A New Data Economy with Power to the People

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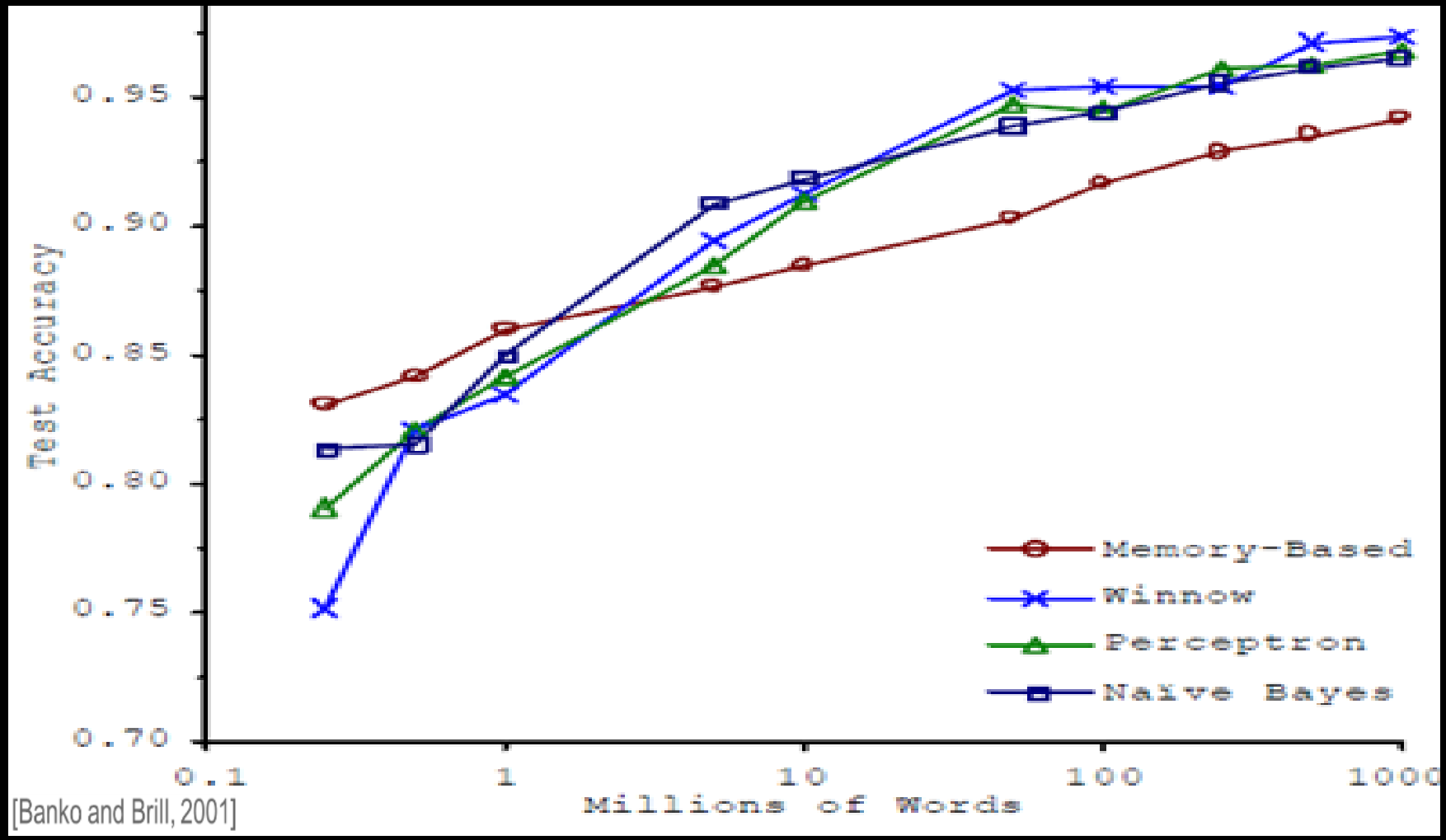
BIGCHAIN DB
iPDB | INTERPLANETARY DATABASE
DEX
ocean

The Dream

Decentralized, open, free flow of data!

The Problem

The Unreasonable Effectiveness of Data



1000% less error!

1000x *more* data

Status quo

Mo’ Data
(and mo’ compute)

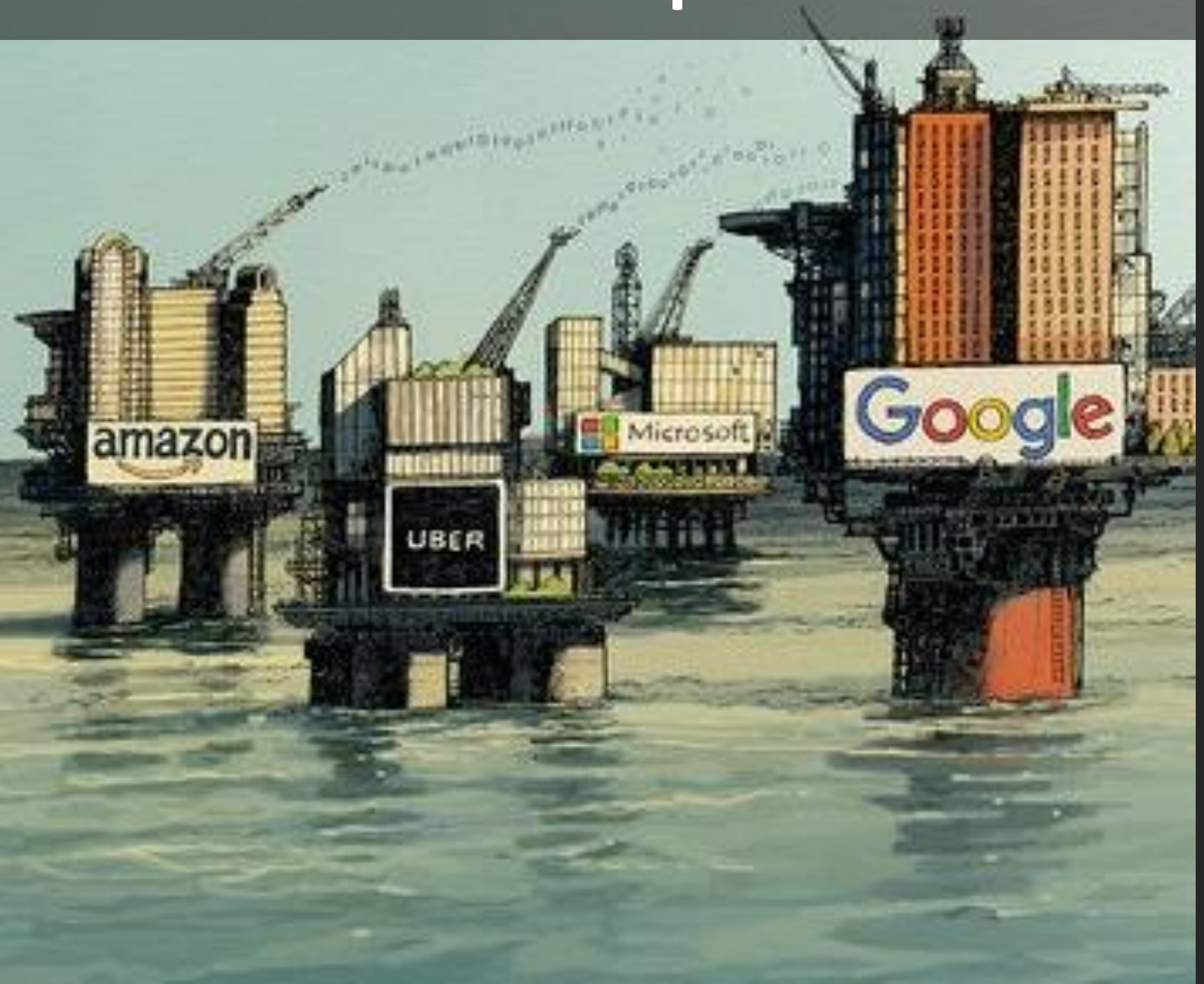
↓

Mo’ accuracy

↓

Mo’ $

Status quo



Silo **Mo' Data**
(and mo' compute)

↓

Mo' accuracy

↓

Mo' $

“GOOG and FB now have direct influence over 70%+ of internet traffic.”

In “The Web Began Dying in 2014”
by Andrew Staltz

https://staltz.com/the-web-began-dying-in-2014-heres-how.html

Data silos
Aka people farming

Lawrence Lundy-Bryan
@lawrencelundy
Following
2/ Core problem - Siloed data with no economic incentive to share
2:35 AM - 3 Oct 2017

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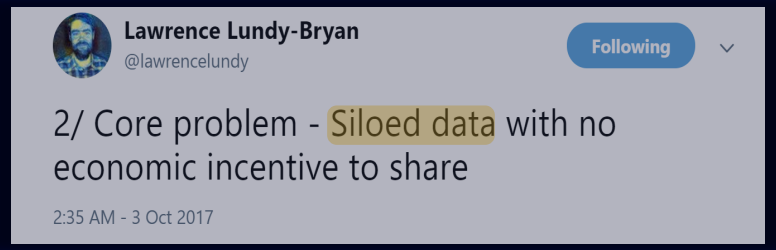
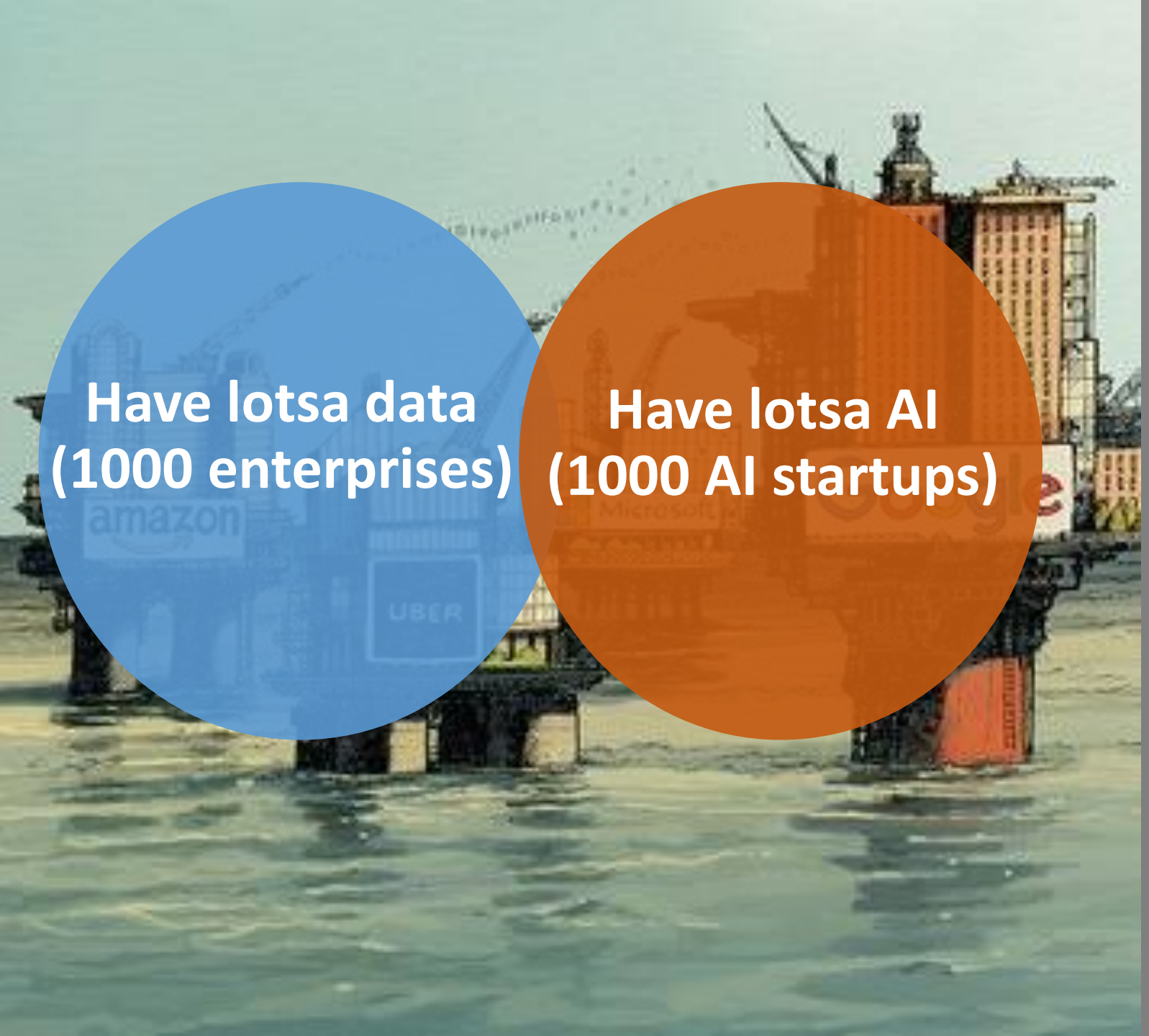
Breaking down silos





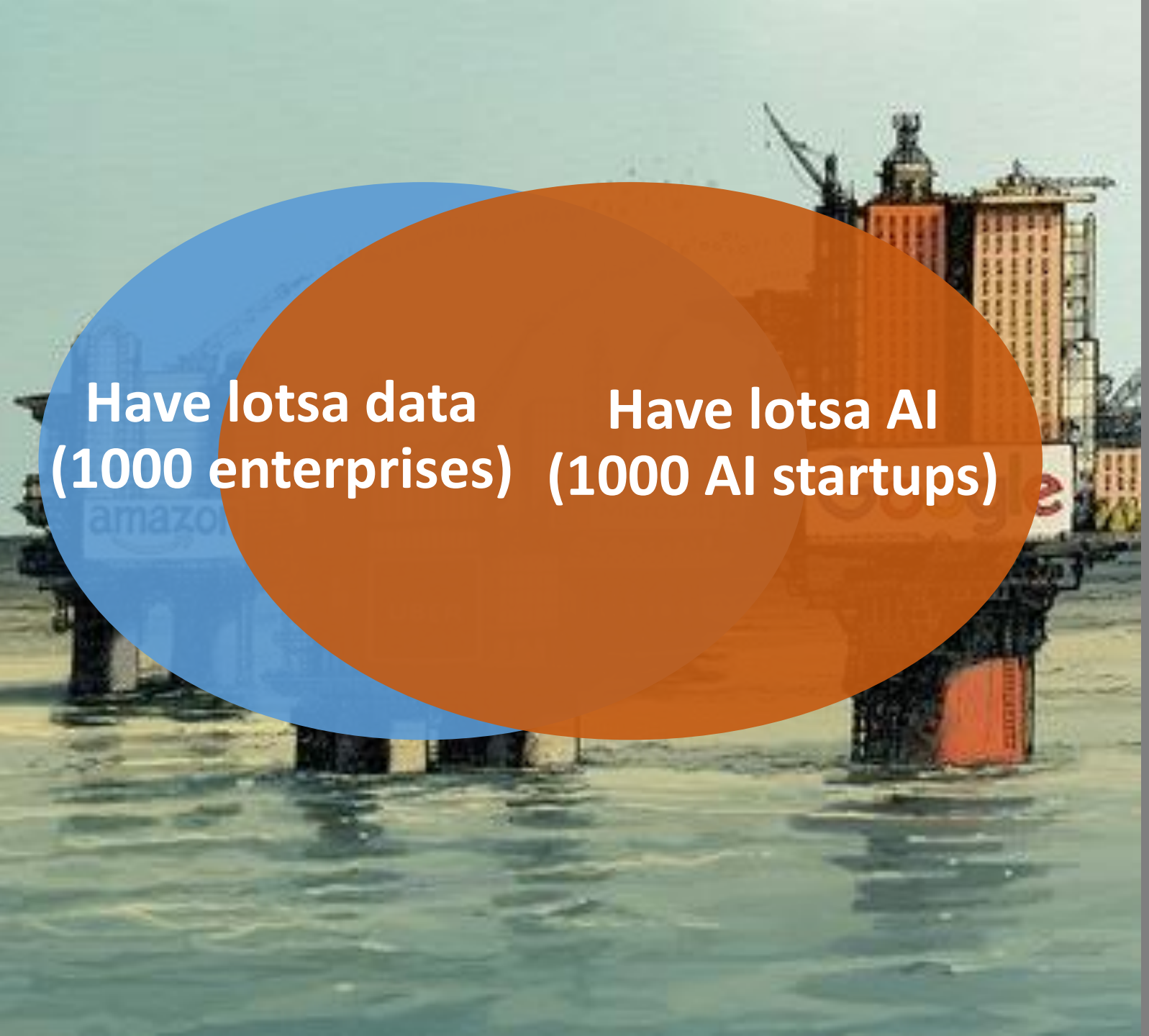
~~Silo~~ *Pool* Mo' Data
(and mo' compute)

↓

Mo' accuracy

↓

Mo' $



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(and mo' compute)

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Mo' accuracy

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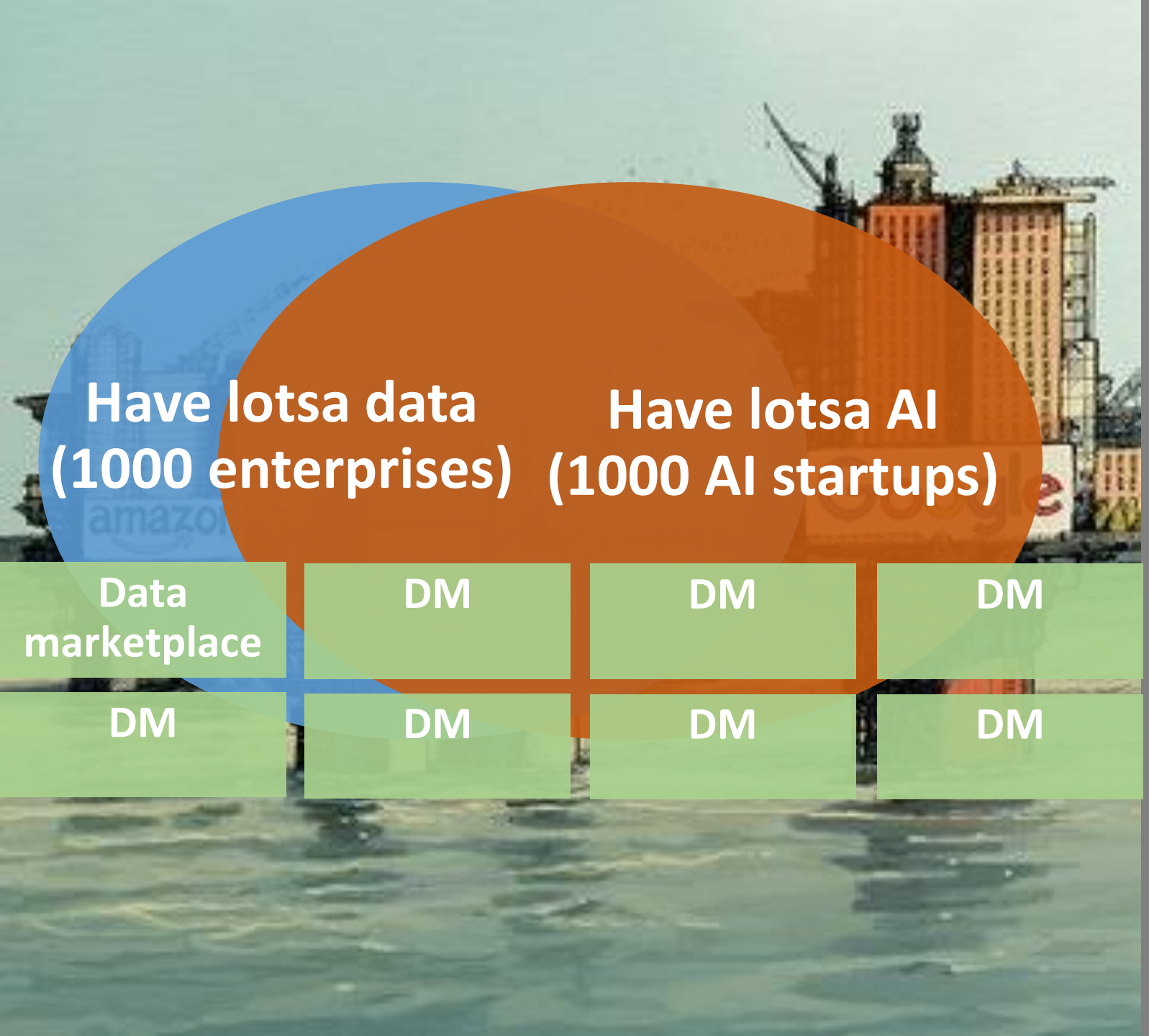
Mo' $



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Mo' accuracy

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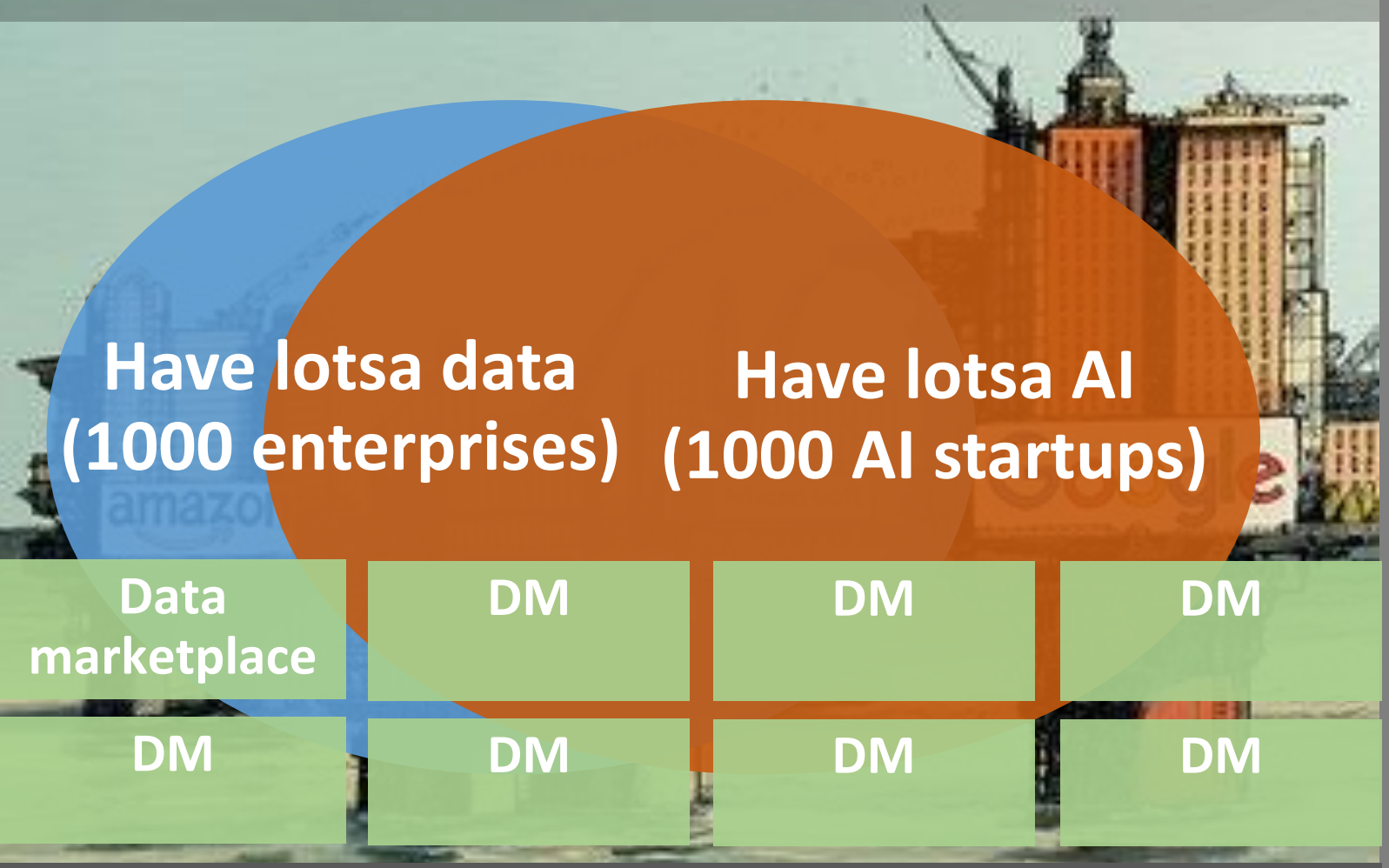
Change the status quo?



Ocean = universal data economy
Curated data in a decentralized substrate

~~Silo~~ *Pool* Mo' Data
(and mo' compute)

↓

Mo' accuracy

↓

Mo' $

Economic incentives: Backgrounder

In the beginning

There was Bitcoin

What's the amazing thing about blockchains?

- Decentralized?
- Immutability?
- Aligning incentives?
- Raising $$$$ off a whitepaper and a dog?
- **One more…**

The Not-So-Obvious Blockchain Superpower:

You can get people *to do things*

So, what do you want people to do?

Design *economic incentives* for that thing,

and bake it into the network as *block rewards*

Economic Incentive for Bitcoin

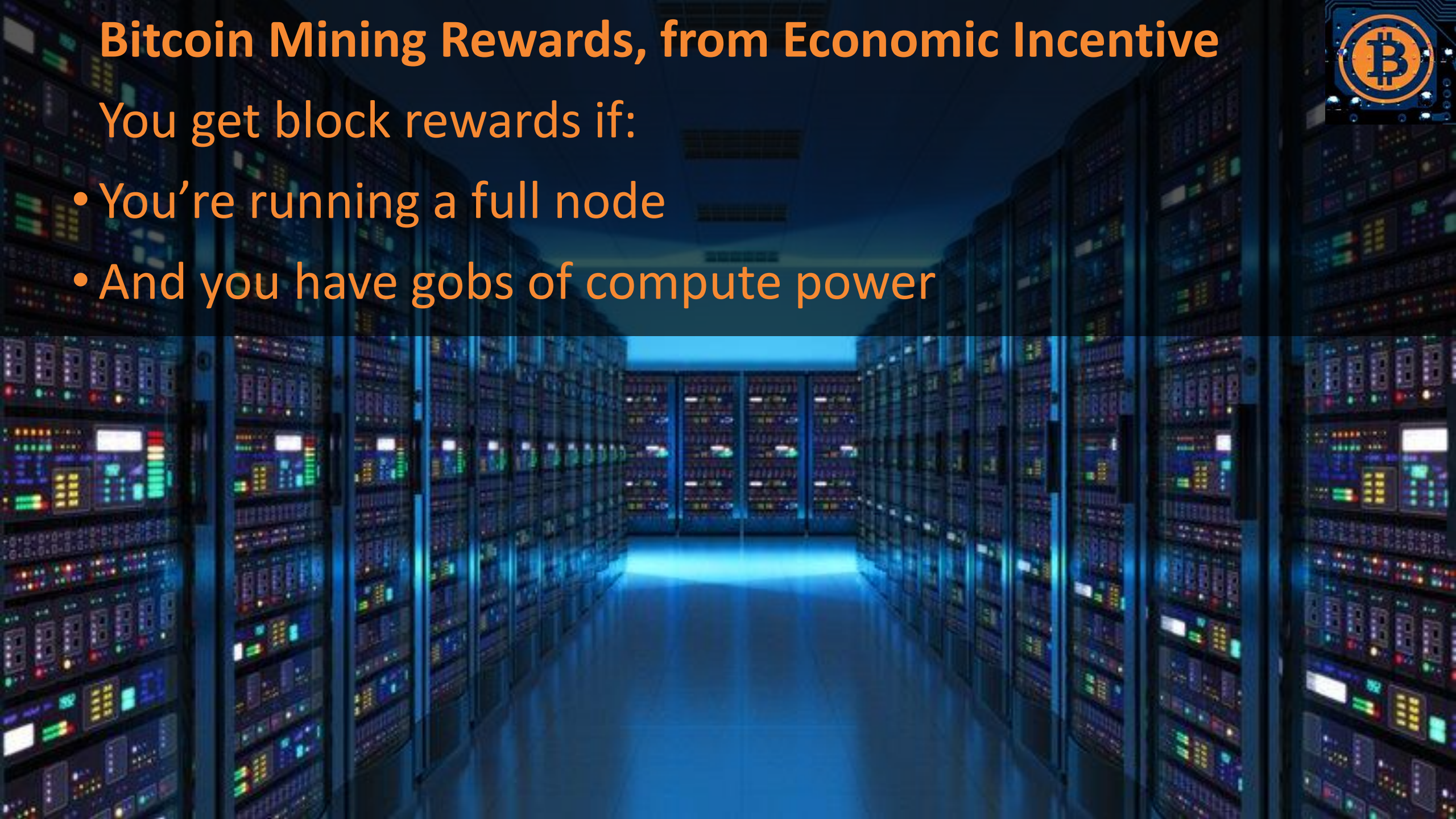
Objective: Maximize security of chain

- Where “security” = compute power
- Therefore, super expensive to roll back changes to the transaction log

$$E(R_i) \ \alpha \ H_i * T$$

- **E()** = expected value
- R_i = block rewards
- H_i = hash power of actor
- **T = # tokens (BTC)** dispensed each block

Bitcoin Mining Rewards, from Economic Incentive



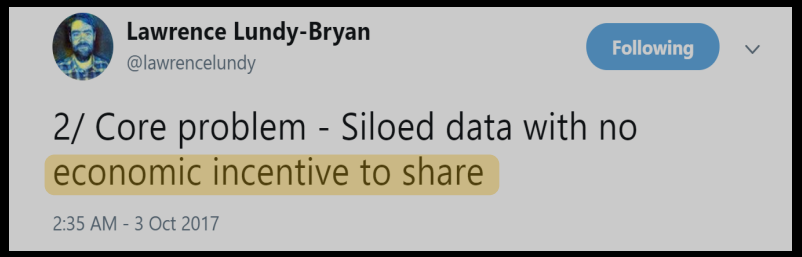
You get block rewards if:

- You're running a full node
- And you have gobs of compute power

Design of Tokenized ecosystem ≈ Design of EAs (Evolutionary Algorithms)

Tokenized ecosystem		Evolutionary Algorithm
Block reward function E.g. “Maximize hash rate”		Objective function E.g. “Minimize error”
Miners & token holders (humans) In a network		Individuals (computer agents) In a population
Block reward interval		Generation
You can’t control human, Just reward: give tokens And punish: slash stake (or hack lol)		You can’t control individual, Just reward: reproduce And punish: kill

Economic incentives: Ocean



Economic Incentive for Ocean

ocean

Objective: Maximize supply of high-quality (curated) data

- **This means: reward curating data + making it available**
- **Where "curating" = betting on data. Reward taste-making.**

$$E(R_{ij}) \alpha \ \log10(S_{ij}) * \log10(D_j) * T * R_i$$

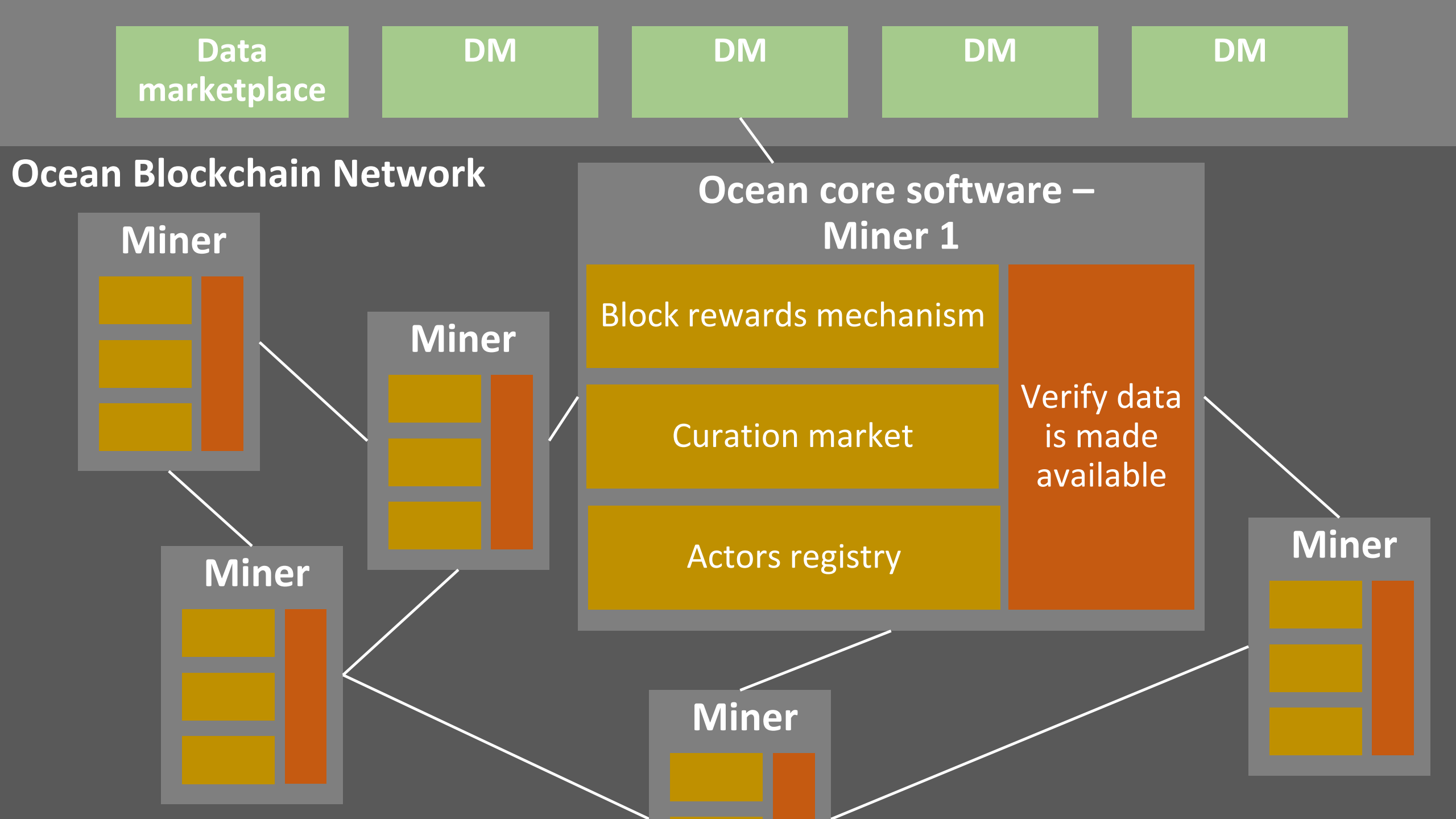
- **$E(R_{ij})$ = expected block rewards**
- **S_{ij} = stake in dataset j**
- **D_j = popularity** = # downloads
- **T = # tokens** during interval
- R_i = download ratio (prevents some attacks)

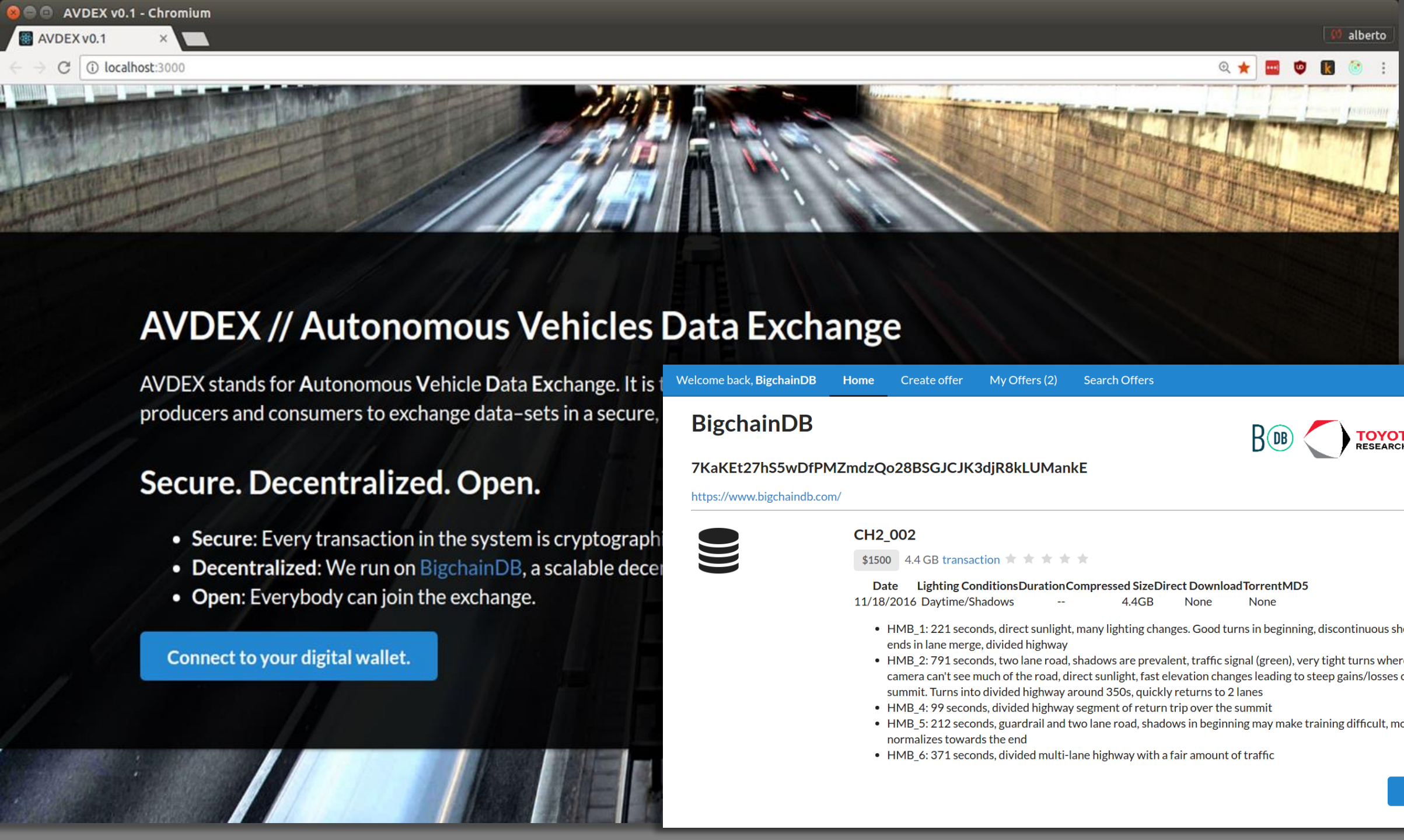
Ocean Mining Rewards, from Economic Incentive

ocean

You get block rewards if:

- You've bet on a dataset (i.e. curated)
- And you make it available when asked


Data marketplace
DM
DM
DM
DM
Ocean Blockchain Network
Ocean core software – Miner 1
Block rewards mechanism
Curation market
Actors registry
Verify data is made available
Miner
Miner
Miner
Miner
Miner



Welcome back, **BigchainDB** | Home | Create offer | My Offers (2) | Search Offers | Logout

BigchainDB

7KaKEt27hS5wDfPMZmdzQo28BSGJCJK3djR8kLUMankE

https://www.bigchaindb.com/

CH2_002

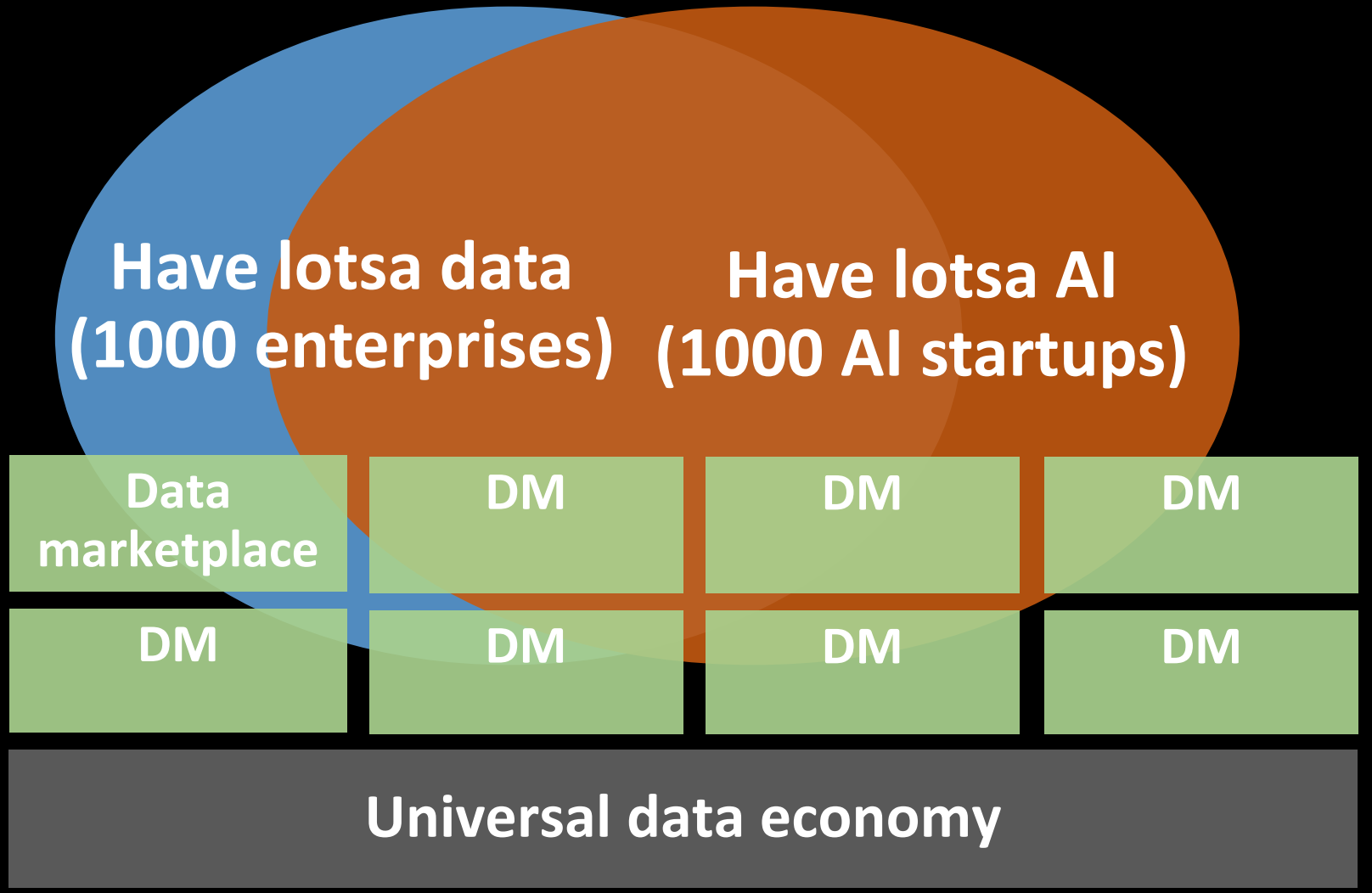
$1500 4.4 GB transaction

Date	Lighting Conditions	Duration	Compressed Size	Direct Download	Torrent	MD5
11/18/2016	Daytime/Shadows	--	4.4GB	None	None	

- HMB_1: 221 seconds, direct sunlight, many lighting changes. Good turns in beginning, discontinuous shoulder lines, ends in lane merge, divided highway
- HMB_2: 791 seconds, two lane road, shadows are prevalent, traffic signal (green), very tight turns where center camera can't see much of the road, direct sunlight, fast elevation changes leading to steep gains/losses over summit. Turns into divided highway around 350s, quickly returns to 2 lanes
- HMB_4: 99 seconds, divided highway segment of return trip over the summit
- HMB_5: 212 seconds, guardrail and two lane road, shadows in beginning may make training difficult, mostly normalizes towards the end
- HMB_6: 371 seconds, divided multi-lane highway with a fair amount of traffic

View >

What unlocking data unlocks

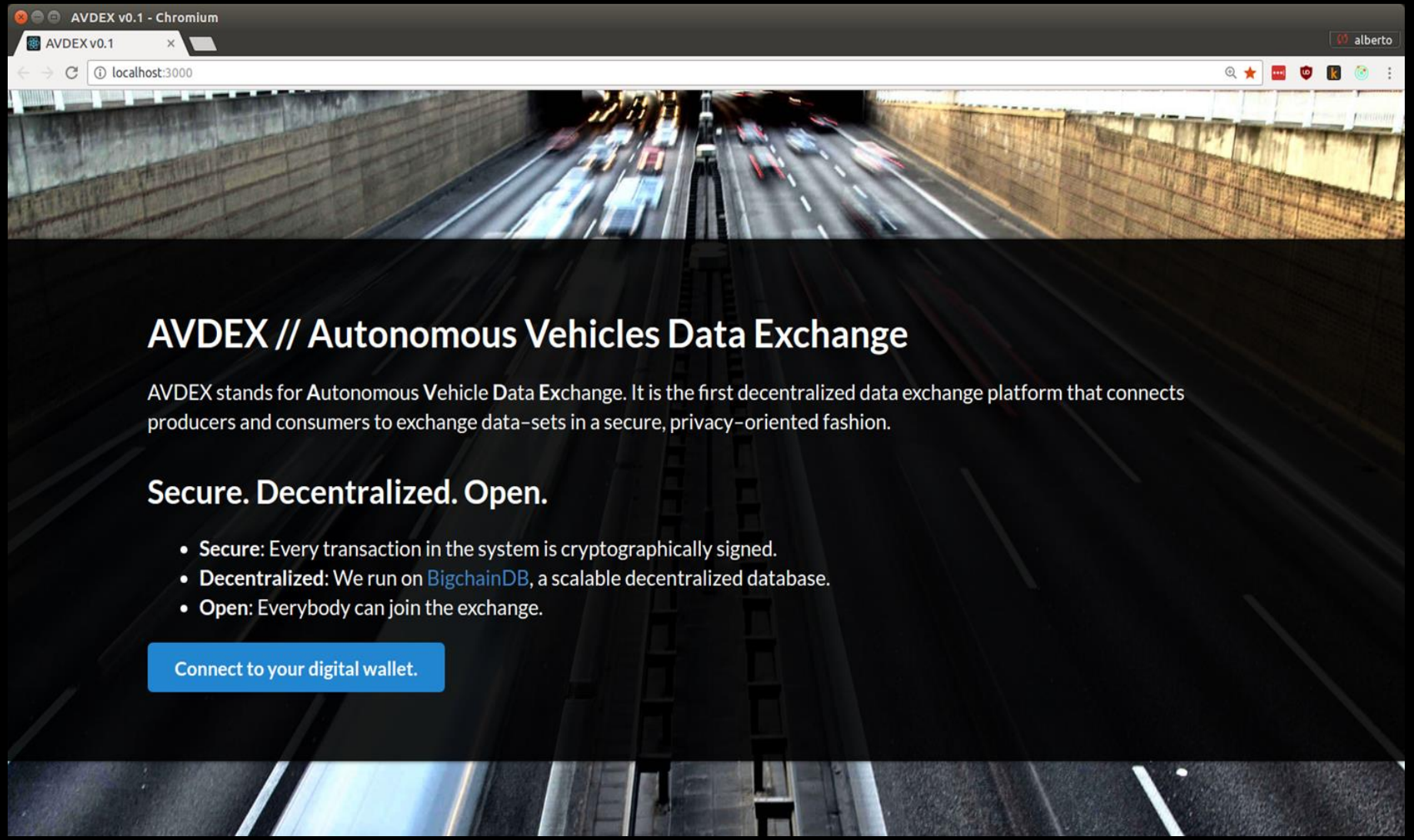


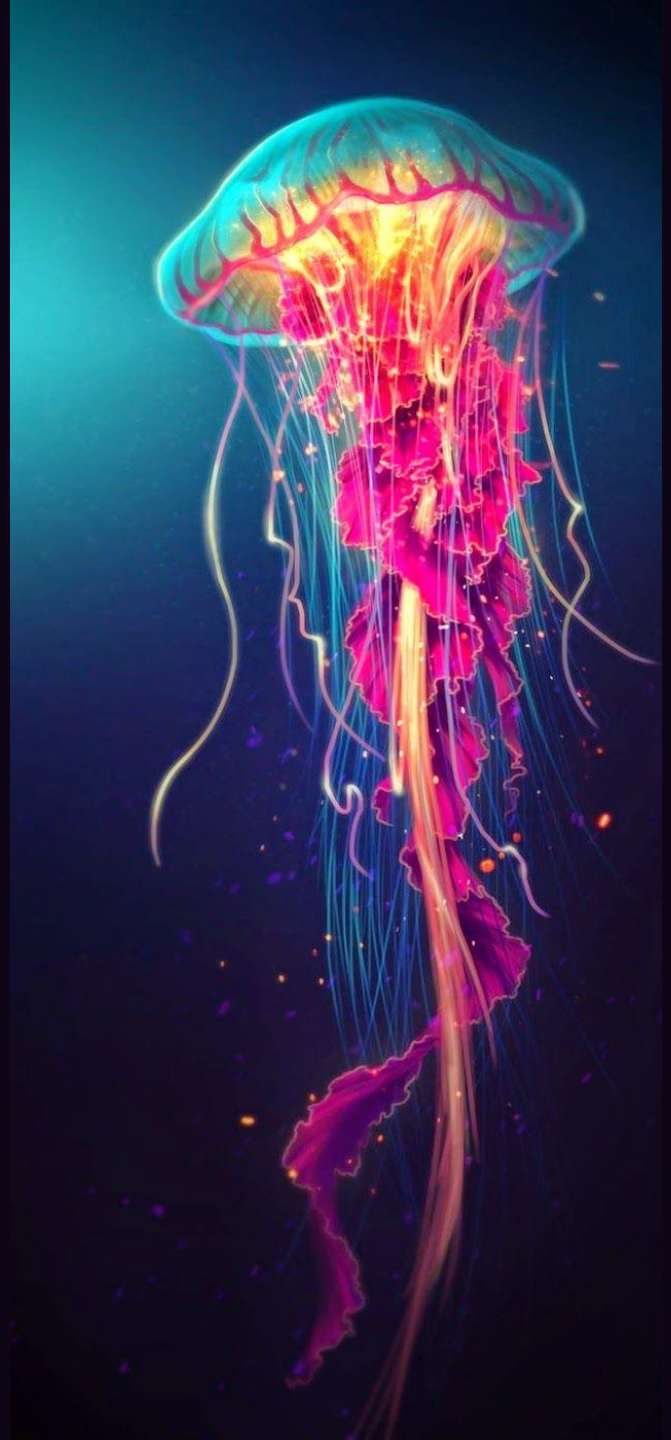
Equalize the opportunity for access to data and benefits of AI

Squeeze out the data silos (aka people farming)

>100x more data for health care research

Self-driving cars: fewer accidents, more mobility





Conclusion

We've lost the web.
Let's reclaim it, better than ever...

Let's build a new data economy that gives power to the people!

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