



# Hacking Open the Open Data Economy, Ocean style

@oceanprotocol  
Trent McConaghy



ocean

# The Token Economy Is Opening Up Money

**Opaque, Power  
Concentrated**

**Transparent,  
Permissionless**

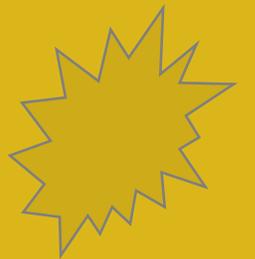
Money

**Shadow Money  
Economy**

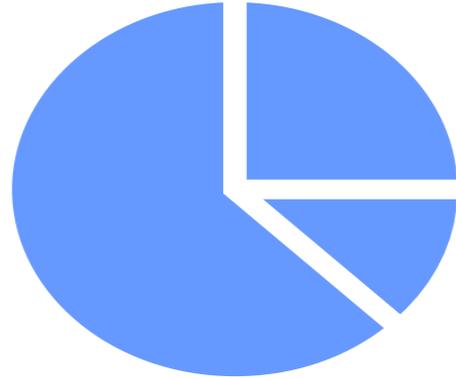
The Fed, Banks



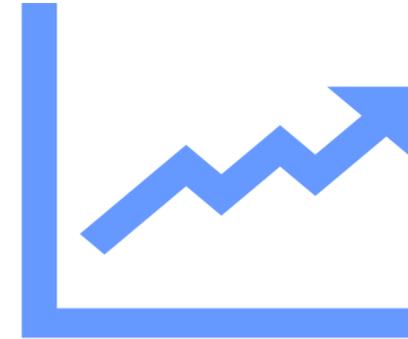
Token  
Economy  
BTC, ETH, .\*



# World Bank: “Digital Economy is a Data Driven Economy”



In 2016, the global Digital Economy was worth \$11.5 trillion, 15.5% of the world's GDP.



It is expected to reach 25% of the world's GDP in less than a decade.

# Just as We Opened Money, Let's Open Data (While Maintaining Privacy)

**Opaque, Power  
Concentrated**

**Transparent,  
Permissionless**





# About Ocean

# Ocean makes it easy to build data commons + data marketplaces

Enterprises, govts, NGOs  
With data & compute



Analysts & Data scientists  
With problems to solve



Data market

DM

DM

DM

DM

Data commons

Analytics &  
data science tools

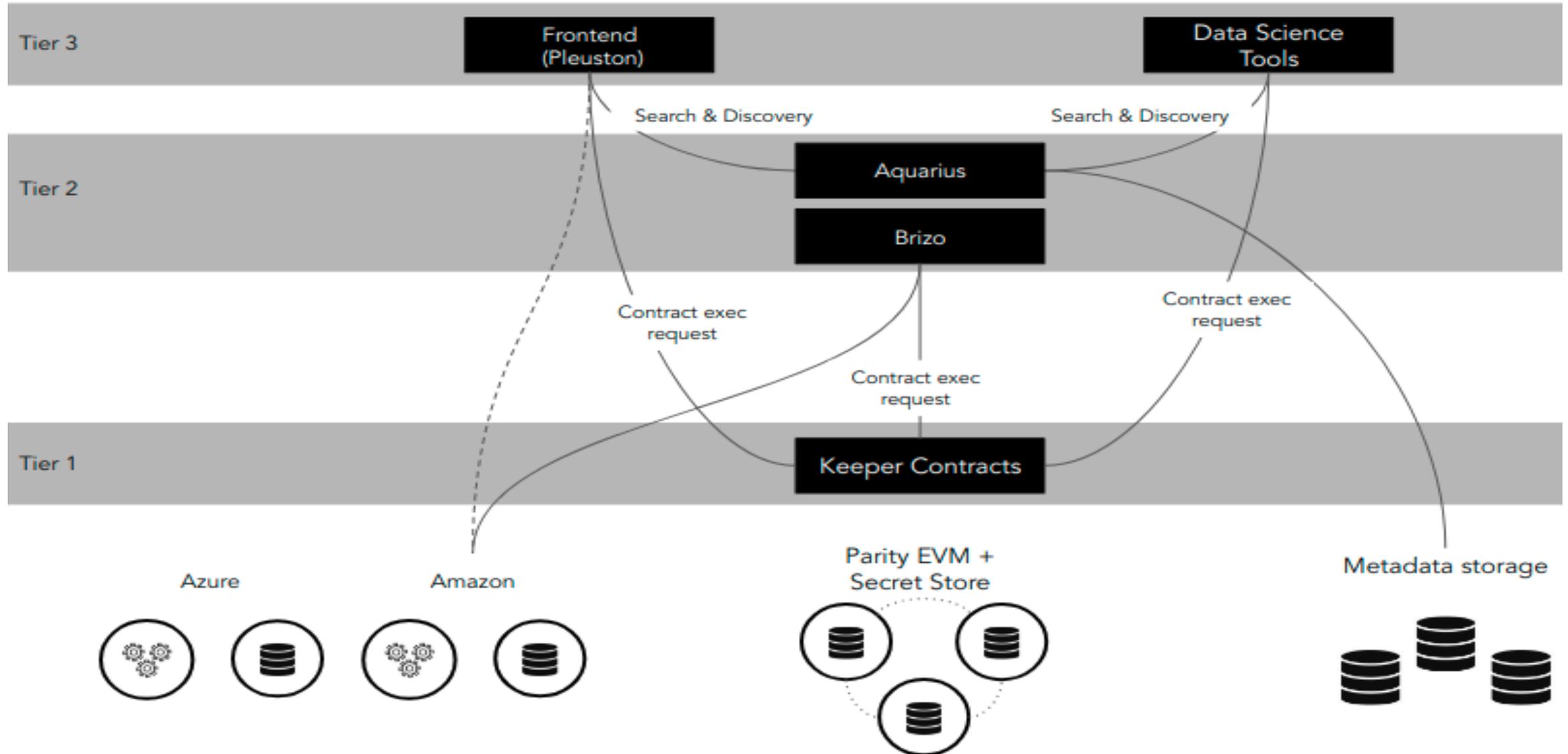


Substrate for data economy



# Ocean is like $\emptyset x$ , but for *data* not tokens

## The heart is data *access control*

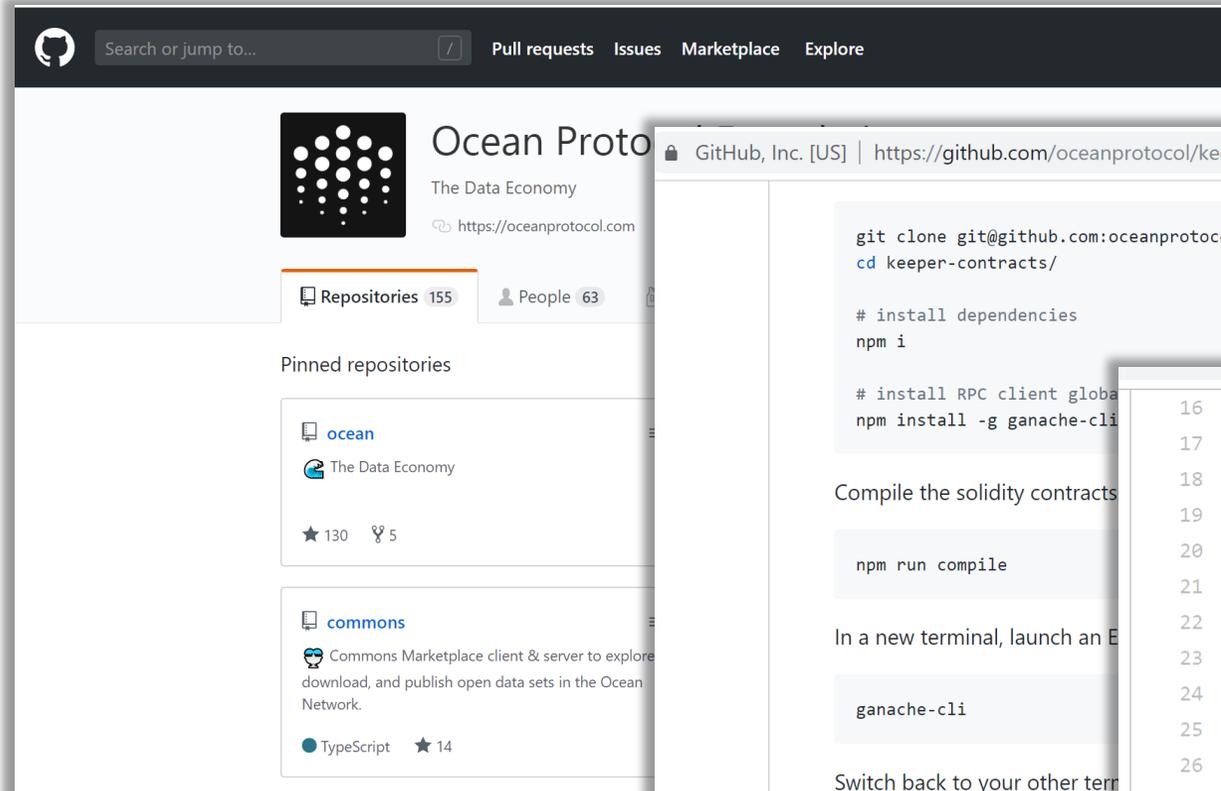


# On Ocean Tech

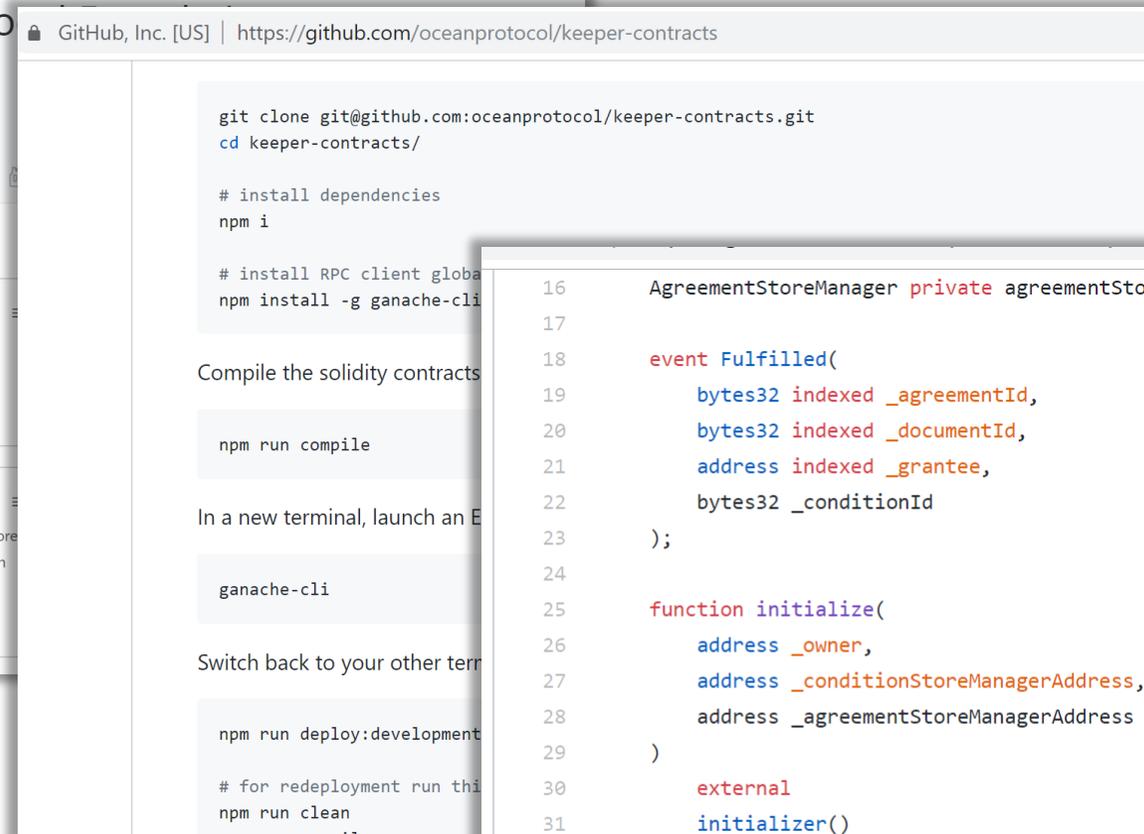
- Public EVM network, running Parity POA
  - But with access control on data itself
  - (Roadmap to Permissionless)
- TokenBridge to Ethereum mainnet
- **“Squid” = SDKs in Python, JS, Java. REST API (alpha)**

# All Ocean Code is Open

[github.com/oceanprotocol](https://github.com/oceanprotocol)



The screenshot shows the GitHub profile page for Ocean Protocol. The profile name is "Ocean Protocol" with the tagline "The Data Economy" and the website "https://oceanprotocol.com". It features 155 repositories and 63 people. Pinned repositories include "ocean" (The Data Economy, 130 stars, 5 forks) and "commons" (Commons Marketplace client & server to explore, download, and publish open data sets in the Ocean Network, TypeScript, 14 stars).



The screenshot shows the GitHub repository page for "keeper-contracts" by Ocean Protocol. The page includes instructions for cloning the repository and installing dependencies:

```
git clone git@github.com:oceanprotocol/keeper-contracts.git
cd keeper-contracts/

# install dependencies
npm i

# install RPC client globally
npm install -g ganache-cli
```

Below the code, there are instructions to compile the Solidity contracts:

```
npm run compile
```

Next, there are instructions to launch a Ganache environment in a new terminal:

```
ganache-cli
```

Finally, there are instructions to switch back to the other terminal and run the deployment script:

```
npm run deploy:development

# for redeployment run this
npm run clean
npm run compile
```

```
16 AgreementStoreManager private agreementStoreManager;
17
18 event Fulfilled(
19     bytes32 indexed _agreementId,
20     bytes32 indexed _documentId,
21     address indexed _grantee,
22     bytes32 _conditionId
23 );
24
25 function initialize(
26     address _owner,
27     address _conditionStoreManagerAddress,
28     address _agreementStoreManagerAddress
29 )
30 external
31 initializer()
32 {
33     Ownable.initialize(_owner);
34
35     conditionStoreManager = ConditionStoreManager(
36         conditionStoreManagerAddress
```

# Ocean Commons: Open Data on an Open Substrate

[commons.oceanprotocol.com](https://commons.oceanprotocol.com)



[Channels](#)

[Publish](#)

[History](#)

[Faucet](#)

[About](#)



## Commons

A marketplace to find and publish open data sets in the Ocean Network.

SEARCH

Featured Channel

AI For Good



# Ocean MantaRay: Data Science on Hosted Jupyter Notebooks

[datascience.oceanprotocol.com](https://datascience.oceanprotocol.com)

The image shows a screenshot of the Ocean MantaRay Jupyter Notebook interface. The interface is dark-themed and features a menu bar at the top with options: File, Edit, View, Run, Kernel, Hub, Tabs, Settings, and Help. Below the menu bar is a file browser showing a folder named 'mantaray\_jupyter' with a 'Last Modified' timestamp of 'seconds ago'. To the right of the file browser is a 'Launcher' panel with a 'Notebook' section containing two 'Python 3' options, a 'Console' option, and an 'Other' section containing 'Terminal' and 'Text File' options. In the background, a dark overlay displays the 'Manta Ray' logo and the text 'Data Science powered by Ocean Protocol'. Below this, there is a paragraph of text: 'The Manta Ray notebooks provide a guided tour of Ocean Protocol in an interactive Jupyter Notebook. You can create your own pre-configured Jupyter Notebook instances on your GitHub account. This project is in alpha! Feel free to report issues in our Gitter channel. Notebooks and Notebook instances may be purged.'

# Ocean Will Transform Data Custody

- “Not your keys, not your data”
- Data custody is now in the hands of the data owner
- Each govt entity, each company, each individual has a “data wallet”.
  - We can use existing token wallet infrastructure.
  - Therefore inherit the benefits of token wallets
- Data custody = like token custody (sw wallets, hw wallets, etc)
- Transfer data access = like transferring tokens
- Data security = like token security (bank-grade by default)

# Documentation:

## [docs.oceanprotocol.com](https://docs.oceanprotocol.com)



ocean

# Ocean Protocol Documentation

Learn about the components of the Ocean Protocol software stack, and how to run or use the components relevant to you.

## Core Concepts

Understand the fundamentals of Ocean Protocol.

[Learn More](#) →

## Setup Guides

Setting up the Ocean Protocol components.

[Learn More](#) →

## Tutorials

Browse tutorials for most common setup and development use-cases.

[Learn More](#) →



ocean

# Example: Quickly build a React App

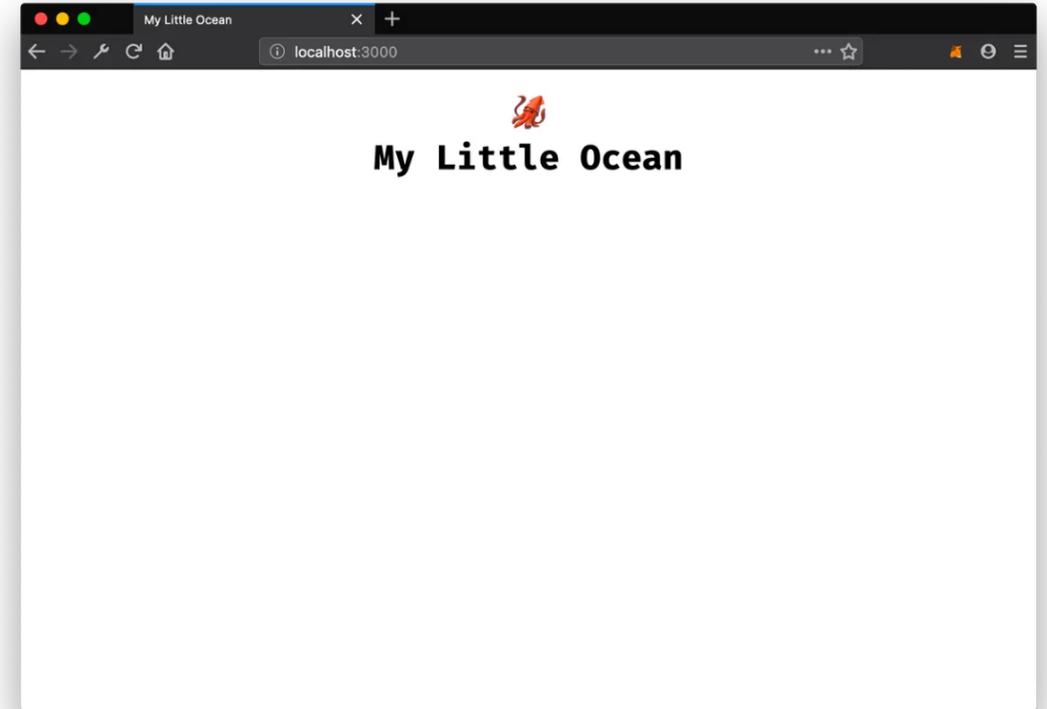
[docs.oceanprotocol.co/tutorials/react-setup/](https://docs.oceanprotocol.co/tutorials/react-setup/)

Create a new folder `src/` and within that a `index.js` file with the following content as our base, where we already import `squid-js` and `web3.js`:

```
import React, { Component } from 'react'
import ReactDOM from 'react-dom'
import { Ocean } from '@oceanprotocol/squid'
import Web3 from 'web3'

class App extends Component {
  render() {
    return (
      <div
        style={{ fontFamily: '"Fira Code", monospace', textAlign: 'center' }}
      >
        <h1>
          <span role="img" aria-label="squid">
            
          </span>
          <br /> My Little Ocean
        </h1>
      </div>
    )
  }
}

ReactDOM.render(<App />, document.getElementById('root'))
```

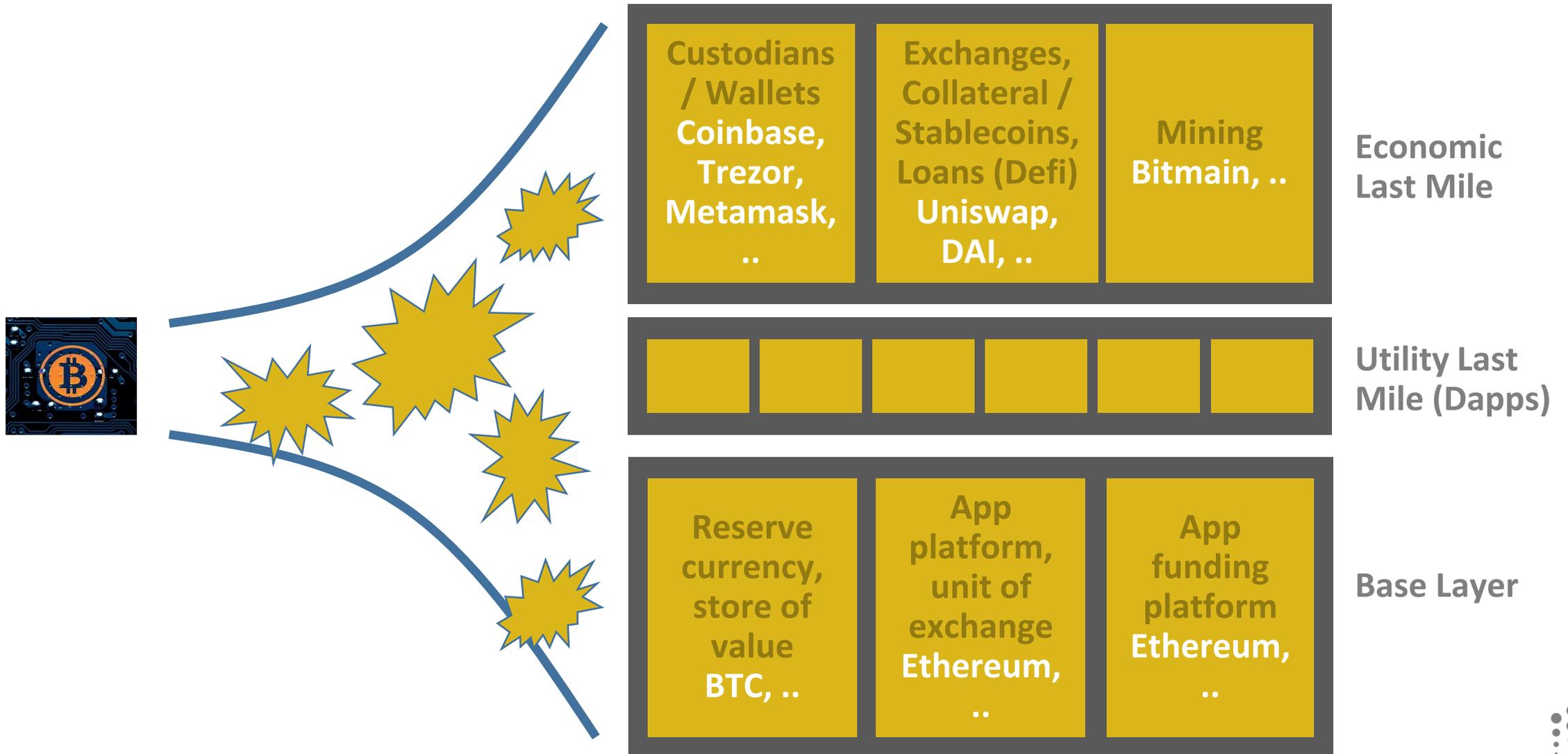


Initial React App



# Opportunities

# What does the Token Economy look like?



# Q: What will the data economy look like?

**A:  $\approx$ The Token Economy**

## Token Economy

## Data Economy

Economic  
Last Mile

Custodians  
/ Wallets  
Coinbase,  
Trezor,  
Metamask

Exchanges,  
Collateral /  
Stablecoins,  
Loans (Defi)  
Uniswap,  
DAI, ..

Mining  
Bitmain, ..

Custodians  
/ Wallets

Dec. Data  
Exchanges,  
Data as  
Collateral,  
Loans

Mining:  
Service  
networks

Utility Last  
Mile (Dapps)



Base Layer

Reserve  
currency,  
store of  
value  
BTC

App  
platform,  
unit of  
exchange  
Ethereum/  
ETH, ..

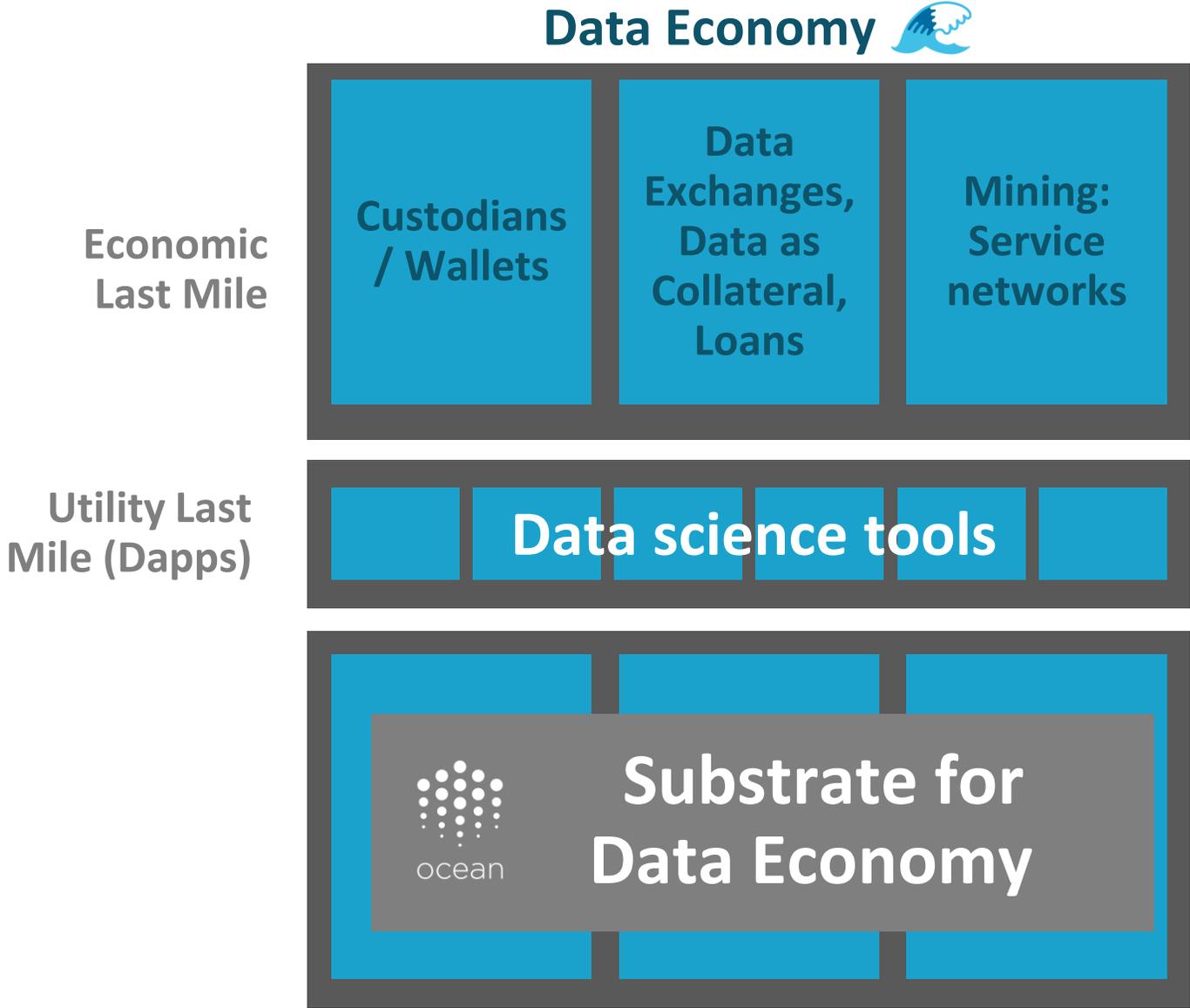
App  
funding  
platform  
Ethereum

Reserve  
currency,  
store of  
value

Data/asset  
platform,  
unit of  
exchange

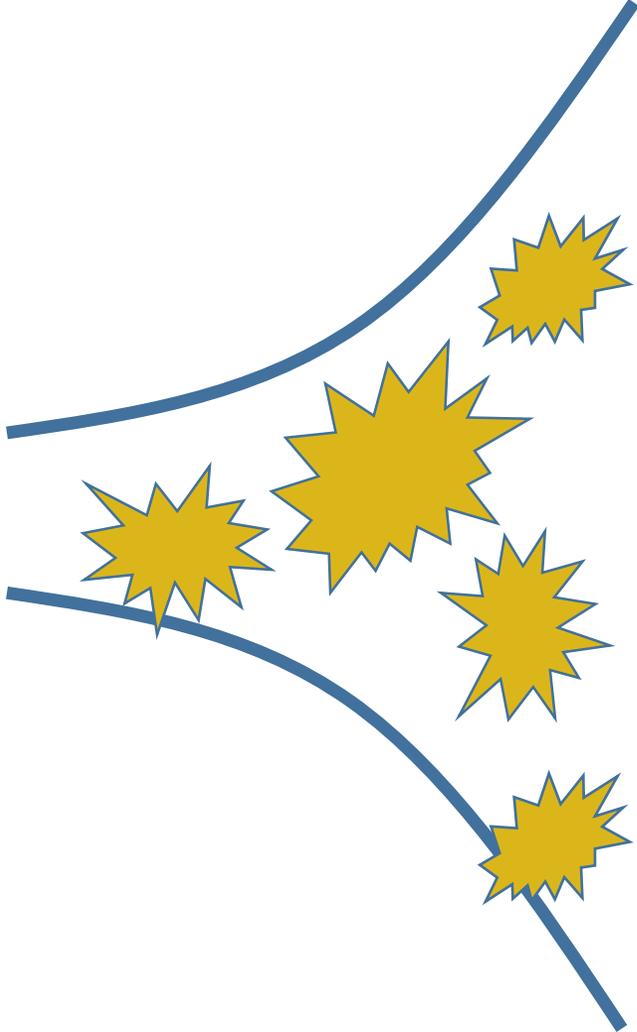
Data/asset  
funding  
platform

# Ocean is the Substrate for the Data Economy



# The Data Economy has myriad opportunities

Data Economy 



Custodians / Wallets	Data Exchanges, Data as Collateral, Loans	Mining: Service networks
----------------------	---	--------------------------

Economic Last Mile

--	--	--	--	--	--

Utility Last Mile (Dapps)

Reserve currency, store of value	Data/asset platform, unit of exchange	Data/asset funding platform
----------------------------------	---------------------------------------	-----------------------------

Base Layer

# Opportunities in dapps (Analytics & data science tools)

## Data Economy

Economic  
Last Mile

Custodians  
/ Wallets

Data  
Exchanges,  
Data as  
Collateral,  
Loans

Mining:  
Service  
networks

Utility  
Last Mile  
(Dapps)

Data science tools

Base Layer

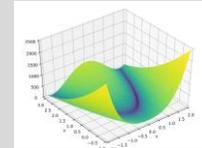
Reserve  
currency,  
store of  
value

Data/asset  
platform,  
unit of  
exchange

Data/asset  
funding  
platform

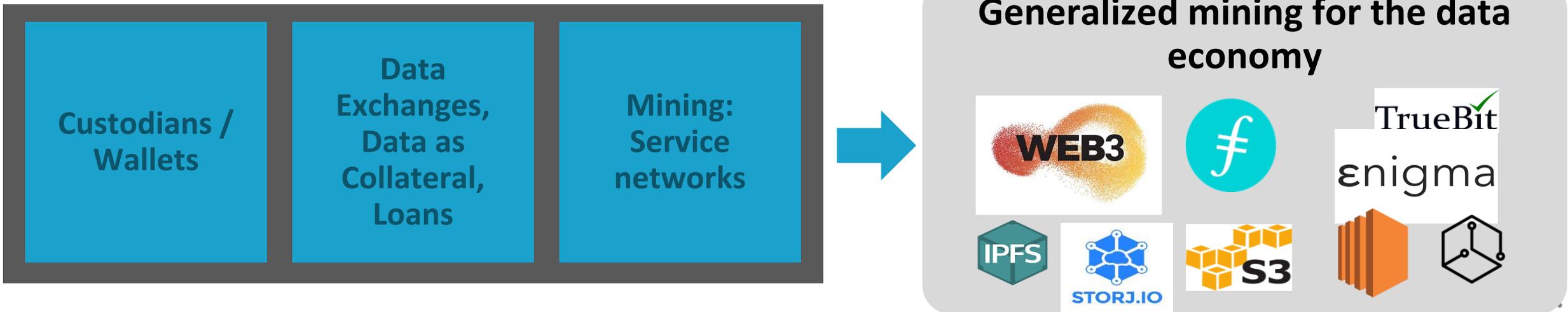


**++capabilities for users:**  
**Buy/sell services via wallets**  
**Way more data**  
**Data/compute provenance**

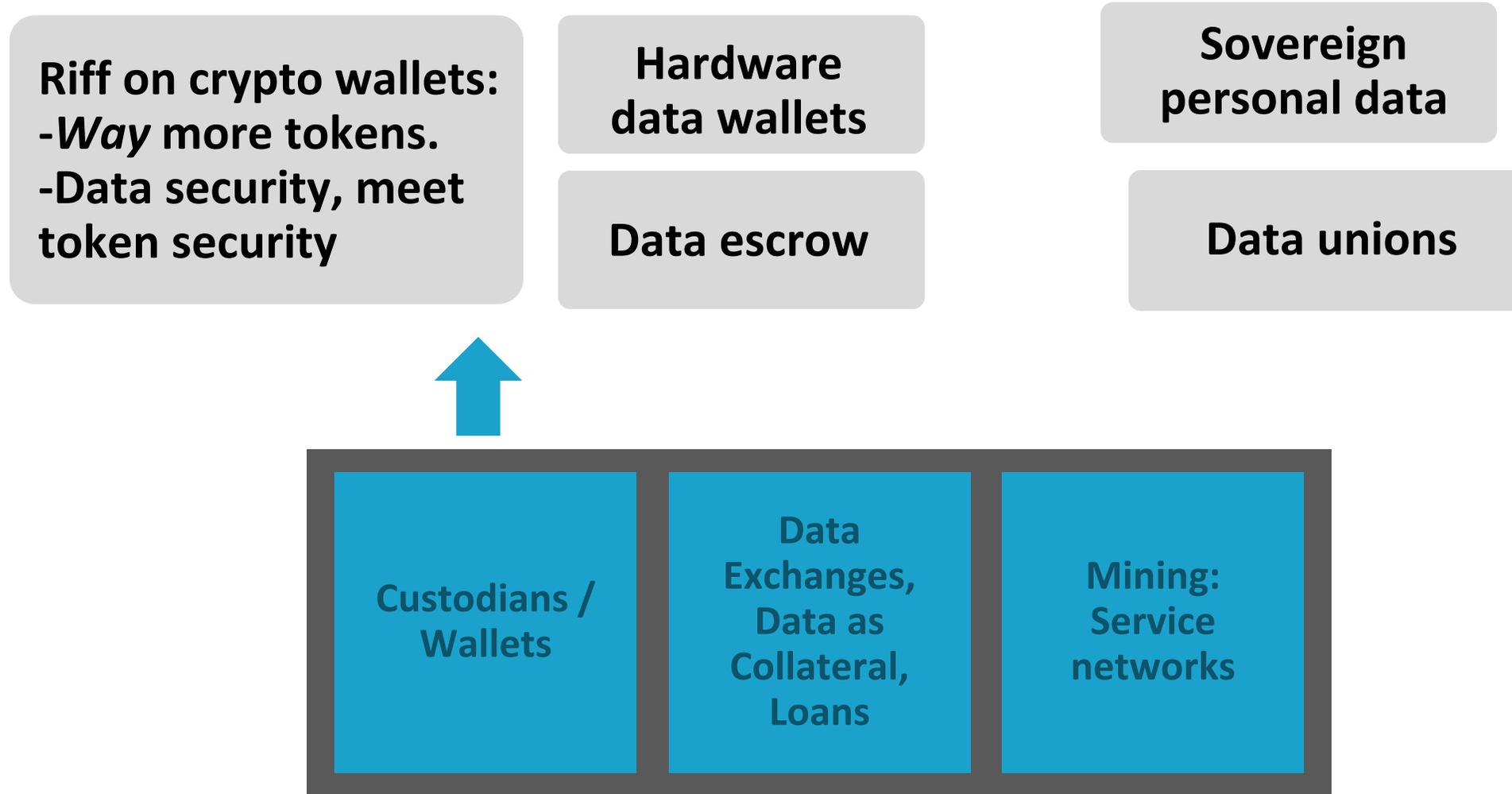


ocean

# Opportunities in last financial mile 1/3: Mining = Integrations with Data & Compute Services



# Opportunities in last financial mile 2/3: Data custody



# Opportunities in last financial mile 3/3: Data \* DeFi

Non-custodial data exchanges

Data-backed stablecoins

Borrowing data  
Loaning data

Long-tail data tokens  
(1M datasets)

Automated data market makers

ICO'ing datasets

Data insurance

Pricing data with bonding curves

Data DAOs to govern data

Custodians /  
Wallets

Data Exchanges,  
Data as Collateral,  
Loans

Mining:  
Service networks





# Opportunities 2: Data Economy Challenge



# Data Economy Challenge

3.4 Million Ocean Tokens. 3 Inspiring Tracks. Global Community Participation. Build the New Data Economy with us!

[REGISTER NOW](#)

[SUBMIT ENTRY](#)

The challenge has started! You can still register, or submit your entry now.



# Tracks & Prizes

TIMELINE & TRACKS

JUDGES

PRIZES

FAQ

MEETUPS



Track 1

## Data Marketplaces

Build a data marketplace and grow the decentralized data ecosystem.

 1. place	333,000 OCEAN + 2K EUR
 2. place	270,000 OCEAN
 3. place	165,000 OCEAN

+ Bonus Rewards



Track 2

## Network Integrations

Create data science tools & services to unlock value from data.

 1. place	333,000 OCEAN + 2K EUR
 2. place	270,000 OCEAN
 3. place	165,000 OCEAN

+ Bonus Rewards



Track 3

## Wild Card

Unleash your unbounded creativity and surprise us with your own entry.

 1. place	333,000 OCEAN + 2K EUR
 2. place	270,000 OCEAN
 3. place	165,000 OCEAN

+ Bonus Rewards

# Tracks & Prizes

TIMELINE & TRACKS

JUDGES

PRIZES

FAQ

MEETUPS



Track 1

## Data Marketplaces

Build a data marketplace and grow the decentralized data ecosystem.

- 1. place 333,000 OCEAN + 2K EUR
- 2. place 270,000 OCEAN
- 3. place 165,000 OCEAN

+ Bonus Rewards



Track 2

## Network Integrations

Create data science tools & services to unlock value from data.

- 1. place 333,000 OCEAN + 2K EUR
- 2. place 270,000 OCEAN
- 3. place 165,000 OCEAN

+ Bonus Rewards



Track 3

## Wild Card

Unleash your unbounded creativity and surprise us with your own entry.

- 1. place 333,000 OCEAN + 2K EUR
- 2. place 270,000 OCEAN
- 3. place 165,000 OCEAN

+ Bonus Rewards



# What type of data marketplace could you build?

Fork an existing token exchange, twist it for data exchange

Fork Ocean Commons, add a killer feature

Marketplace for supply chain data

Marketplace for energy data

Marketplace for synthetic data

Market with built-in data exploration

Bundle datasets into dataset portfolios (Set Protocol \* Ocean)

Price data with channel auctions

Price data with bonding curves

Marketplace with DAO-driven data labeling

Marketplace for low-liquidity datasets  
Via e.g. n-token automated market maker (think Balancer)



# Getting started on marketplaces

- **Docs: Quickstart**

<https://docs.oceanprotocol.com/setup/quickstart/>

- **Docs: Set Up a Marketplace**

<https://docs.oceanprotocol.com/setup/marketplace/>

- **Tutorial: Ocean React App**

<https://docs.oceanprotocol.com/tutorials/react-setup/>

- **Commons Marketplace**

<https://github.com/oceanprotocol/commons>



# Tracks & Prizes

TIMELINE & TRACKS

JUDGES

PRIZES

FAQ

MEETUPS



Track 1

## Data Marketplaces

Build a data marketplace and grow the decentralized data ecosystem.

- 🏆 1. place 333,000 OCEAN + 2K EUR
- 🏆 2. place 270,000 OCEAN
- 🏆 3. place 165,000 OCEAN

+ Bonus Rewards



Track 2

## Network Integrations

Create data science tools & services to unlock value from data.

- 🏆 1. place 333,000 OCEAN + 2K EUR
- 🏆 2. place 270,000 OCEAN
- 🏆 3. place 165,000 OCEAN

+ Bonus Rewards



Track 3

## Wild Card

Unleash your unbounded creativity and surprise us with your own entry.

- 🏆 1. place 333,000 OCEAN + 2K EUR
- 🏆 2. place 270,000 OCEAN
- 🏆 3. place 165,000 OCEAN

+ Bonus Rewards



ocean

# What type of integration could you build?

**Integrate to TensorFlow to**  
-consume training data  
-supply AI models as data

**Integrate into**  
OpenML and its  
20,000 datasets

**Integrate Iota's data**  
market as datafeed

**Integrate fetch.ai**  
algorithm results as  
data

**Integrate into Azure ML**  
Studio  
(IDE for AI modeling)

**Integrate Chainlink**  
on Ocean mainnet  
(start with OP's  
prototype)

**Integrate SEED**  
bots as data

**Fork**  
MantaRay,  
add asset  
search

**Make Ocean**  
data available  
directly in scikit  
learn

**Use OrbitDB for**  
metadata store  
(in Aquarius)

**Integrate Ethereum**  
Swarm, Storj, Sia,  
Filecoin beta



# Getting started on integrations

- **Docs: Jupyter Notebooks**

<https://docs.oceanprotocol.com/tutorials/jupyter-notebooks/>

- **Blog: Project Manta Ray — Data Science powered by OP**

<https://blog.oceanprotocol.com/project-manta-ray-data-science-powered-by-ocean-protocol-535c54089b0f>

- **GitHub: mantaray**

<https://github.com/oceanprotocol/mantaray>

- **GitHub: mantaray\_utilities**

[https://github.com/oceanprotocol/mantaray\\_utilities](https://github.com/oceanprotocol/mantaray_utilities)

- **Docs: Set up Azure Storage**

<https://docs.oceanprotocol.com/tutorials/azure-for-brizo/>



# Tracks & Prizes

TIMELINE & TRACKS

JUDGES

PRIZES

FAQ

MEETUPS



Track 1

## Data Marketplaces

Build a data marketplace and grow the decentralized data ecosystem.

 1. place	333,000 OCEAN + 2K EUR
 2. place	270,000 OCEAN
 3. place	165,000 OCEAN

+ Bonus Rewards



Track 2

## Network Integrations

Create data science tools & services to unlock value from data.

 1. place	333,000 OCEAN + 2K EUR
 2. place	270,000 OCEAN
 3. place	165,000 OCEAN

+ Bonus Rewards



Track 3

## Wild Card

Unleash your unbounded creativity and surprise us with your own entry.

 1. place	333,000 OCEAN + 2K EUR
 2. place	270,000 OCEAN
 3. place	165,000 OCEAN

+ Bonus Rewards



ocean

# What sort of Wild Card could you build?

## A Data Wallet

E.g. take an Ocean dataset and wrap with NFT; then integrate with an NFT wallet

## Data as collateral

E.g. demonstrate datasets could fit in multi-collateral DAI

An **ArtDAO**, e.g. extend Simondlr's Artonomous

## Limited-Edition Fungible Data Assets

E.g. take an NFT-ized dataset, and wrap it with a simple ERC20 contract.

An Ocean **block explorer with integrated dataset visualization** e.g. with Metabase

## Continuously Fungible Data Assets

E.g. take an NFT-ized dataset, and wrap it with a bonding curve ("make re-fungible").

**On-chain evolution** of EVM bytecode

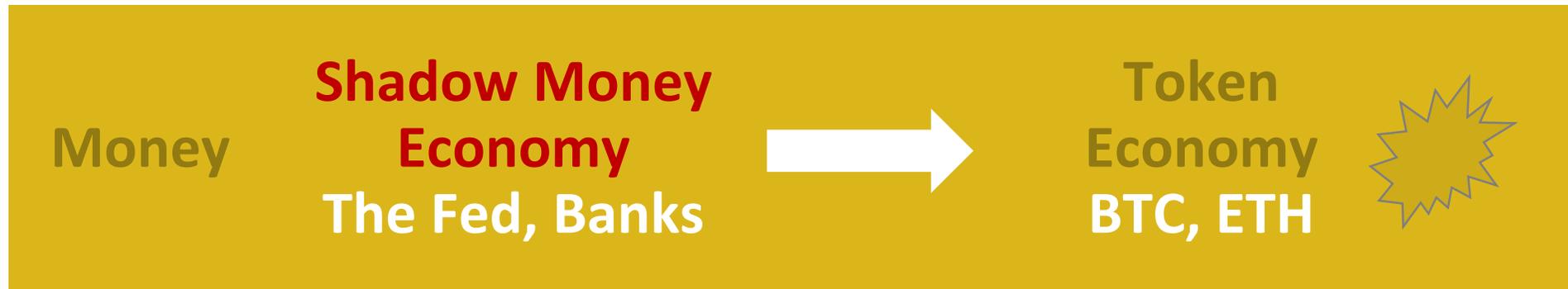
The background of the slide features several jellyfish of various species and sizes, illuminated with a blue light. In the upper left, there is a large, elongated jellyfish with a complex internal structure. To its right is a smaller, more rounded jellyfish. In the upper right, a large, flat, disc-like jellyfish is visible. In the lower right, there is a large, rounded jellyfish with a prominent internal structure. In the lower left, a smaller, rounded jellyfish is visible. The overall scene is set against a dark blue background, creating a deep-sea atmosphere.

# Conclusion

# The Token Economy Opened Money. The Data Economy Opens Data (Retaining Privacy)

**Opaque, Power  
Concentrated**

**Transparent,  
Permissionless**



# Come build the Data Economy on Ocean:)

[docs.oceanprotocol.com](https://docs.oceanprotocol.com)

These slides, with links, at [trent.st/content/o/d](https://trent.st/content/o/d)

