



Token Engineering in Practice: Ecosystem sustainability & data markets

Trent McConaghy,
Feb 7, 2022
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trent.st/content/uofm.pdf



Outline

- Introduction to Token Engineering (TE)
- TE applied to ecosystem sustainability
- TE applied to data markets

Engineering



is the creative application of science,
mathematical methods, and empirical evidence

to the innovation, design, construction,
operation and maintenance

of structures, machines, materials, devices,
systems, processes, and organizations.

Intro to Token Engineering (TE)

Science ↔ Engineering

- **Engineering** is about building things that work.
- **Science** is about contributing new knowledge.
- They're complementary.

Therefore Token Engineering is complementary to the science of
Cryptoconomics / Token Economics.

Trent McConaghy
@trentmc0

Tokens are the electrons of blockchain circuits.

2:52 PM - 26 Aug 2018

17 Retweets 77 Likes

6 17 77

Add another Tweet

Electrons : Electrical Engineering
Tokens : Token Engineering



First introduction of “Token Engineering” (Mar 2018)

Towards a Practice of Token Engineering

Methodology, Patterns & Tools. TE Series Part II.

In my [previous article](#), I described *why* we need to get incentives right when we build tokenized ecosystems. Here, I ask: *how* do we design incentives for these tokenized ecosystems? And actually since incentives are the heart of tokenized ecosystems, it's really: *how do we design tokenized ecosystems?* And, how do we *analyze* and *verify* them?

This article is a first stake in the ground towards a practice of **token engineering**: the theory, practice and tools to analyze, design, and verify tokenized ecosystems.

The first section of this article relates token designs to other fields and explains why “engineering”. The rest of this article is an attempt to draw us closer to this goal, by leveraging existing fields in three main ways:

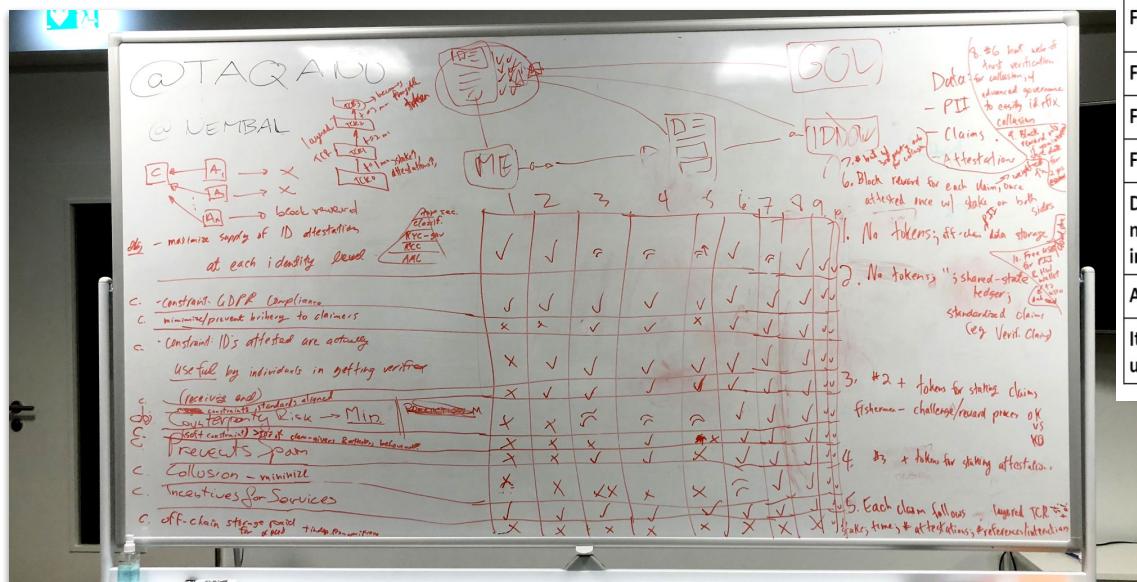
- We can frame **token design as optimization design**, then use optimization design methodology.
- Inspired by **software engineering patterns**, we can document emerging patterns for token design.
- **Simulation, verification, and design space exploration (CAD tools)** for circuit design have helped engineers analyze, design, and verify

A TE Design Process

1. Formulate the problem. Stakeholders -> objectives, constraints, design space.

2. Try existing building blocks. If needed, try different formulations or blocks.

3. Design new block? Only if needed!



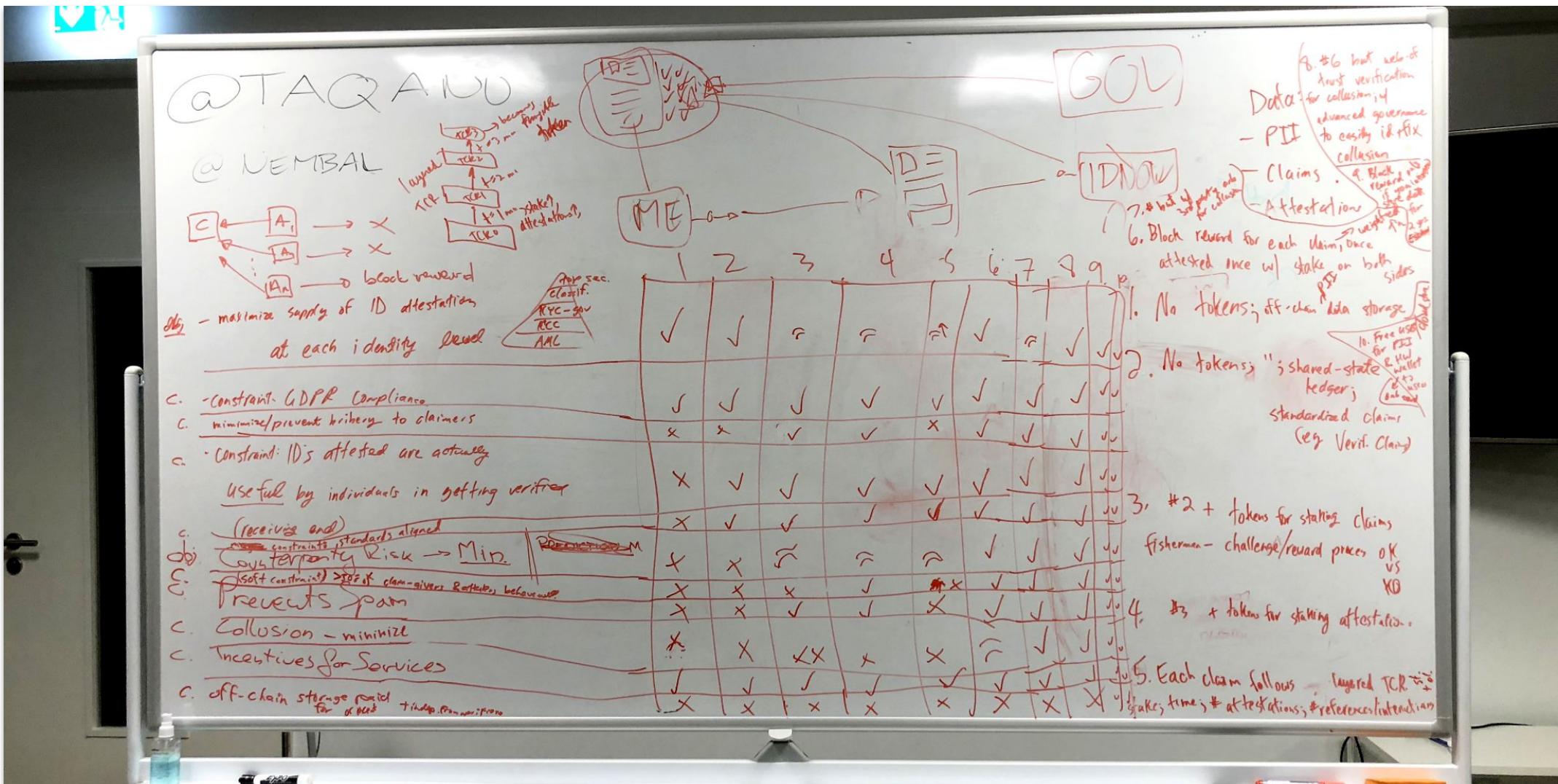
Worked example

| Key Question | 1 | 2 | 3 | 4 | 5 | 6 | | |
|--|---|-----|----|----------|----------------------|----------------------------|-----------------|---|
| For priced data: incentive for supplying more? Referring? | ✗ | ≈ | ✓ | ≈ | ≈ | ✓ | | |
| For priced data: good spam prevention? | ≈ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| For free data: incentive for supplying more? Referring? | ✗ | ≈ | ✗ | ✓ | ✓ | ✓ | | |
| For free data: good spam prevention? | ≈ | ✓ | ≈ | ✓ | ≈ | ✓ | | |
| Does token give higher marginal value to users of the network, vs external investors? Eg Does return on capital increase as stake increases? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Are people incentivized to run keepers? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| It simple? Is onboarding low-friction? Where possible, do we use incentives/crypto rather than legal recourse? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Criterion | Status Quo | ISS | LB | ISS + LB | ISS + LB + Dutch:Pub | ISS + LB + Dutch:Pub + ICO | ISS + Dutch:Pub | |
| Simple | -easy to understand. Mental model plays well with existing | ✓ | ✓ | ✓ | ✓ | =✓ | ✗ | ✓ |
| | -smart contract SW: simple to implement, understand, maintain | | | | | | | |
| | -GUI SW simple: to implement, understand, maintain | | | | | | | |
| Avoids large price swings when people just want to stake OCEAN | ✗ | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Solves price spikes at beginning | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ |
| Solves price spikes in market equilibrium | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| No risk of exit scam afterIDO | ✗ | ✓ | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ |

TE Example 1: Ocean V1 (2017)

| Key Question | 1 | 2 | 3 | 4 | 5 | 6 |
|--|---|---|---|---|---|---|
| For priced data: incentive for supplying more? Referring? | ✗ | ≈ | ✓ | ≈ | ≈ | ✓ |
| For priced data: good spam prevention? | ≈ | ✓ | ✓ | ✓ | ✓ | ✓ |
| For free data: incentive for supplying more? Referring? | ✗ | ≈ | ✗ | ✓ | ✓ | ✓ |
| For free data: good spam prevention? | ≈ | ✓ | ≈ | ✓ | ≈ | ✓ |
| Does token give higher marginal value to users of the network, vs external investors? Eg Does return on capital increase as stake increases? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Are people incentivized to run keepers? | ≈ | ≈ | ✓ | ✓ | ✓ | ✓ |
| Is simple? Is onboarding low-friction? Where possible, do we use incentives/crypto rather than legal recourse? | ✓ | ✓ | ≈ | ≈ | ✓ | ✓ |

TE Example 2: Identity (2018)



Reference

TE Example 3: Ocean V4 (2021)

| Criterion | Ocean V3 | LBP | 1SS | LBP + 1SS | 1SS + Dutch: Pub | 1SS + Dutch: Pool | 1SS + Dutch: Pool + Vesting | 1SS + Vesting |
|---|----------|-----|-----|-----------|------------------|-------------------|-----------------------------|---------------|
| Simple to understand, build, maintain | ✓ | ✓ | ✓ | ✓ | ≈ | ✓ | ≈ | ✓✓ |
| Avoids large price swings / IL when people just want to stake OCEAN | * | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Solves price spikes at beginning | * | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Solves price spikes in market equilibrium | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Solve rug pulls | ** | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Good incentive for publisher to publish initially | ✓✓ | * | * | * | ✓ | * | ✓ | ✓ |



TE Community - Start

**1st TE event
Berlin, Apr 2018**



TE Community Now

1st TE event
Berlin, Apr 2018



Global gatherings



Discord - primary gathering point

REVIEWS-WG – 1
TE COMMUNITY MEMBER – 178
lpopplingxans
17012
2075 | zero.io · gamed...
24nico
A-care
Abstrucked
Aditya | Biconomy
aichain
aiueo66
ajc
Alesh

701149241107808327/817317029500551208
te-balancer_simulations Open channel for projects, teams, and individual researchers who work on ...
TokenEngineeringCommunity/BalancerPools-AM...
At 1 Contributor 0 Issues 0 Stars 3 Forks
octopus Yesterday at 2:20 PM
Getting started on Advanced Question #5:
Here are the graph and trading data for my custom AMM curve. The initial balance is (100,100). The curve has no asymptotes – it ends at (400,0) and (0,400).
Balancer Math Challenge
Advanced Challenge, Question #5
Custom AMM Curve Octopus
(0, 400)
(100, 100)
Initial Balance
Message # te-balancer_simulations
Try slash commands! A new way to use bots by typing slash. [Dismiss](#)

COMMUNITY CHAT
-reviews
-te-book
-te-jobs
-and-a
-te-monthly-best-reads
-meta-stuff
-te-praise
-memes
TE-ACADEMY
-tmg1-may2021
-cadcad-study-group
-ocean-study-group
-smartcontracts-study...

Learning - via
tokenengineering.org, more

Welcome to the Token
Engineering library!

This is a growing list of resources and applications of token engineering technology, that you can learn from

Intro Materials

- Cryptoeconomics 101 - A history around the token engineering
- Glossary of systems concepts - engineering.
- Token engineering in practice -
- Towards a diversity of DAOs - DAOs.
- Differential Specification Syntax diagrams in the CadCAD ecosystem

TokenEngineering Academy

About

The TokenEngineering Academy (TE Academy) offers lectures, workshops, and seminars for anyone interested in this new, emerging field. We invite individuals and project teams to learn, collaborate, and put token engineering into practice. Please get in touch if you'd like to bring your team to TE Academy: contact@tokenengineering.net.

OMNIPool Engineering and

Simulation Tools

cadCAD

An open-source Python package that assists in the processes of designing, testing and validating complex systems through simulation.

TRY IT OUT

JOIN OUR COMMUNITY

github.com/oceanprotocol/tokenspice

showsups.py

tokenspice.ini

README.md

WARNING: this is WIP code. Prototype, not useful to some:)

TokenSPICE: EVM Agent-Based Token Simulator

TokenSPICE can be used to help design, tune, and verify tokenized ecosystems in an overall Token Engineering (TE) flow.

TokenSPICE simulates tokenized ecosystems using an agent-based approach.

Each "agent" is a class. Has a wallet, and does work to earn \$. One models the system by wiring up agents, and tracking metrics (kpi's). Agents may be written in pure Python, or with an EVM-based backend. (The original version was pure Python. This repo supersedes the original.)

The background of the slide is a vibrant, colorful underwater scene of a coral reef. Various types of coral are visible, including soft corals in shades of pink, purple, and red, and stony corals in shades of orange and yellow. A single, small fish with distinct yellow and green stripes swims gracefully among the corals.

Token Engineering applied to ecosystem sustainability

Goals

Find a design to enable...

- Ecosystem sustainable and growing, towards ubiquity
- Funding goes to teams improving L1-L3 etc, over the long term (10+ years)
- \$TOKEN grows as usage of network grows

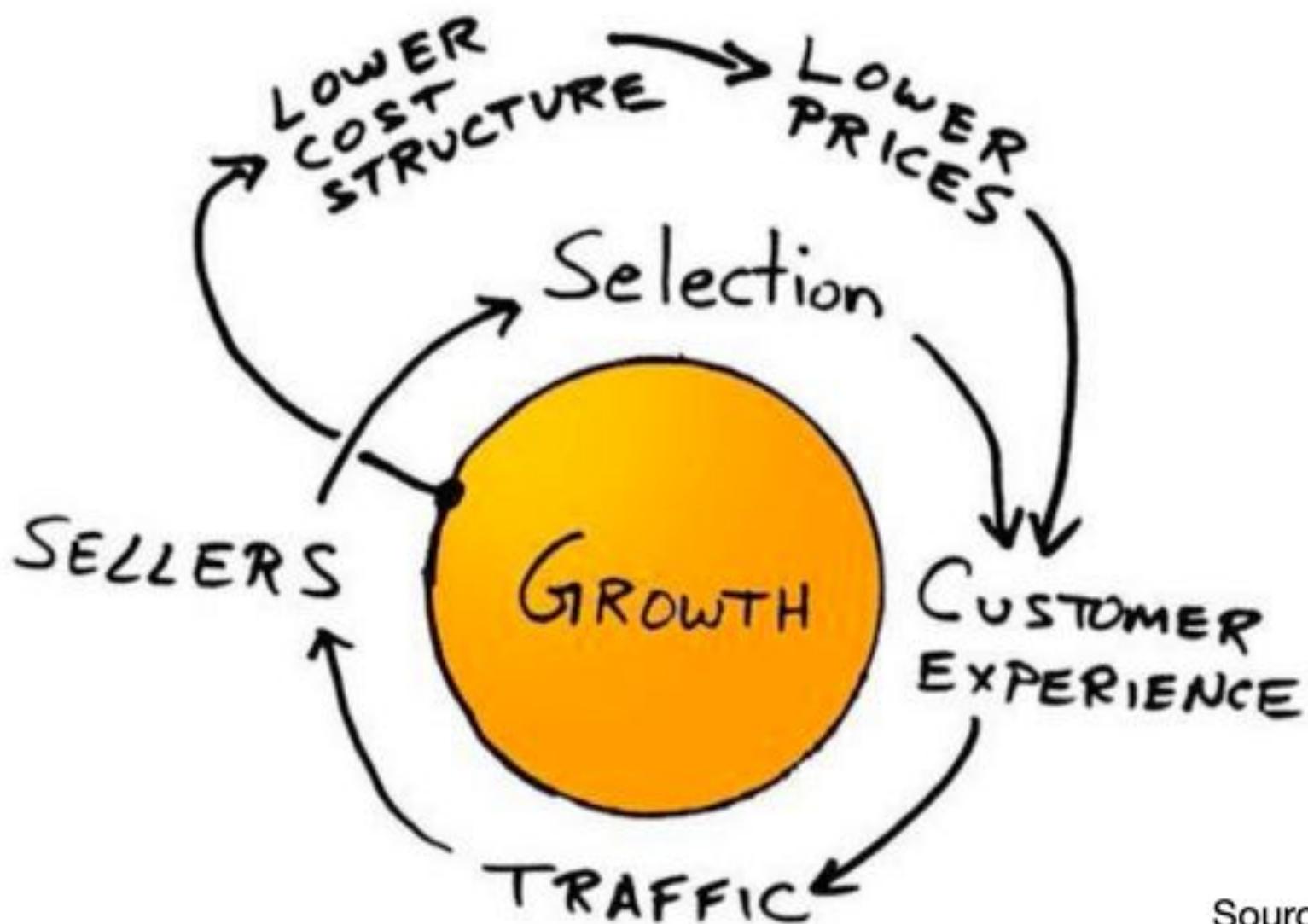
Including:

- Basic design is simple to understand and communicate
- Can be implemented in a pragmatic fashion, over time
- Get people to do “work”,
- Encourage skin-in-the-game by users

A choice of system-level design will lead to goals of sub-blocks in the system.



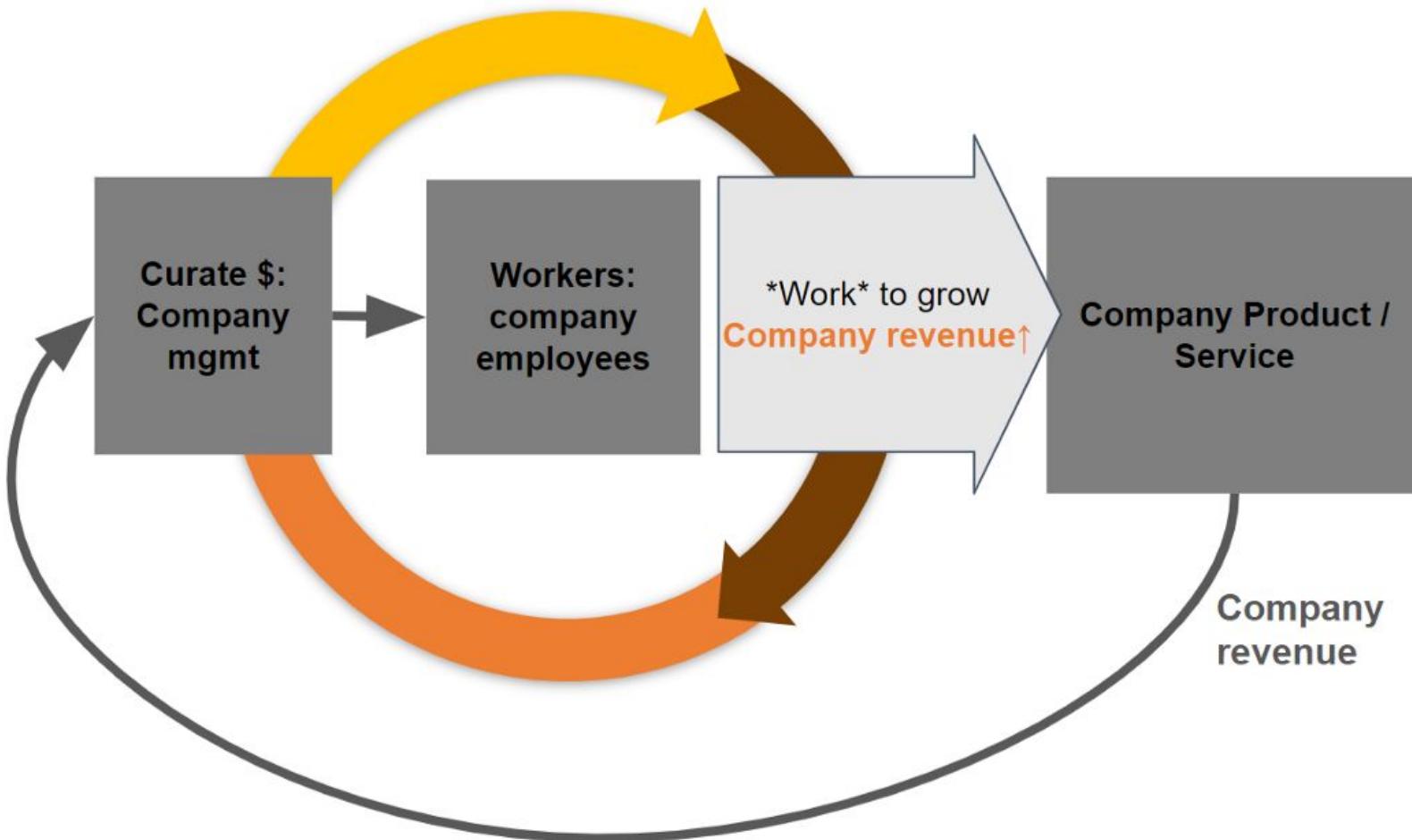
How does Amazon work?



Source: Amazon

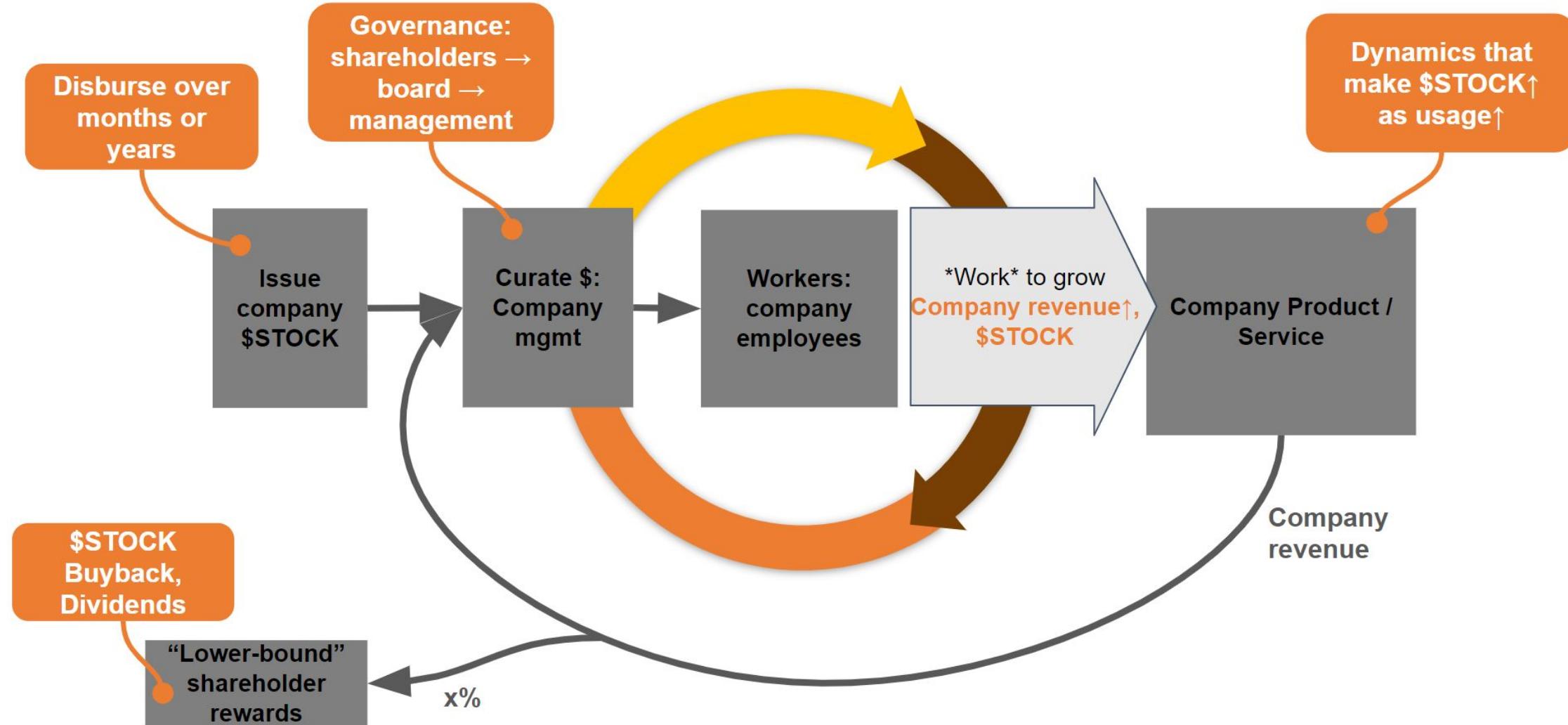
Company business model with a focus on revenue

Challenges: how to kickstart the company, how to grow fast enough to beat the competition



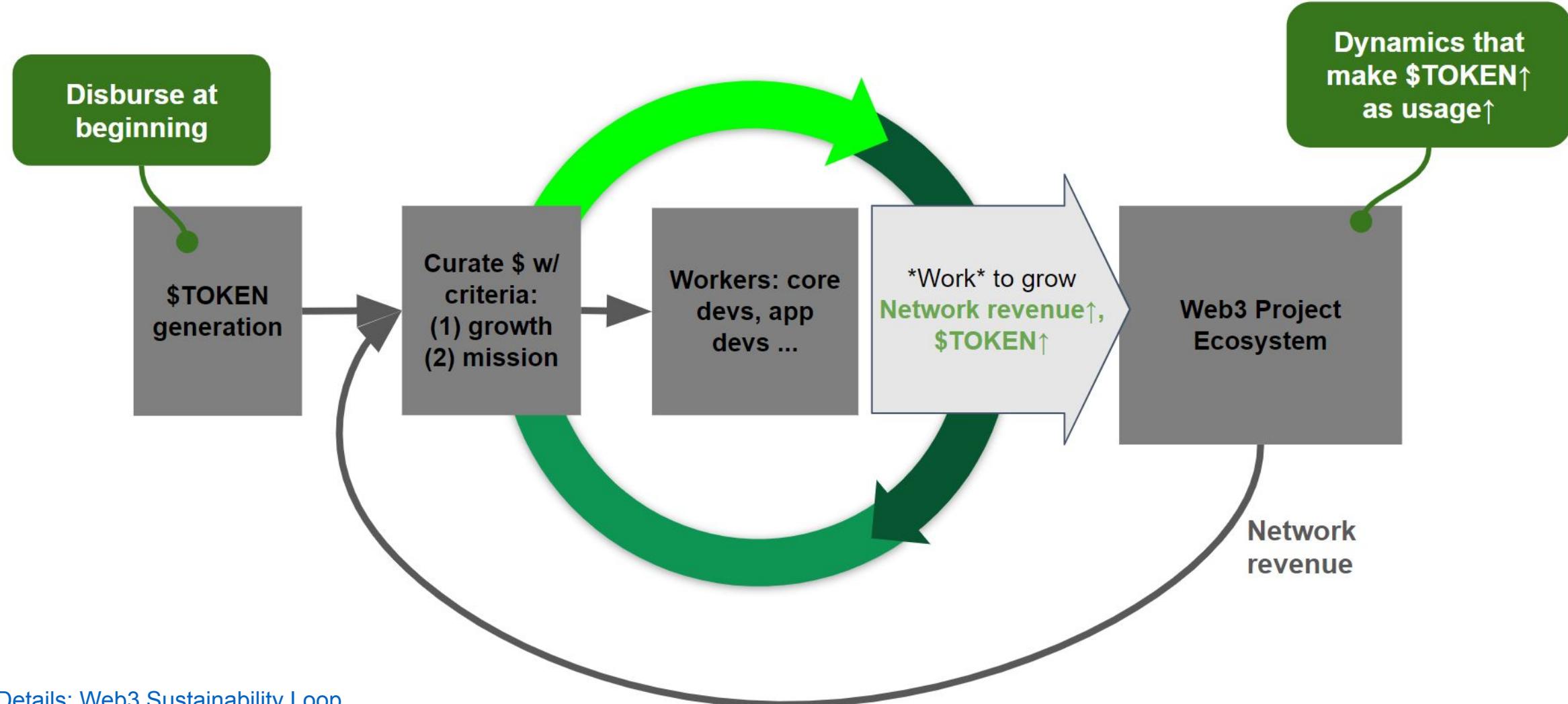
Company business model - full picture

Has an “outer wrapper” that uses stock as a tool, in addition to revenue.



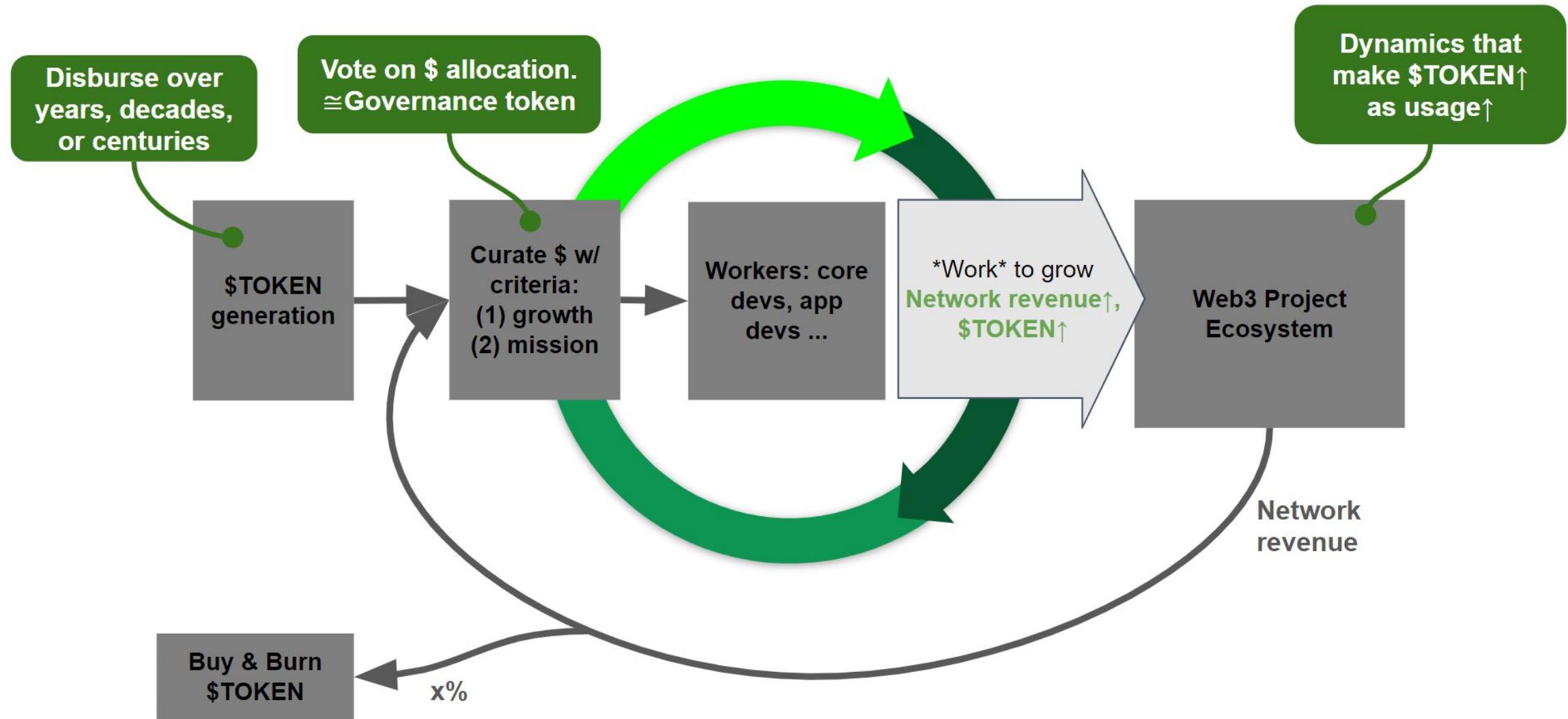
Web3 Sustainability Model with a focus on revenue

Challenges: how to kickstart the project, how to catalyze growth



Web3 Sustainability Loop - full picture

Has an “outer wrapper” that uses tokens as a tool, in addition to revenue

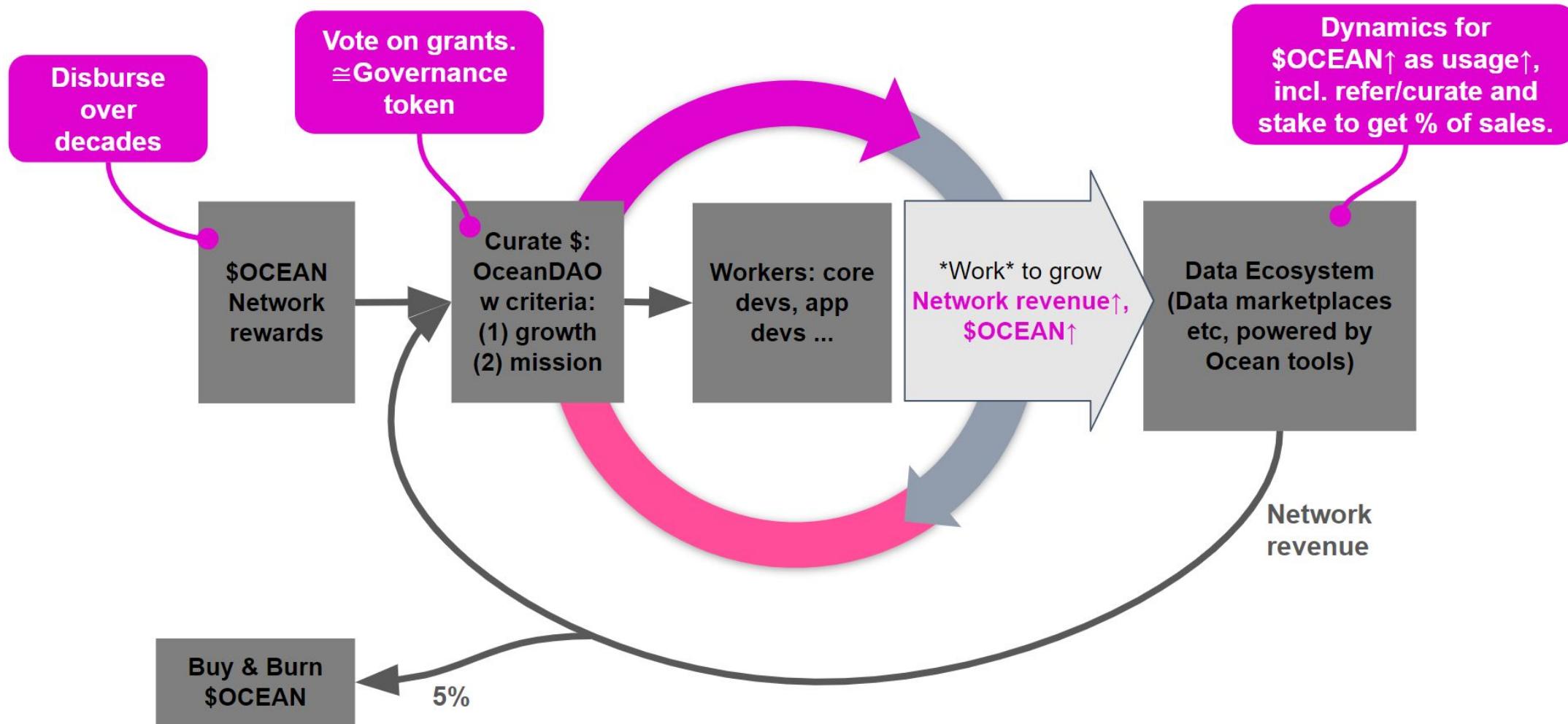


[Details: Web3 Sustainability Loop](#)



Ocean's Web3 Sustainability Loop

Revenue for long-term sustainability, OCEAN to catalyze it



On Verifying Token-Based Systems

A Token Engineering perspective



Trent McConaghy

Jul 14 · 11 min read



“Trust, but verify”—Russian proverb

Defining the Problem

TE Verification is about evaluating the token-based system to find out whether it meets the specified requirements. The system could be a simple tool or a full tokenized ecosystem, instantiated as one or more smart contracts or even L1 blockchain networks.

<https://blog.oceanprotocol.com/on-verifying-token-based-systems-c33eca757ecf>



On TE Verification

It's pragmatic to do verification in **phases** of increasing fidelity:

1. **Humans.** Subjective discussions, with increasing # people. 1 → 2 → key stakeholders
2. **Software modeling**, with increasing fidelity. Spreadsheet → agent-based sim → high-fid sim
3. **Economic (live).** Can ratchet value-at-risk over time. People can choose risk/reward tradeoff.
Phased approach.



Software-based Verification: TokenSPICE

<https://github.com/tokenspice/tokenspice>



TokenSPICE: EVM Agent-Based Token Simulator



TokenSPICE simulates tokenized ecosystems via an agent-based approach, with EVM in-the-loop.

It can help in [Token Engineering](#) flows, to design, tune, and verify tokenized ecosystems. It's young but promising. We welcome you to contribute! 🌟

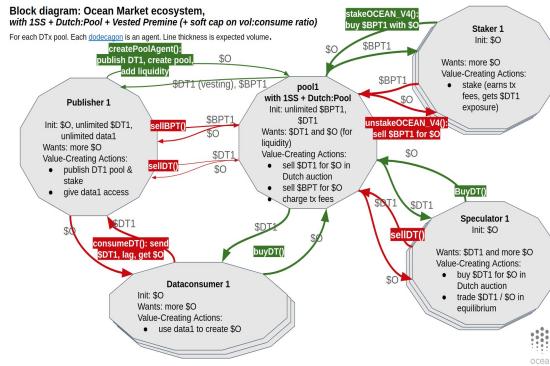
- TokenSPICE simulates by simply running a loop. At each iteration, each *agent* in the *netlist* takes a step. That's it! [Simple is good](#).
- A netlist wires up a collection of agents to interact in a given way. Each agent is a class. It has an Ethereum wallet, and does work to earn money. Agents may be written in pure Python, or with an EVM-based backend.
- One models a system by writing a netlist and tracking metrics (KPIs). One can write their own netlists and agents to simulate whatever they like. The [netlists](#) directory has examples.

TokenSPICE Flow

Develop smart contract

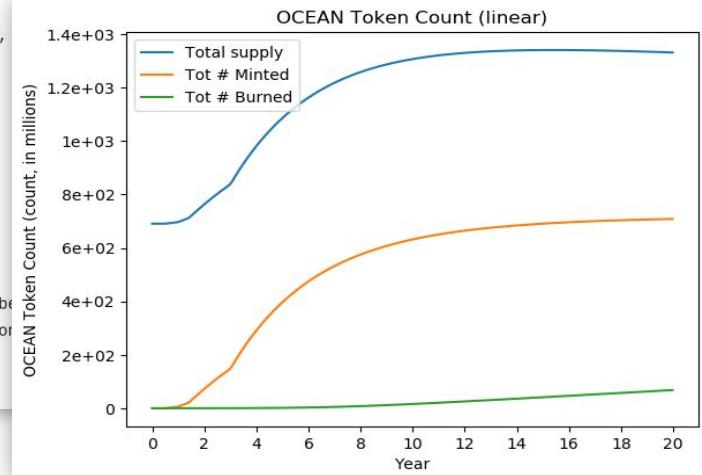
Verify with TokenSPICE simulator

Deploy smart contract (as tx)



```
uint spotPriceBefore = calcSpotPrice(  
    inRecord.balance,  
    inRecord.denorm,  
    outRecord.balance,  
    outRecord.denorm,  
    _swapFee  
>;  
require(spotPriceBefore <= maxPrice, 'ERR_BAD_LIMIT_PRICE');  
  
tokenAmountOut = calcOutGivenIn(  
    inRecord.balance,  
    inRecord.denorm,  
    outRecord.balance,  
    outRecord.denorm,  
    tokenAmountIn
```

```
new_agents.add(  
    PublisherAgent(  
        name="publisher",  
        USD=0.0,  
        OCEAN=self.ss.publisher_init_OCEAN,  
        pub_ss=pub_ss,  
    )  
)  
  
new_agents.add(  
    DataconsumerAgent(  
        name="consumer",  
        USD=0.0,  
        OCEAN=self.ss.consumer_init_OCEAN,  
        s_between_buys=self.ss.consumer_s_be-  
        profit_margin_on_consume=self.ss.co-  
    )  
)
```





Data markets 1/2: Quick Intro to Ocean

What is Ocean?

Ocean is...

1. A **community** of individuals and orgs driving to the mission
2. A **token** (OCEAN) with incentives to grow & sustain the ecosystem
3. A **set of tools** as public infrastructure to facilitate the mission



ocean

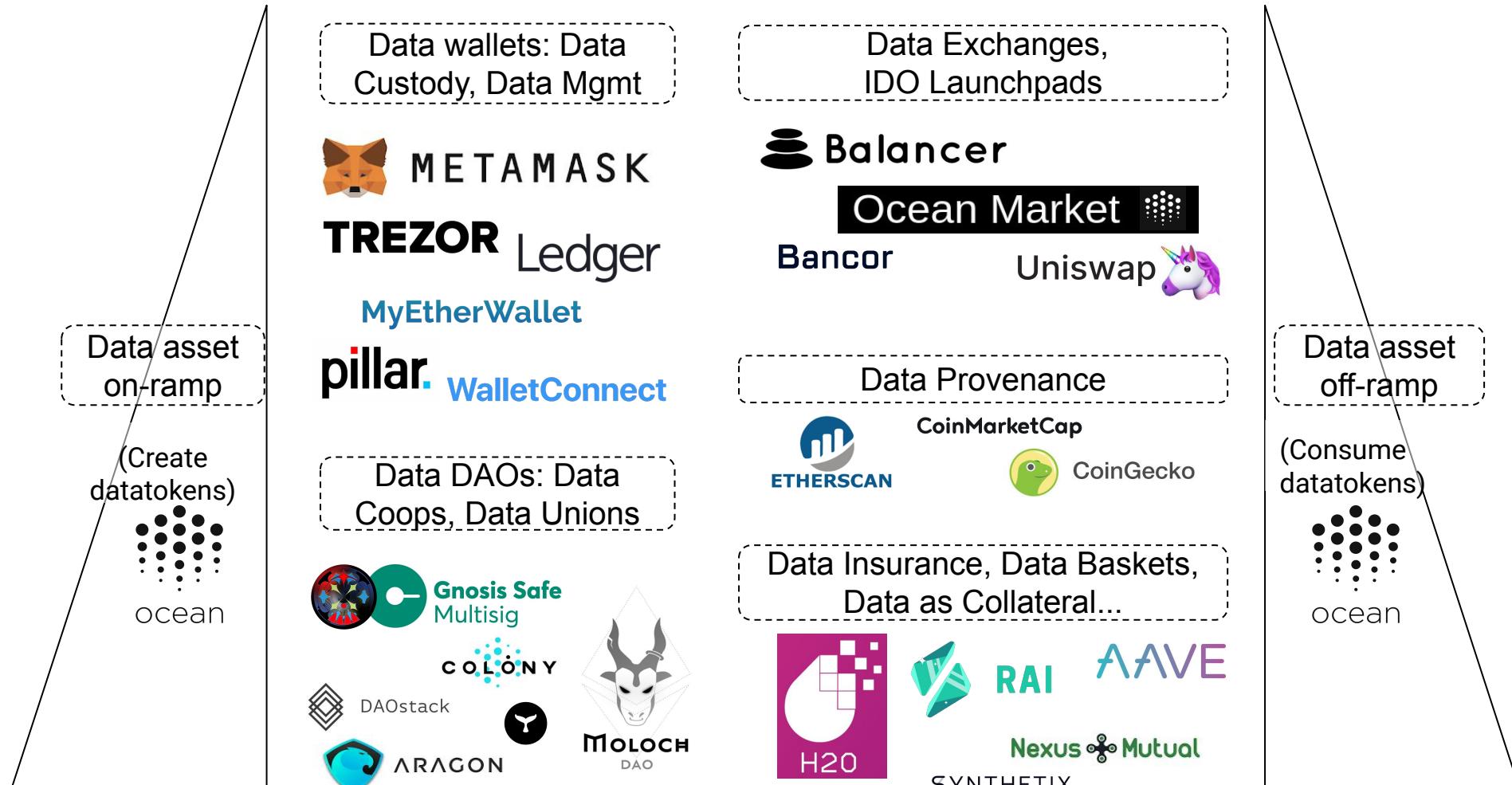
Ocean Tools

- **Key principle:** datatokens
- **Ocean backend:** smart contracts + Py + JS. On Eth, Polygon, ..
- **Ocean Market:** dapp
- **OceanDAO:** grants program



Key principle: Ocean Datatokens

Ocean makes it easy to publish data services (deploy and mint ERC20 datatokens), and to consume data services (spend datatokens). Crypto wallets, exchanges, and DAOs become *data wallets*, exchanges, and DAOs.



Ocean.py, js

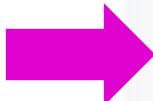
Programmatically publish datatokens, data DEXes ..

<https://github.com/oceanprotocol/ocean.py/blob/main/READMEs/datatokens-flow.md>

```
import os
from ocean_lib.example_config import ExampleConfig
from ocean_lib.ocean.ocean import Ocean
from ocean_lib.web3_internal.wallet import Wallet

private_key = os.getenv('TEST_PRIVATE_KEY1')
config = ExampleConfig.get_config()
ocean = Ocean(config)

print("create wallet: begin")
wallet = Wallet(ocean.web3, private_key, config.block_confirmations, config.transaction_timeout)
print(f"create wallet: done. Its address is {wallet.address}")


print("create datatoken: begin.")
datatoken = ocean.create_data_token("Dataset name", "dtsymbol", from_wallet=wallet)
print(f"created datatoken: done. Its address is {datatoken.address}")
```

Congrats, you've created your first Ocean datatoken! 🎉

Ocean Market

market.oceanprotocol.com

- Data on-ramp (publish)
- Data off-ramp (consume)
- DEX, for data

The screenshot shows the Ocean Market beta website at market.oceanprotocol.com. The interface includes a navigation bar with 'PUBLISH' and 'HISTORY' buttons, a 'Get MetaMask' button, and a settings gear icon. A yellow banner at the top states: 'We are in beta. Please familiarize yourself with [the market](#), [the risks](#), and the [Terms of Use](#)'. The main section features a large graphic with overlapping bell curves in pink and grey, labeled 'Data Partners'. A search bar with the placeholder 'What are you looking for?' and a 'SEARCH' button is positioned over the graphic. Below this, three data set cards are displayed:

- WONKRI-42**
Leading retail brands and consumer preferences - over 36,000,000 points of data
Building Block Group
Insight into consumer brand preferences and trends based on big data is high...
3,447.227 OCEAN POOL
- CHACOD-81**
Altcoin Sentiment Data
Building Block Group
Sentiment data is highly valuable to crypto institutional and retail investors be...
2,011.976 OCEAN POOL
- STROCT-64**
Bitcoin Sentiment Analysis
Building Block Group
Sentiment data is highly valuable to crypto institutional and retail investors be...
4,098.248 OCEAN POOL



OceanDAO Grants

\$100K+ available per month. Anyone can apply

<https://oceanprotocol.com/dao>



The screenshot shows the OceanDAO Grants landing page. At the top, it says "OCEANDAO" and "OceanDAO Grants". Below that, there is a paragraph of text: "OceanDAO offers community grants curated by OCEAN holders, towards growing the Ocean ecosystem. Funding is available for building software that uses Ocean, unleashing data, outreach, and improving OceanDAO itself." At the bottom, there are three buttons: "SUBMIT PROPOSAL", "VIEW PROPOSALS", and "VOTE".

Grant Proposal Template

Part 1 - Proposal Submission (*Mandatory)

Name of Project:

_____ (>=1 words) _____

Proposal in one sentence:

_____ (1 sentence) _____

Description of the project and what problem is it solving: (You can give more details in "proposal details" section farther down.)

_____ (1 paragraph) _____

Grant Deliverables: (Target deliverables for the funding provided.)

- _____ (Grant Deliverable 1) _____
- _____ (Grant Deliverable 2) _____
- _____ (Grant Deliverable 3) _____
- ...





Data markets 2/2 TE for data markets

Data Markets TE: Process

- Goals
- Design
- Implementation
- Verification

We'll use our experience with Ocean Protocol.

TE for Ocean Data Markets: Goals

- Drives health of \$OCEAN: as mkt \$ vol goes up, \$OCEAN goes up
- Incentivizes people to “do work”, aka add value (more datasets, curation)
- Drives virality, i.e. incentivizes people to refer others to Ocean
- Basic design is simple to understand & communicate
- Each 3rd-party market can also get all the characteristics here. E.g. virality



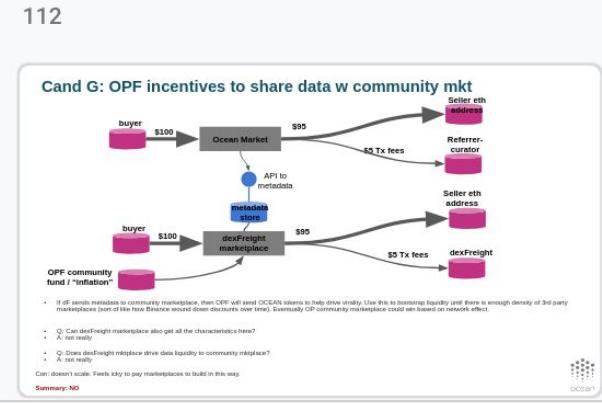
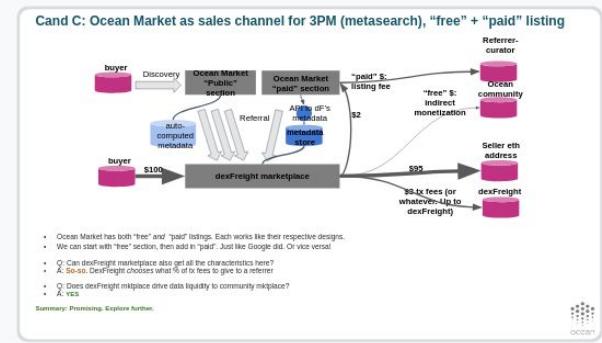
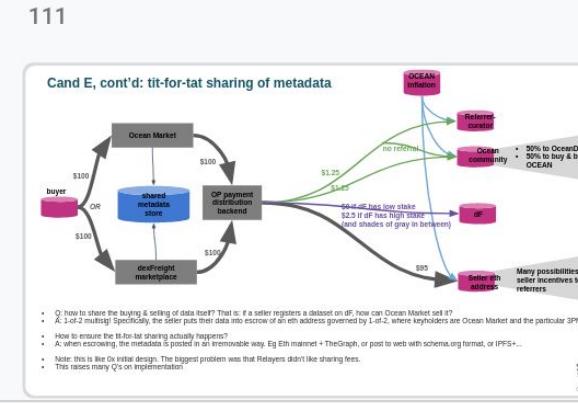
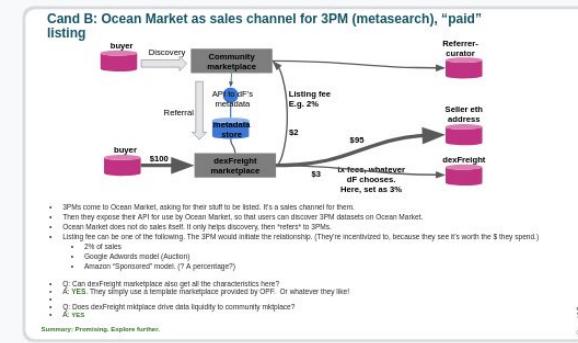
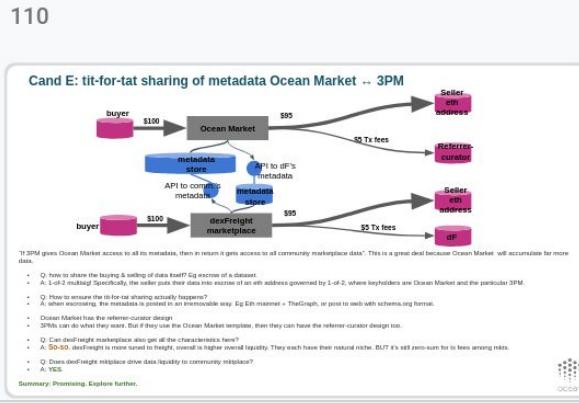
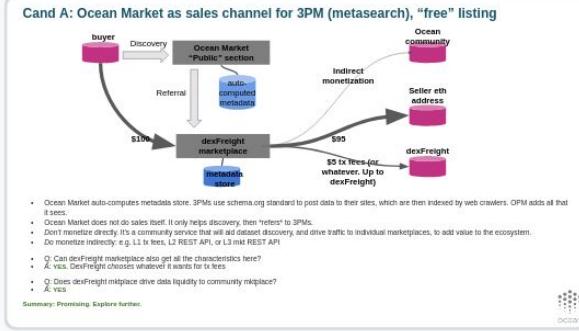
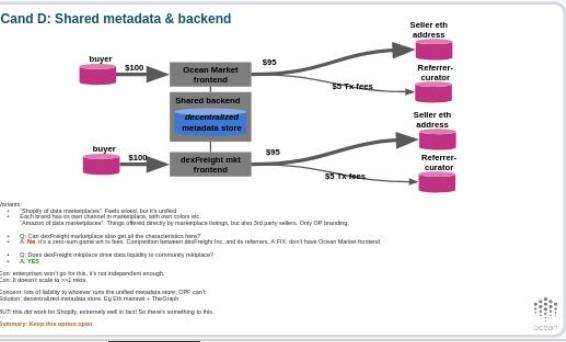
TE for Ocean Data Markets: Design exploration

Many designs were explored against the criteria.

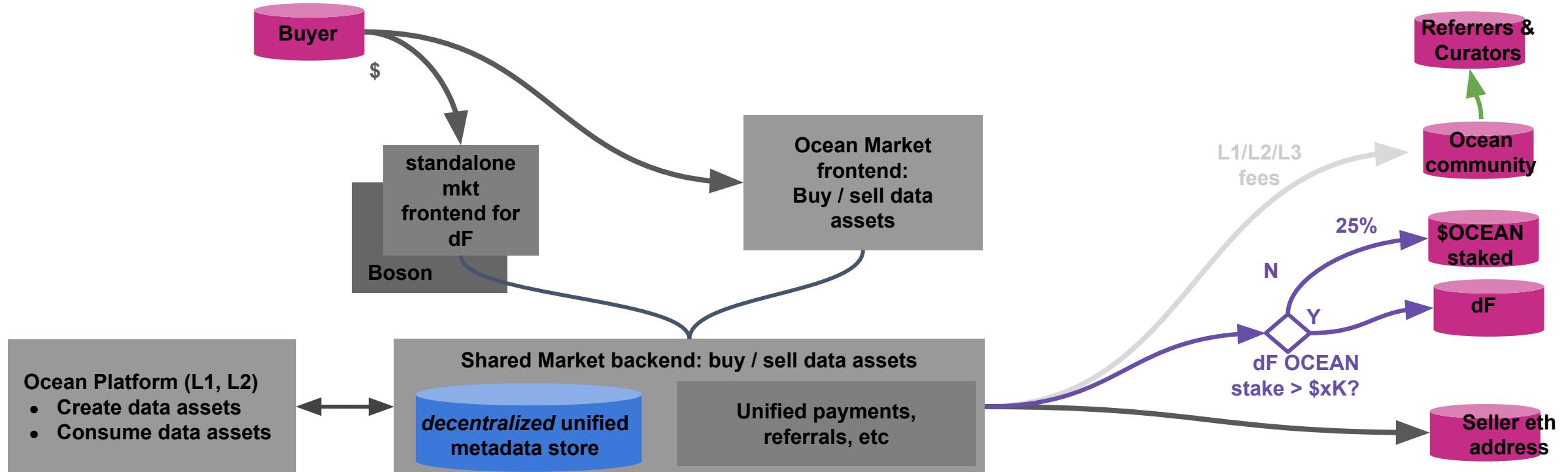
Appendix:
Marketplace TE:
Account for 3PM: Promising Designs



109



TE for Ocean Data Markets: Chosen design



- As \$ volume goes up, it drives \$OCEAN.
- Gets “work” and skin-in-the-game by curators, referrers, third-party marketplace owners
 - If you’re doing referrals and you drive volume↑, for more rewards you need stake↑
 - Same for curation

TE for Ocean Data Markets: Implementation

A realization: AMMs implements the “Chosen TE design”, and meets “TE Goals”.

Details:

- Datatoken-OCEAN AMMs. LPing = staking = curating. LPs get a % of swap volume.
- Store metadata on-chain
- Deploy to Ethereum mainnet
- Datatoken consume() sends a % to marketplace runner, and to Ocean community



TE for Ocean Data Markets: Verification

1. **Humans.** Subjective discussions, with increasing # people. 1 → 2 → key stakeholders

- Discussions among team
- Discussions with close collaborators (Fabric.vc, Balancer)

2. **Software.** Spreadsheet → agent-based sim

- Built Py & JS drivers for Balancer, and make extensive unit tests
- Did not do high-fidelity simulations of token dynamics. Why: (a) AMMs are already live (b) given the first point it wasn't worth the time commitment.

3. **Economic** (live). Can ratchet value-at-risk over time. People can choose risk/reward tradeoff.

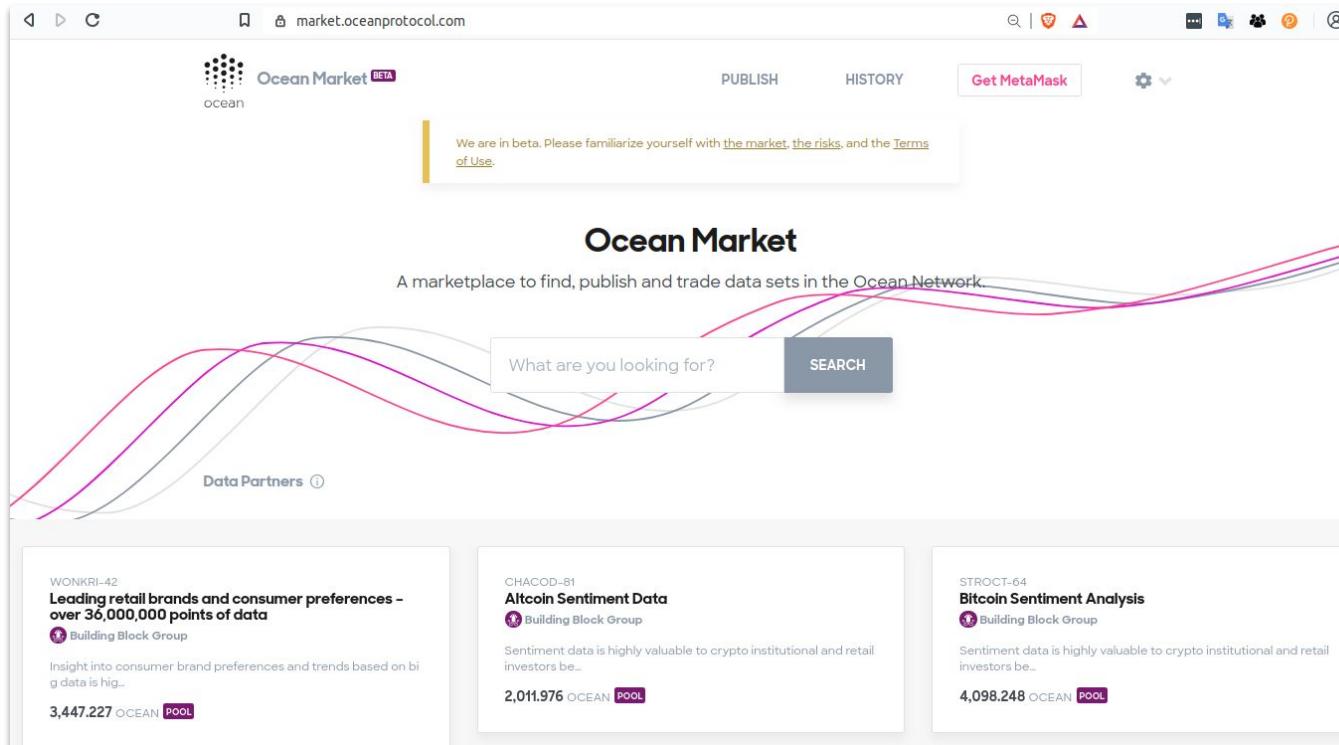
- Launched Ocean Market with lots of writings & caveats (e.g. "beta"). "Test in prod" ;)
- People did choose risk/reward tradeoff. Some made \$, some lost, some simply tested.
- Observed community response to Ocean Market, and token dynamics.
- Made adjustments accordingly. Being live was key to rapid improvements in what mattered.
- Most notable TE adjustment: 10/90 OCEAN/DT → 50/50 → 70/30. It helped a lot.
- Further TE improvements identified around "Safer Staking / Better IDOs". (Built in next version)



TE For Data Markets: Result: Ocean Market

<https://market.oceanprotocol.com>

- It's a decentralized exchange (DEX), tuned for data.
- Webapp + datatokens + AMMs (Balancer)
- Actions: publish data, buy, sell, consume, stake



Live Example: Ocean Market: Dataset Publish Flow

<https://market.oceanprotocol.com/publish>

Ocean Market BETA

PUBLISH

Publish

Highlight the important features of your data set to make it more discoverable and catch the interest of data consumers.

Given the beta status, publishing on Rinkeby first is strongly recommended. Please familiarize yourself with [the market](#), [the risks](#), and the [Terms of Use](#).

Title*
e.g. Shapes of Desert Plants

Enter a concise title.

Description*

Add a thorough description with as much detail as possible. You can use [Markdown](#).

File*
e.g. <https://file.com/file.json>

Please provide a URL to your data set file. This URL will be stored encrypted after publishing.

Sample file
e.g. <https://file.com/samplefile.json>

Please provide a URL to a sample of your data set file. This file should reveal the data structure of your data set, e.g. by including the header and one line of a CSV file. This file URL will be publicly available after publishing.

Access Type*

Choose how you want your files to be accessible for the specified price.

Datatoken Name & Symbol*
- C
The datatoken for this data set will be created with this name & symbol.

Author*
e.g. Jelly McJellyfish
Give proper attribution for your data set.

Tags
e.g. logistics, ai
Separate tags with comma.

Terms & Conditions*
 I agree to these Terms and Conditions

DEFINITIONS
"Service" means all websites, software and services offered and operated by

SUBMIT **RESET FORM**



Live Example Data Asset: Fixed Pricing (eBay data)

The screenshot displays the Ocean Market interface for a fixed pricing data asset. At the top, the header includes the Ocean logo, 'Ocean Market BETA', 'PUBLISH', 'HISTORY', a 'Get MetaMask' button, and a settings icon. The main title is 'eBay DATASET - 10 Million Data Points (1,000,000 Product Listings)'. On the left, a 'Data Reservoir' section shows a graph with several curves and a blue 'dt' logo for DATA RESERVOIR. It describes the dataset as having over 10 million data points from 1,000,000 eBay product listings in the electronics category for November 2020, updated monthly. A 'What's included in the dataset?' section details the xlsx format and scraped data points. On the right, a 'USE' tab is selected, showing a summary of 2,639.166 OCEAN in a pool, equivalent to €1,211.94. A 'BUY' button is present, along with a note about spending back to the publisher and pool. A 'No account connected' message with a 'Connect Wallet' button is shown. The bottom right corner features the Ocean logo.

Ocean Market BETA

PUBLISH HISTORY Get MetaMask

eBay DATASET - 10 Million Data Points (1,000,000 Product Listings)

Data Reservoir

Exceptional Whale Token – EXCWHA-70 ↗
Published by 0x98EA...16E4 — Etherscan ↗

 DATA RESERVOIR

This dataset has a massive total of over 10 million data points from over 1,000,000 product listings on eBay using the electronics category. This dataset is from the first week of November 2020.

- Updated monthly

What's included in the dataset?

The dataset is in xlsx format and each line shows 10 data points with the date & time scraped. The following is included in this dataset:

- *Seller name
- *Seller rating
- *Item category
- *Item ID

2,639.166 OCEAN POOL
= €1,211.94

html

BUY

For using this data set, you will buy 1 EXCWHA-70 and immediately spend it back to the publisher and pool.

No account connected
Please connect your Web3 wallet.

ocean

Live Example Data Asset: Dynamic Pricing (Consumer Data Streams)

The screenshot shows the Ocean Market BETA interface. At the top, there is a navigation bar with the Ocean logo, the text "Ocean Market BETA", and buttons for "PUBLISH", "HISTORY", "Get MetaMask", and a settings icon.

The main content area features a banner for "AtlantisStream.io - Realtime Consumer Data Streams". Below the banner, there is a section titled "Atlantis Streams" with the following details:

- Meretricious Manatee Token – MERMAN-13 ↗
- Published by [0x4f40...50B3](#) – Etherscan ↗
- Atlantis Stream is a crowdsourced dataset of real-time consumer data streams.
- Notice (11/17/2020)**
- Atlantis Stream is currently pre-alpha, and will be migrating to compute-to-data when it becomes available. Stay up to date on any of our official channels below:

 - [Website](#)
 - [Newsletter](#)
 - [Telegram](#)
 - [Twitter](#)
 - [Discord](#)
 - [Github](#)

- For business inquiries:

 - [Contact our founder](#)
 - Email us at team@atlantisstream.io

- How it works.**

On the right side of the screen, there is a detailed view of the data asset's pricing and usage information:

- USE** tab selected.
- 289.698 OCEAN** (POOL) = €132.88
- No file info available.
- BUY** button.
- Text: "For using this data set, you will buy 1 MERMAN-13 and immediately spend it back to the publisher and pool."
- No account connected** (indicated by a red square icon).
- Text: "Please connect your Web3 wallet."



Example Data Asset: A Data Union (Swash)

The screenshot shows the Ocean Market BETA interface with the following details:

Top Navigation: Ocean Market BETA, PUBLISH, HISTORY, Connect Wallet, Settings.

Title: Swash - Consumer Browsing Data

Left Panel (Asset Details):

- Publisher:** SwashData Tech Oy
- Token:** Tasty Lobster Token – TASLOB-45
- Published by:** SwashData Tech Oy (Home, Twitter, Etherscan)
- Description:** Swash is creating the world's first Data Union. It crowdsources users' surfing data through a browser plugin (available on Chrome, Firefox, Brave, Edge, and more) and shares profits with users. This lets Swash provide data buyers with unrivaled zero-party consumer data at scale, from all over the web, guaranteeing data quality and user consent. The increasing number of users will grow the value of Swash data assets over time.
- Use cases:** Market intelligence, Consumer insights, E-commerce analytics, AI/ML, and Advertising optimisation
- UPDATE: November 21th 2020:**
 - Number of data points: 800K (+100k since last update)
 - Data Union members: 1600 (+100 since last update)
 - Geo coverage: Worldwide

Right Panel (Purchase Options):

- Options:** USE, POOL, TRADE
- File Type:** zip
- Size:** 68.85 MB
- Price:** 31,958.954 OCEAN POOL
= €14,448.80
- Buy Button:** BUY
- Note:** For using this data set, you will buy 1 TASLOB-45 and immediately spend it back to the publisher and pool.
- Status:** No account connected
- Text:** Please connect your Web3 wallet.

Live Example Data Indexes for Ocean Market

Quality Metrics from the Community, Free & For Sale

Tokens: 524 OCEAN Price: \$0.42 OCEAN Market Cap: \$148,650,190.67 Tokens Volume (24h): \$49,836,028.19 (49,836,028.193 OCEAN) To

Data Market Cap

powered by 

Today's Token Prices by Market Cap

The global OCEAN market cap is \$30,449,817.34, a ^ 9.8% change over the last day.

| Name | Price | Market Cap | Volume (24h) | Circulating Supply | Tags |
|-----------------------------------|------------|----------------|----------------|--------------------------|--------------------------|
| Intransigent Fugu Token INTFUG-26 | \$9,998.00 | \$9,998,000.00 | \$9,998,000.00 | 1,000 1,000 INTFUG-26 | location-data-uk-driving |
| Sclerotic Eel Token SCLEEL-38 | \$3,115.00 | \$3,115,000.00 | \$0.00 | 0 SCLEEL-38 | |
| Jocular Clam Token JOCCLA-51 | \$2,100.00 | \$2,100,000.00 | \$0.00 | 0 JOCCLA-51 | |

rugpullindex.com

The first decentralized data set index in the world.

Last updated on 2020/12/11 (updated every day at midnight)

| # (1d Δ) | Symbol | Score | Gini | Liquidity (OCEAN) | Price (OCEAN) | LP |
|----------|-----------|-------|------|-------------------|---------------|---|
| 1 ▲ | QUICRA-0 | 16.60 | 0.93 | 554,838 | 498.85 | LP |
| 2 ▲ | TREPEL-36 | 5.73 | 0.70 | 44,219 | 91.03 | LP |
| 3 ▲ | MERMAN-13 | 5.11 | 0.86 | 82,213 | 187.29 | LP |
| 4 ▲ | TASLOB-45 | 3.01 | 0.88 | 57,053 | 33,500.49 | LP |
| 5 ▲ | LUMSTA-42 | 2.13 | 0.97 | 150,159 | 33,270.58 | LPs Trade |



Bridging.tech Datasets
@BDatasets

Check out this datatoken overview of our datapool:
Ocean Market  Pool trends and charts 

Price to buy increased to 29 \$ocean because in the last 2 days around 30 'WONPEL-82' were traded out (not bought).

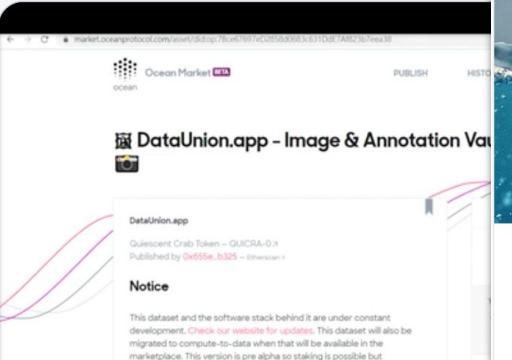


Live Example Data Ecosystem

Several startups launched in first mo. Now, >25 teams

DataUnion.App @DataunionA · Nov 15
There is a first review on YouTube about the dataset:
youtu.be/CtETKKnx1fk
Thank you for that @profit_ai

#OceanProtocol



OpenData | Data Brokers @databrokers1 Follows you

datawhale @realdatawhale · Nov 25
Our proprietary staking rating formula for "Directory" will be based on metrics that don't lie: numbers.

The highest weightage for the rating will be based on number of sales, number of transactions & decentralization.

Our TREPEL-36 sold more than all top pools combined 🐳



| Dataset Title | Dataset-Ticker | Dataset-Supply | Average 7-Day Liquidity | Number of Sales | Number of Contract Tx | Number of Token Transfers | Total Token Holders | GPI Index (via rugvul/index.com) |
|---|----------------|----------------|-------------------------|-----------------|-----------------------|---------------------------|---------------------|----------------------------------|
| TREPEL-36 | 500 | 146,956 | 50 | 6,214 | 265 | 1,182 | 854 | 0.72 |
| Swash - Consumer Browning Data | TASLO-49 | 20 | 135,948 | 8,432 | 54 | 1,027 | 40 | 0.87 |
| Product reviews and comments on Amazon.com (processed data) | LUMIN-50 | 50 | 128,594 | - | - | 523 | 329 | 0.77 |
| Leading retail brands and consumer preferences – over 36,000,000 points of data | WONKR-42 | 20 | 61,551 | - | 2,136 | 34 | 341 | 0.85 |
| PVPLACE 808 Mafia Metropolis Compositions / Samples | IRNCOR-52 | 60 | 35,930 | 2 | 851 | 19 | 230 | 0.98 |
| Ebay Direct Sales Data Points (1,000,000 Product Listings) | KYB-70 | 8 | 41,065 | 498 | 8 | 173 | 104 | 0.94 |
| Absent Sentiment Data | CHAOOD-41 | 20 | 28,506 | 1 | 1,290 | 30 | 467 | 0.81 |
| Bittorrent Sentiment Analysis | STRUCT-44 | 9 | 33,020 | 810 | 5 | 262 | 193 | 0.93 |
| DataUnion.app - Image & Annotation Value | QUICRA-0 | 1,000 | 642,256 | 595 | 65 | 172 | 190 | 0.90 |
| Advanced Data Science - Consumer Data Streams | MIRNA-13 | 857 | 184,460 | 4 | 743 | 231 | 154 | 0.89 |
| Oceanaceo - Datapool Evaluation and Charting | ADASTA-60 | 997 | 80,783 | 13 | 1,167 | 122 | 190 | 0.84 |
| Ocean Market - Pool trends and charts | WONPEL-62 | 535 | 35,682 | 5 | 299 | 92 | 66 | 0.78 |



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dataapplications we strive to provide businesses & researchers with high quality, data that facilitates new market insights, & drives innovation.

Joined November 2020

Following 27 Followers



DATA RESERVOIR

Data Reservoir @DataReservoir Follows you

Provider of valuable datasets on the Ocean Marketplace.

Joined November 2020

70 Following 329 Followers



Live Example: Ocean Market Stats After First Month

(Six months later, it's about 3x the numbers shown)

30.626
visitors
to
the marketplace

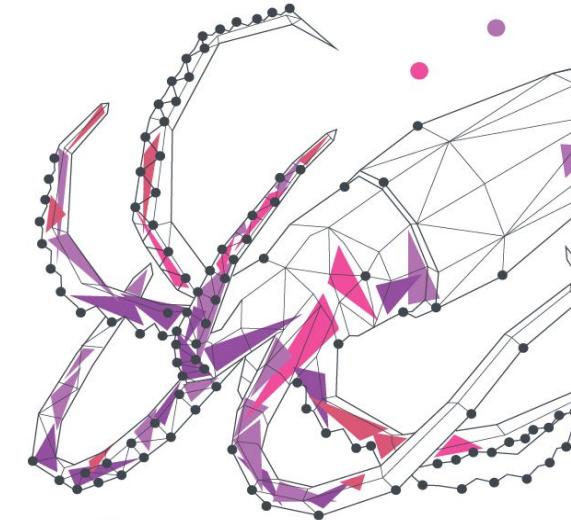


1.322.631
OCEAN pooled



58.500
transactions

1.505.557 pageviews



268
datasets
published

164 dataset pools

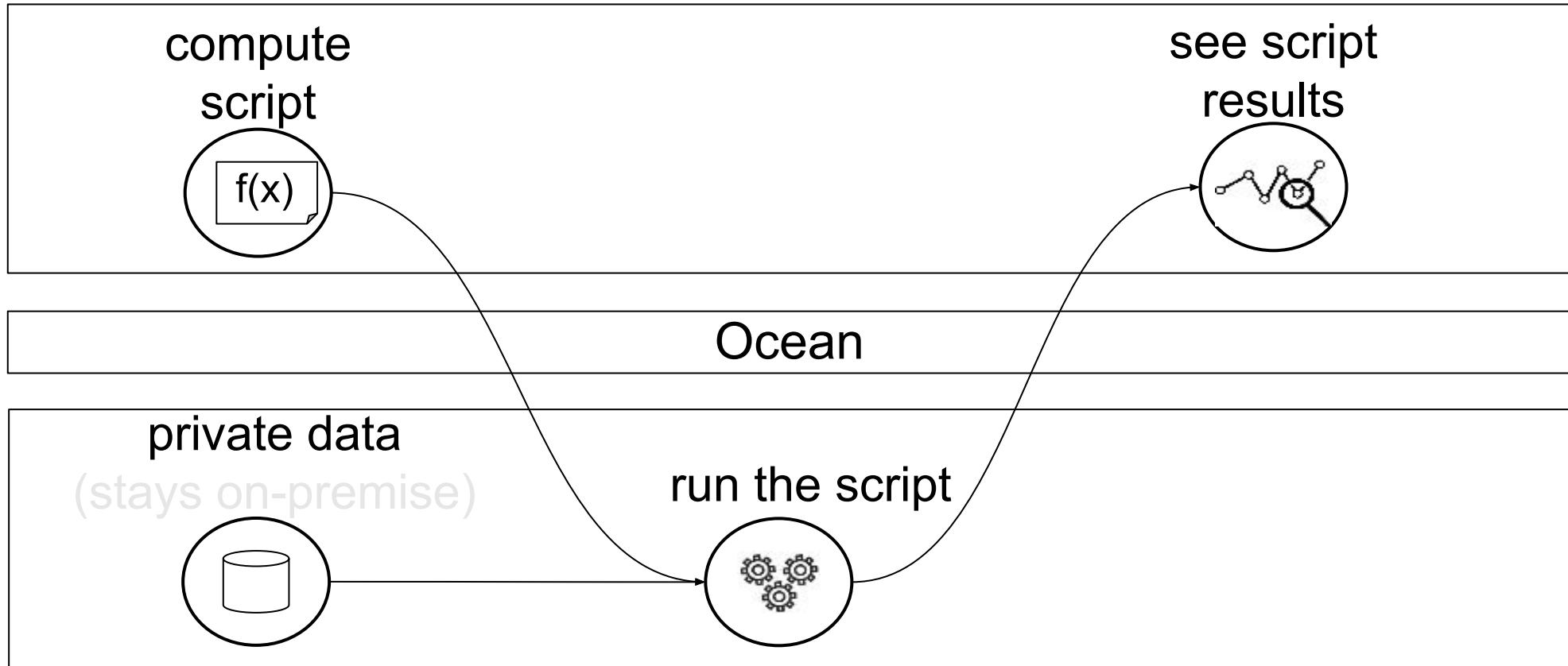
Data Services: “Static Uri” Service

- Publisher encrypts the uri
- Uri gets decrypted upon ‘consume’
- Available in backend and frontend (Ocean Market)
- Works for...
 - static files
 - dynamically-updated files
 - http & Web2 REST APIs
 - IPFS uris
 - and more. Super-flexible.



Data Services: Compute-to-Data Data Service

Buy & sell private data, while preserving privacy

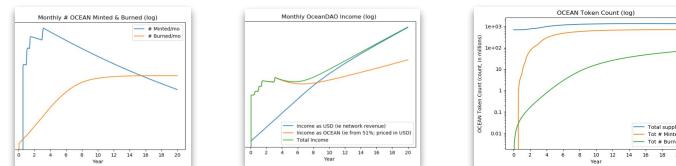
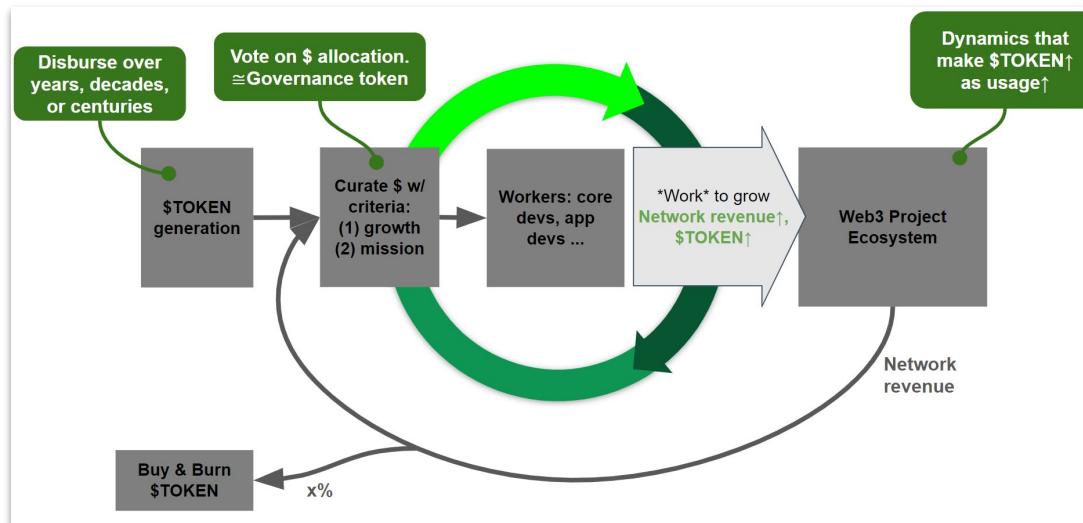




Conclusion

Conclusion

- Intro to TE
- TE for ecosystem sustainability – Web3 Sustainability Loop
- TE for data markets – with live example Ocean Market



Screenshot of the Ocean Market beta website (market.oceanprotocol.com):

The page includes:

- Ocean Market BETA** logo and navigation links: PUBLISH, HISTORY, Get MetaMask.
- A message: "We are in beta. Please familiarize yourself with the [market](#), the [risks](#), and the [Terms of Use](#)".
- Ocean Market** title and subtitle: "A marketplace to find, publish and trade data sets in the Ocean Network".
- A search bar: "What are you looking for? SEARCH".
- Data Partners** section with a list of datasets:

 - WONKRI-42**: "Leading retail brands and consumer preferences - over 36,000,000 points of data" by Building Block Group. Price: 3,447.227 OCEAN POOL.
 - CHACOD-81**: "Altcoin Sentiment Data" by Building Block Group. Price: 2,011.976 OCEAN POOL.
 - STROCT-64**: "Bitcoin Sentiment Analysis" by Building Block Group. Price: 4,098.248 OCEAN POOL.

@trentmc0
@oceanprotocol

