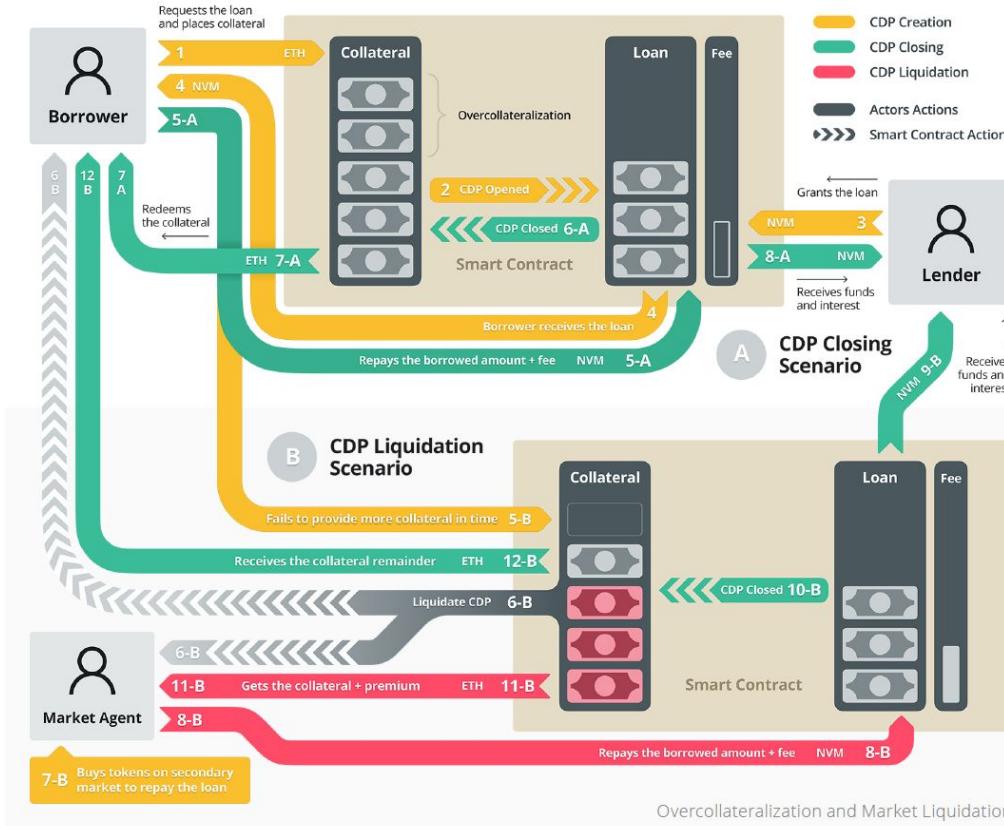
Stabilization Mechanisms: CDP (Passive & Active Incentives)



Stabilization Mechanisms: CDP (Passive & Active Incentives)



CDP Overcollateralization & market liquidation

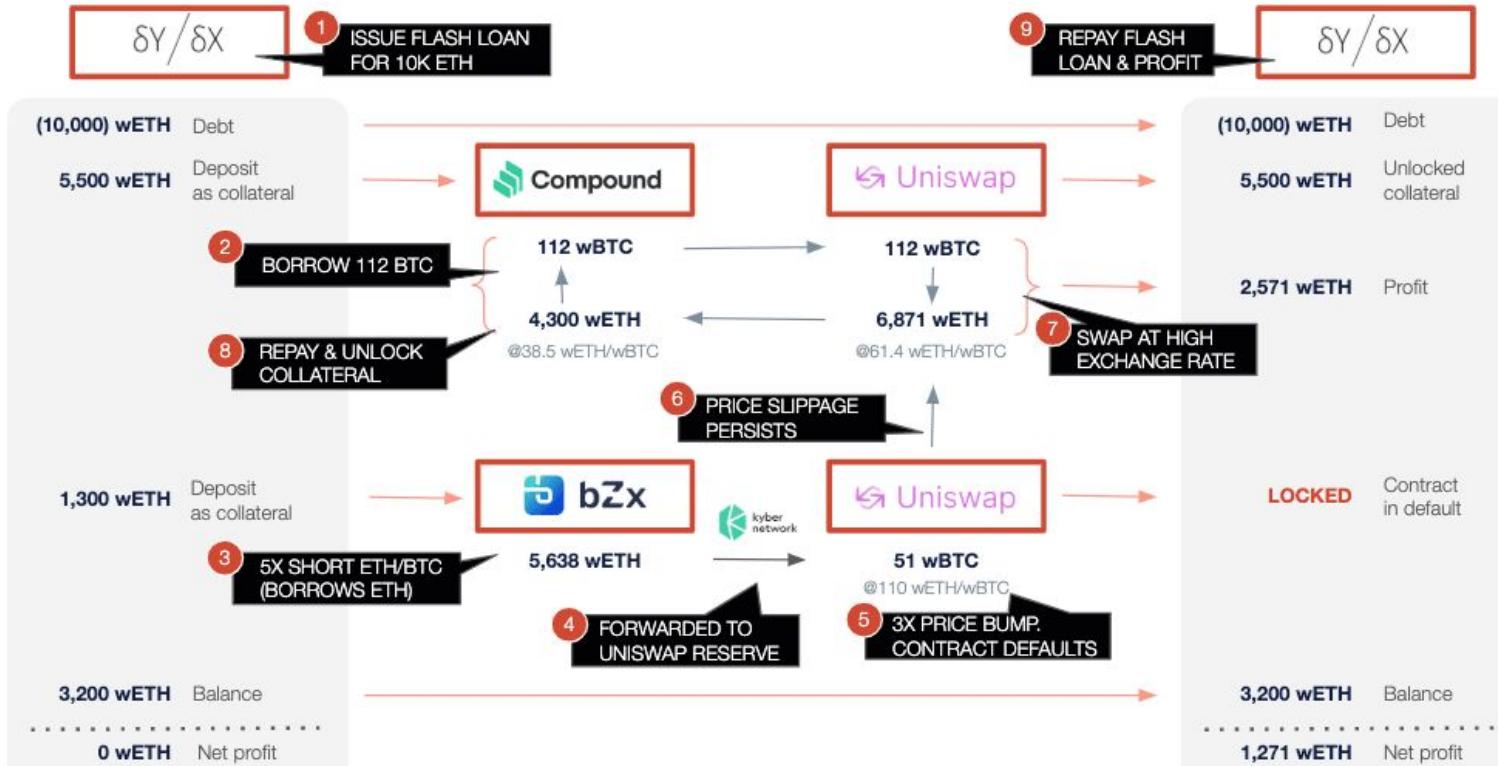


Special Topic: Exploitation of DeFi Composability

Key DeFi Composability Risk Takeaways

- DeFi financial primitive patterns are **growing in complexity** with each added product.
- When a new product (e.g. flash loans) was introduced, there was a path that was not traditional arbitrage across networks, but rather a **combination of financial products** that led to a direct payout.
- **Composability is the source of innovation**, but also poses a large risk to the full Ethereum ecosystem
- **Mitigations can include creation of tools** for analyzing liquidity, oracle sources, insurance, and threshold caps

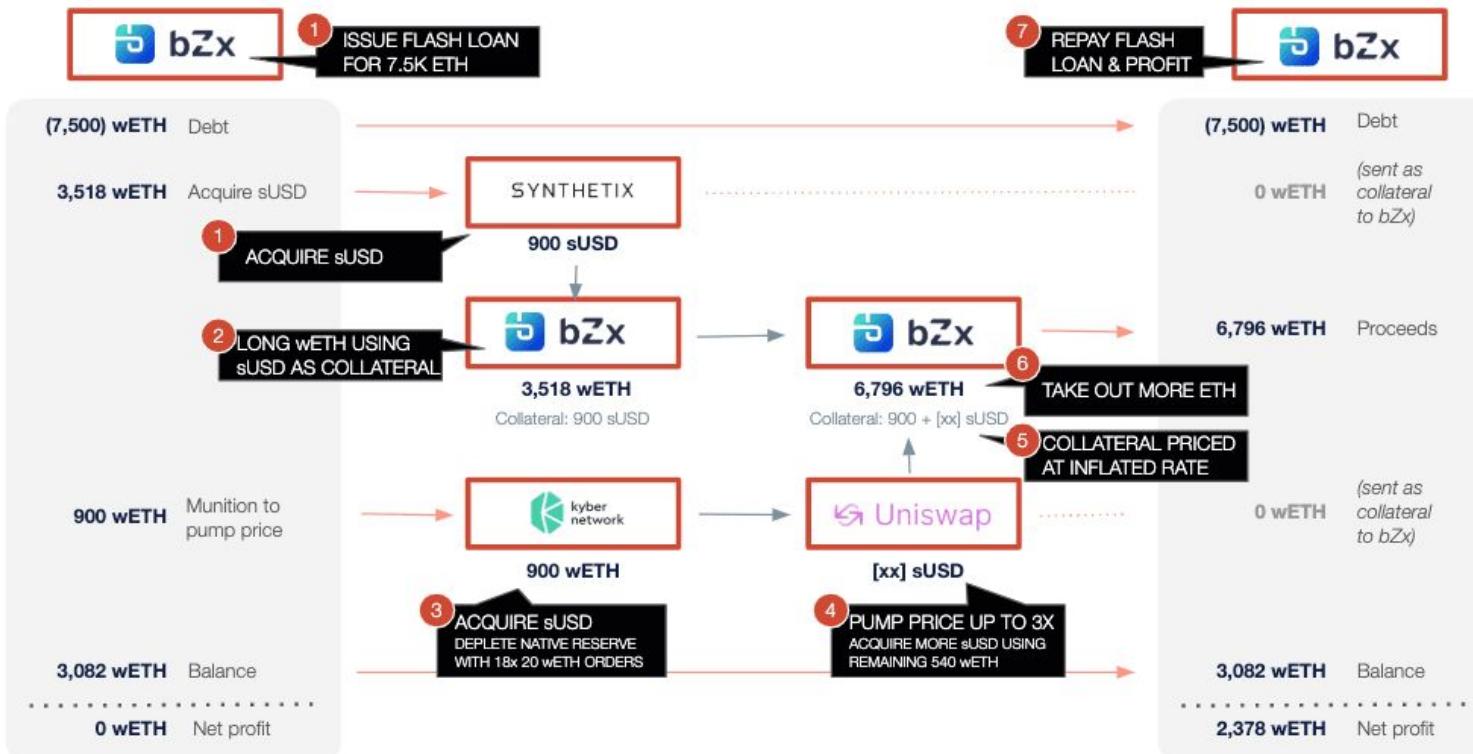
#1: bZx 'Valentine's Day' Exploit 💔



Source: Steps from Etherscan, bZx Post-Mortem, PeckShield post. wETH/wBTC ratio, profit amount from PeckShield report.

© The Defiant 2020

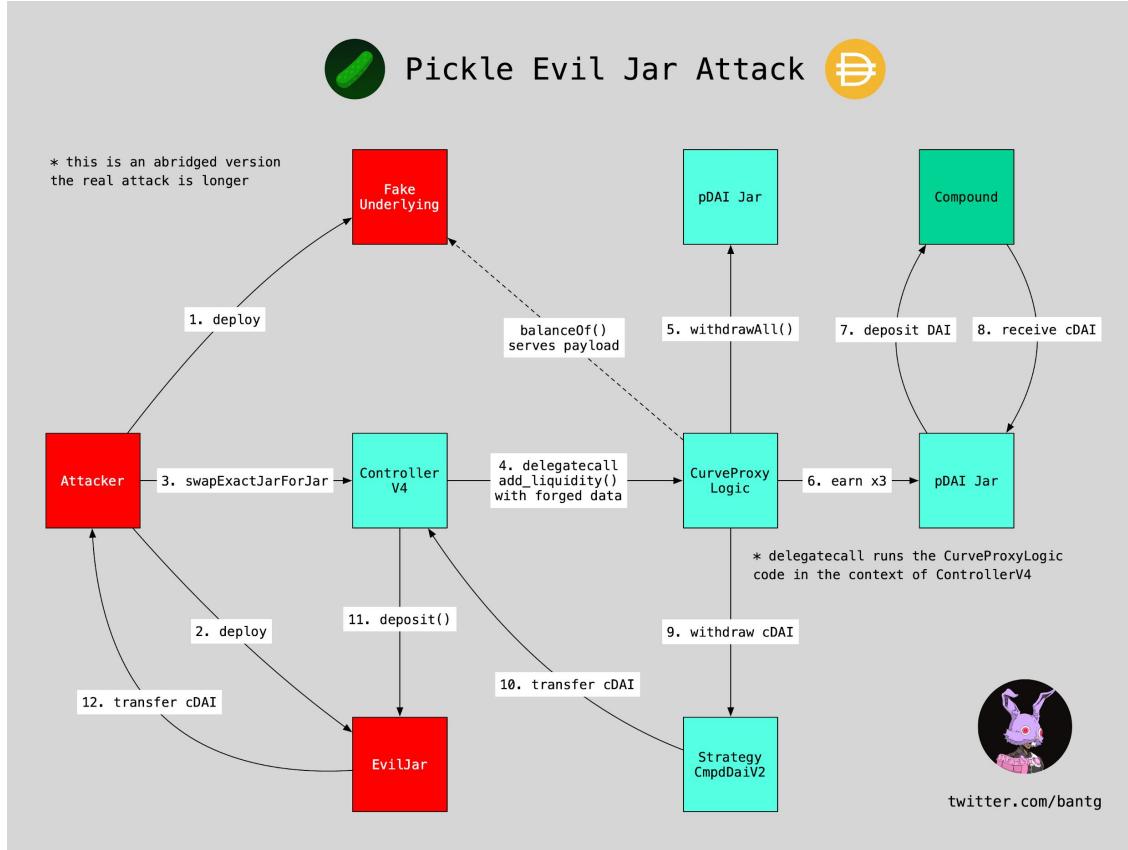
#2: bZx 'Sunday Scaries' Exploit



Source: Steps from Etherscan, @DegenSpartan, Kerman Kohli

© The Defiant 2020

Pickle Attack (Nov 21)



What can be done about those composability pitfalls?

Liquidity Analysis

Ongoing monitoring around the attack vector of flash loan liquidity compared to assets used by platform liquidity.

Bootstrap Insurance Liquidity

With new insurance protocols such as Nexus and Opyn, taking the other side of the insurance is a way to signal confidence that you're willing to pay out losses

Oracle Analysis

Don't just assume a large whale won't manipulate oracles, anyone can become one now.

Liquidity Caps

Don't rush the deployment process: lot of testnet time and then progressive liquidity caps to limit scale of potential losses

Thank You!

How Devs Get Started

Quorum Developer Quickstart

`npx quorum-dev-quickstart` Copy

Docs links

- besu.hyperledger.org →
- docs.pogorium.consensys.net →
- docs.orchestrate.consensys.net →
- docs.orion.consensys.net →
- docs.tessera.consensys.net →
- docs.ethsigner.consensys.net →
- docs.quorumplugins.consensys.net →

Requirements for the computer to run the command

- nodejs v10+
- docker
- docker-compose

For Windows users:

- Windows Subsystem for Linux 2
- Docker desktop configured to use the WSL2-based engine

Have Questions? Contact us.

[SUBMIT A TICKET](#)

DEVELOPER PORTAL

The BUIDL Network

A global initiative supporting the Ethereum developer community and the people behind Web3 technology.

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MythX WATCH NOW

Using Security Tools in Smart Contract Development WATCH NOW

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Browse Webinars



Blockchain Knowledge Base

Welcome to the world of blockchain! If you're in the early stages of exploration and eager to find out why blockchain matters and how it's changing the game.

What is Blockchain Technology?
How Does a Blockchain Work?
Blockchain vs. Cryptocurrency
What is Ethereum? Zcash?
How Does Ethereum Work?
What is the Ethereum Blockchain?
What is Cryptocurrency?

Read our [Introduction to Blockchain Technology](#) →



Quorum Dev Quickstart - consensys.net/developers

Get Started with Ethereum

Step 1: Send Your First Transaction

- First Steps →
- What You Can Do With Blockchain →
- Web2 Stack vs. Web3 Stack →
- Sending Your First Transaction →

[START STEP 1](#)

Step 2: Create a Smart Contract

- Getting Familiar With Truffle →
- Starting a Truffle Project →
- Writing a Smart Contract →
- Using the Remix Compiler →

[START STEP 2](#)

Step 3: Launch a Decentralized App (Dapp)

- Getting Started With Infura →
- Setting Up a Smart Contract →
- Deploying Your First Public Contract →
- Building a Web3 Frontend →

[START STEP 3](#)

Review Knowledge Base

Derivatives

DISCLAIMER

Accenture holds no view regarding the merits or viability of the technologies presented.

What is a derivative?



Definition

A derivative is a contract between two or more parties whose value is based on an agreed-upon underlying financial asset, index or security.



Types

Futures contracts, forward contracts, options, swaps, and warrants are commonly used derivatives.



Motivation

Derivatives can be used to either mitigate risk (hedging) or assume risk with the expectation of commensurate reward (speculation).

What is a DeFi derivative?

Blockchain-based smart contracts enable the creation of **tokenized derivatives** whose value is derived from the performance of an underlying asset and in which counterparty agreements are **hardwired in code**. DeFi derivatives can represent real-world assets such as **fiat currencies, bonds, and commodities**, as well as **cryptocurrencies**.



3 Case Studies



$\delta Y / \delta X$



Case study: Synthetix (1/3)



What is it?

- Decentralized synthetic asset issuance protocol built on Ethereum
- Create DeFi derivatives that track real-world assets
- crypt-native exposure to traditional markets.
 - fiat currencies, ETFs, commodities and cryptocurrencies, the platform offers

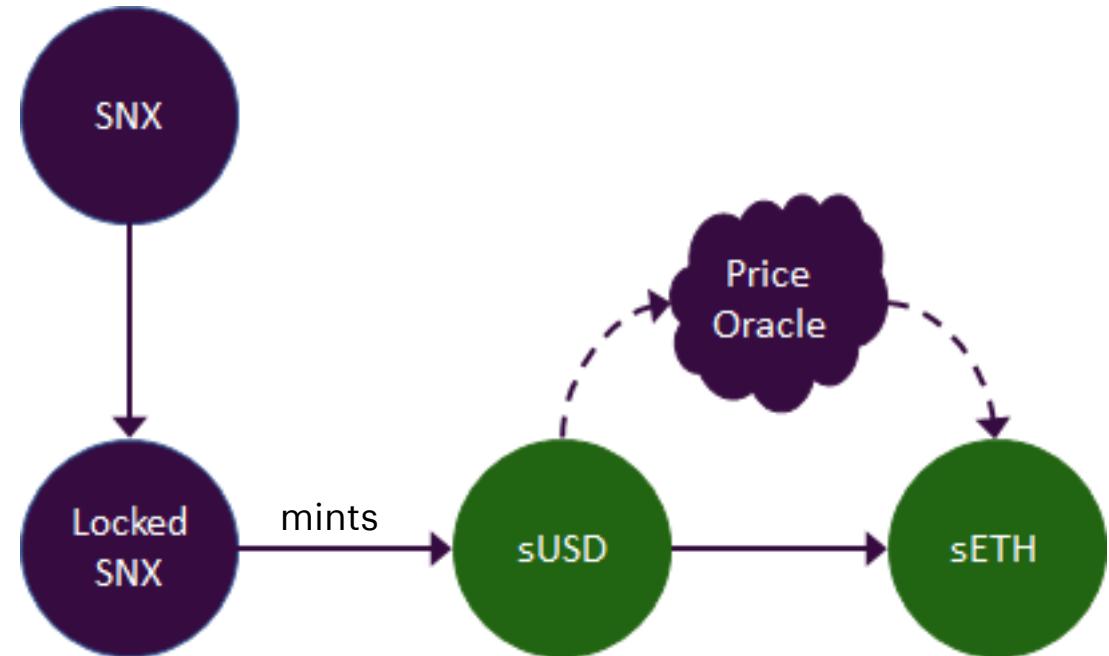


Case study: Synthetix (2/3)



How does it work?

- SNX as *collateral* to mint Synthetic assets (Synths)
- Conversions between Synths *directly* avoiding the need for counterparties.
- All Synths are backed with up to 800% *collateral*



Synthetix doc intermezzo

Case study: Synthetix (3/3)



What are the risks?

- Price shock: under-collateralization
- Centralisation risk:
 - dev team dependency
 - Chainlink
- Regulatory uncertainty

[Home](#) / [News](#) / [FCA bans the sale of crypto-derivatives to retail consumers](#)

FCA bans the sale of crypto-derivatives to retail consumers

Press Releases | First published: 06/10/2020 | Last updated: 06/10/2020

The FCA has published final rules banning the sale of derivatives and exchange traded notes (ETNs) that reference certain types of cryptoassets to retail consumers.

The FCA considers these products to be ill-suited for retail consumers due to the harm they pose. These products cannot be reliably valued by retail consumers because of the:

- inherent nature of the underlying assets, which means they have no reliable basis for valuation
- prevalence of market abuse and financial crime in the secondary market (eg cyber theft)
- extreme volatility in cryptoasset price movements
- inadequate understanding of cryptoassets by retail consumers
- lack of legitimate investment need for retail consumers to invest in these products

These features mean retail consumers might suffer harm from sudden and unexpected losses if they invest in these products.

Unregulated transferable cryptoassets are tokens that are not 'specified investments' or e-money, and can be traded, which includes well-known tokens such as Bitcoin, Ether or Ripple. Specified investments are types of investment which are specified in legislation. Firms that carry out particular types of regulated activity in relation to those investments must be authorised by the FCA.

Source: <https://www.fca.org.uk/news/press-releases/fca-bans-sale-crypto-derivatives-retail-consumers>

Excel Intermezzo

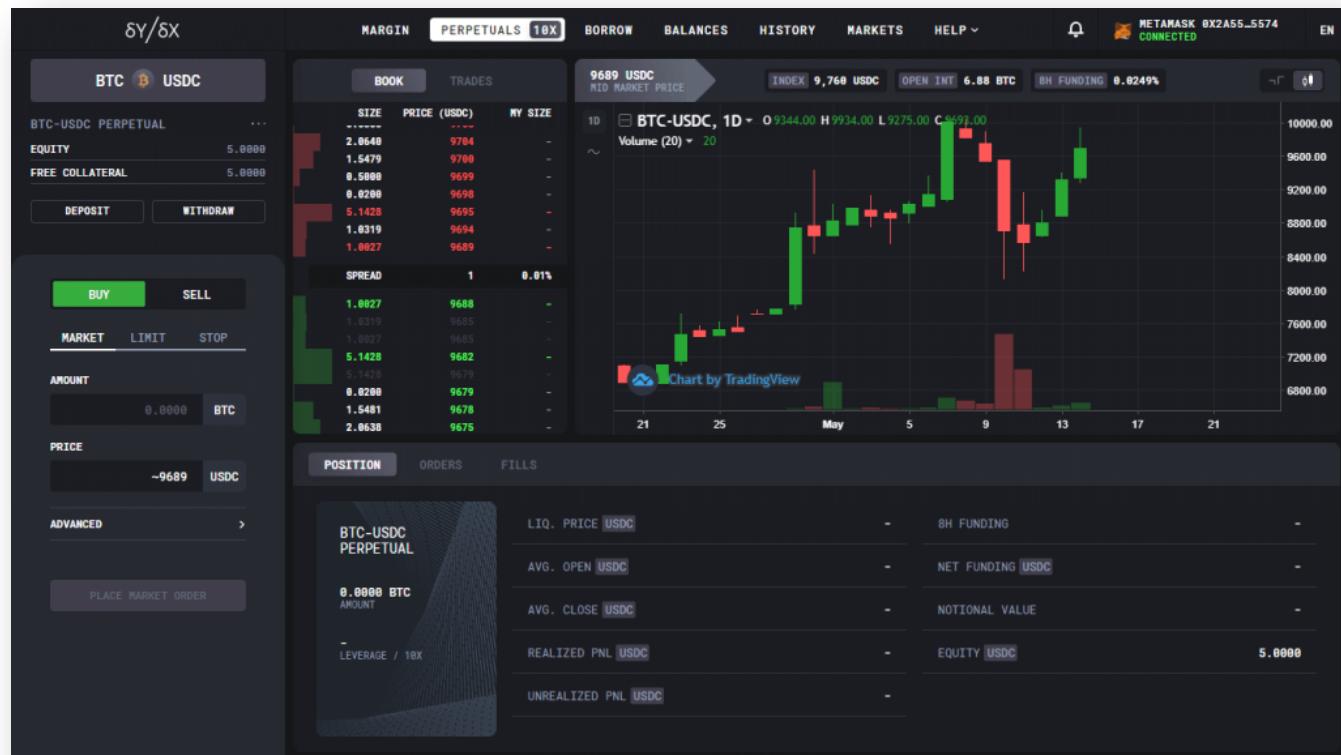
[Link to Sheet](#)

Case study: dYdX (1/3)

$\delta Y / \delta X$

What is it?

- dYdX is a decentralized trading platform
- currently supports *margin trading, perp-futures, spot trading, lending, and borrowing*
- High volume due to blend of different features

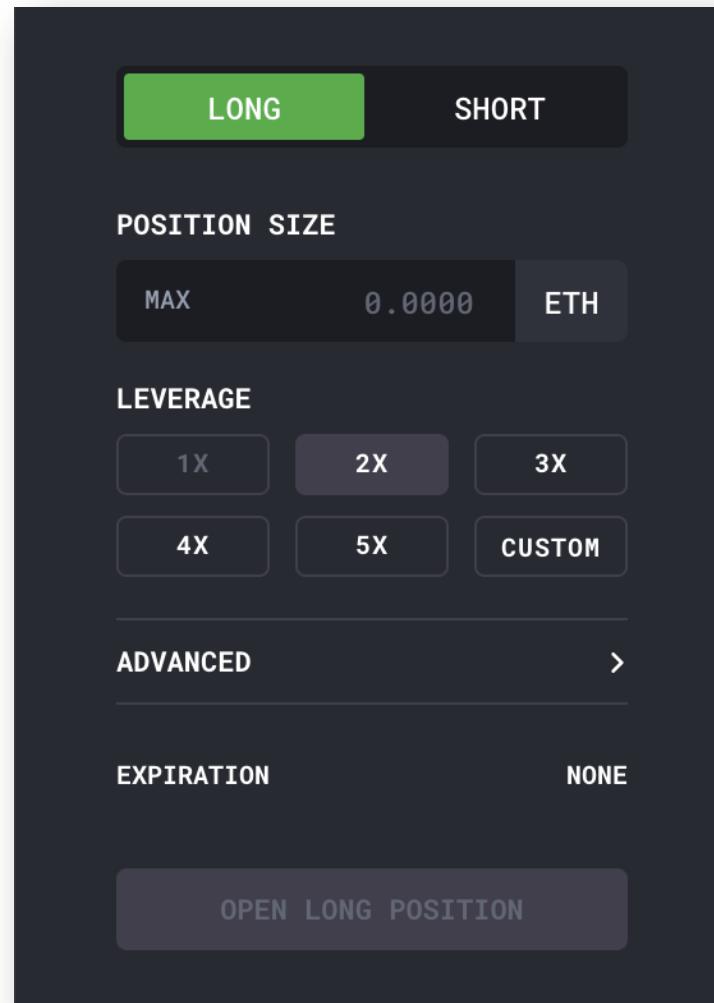


Case study: dYdX (2/3)

$\delta Y / \delta X$

How does it work (Margin)?

- “*The longs pay the shorts and the shorts pay the longs*”
- Isolated margin
 - ‘isolate’ a certain amount of funds as part of a trade, at a specific leverage.
 - Leverage determines how much margin deposit is required
 - If liquidation occurs, losses are capped by the size of the isolated position.
- Cross margin
 - utilizes all assets in your dYdX account balance as collateral
 - More value at risk, higher leverage
- More [here](#)



Case study: dYdX (3/3)

$\delta Y / \delta X$

What are the risks?

- Price volatility: margin-call
- Centralisation risk
 - dev team dependency
 - Chainlink
- Regulatory uncertainty
 - Known dev team



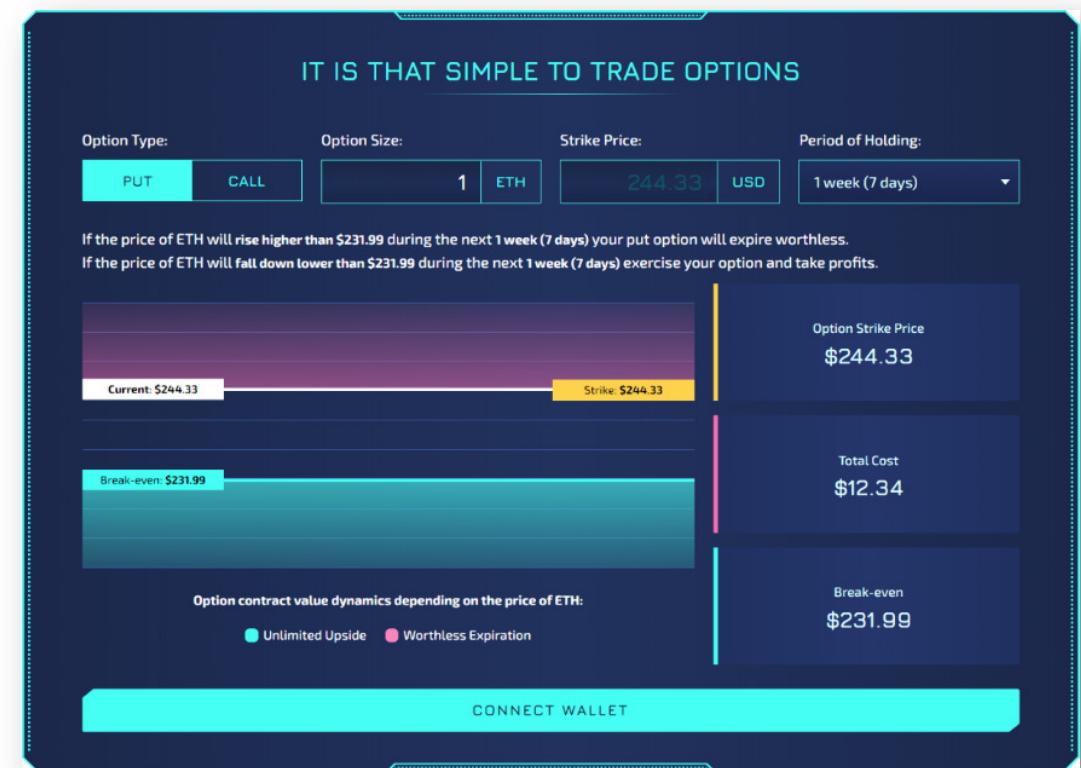
dYdX Exchange Intermezzo

Case study: Hegic (1/3)



What is it?

- on-chain options trading protocol on Ethereum
- Buy WBTC or ETH call and put options as a holder (buyer)
- Sell call and put options as one of the liquidity providers
- Hedge or leverage your position

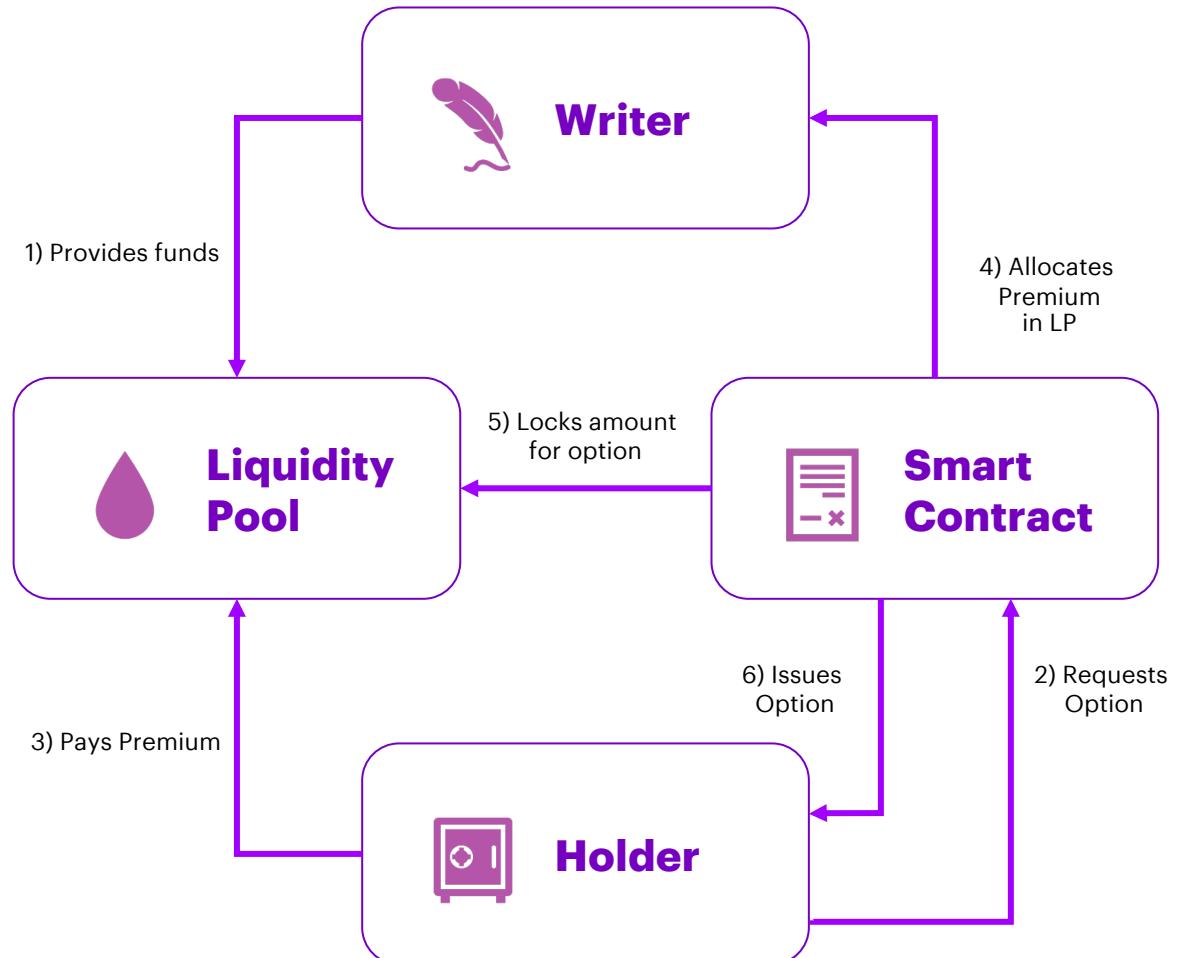


Case study: Hegic (2/3)



How does it work?

- Options Writers
 - Write call and put options.
 - Provide liquidity and start earning yield on WBTC or ETH. Auto diversification of capital allocation.
- Option Holders
 - Trade call and put options.
 - Non-custodial options with on-chain settlement. Choose any strike price, exercise at any moment.
- More [here](#) and [here](#)



Case study: Hegic (3/3)



What are the risks?

- Centralisation risk
 - dev team dependency (Admin control)
 - Chainlink
- Regulatory uncertainty
- Pseudonymous dev team
- V888 is in Beta at the time of this writing
- Value at Risk (however Risk is shared by LPs pro-rata)
- More [here](#)

Nothing preventing admin actions as per documentation

The Hegic documentation states the following:

Hegic Protocol V1 contracts admin key holder CAN'T:

call withdraw function (can't withdraw users' funds from the pools contracts)
call lock function (can't lock funds on the liquidity pools contracts)
call unlock function (can't unlock funds on unexercised active contracts)
call transfer function (can't send users' writeETH / writeERC tokens)
call exercise function (can't exercise users' active options contracts)

However, there is no limitation of any sort on the `owner` calling these functions. Resolution of this deviance is solved through limiting all calls to the function to block the owner address.

Resolution: Hegic notes that:

Added to README.md:

[Added on 28.05.2020] ATTENTION! PLEASE READ THIS! During the first 90 days after the V1.1 contracts deployment (these contracts are not deployed yet) the owner address will be a highly privileged account. It means that the contracts will be under the owner's control. After 90 days from the `contractCreationTimestamp` time,

19

these privileges will be lost forever and the contracts owner will only be able to use `setLockupPeriod` (LockupPeriod value can only be <60 days), `setImpliedVolRate`, `setMaxSpread` functions of the contracts.

Bramah believes that this inclusion adequately illustrates the risk for usage with the contract.

Source: https://bramah.systems/audits/Hegic_Audit_Bramah.pdf

Hegic Smart-Contract Intermezzo

DeFi M&A

- Hedged DeFi strategies
- Hedged yield farming
- Stabilize yield for a premium

