Title: Web 3.0 is changing computing, the internet, and society -- blockchains, cryptocurrencies, and the decentralized web

Speakers: Juan Benet

Series: Colloquium

Date: May 29, 2019 - 2:00 PM

URL: http://pirsa.org/19050040

Abstract: Computing has had many fundamental platform shifts in its history, and each came shrouded with mystery, hype, and dazzling potential: Alan Turing's universal machines, Doug Engelbart's Dynamic Knowledge Repository, J.C.R. Licklider's Intergalactic Network, the development of the internet, and all the waves of personal computers. More recently, Web 1.0, Web 2.0, and now Web 3.0 have all been heralded with barely-working demos and baffling hype, only to quietly install and broadly distribute fundamental improvements to our everyday life, to our work, and to our society. Each time the smoke cleared, our civilization had been transformed.

&nbsp;

Right now, there are fundamental improvements being designed, built, and deployed in the web 3.0 landscape. These improvements and the applications they enable have the potential to transform our lives, our societies, and our civilization yet again. Some of those changes have started to happen, but the vast majority loom in the horizon. To understand the potential changes to our future, we must first understand what the technologies are, what properties they have, and what applications and actions they enable. After looking at the pieces concretely, both in theory and in practice, we can then put the puzzle of the future back together.

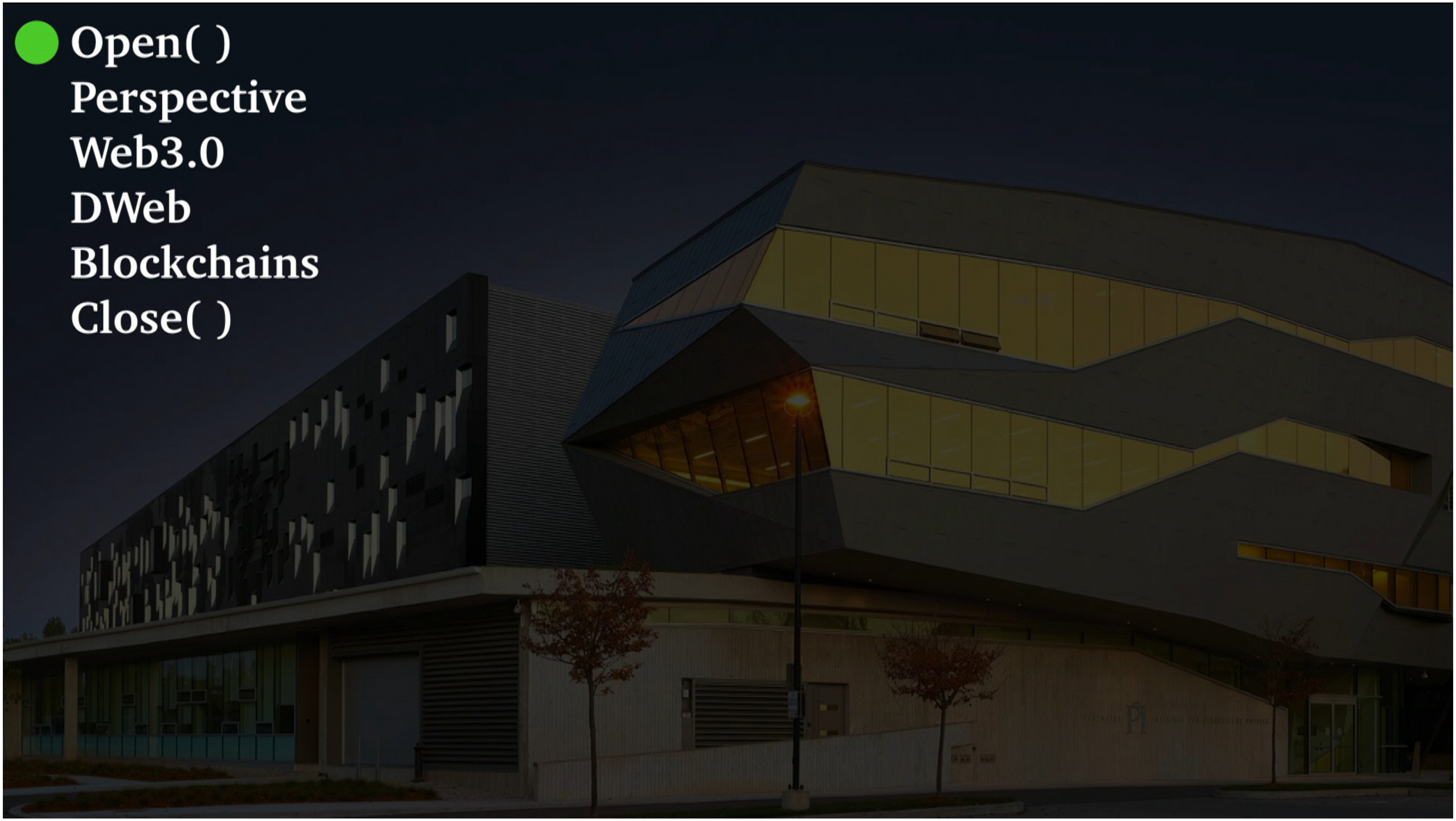
&nbsp;

This colloquium will explore:

- What web 3.0 is, and its key technologies
- Decentralized Web systems, and their applications
- Blockchain systems, as a next generation platform for computing
- Cryptocurrencies, and the systems they enable
- Smart contracts and autonomous programs
- Cryptoeconomics and incentive structure engineering
- Open Services -- open source internet-wide utilities
- and a set of Open Problems in the field.

Web 3.0 Colloquium

@juanbenet



● Open( )

Perspective

Web3.0

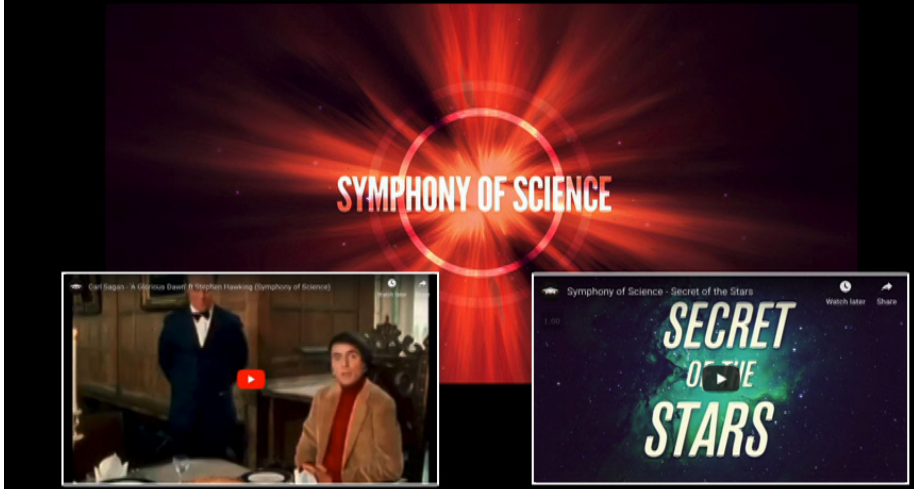
DWeb

Blockchains

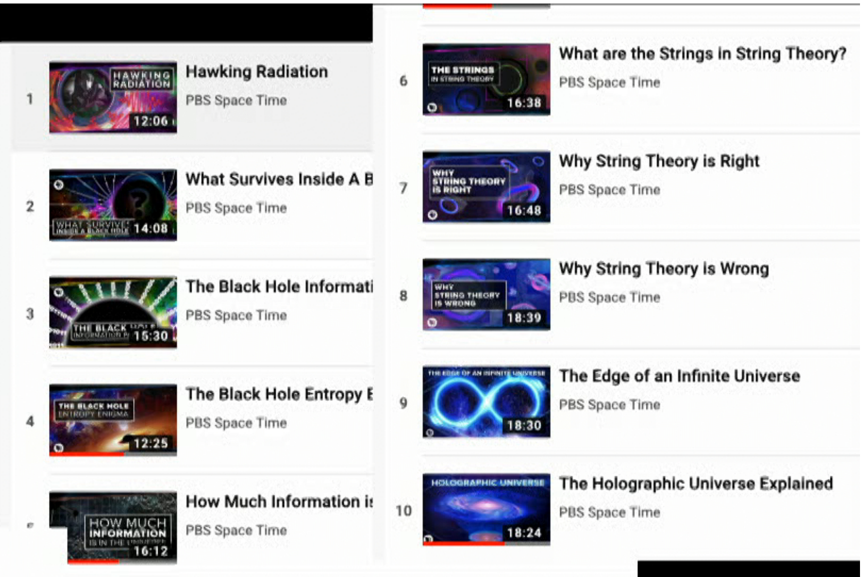
Close( )

MELODYSHEEP

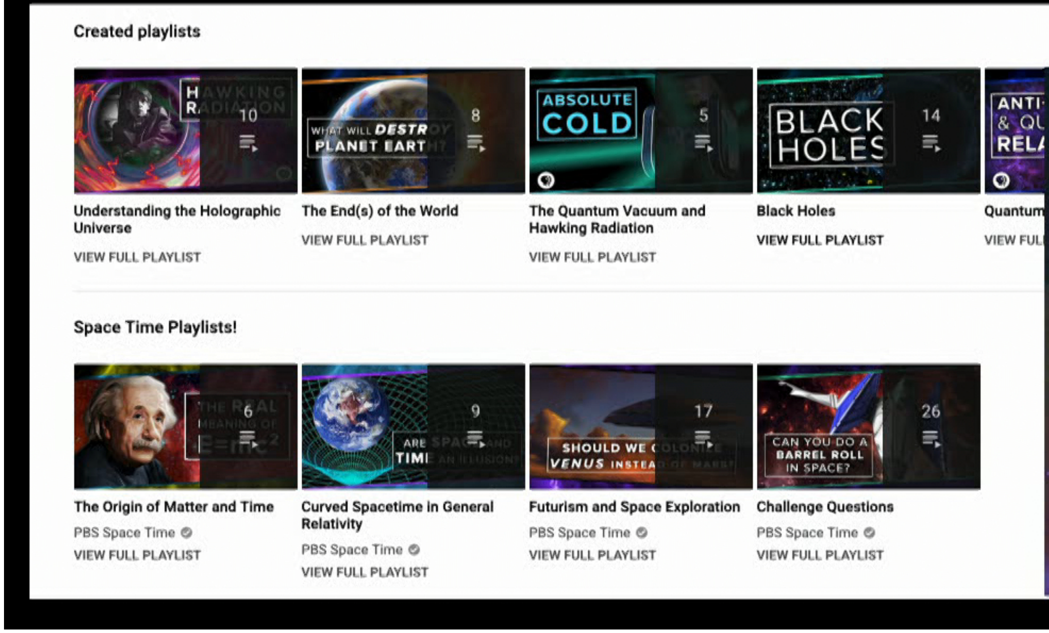
TIMELAPSE
OF THE
ENTIRE UNIVERSE


SYMPHONY OF SCIENCE
Carl Sagan - 'A Glorious Dawn' ft Stephen Hawking (Symphony of Science)
Symphony of Science - Secret of the Stars
Watch later
Share
SECRET
OF THE
STARS

TIMELAPSE
OF THE
FUTURE



1	Hawking Radiation PBS Space Time	12:06
2	What Survives Inside A B PBS Space Time	14:08
3	The Black Hole Informati PBS Space Time	15:30
4	The Black Hole Entropy E PBS Space Time	12:25
5	How Much Information is PBS Space Time	16:12
6	What are the Strings in String Theory? PBS Space Time	16:38
7	Why String Theory is Right PBS Space Time	16:48
8	Why String Theory is Wrong PBS Space Time	18:39
9	The Edge of an Infinite Universe PBS Space Time	18:30
10	The Holographic Universe Explained PBS Space Time	18:24



Created playlists

Understanding the Holographic Universe — 10
VIEW FULL PLAYLIST

The End(s) of the World — 8
VIEW FULL PLAYLIST

The Quantum Vacuum and Hawking Radiation — 5
VIEW FULL PLAYLIST

Black Holes — 14
VIEW FULL PLAYLIST

Quantum
VIEW FUL

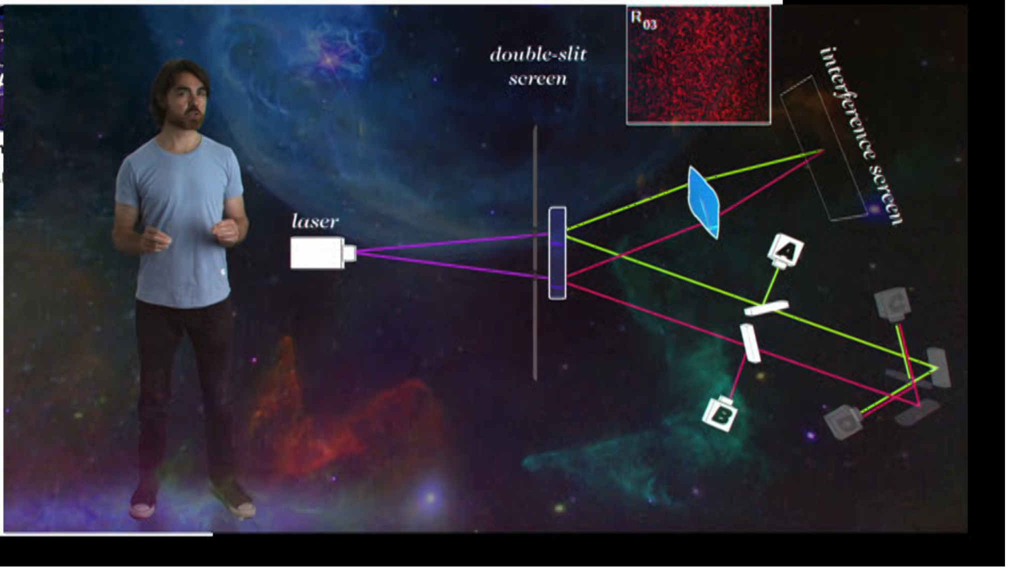
Space Time Playlists!

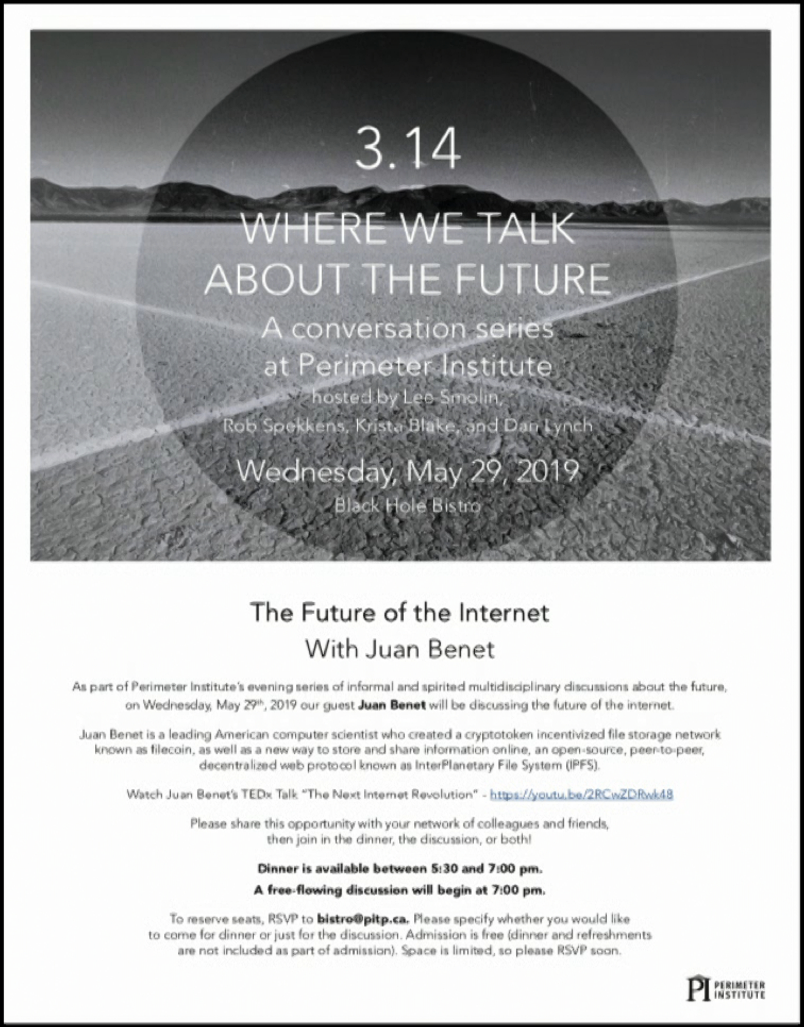
The Origin of Matter and Time — 6
PBS Space Time
VIEW FULL PLAYLIST

Curved Spacetime in General Relativity — 9
PBS Space Time
VIEW FULL PLAYLIST

Futurism and Space Exploration — 17
PBS Space Time
VIEW FULL PLAYLIST

Challenge Questions — 26
PBS Space Time
VIEW FULL PLAYLIST





3.14

WHERE WE TALK ABOUT THE FUTURE

A conversation series at Perimeter Institute

hosted by Lee Smolin, Rob Spekkens, Krista Blake, and Dan Lynch

Wednesday, May 29, 2019

Black Hole Bistro

The Future of the Internet

With Juan Benet

As part of Perimeter Institute's evening series of informal and spirited multidisciplinary discussions about the future, on Wednesday, May 29th, 2019 our guest **Juan Benet** will be discussing the future of the internet.

Juan Benet is a leading American computer scientist who created a cryptotoken incentivized file storage network known as filecoin, as well as a new way to store and share information online, an open-source, peer-to-peer, decentralized web protocol known as InterPlanetary File System (IPFS).

Watch Juan Benet's TEDx Talk "The Next Internet Revolution" - https://youtu.be/2RCwZDRwk48

Please share this opportunity with your network of colleagues and friends, then join in the dinner, the discussion, or both!

Dinner is available between 5:30 and 7:00 pm.

A free-flowing discussion will begin at 7:00 pm.

To reserve seats, RSVP to **bistro@pitp.ca.** Please specify whether you would like to come for dinner or just for the discussion. Admission is free (dinner and refreshments are not included as part of admission). Space is limited, so please RSVP soon.

PI PERIMETER INSTITUTE

3.14

WHERE WE TALK ABOUT THE FUTUE

The Future of the Internet

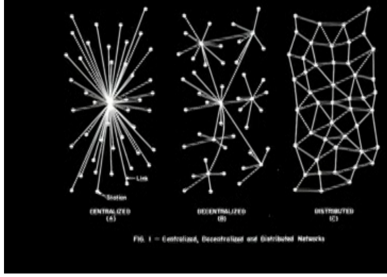
Dinner: 5:30 - 7p
Discussion: 7pm

Black Hole Bistro

Protocol Labs

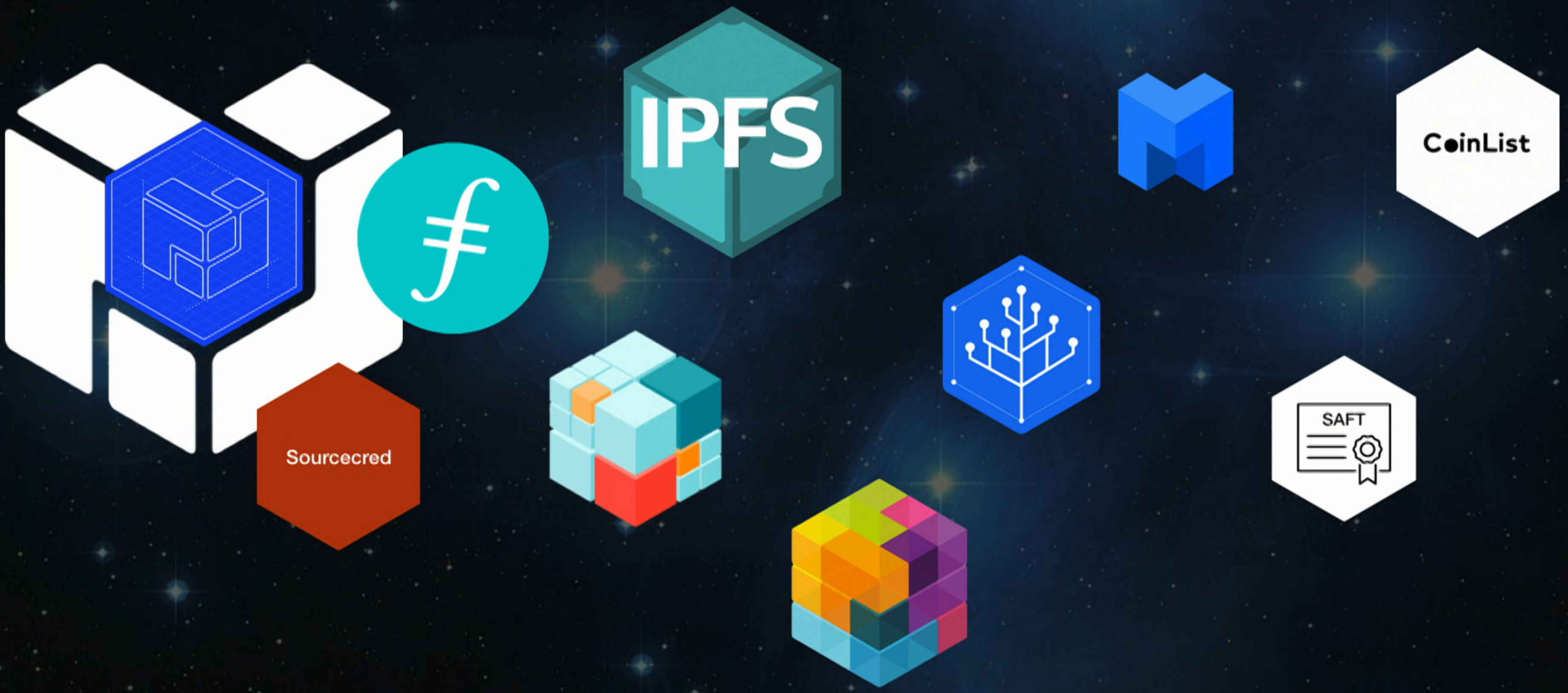
MISSION

We drive breakthroughs
in computing and internet technology
to push humanity forward.



CENTRALIZED
(A)
DECENTRALIZED
(B)
DISTRIBUTED
(C)
FIG. 1 — Centralized, Decentralized and Distributed Networks

PL creates, supports, & grows projects



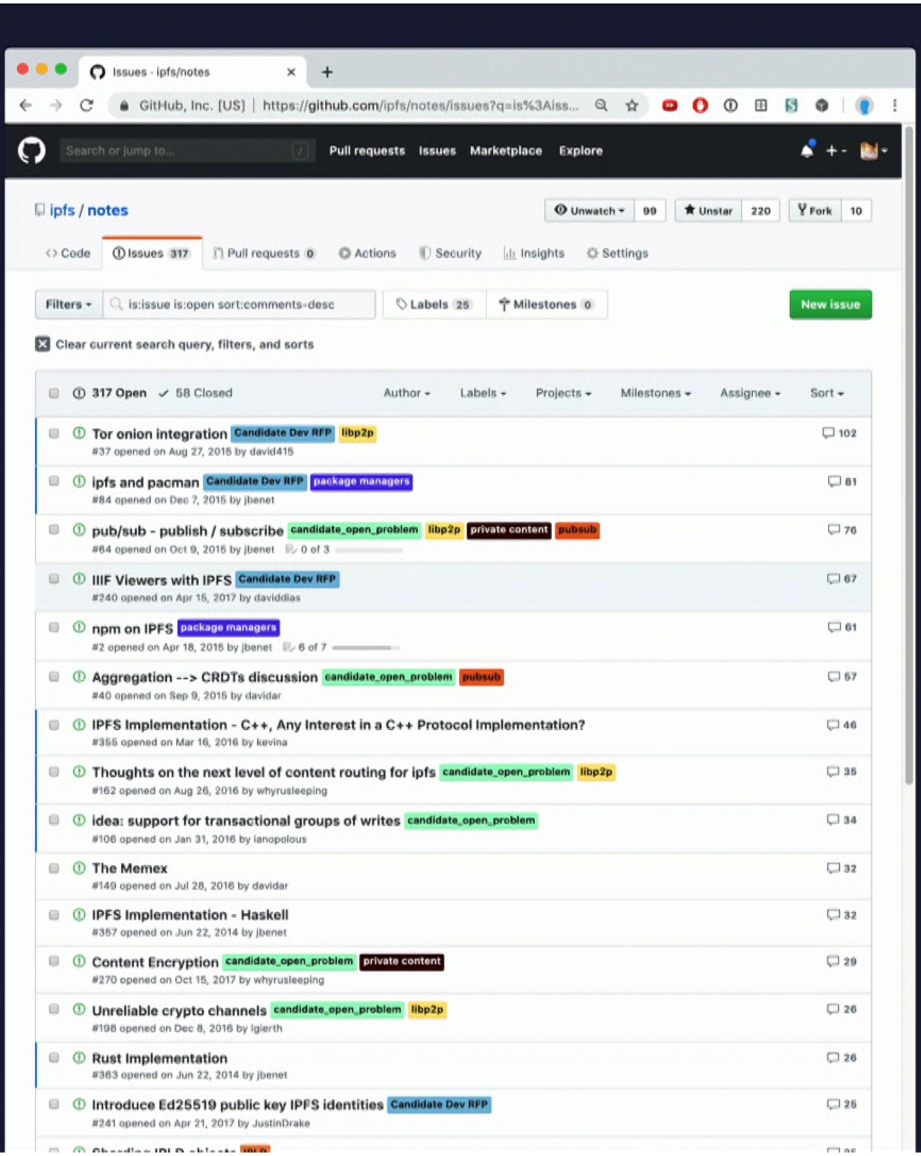
Protocol Labs Research

Open Source

Startup

Research

Open Problems



ipfs / notes

is:issue is:open sort:comments-desc

☒ Clear current search query, filters, and sorts

317 Open ✓ 58 Closed

- Tor onion integration `Candidate Dev RFP` `libp2p` — 102
  #37 opened on Aug 27, 2015 by david415
- ipfs and pacman `Candidate Dev RFP` `package managers` — 81
  #84 opened on Dec 7, 2015 by jbenet
- pub/sub - publish / subscribe `candidate_open_problem` `libp2p` `private content` `pubsub` — 76
  #64 opened on Oct 9, 2015 by jbenet 0 of 3
- IIIF Viewers with IPFS `Candidate Dev RFP` — 67
  #240 opened on Apr 15, 2017 by daviddias
- npm on IPFS `package managers` — 61
  #2 opened on Apr 18, 2015 by jbenet 6 of 7
- Aggregation --> CRDTs discussion `candidate_open_problem` `pubsub` — 57
  #40 opened on Sep 9, 2015 by davidar
- IPFS Implementation - C++, Any Interest in a C++ Protocol Implementation? — 46
  #355 opened on Mar 16, 2016 by kevina
- Thoughts on the next level of content routing for ipfs `candidate_open_problem` `libp2p` — 35
  #162 opened on Aug 26, 2016 by whyrusleeping
- idea: support for transactional groups of writes `candidate_open_problem` — 34
  #106 opened on Jan 31, 2016 by ianopolous
- The Memex — 32
  #149 opened on Jul 28, 2016 by davidar
- IPFS Implementation - Haskell — 32
  #357 opened on Jun 22, 2014 by jbenet
- Content Encryption `candidate_open_problem` `private content` — 29
  #270 opened on Oct 15, 2017 by whyrusleeping
- Unreliable crypto channels `candidate_open_problem` `libp2p` — 26
  #198 opened on Dec 8, 2016 by lgierth
- Rust Implementation — 26
  #363 opened on Jun 22, 2014 by jbenet
- Introduce Ed25519 public key IPFS identities `Candidate Dev RFP` — 25
  #241 opened on Apr 21, 2017 by JustinDrake
- Sharding IPLD objects `IPLD` — 25

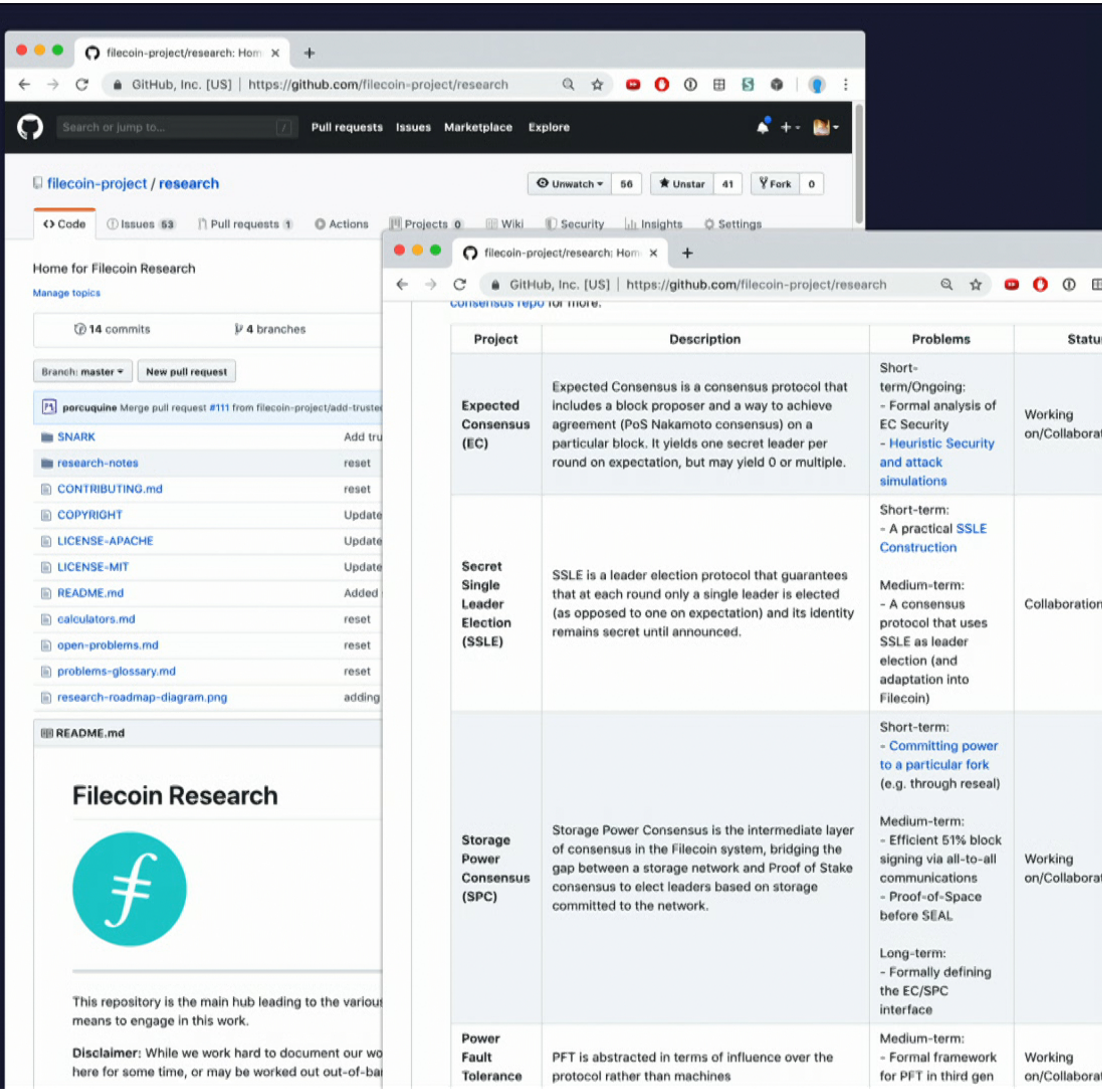
Protocol Labs Research

Open Source

Startup

Research

Open Problems



filecoin-project / research

Home for Filecoin Research

14 commits 4 branches

porcuquine Merge pull request #111 from filecoin-project/add-truste

SNARK	Add tru
research-notes	reset
CONTRIBUTING.md	reset
COPYRIGHT	Update
LICENSE-APACHE	Update
LICENSE-MIT	Update
README.md	Added
calculators.md	reset
open-problems.md	reset
problems-glossary.md	reset
research-roadmap-diagram.png	adding

Filecoin Research

This repository is the main hub leading to the variou means to engage in this work.

Disclaimer: While we work hard to document our wo here for some time, or may be worked out out-of-ba

consensus repo for more.

Project	Description	Problems	Statu
Expected Consensus (EC)	Expected Consensus is a consensus protocol that includes a block proposer and a way to achieve agreement (PoS Nakamoto consensus) on a particular block. It yields one secret leader per round on expectation, but may yield 0 or multiple.	Short-term/Ongoing: - Formal analysis of EC Security - Heuristic Security and attack simulations	Working on/Collaborat
Secret Single Leader Election (SSLE)	SSLE is a leader election protocol that guarantees that at each round only a single leader is elected (as opposed to one on expectation) and its identity remains secret until announced.	Short-term: - A practical SSLE Construction Medium-term: - A consensus protocol that uses SSLE as leader election (and adaptation into Filecoin)	Collaboration
Storage Power Consensus (SPC)	Storage Power Consensus is the intermediate layer of consensus in the Filecoin system, bridging the gap between a storage network and Proof of Stake consensus to elect leaders based on storage committed to the network.	Short-term: - Committing power to a particular fork (e.g. through reseal) Medium-term: - Efficient 51% block signing via all-to-all communications - Proof-of-Space before SEAL Long-term: - Formally defining the EC/SPC interface	Working on/Collaborat
Power Fault Tolerance	PFT is abstracted in terms of influence over the protocol rather than machines	Medium-term: - Formal framework for PFT in third gen	Working on/Collaborat

Open( )

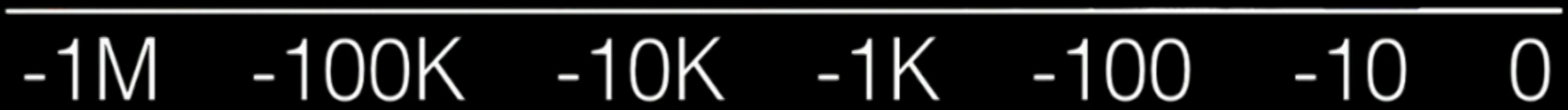
Perspective

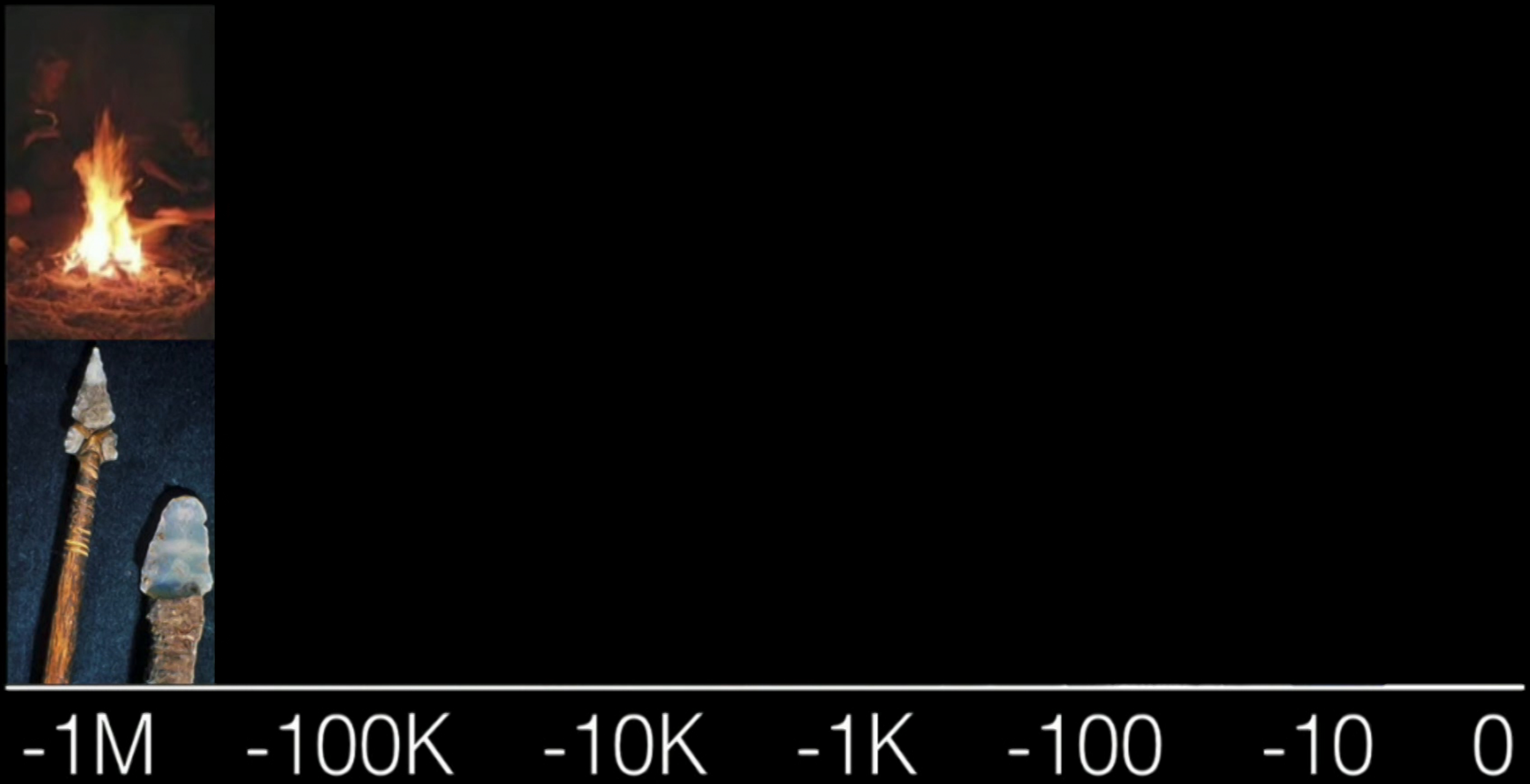
Web3.0

DWeb

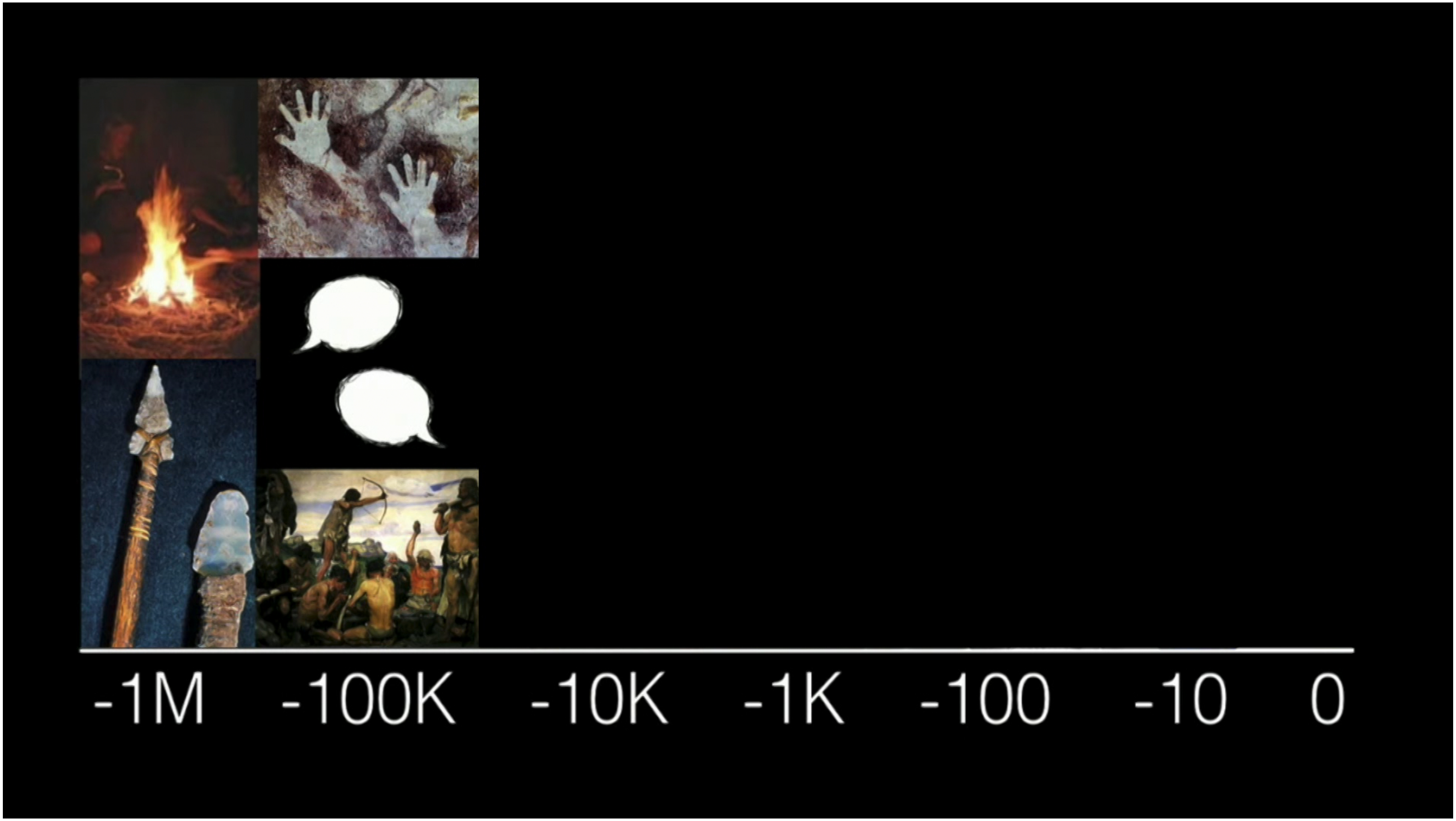
Blockchains

Close( )


-1M
-100K
-10K
-1K
-100
-10
0



-1M -100K -10K -1K -100 -10 0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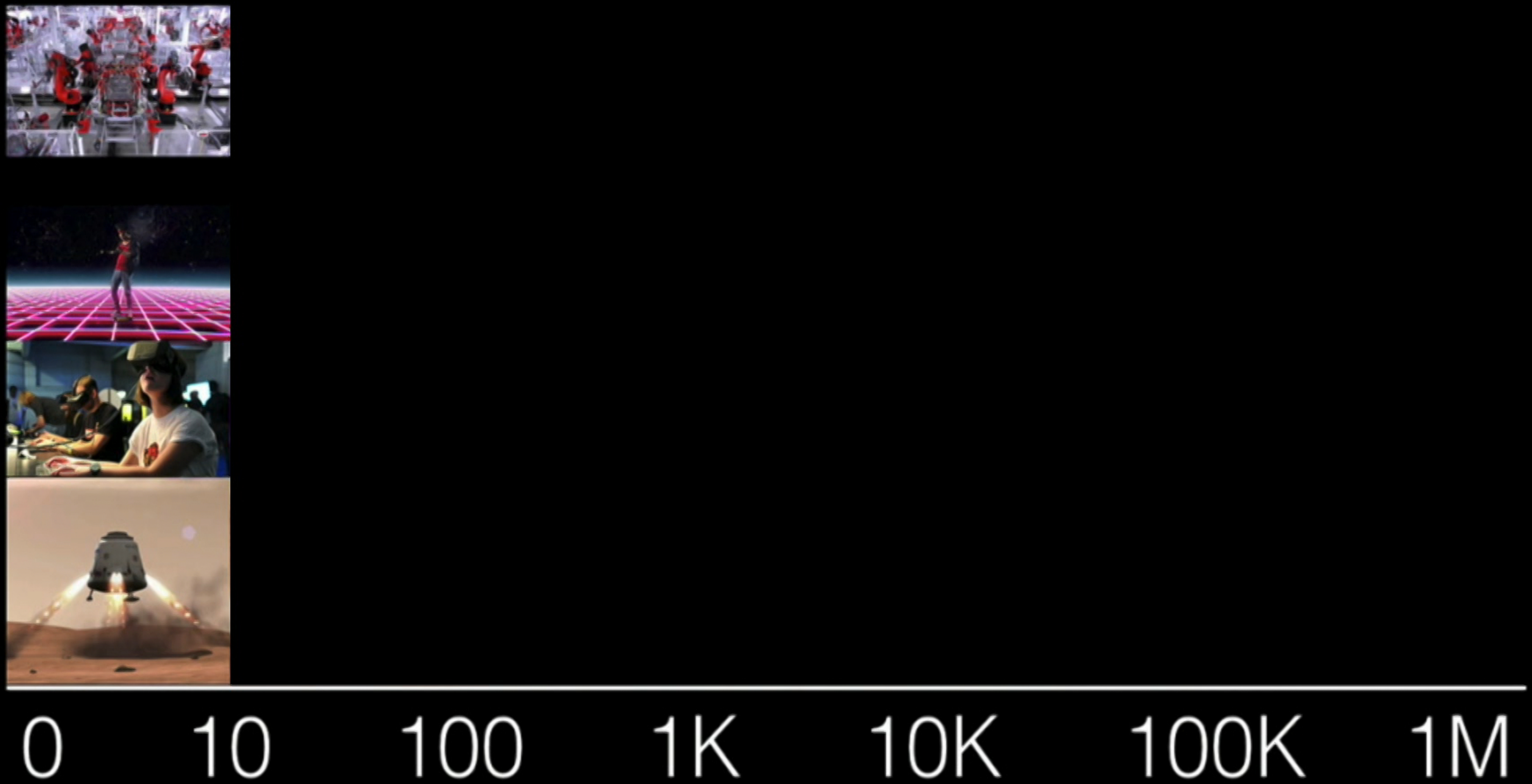
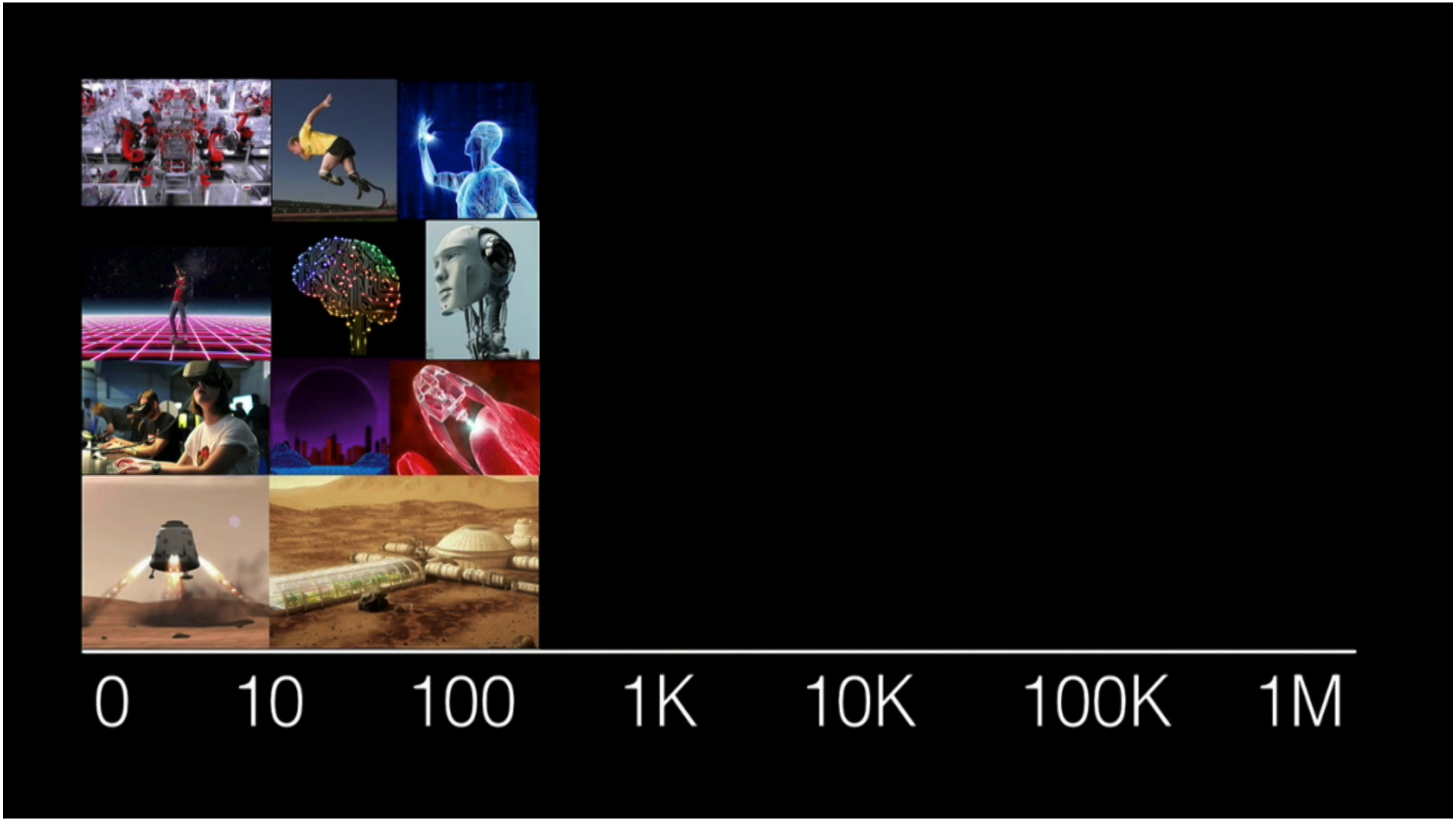
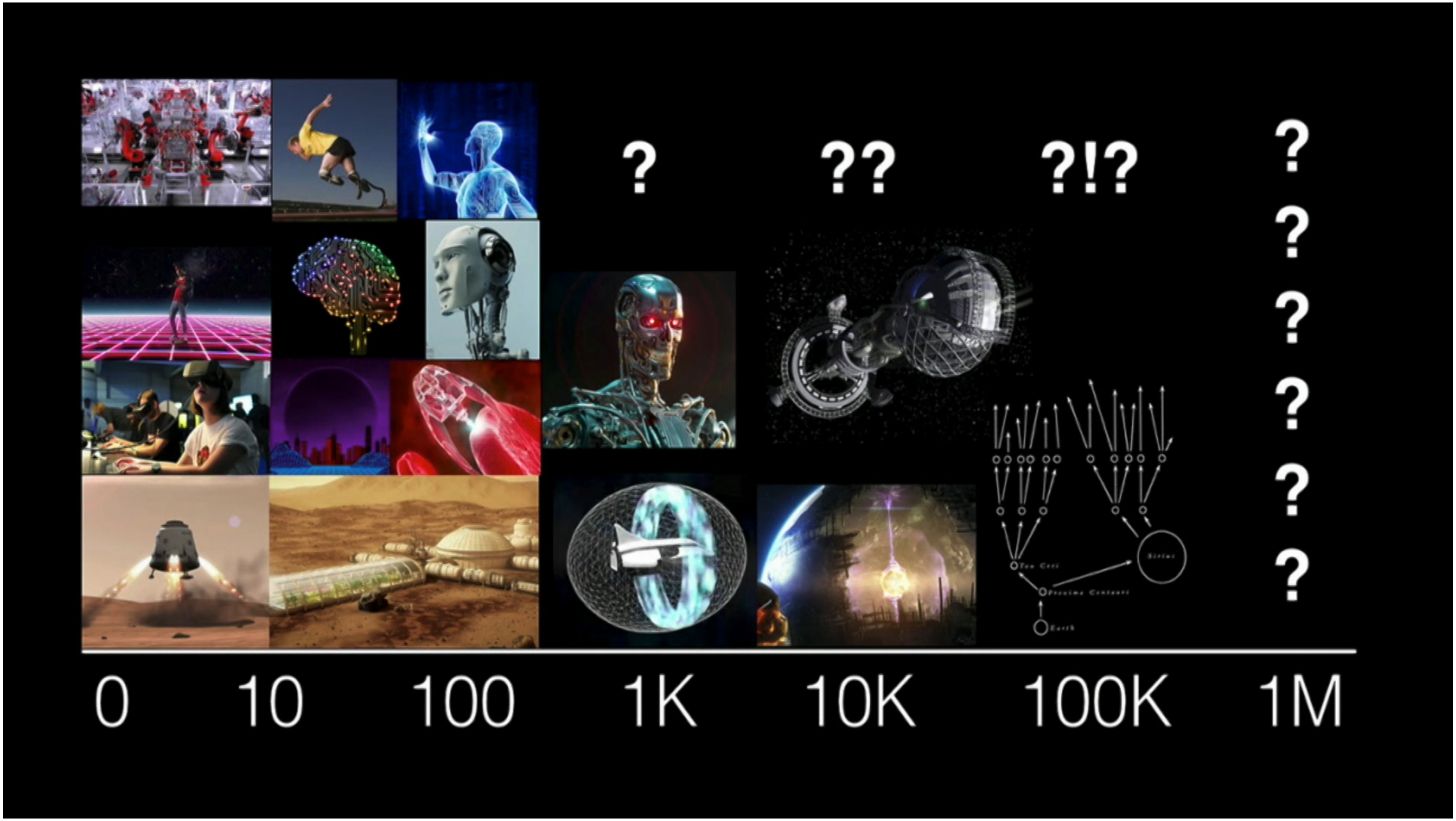
-100K
-10K
-1K
-100
-10
0

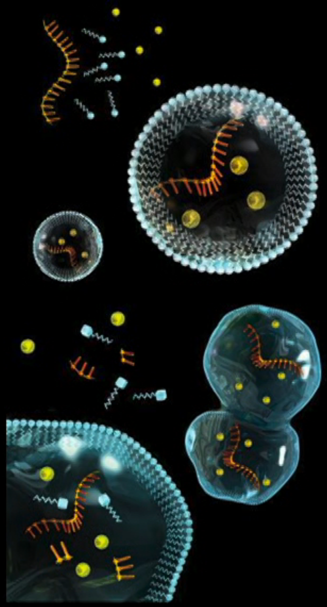

0
10
100
1K
10K
100K
1M

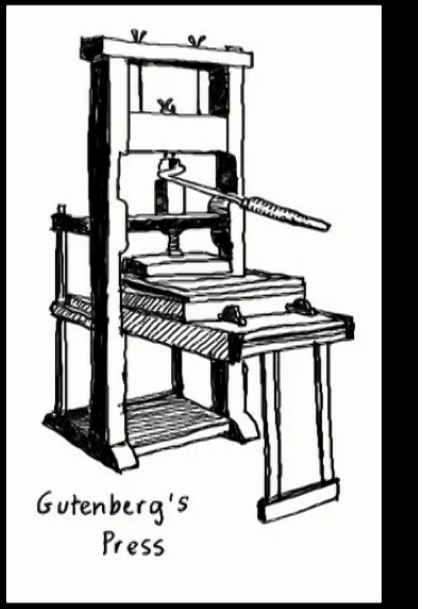

0
10
100
1K
10K
100K
1M

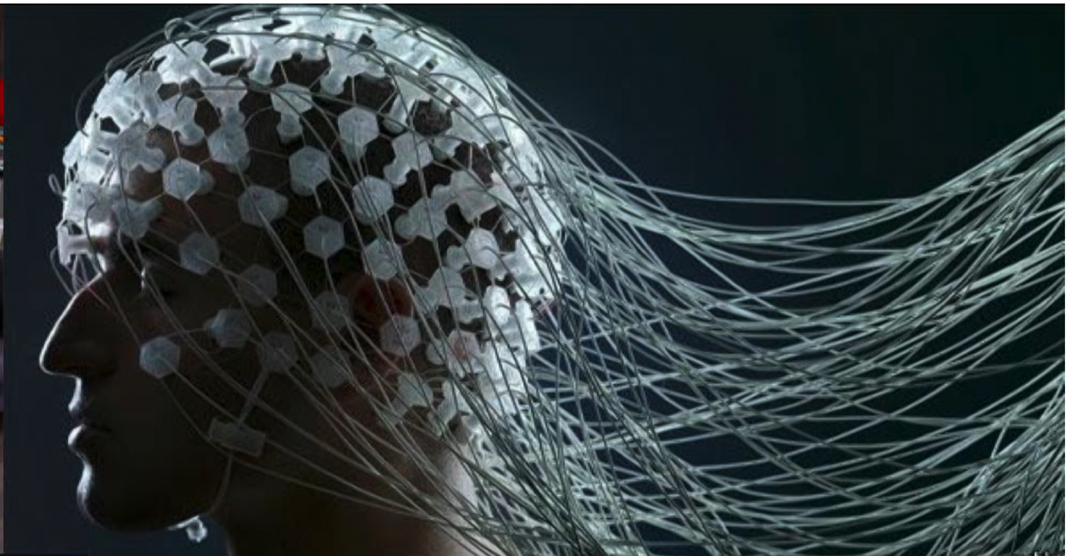


? ?? ?!? ? ? ? ? ? ?

0 10 100 1K 10K 100K 1M

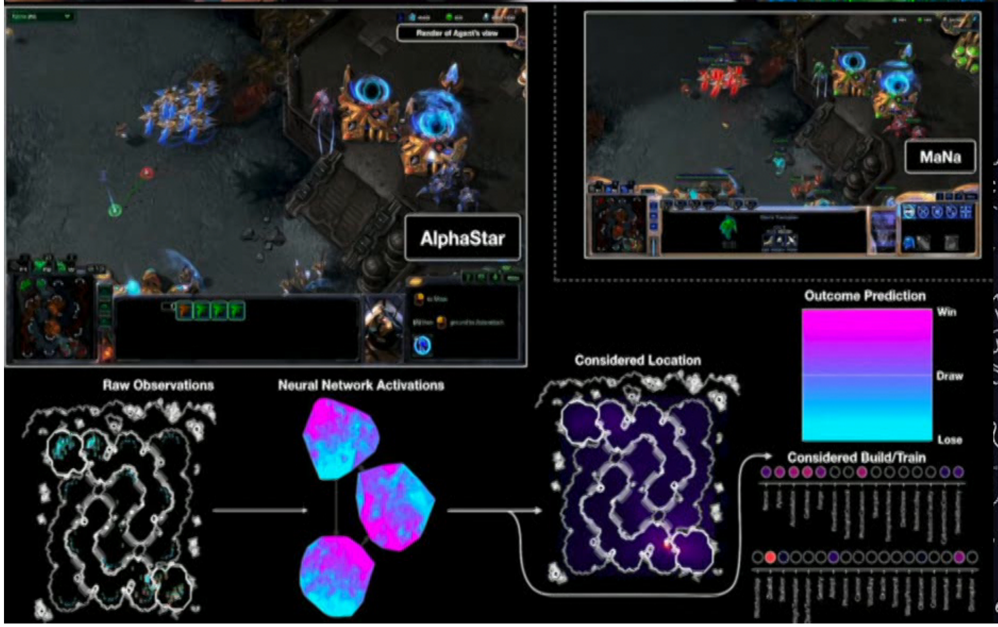


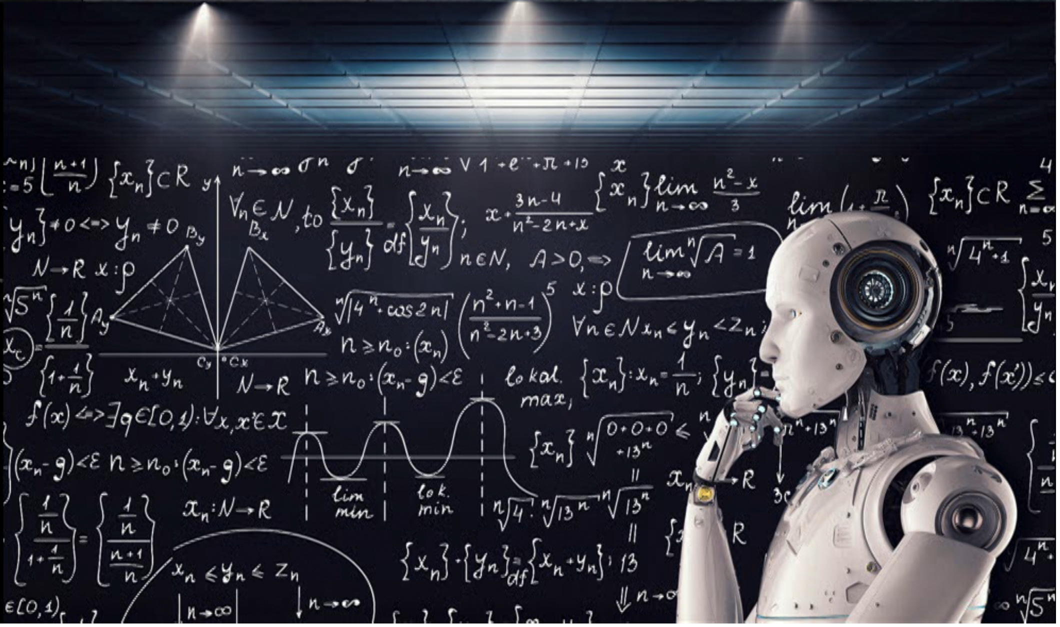

Gutenberg's
Press

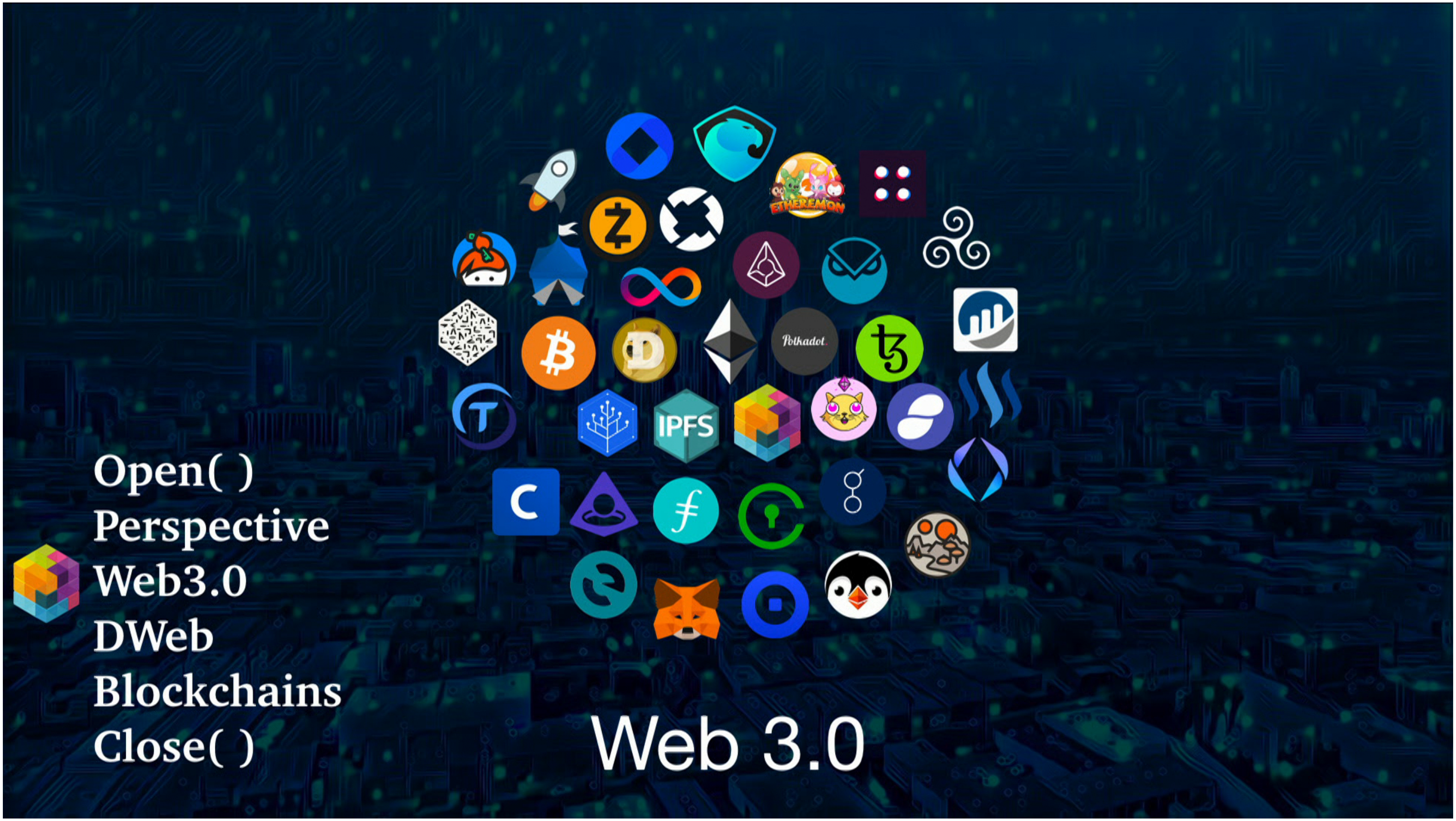

corbis

LEFT REARWARD VEHICLE CAMERA
MEDIUM RANGE VEHICLE CAMERA

Boston Dynamics


AlphaStar
MaNa
Outcome Prediction
Win
Draw
Lose
Considered Location
Raw Observations
Neural Network Activations
Considered Build/Train





Web 3.0

Open( )

Perspective

Web3.0

DWeb

Blockchains

Close( )

Internet

wires, network

Web 1.0

read-only
static

Web 2.0

read-write
interactive

Internet

wires, network

Web 1.0

read-only
static

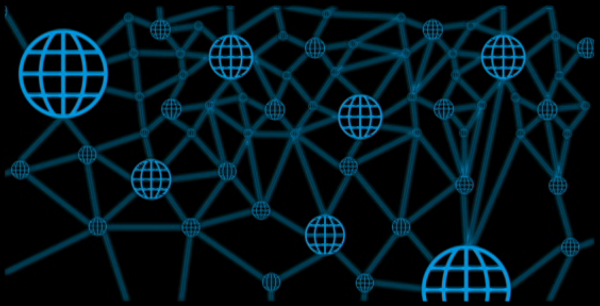
Web 2.0

read-write
interactive

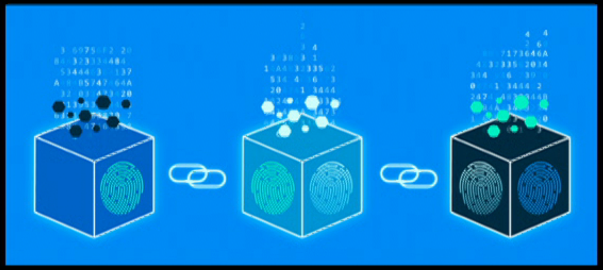
Web 3.0

read-write-trust
verifiable

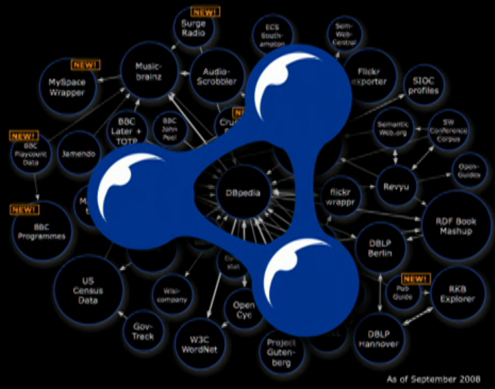
Web 3.0



Decentralized Web



Blockchain

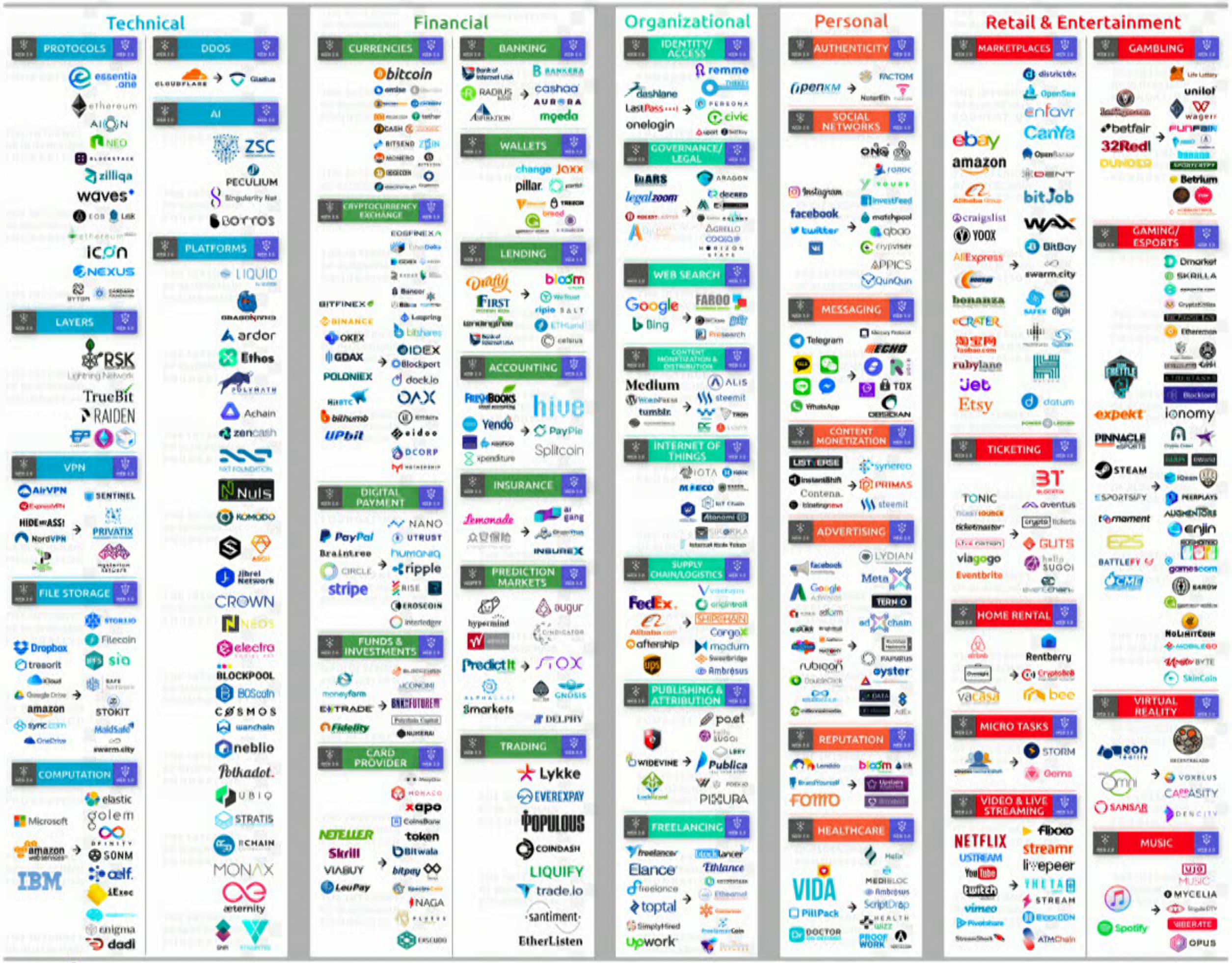


Linked Data

Web 3.0

WEB 2.0 → WEB 3.0 COMPARISON LANDSCAPE.

WELCOME INTERNET OF BLOCKCHAINS

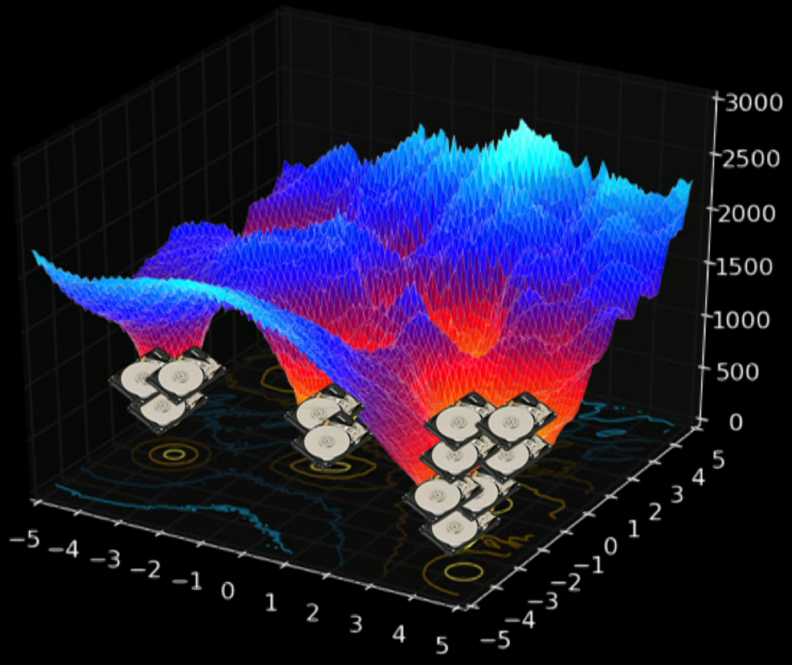


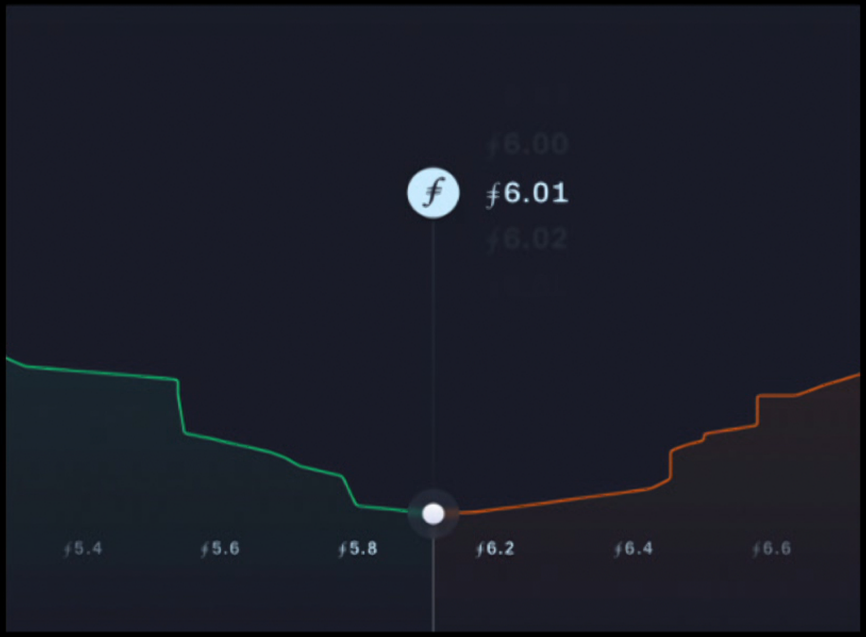
THE INTERNET OF BLOCKCHAIN FOUNDATION

Matteo Gianpietro Zago

NEWGROUNDS
yspace
VOX
deviantART
friendst
YouTube
facebook
xanga
twitter
classmates.com
wasabi Club
veoh
imeem
flickr
FARK
tribe.net

Software is eating Economics.



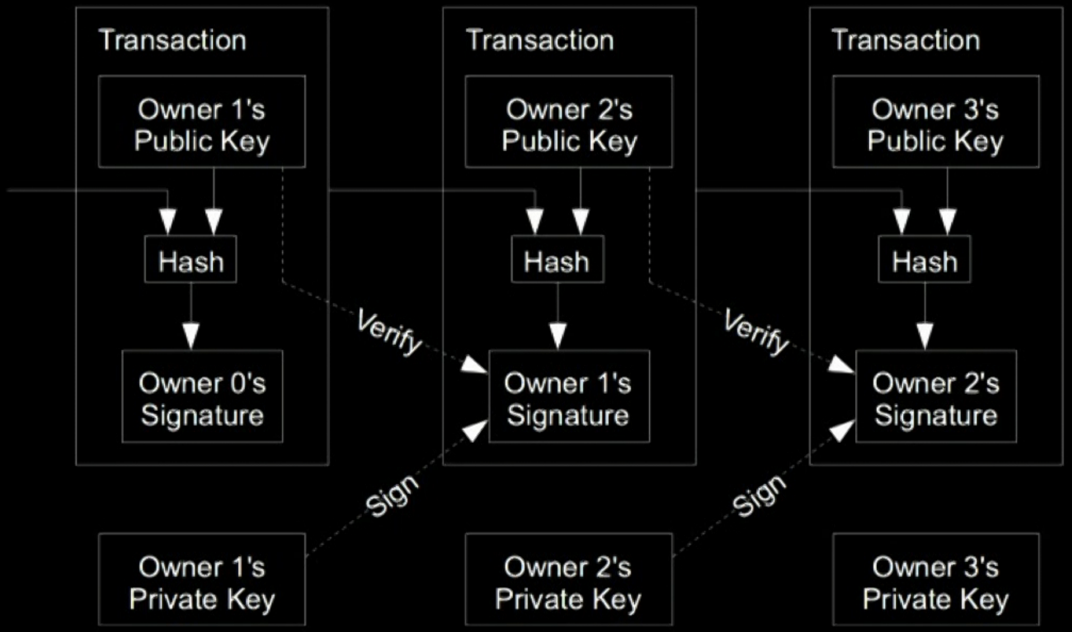


Software is eating Law.

```
contract token {
        mapping  (addr
public coinBalanceOf
        event CoinTran
sender, address rece

function token (uint
        if supply (sup
10000;
        coinBalanceOf[
supply;
   }
}
```

signature 1
signature 2



Transaction

Owner 1's Public Key

Hash

Owner 0's Signature

Owner 1's Private Key

Verify

Sign

Transaction

Owner 2's Public Key

Hash

Owner 1's Signature

Owner 2's Private Key

Verify

Sign

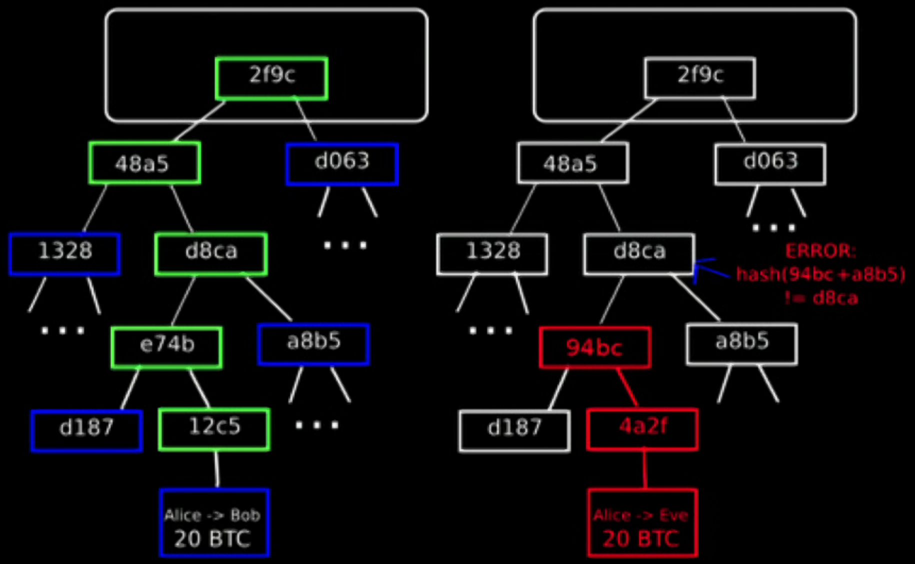
Transaction

Owner 3's Public Key

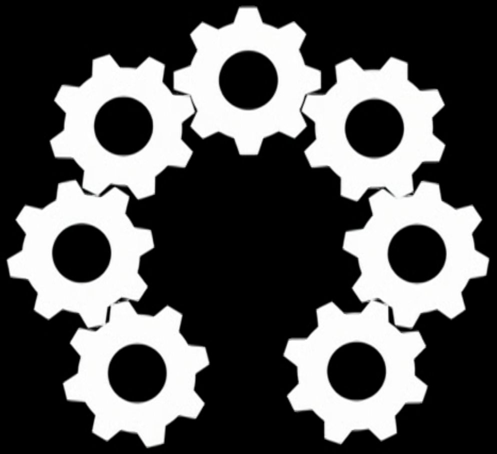
Hash

Owner 2's Signature

Owner 3's Private Key



ERROR:
hash(94bc+a8b5)
!= d8ca



Open Services

- Open Source
- Forkability
- Permissionless Entry
- Provide a service over time
- Incentive structures
- Optimize value

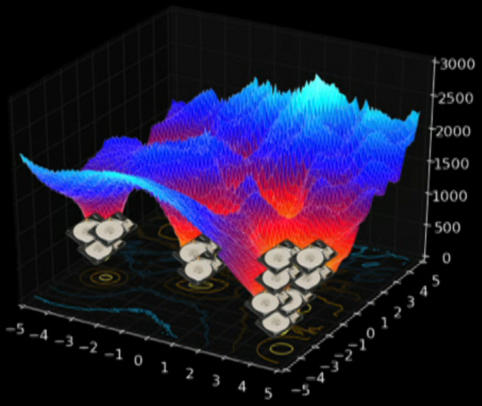
BITCOIN DIGITAL CRYPTOCURRENCY
BITCOIN DIGITAL CRYPTOCURRENCY

Global Digital Currencies

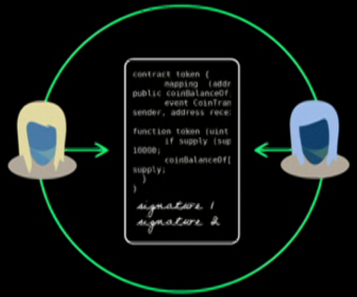
<u>Open Services</u>

Self-sovereign Registries

Prediction Markets



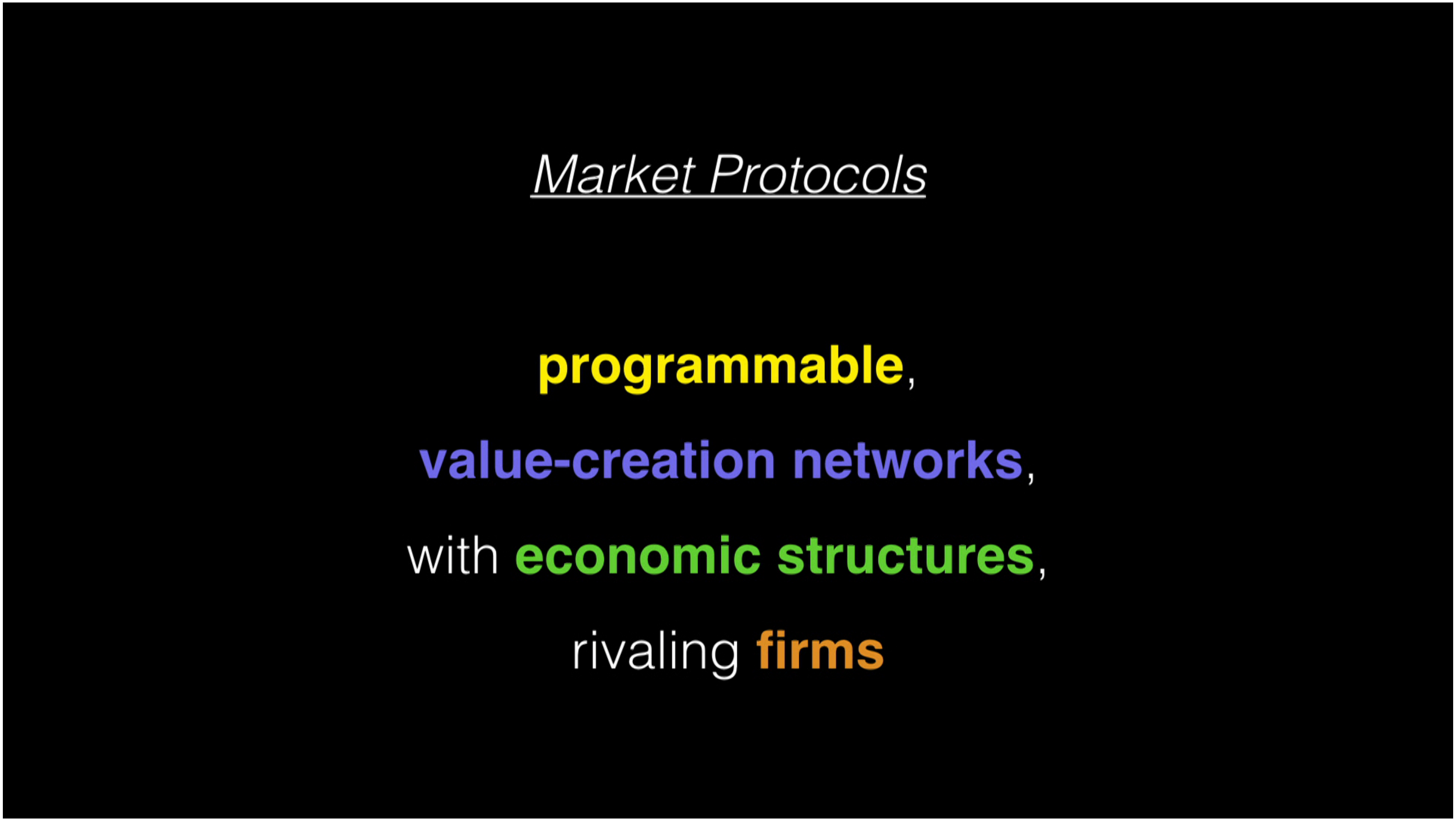
Storage Markets
Computation Markets



```
contract token {
        mapping  (addr
public coinBalanceOf
        event CoinTran
sender, address rece

function token (uint
        if supply (sup
10000;
        coinBalanceOf[
supply;
  }
}
```

Smart Contract System



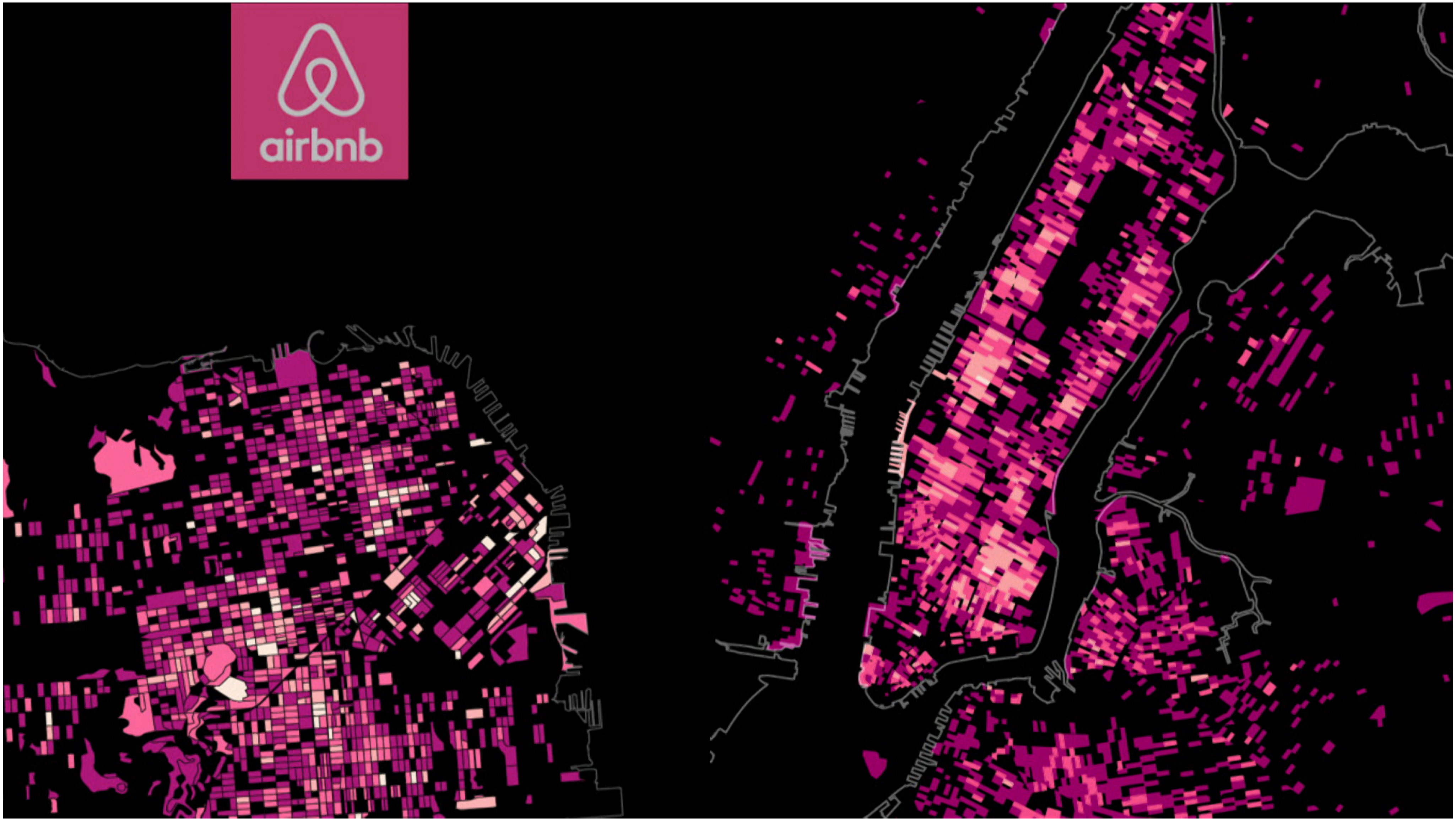
Market Protocols

programmable,

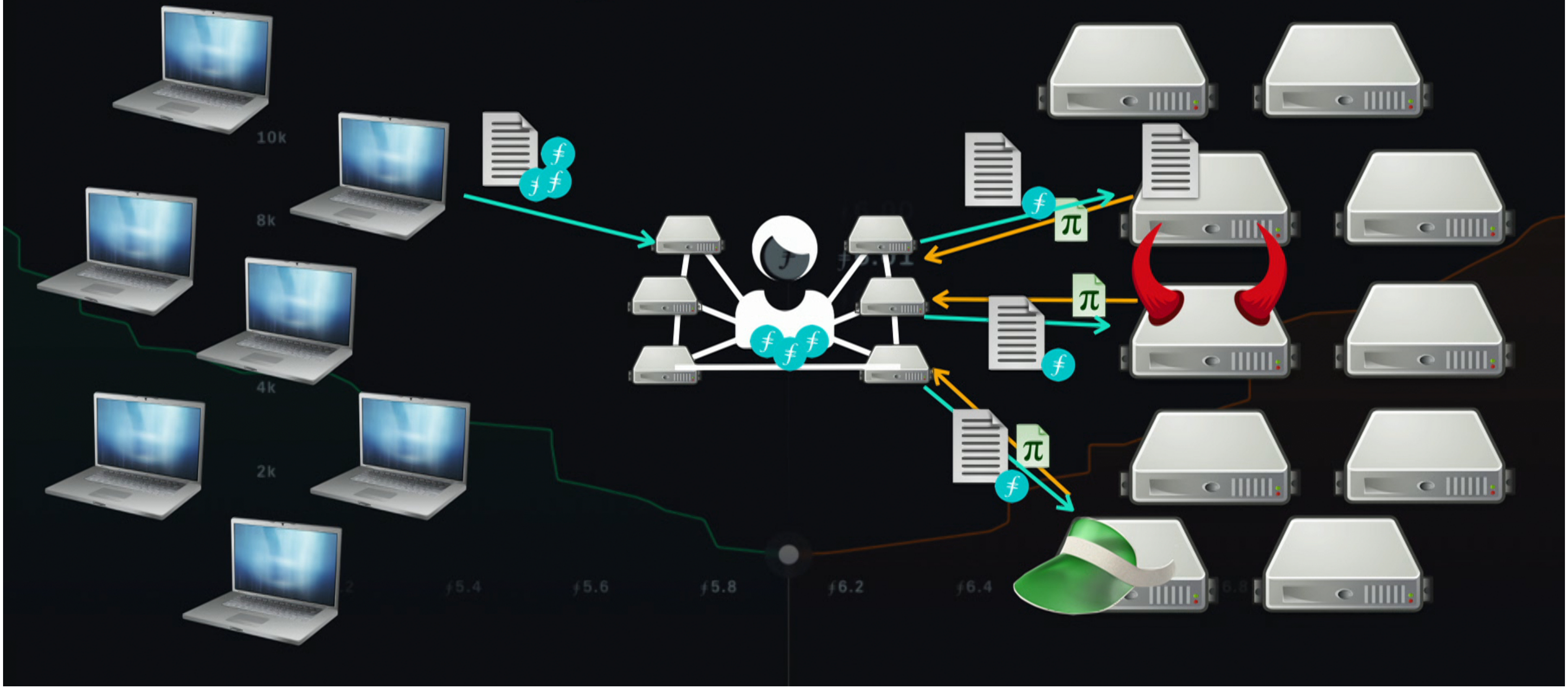
value-creation networks,

with **economic structures**,

rivaling **firms**


airbnb

Filecoin



- Open( )
- Perspective
- Web3.0
- DWeb
- Blockchains
- Close( )

Decentralized Web

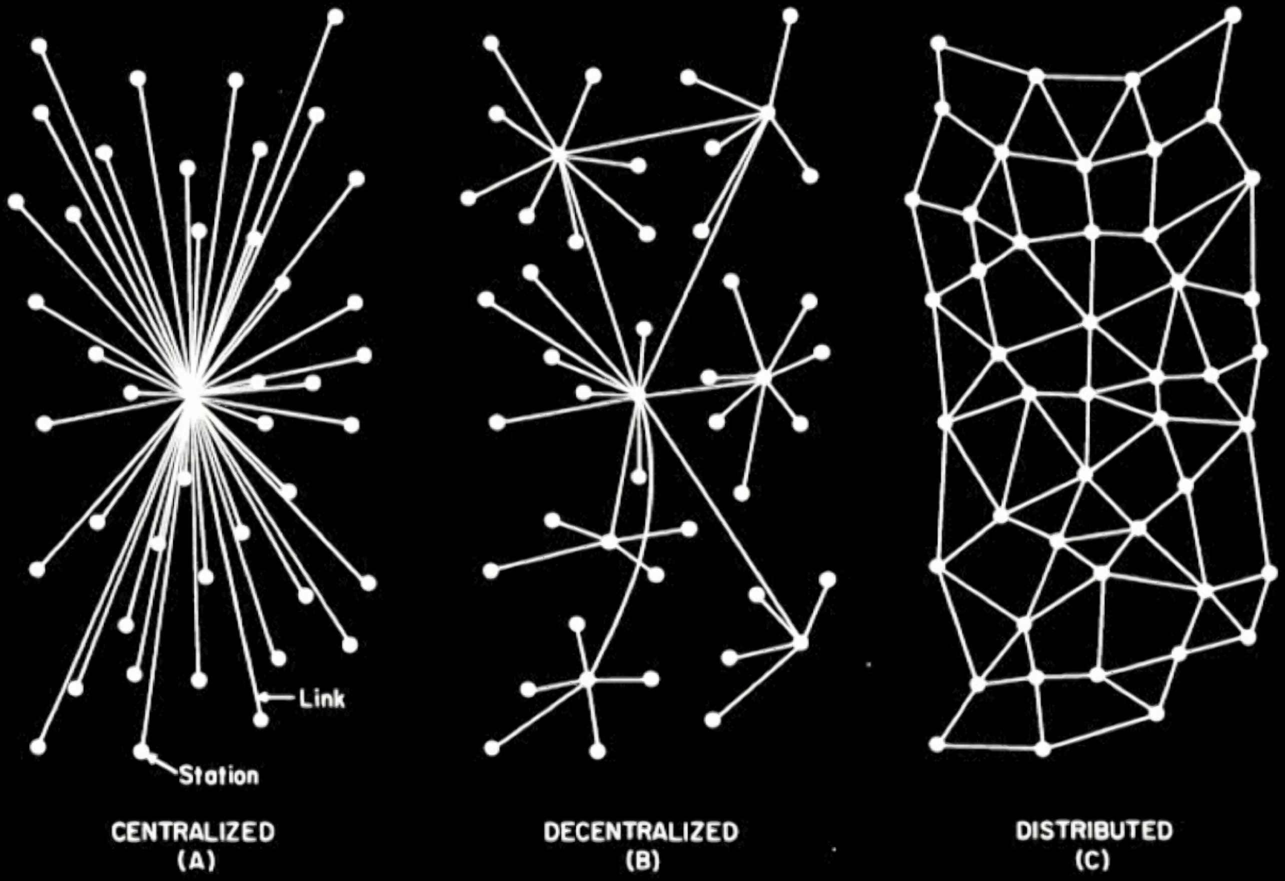
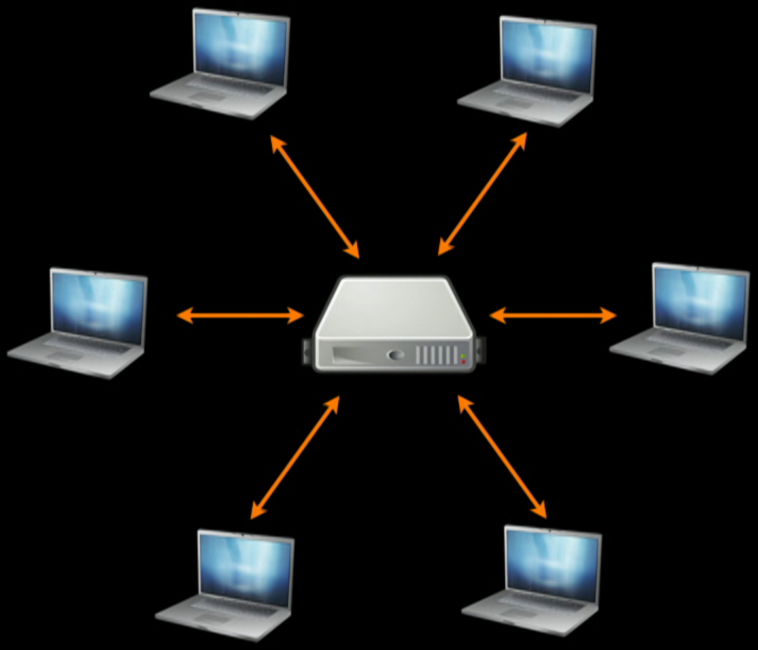
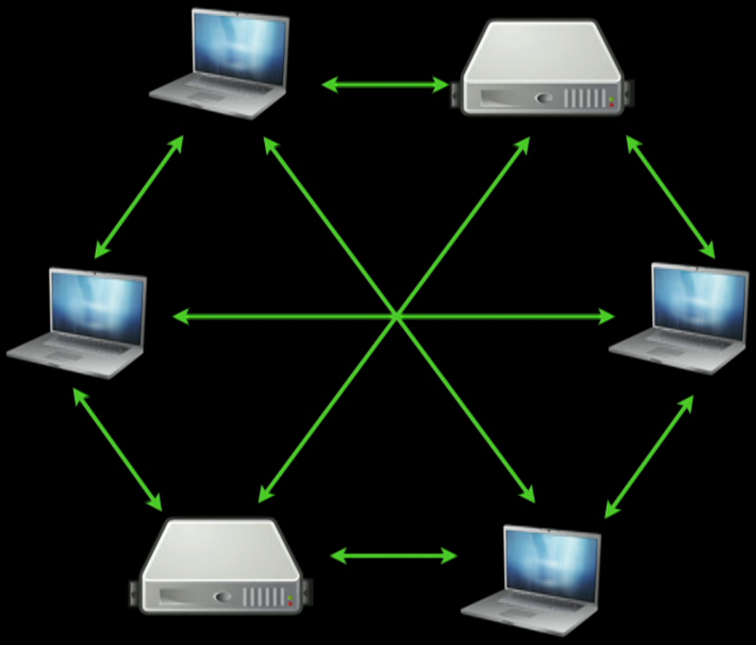


FIG. I — Centralized, Decentralized and Distributed Networks

HTTP

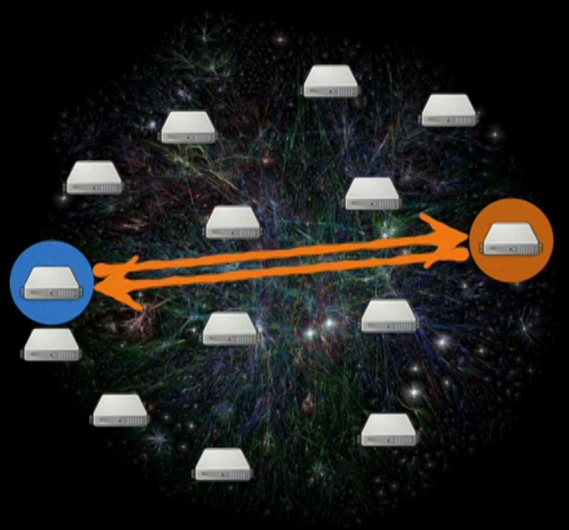


IPFS



HTTP

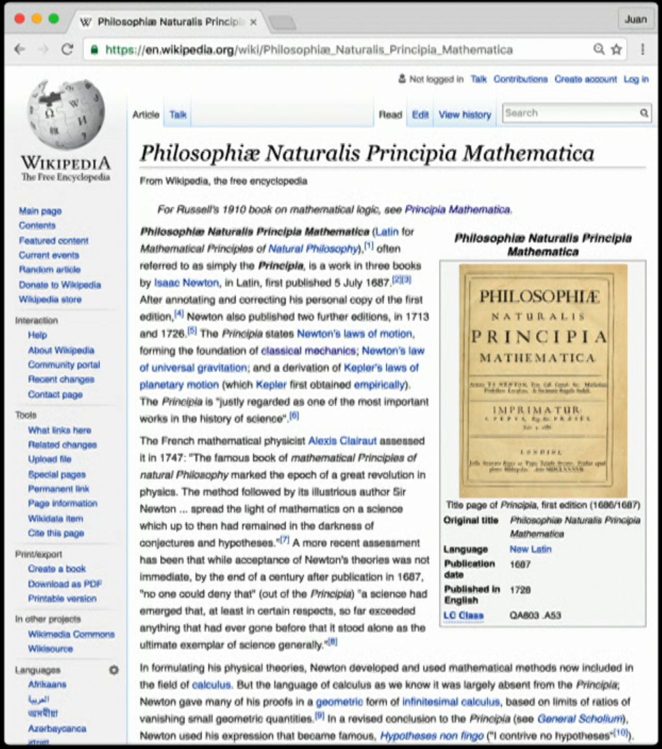
domain name http://example.com/foo/bar/baz.png



location address http://162.243.139.61/foo/bar/baz.png

Hey, you should
read this great book:

New York Public Library,
Section 9,
Bookcase 3,
Top shelf,
First from the left.



Philosophiæ Naturalis Principia Mathematica

From Wikipedia, the free encyclopedia

For Russell's 1910 book on mathematical logic, see Principia Mathematica.

Philosophiæ Naturalis Principia Mathematica (Latin for *Mathematical Principles of Natural Philosophy*),[1] often referred to as simply the ***Principia***, is a work in three books by Isaac Newton, in Latin, first published 5 July 1687.[2][3] After annotating and correcting his personal copy of the first edition,[4] Newton also published two further editions, in 1713 and 1726.[5] The *Principia* states Newton's laws of motion, forming the foundation of classical mechanics; Newton's law of universal gravitation; and a derivation of Kepler's laws of planetary motion (which Kepler first obtained empirically). The *Principia* is "justly regarded as one of the most important works in the history of science".[6]

The French mathematical physicist Alexis Clairaut assessed it in 1747: "The famous book of *mathematical Principles of natural Philosophy* marked the epoch of a great revolution in physics. The method followed by its illustrious author Sir Newton ... spread the light of mathematics on a science which up to then had remained in the darkness of conjectures and hypotheses."[7] A more recent assessment has been that while acceptance of Newton's theories was not immediate, by the end of a century after publication in 1687, "no one could deny that" (out of the *Principia*) "a science had emerged that, at least in certain respects, so far exceeded anything that had ever gone before that it stood alone as the ultimate exemplar of science generally."[8]

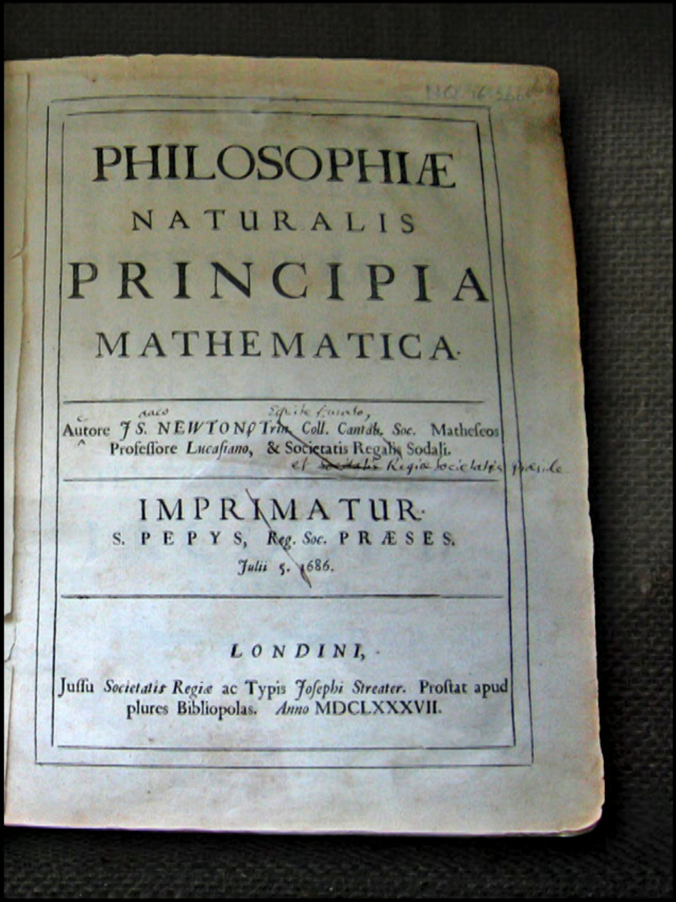
Philosophiæ Naturalis Principia Mathematica

Title page of *Principia*, first edition (1686/1687)

Original title	*Philosophiæ Naturalis Principia Mathematica*
Language	New Latin
Publication date	1687
Published in English	1728
LC Class	QA803 .A53

In formulating his physical theories, Newton developed and used mathematical methods now included in the field of calculus. But the language of calculus as we know it was largely absent from the *Principia*; Newton gave many of his proofs in a geometric form of infinitesimal calculus, based on limits of ratios of vanishing small geometric quantities.[9] In a revised conclusion to the *Principia* (see *General Scholium*), Newton used his expression that became famous, *Hypotheses non fingo* ("I contrive no hypotheses"[10]).

≠



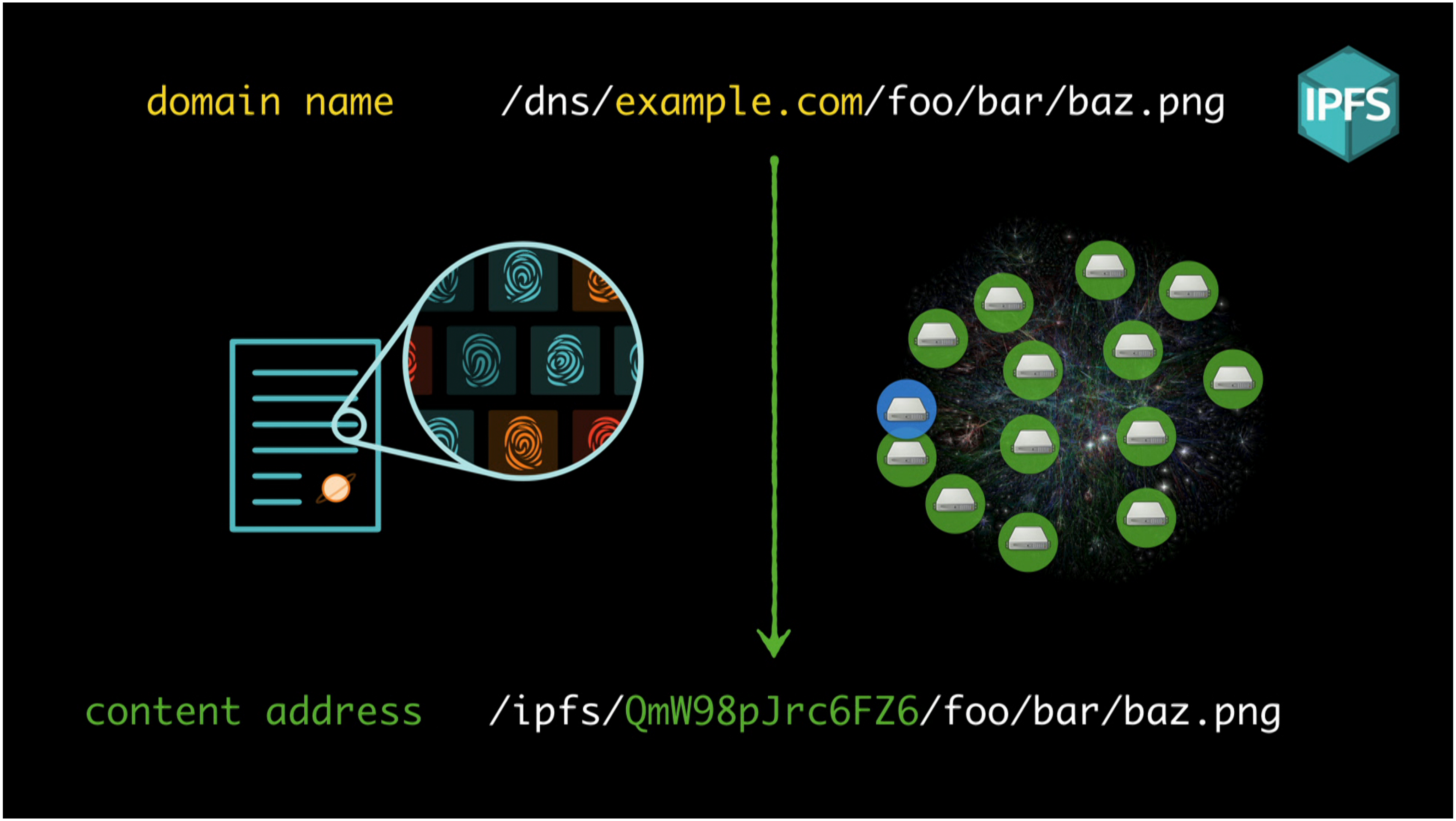
PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA.

aaco Equite Aurato,
Autore J S. NEWTONO, Trin. Coll. Cantab. Soc. Matheſeos
Profeſſore *Lucaſiano*, & Societatis Regalis Sodali.
et ~~Sodali~~ Regiæ Societatis præside

IMPRIMATUR.
S. PEPYS, *Reg. Soc.* PRÆSES.
Julii 5. 1686.

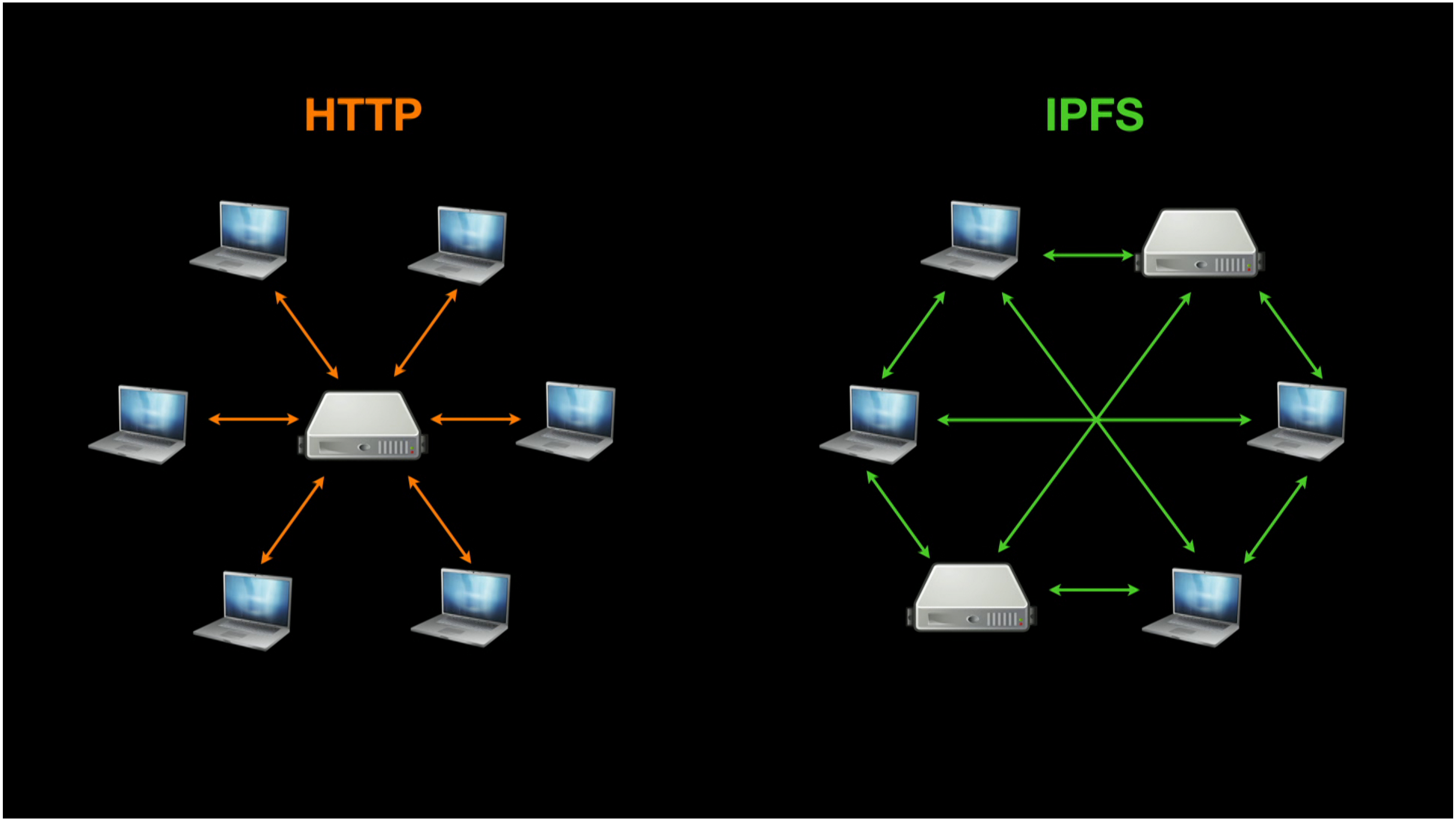
LONDINI,

Juſſu *Societatis Regiæ* ac Typis *Joſephi Streater*. Proſtat apud
plures Bibliopolas. *Anno* MDCLXXXVII.



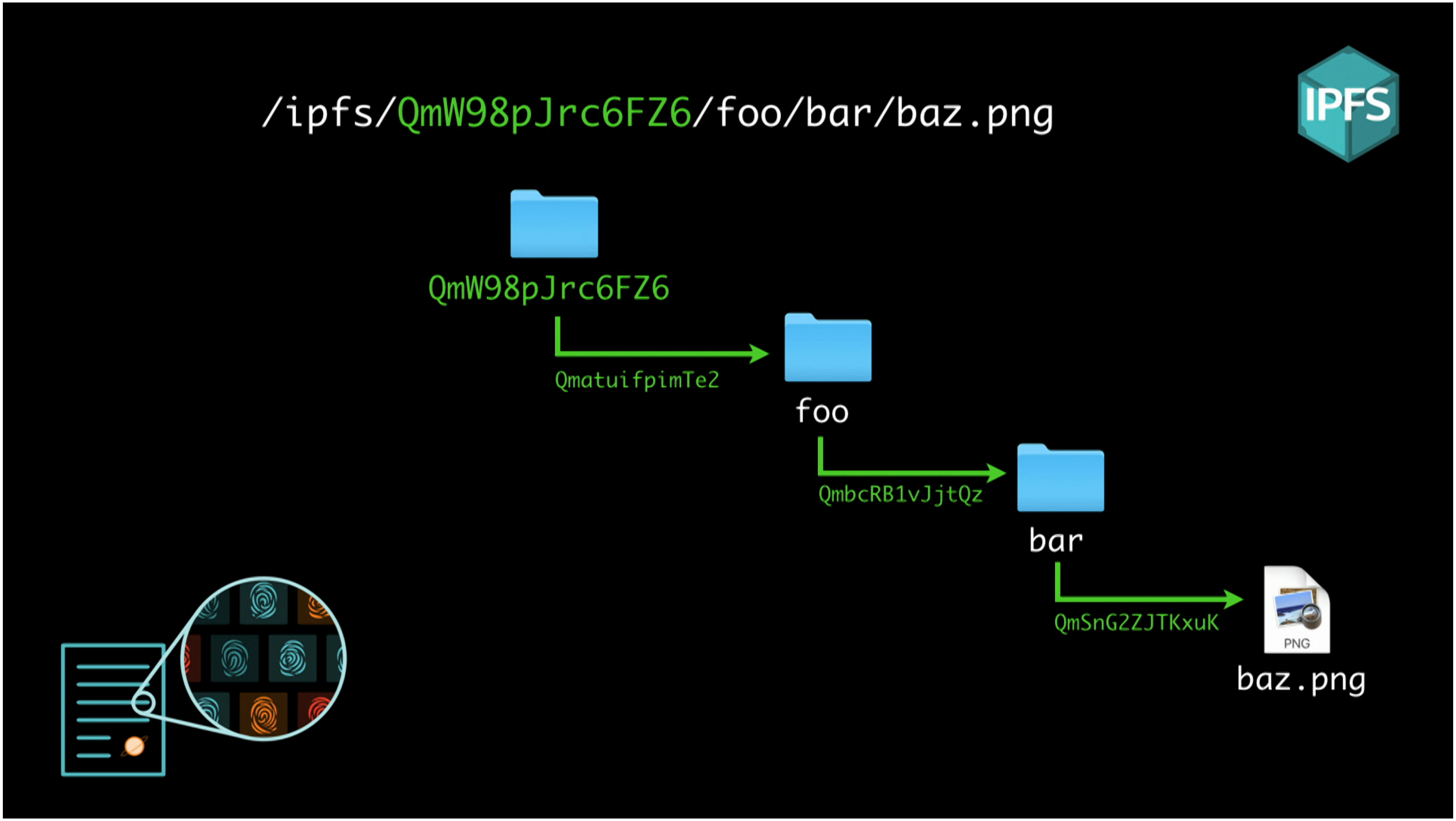
domain name /dns/example.com/foo/bar/baz.png

content address /ipfs/QmW98pJrc6FZ6/foo/bar/baz.png



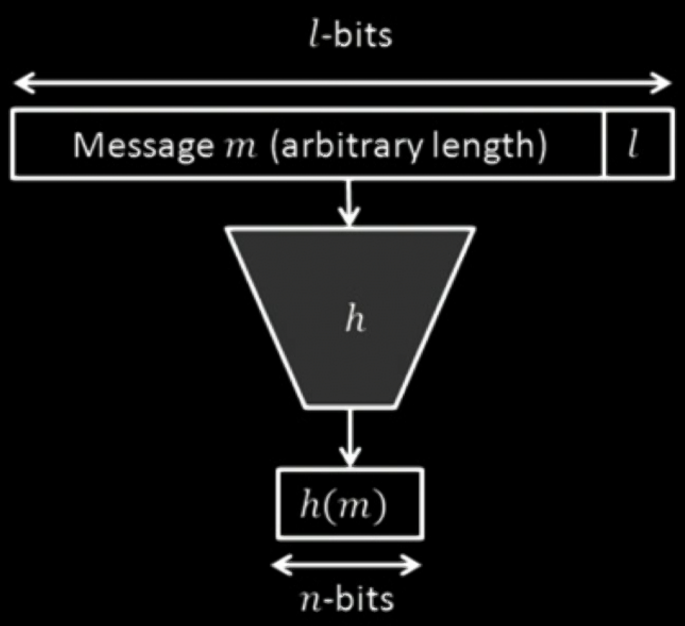
HTTP

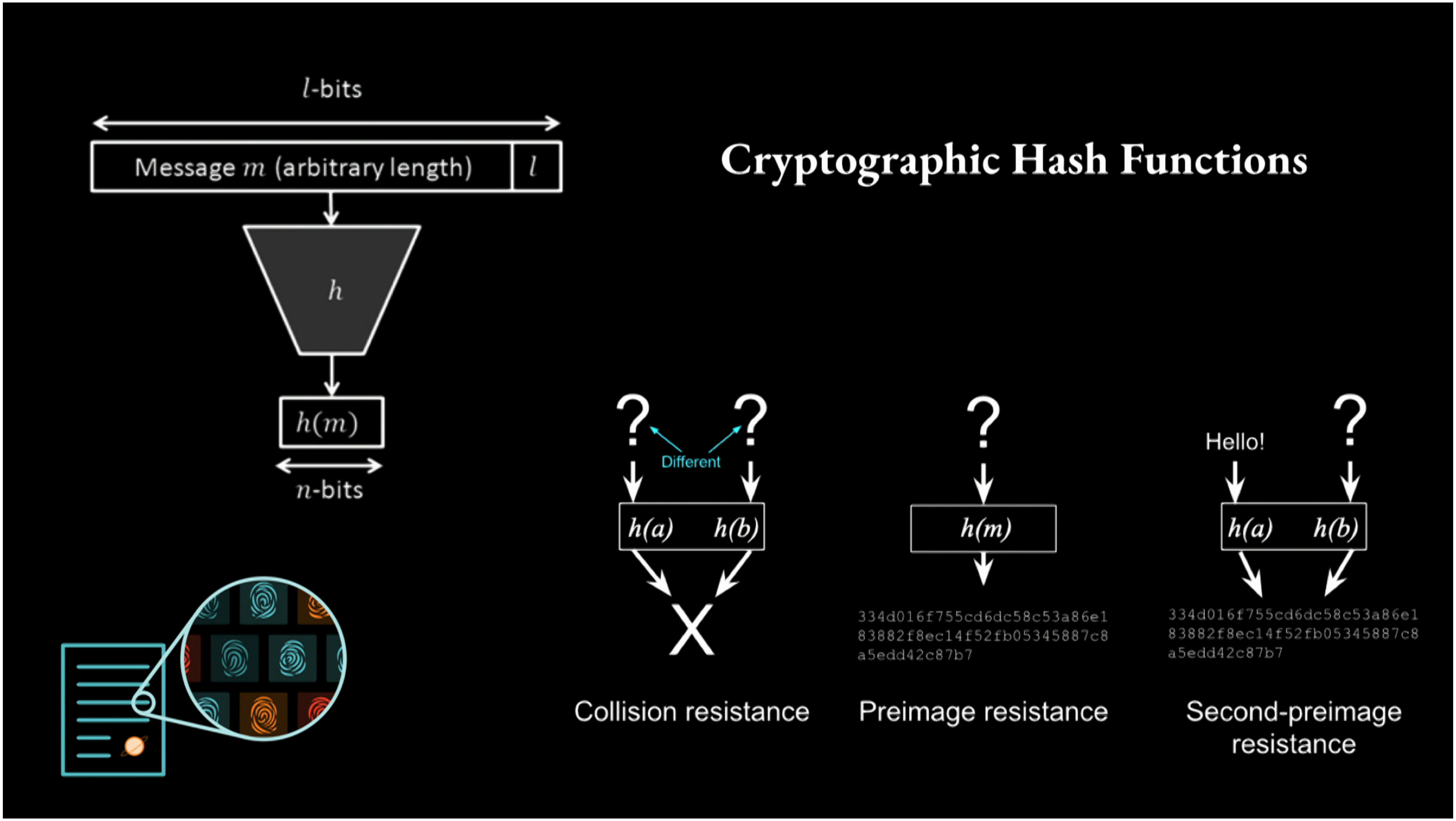
IPFS



/ipfs/QmW98pJrc6FZ6/foo/bar/baz.png

Cryptographic Hash Functions





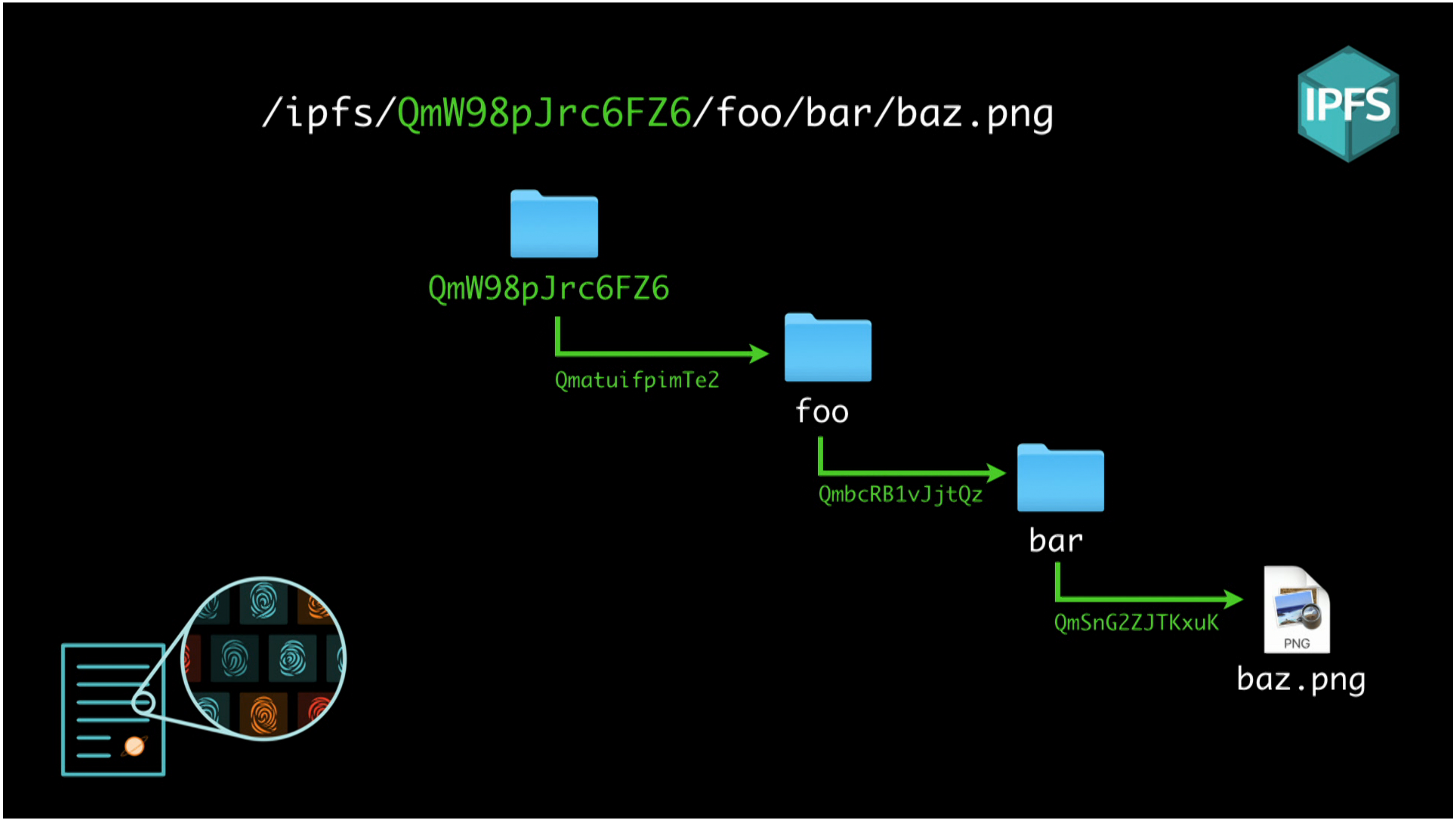
Cryptographic Hash Functions

l-bits
Message m (arbitrary length)
l
h
$h(m)$
n-bits
?
?
Different
$h(a)$
$h(b)$
X
?
$h(m)$
334d016f755cd6dc58c53a86e1
83882f8ec14f52fb05345887c8
a5edd42c87b7
Hello!
?
$h(a)$
$h(b)$
334d016f755cd6dc58c53a86e1
83882f8ec14f52fb05345887c8
a5edd42c87b7

Collision resistance

Preimage resistance

Second-preimage resistance



/ipfs/QmW98pJrc6FZ6/foo/bar/baz.png

QmW98pJrc6FZ6

QmatuifpimTe2

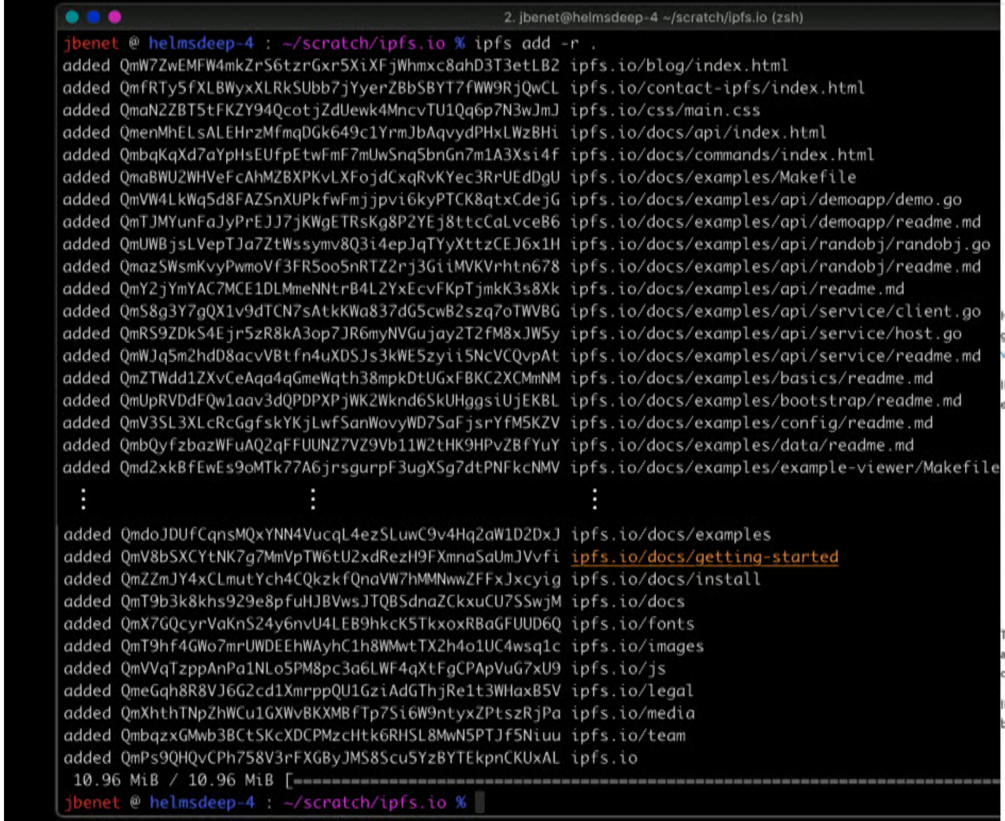
foo

QmbcRB1vJjtQz

bar

QmSnG2ZJTKxuK

baz.png



```
jbenet @ helmsdeep-4 : ~/scratch/ipfs.io % ipfs add -r .
added QmW7ZwEMFW4mkZrS6tzrGxr5XiXFjWhmxc8ahD3T3etLB2 ipfs.io/blog/index.html
added QmfRTy5fXLBWyxXLRkSUbb7jYyerZBbSBYT7fWW9RjQwCL ipfs.io/contact-ipfs/index.html
added QmaN2ZBT5tFKZY94QcotjZdUewk4MncvTU1Qq6p7N3wJmJ ipfs.io/css/main.css
added QmenMhELsALEHrzMfmqDGk649c1YrmJbAqvydPHxLWzBHi ipfs.io/docs/api/index.html
added QmbqKqXd7aYpHsEUfpEtwFmF7mUwSnq5bnGn7m1A3Xsi4f ipfs.io/docs/commands/index.html
added QmaBWU2WHVeFcAhMZBXPKvLXFojdCxqRvKYec3RrUEdDgU ipfs.io/docs/examples/Makefile
added QmVW4LkWq5d8FAZSnXUPkfwFmjjpvi6kyPTCK8qtxCdejG ipfs.io/docs/examples/api/demoapp/demo.go
added QmTJMYunFaJyPrEJJ7jKWgETRsKg8P2YEj8ttcCaLvceB6 ipfs.io/docs/examples/api/demoapp/readme.md
added QmUWBjsLVepTJa7ZtWssymv8Q3i4epJqTYyXttzCEJ6x1H ipfs.io/docs/examples/api/randobj/randobj.go
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added QmS8g3Y7gQX1v9dTCN7sAtkKWa837dG5cwB2szq7oTWVBG ipfs.io/docs/examples/api/service/client.go
added QmRS9ZDkS4Ejr5zR8kA3op7JR6myNVGujay2T2fM8xJW5y ipfs.io/docs/examples/api/service/host.go
added QmWJq5m2hdD8acvVBtfn4uXDSJs3kWE5zyii5NcVCQvpAt ipfs.io/docs/examples/api/service/readme.md
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added Qmd2xkBfEwEs9oMTk77A6jrsgurpF3ugXSg7dtPNFkcNMV ipfs.io/docs/examples/example-viewer/Makefile
  ⋮                     ⋮                           ⋮

added QmdoJDUfCqnsMQxYNN4VucqL4ezSLuwC9v4Hq2aW1D2DxJ ipfs.io/docs/examples
added QmV8bSXCYtNK7g7MmVpTW6tU2xdRezH9FXmnaSaUmJVvfi ipfs.io/docs/getting-started
added QmZZmJY4xCLmutYch4CQkzkfQnaVW7hMMNwwZFFxJxcyig ipfs.io/docs/install
added QmT9b3k8khs929e8pfuHJBVwsJTQBSdnaZCkxuCU7SSwjM ipfs.io/docs
added QmX7GQcyrVaKnS24y6nvU4LEB9hkcK5TkxoxRBaGFUUD6Q ipfs.io/fonts
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added QmXhthTNpZhWCu1GXWvBKXMBfTp7Si6W9ntyxZPtszRjPa ipfs.io/media
added QmbqzxGMwb3BCtSKcXDCPMzcHtk6RHSL8MwN5PTJf5Niuu ipfs.io/team
added QmPs9QHQvCPh758V3rFXGByJMS8Scu5YzBYTEkpnCKUxAL ipfs.io
 10.96 MiB / 10.96 MiB [=================================================================
jbenet @ helmsdeep-4 : ~/scratch/ipfs.io %
```
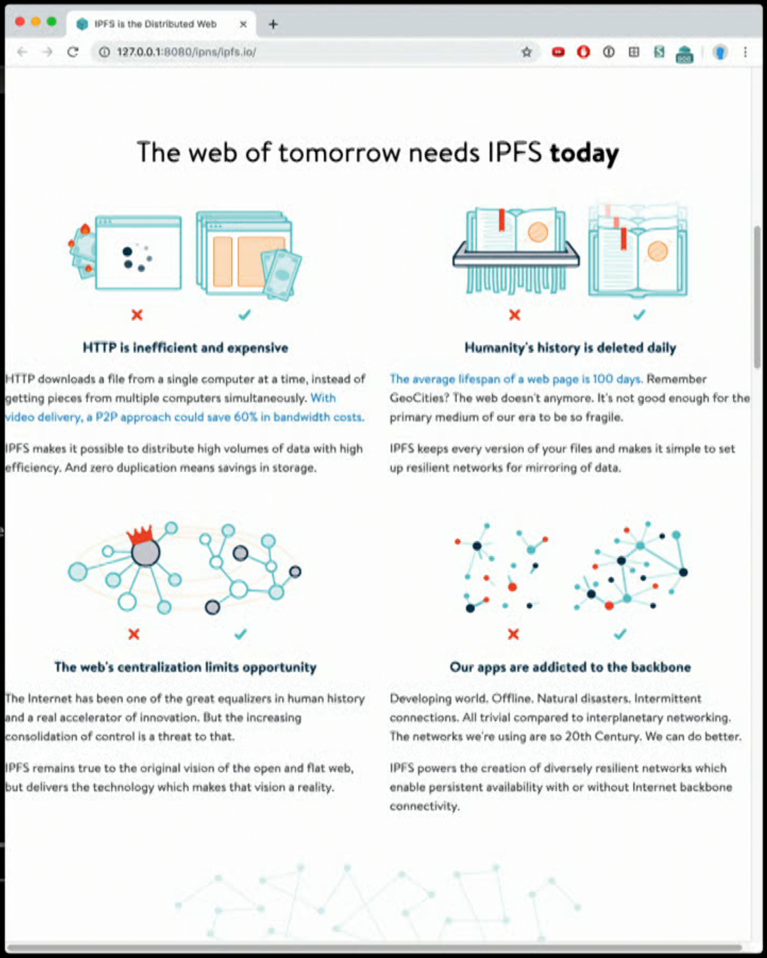



The web of tomorrow needs IPFS **today**

HTTP is inefficient and expensive

HTTP downloads a file from a single computer at a time, instead of getting pieces from multiple computers simultaneously. With video delivery, a P2P approach could save 60% in bandwidth costs.

IPFS makes it possible to distribute high volumes of data with high efficiency. And zero duplication means savings in storage.

Humanity's history is deleted daily

The average lifespan of a web page is 100 days. Remember GeoCities? The web doesn't anymore. It's not good enough for the primary medium of our era to be so fragile.

IPFS keeps every version of your files and makes it simple to set up resilient networks for mirroring of data.

The web's centralization limits opportunity

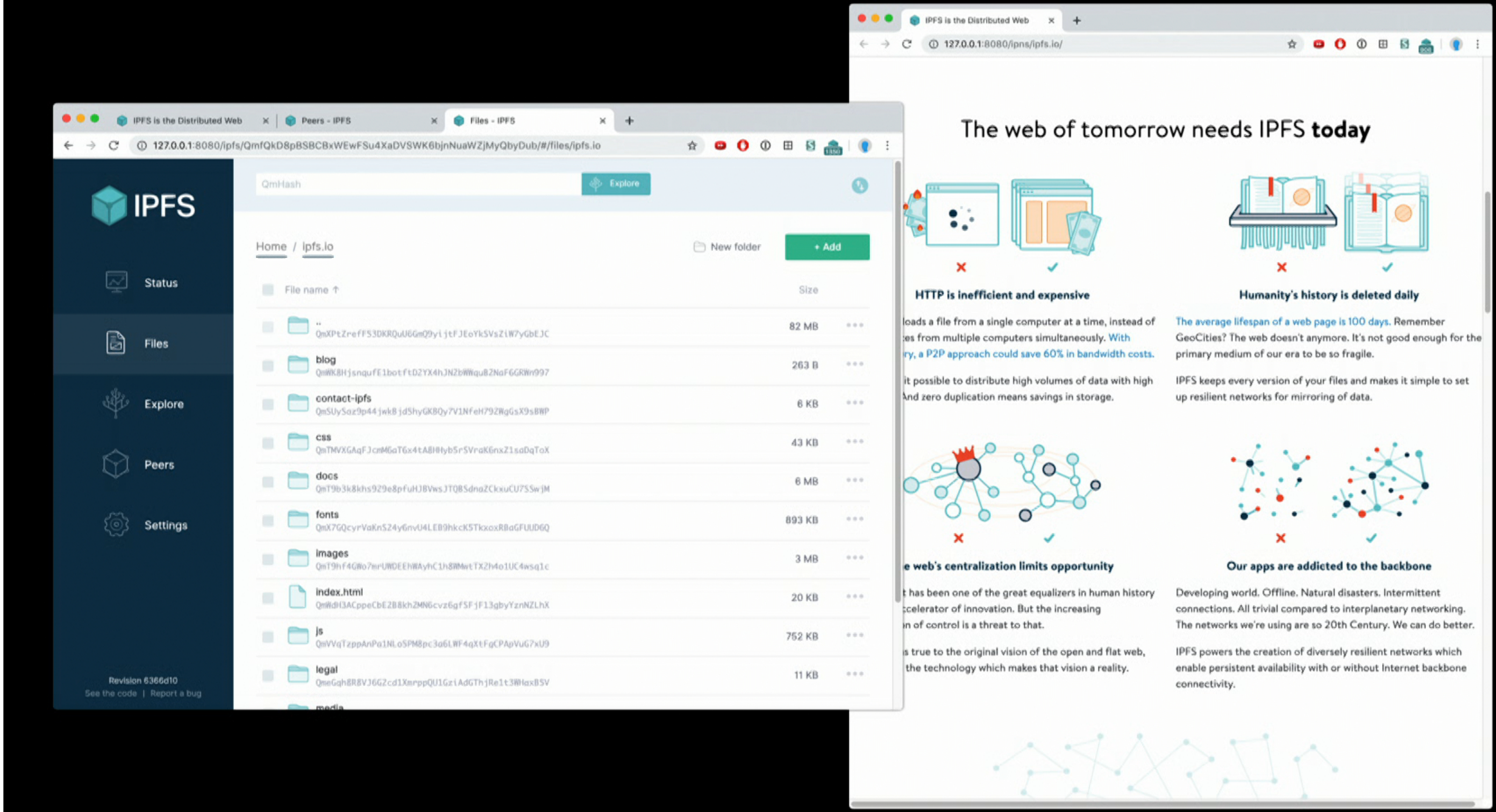
The Internet has been one of the great equalizers in human history and a real accelerator of innovation. But the increasing consolidation of control is a threat to that.

IPFS remains true to the original vision of the open and flat web, but delivers the technology which makes that vision a reality.

Our apps are addicted to the backbone

Developing world. Offline. Natural disasters. Intermittent connections. All trivial compared to interplanetary networking. The networks we're using are so 20th Century. We can do better.

IPFS powers the creation of diversely resilient networks which enable persistent availability with or without Internet backbone connectivity.


IPFS is the Distributed Web
Peers - IPFS
Files - IPFS
127.0.0.1:8080/ipfs/QmfQkD8pBSBCBxWEwFSu4XaDVSWK6bjnNuaWZjMyQbyDub/#/files/ipfs.io
IPFS
Status
Files
Explore
Peers
Settings
Revision 6366d10
See the code | Report a bug
QmHash
Explore
Home / ipfs.io
New folder
+ Add
127.0.0.1:8080/ipns/ipfs.io/

File name ↑	Size
.. QmXPtZrefFS3DKRQuU6GmQ9yijtFJEoYkSVsZiW7yGbEJC	82 MB
blog QmWK8HjsnqufE1botftD2YX4hJNZbWNquBZNoF6GRWn997	263 B
contact-ipfs QmSUySoz9p44jwk8jdShyGK8Qy7V1NfeH79ZWgGsX9sBWP	6 KB
css QmTMVXGAqFJcmMGaT6x4tA8HHyb5rSVraK6nxZ1saDqToX	43 KB
docs QmT9b3k8khs929e8pfuHJBVwsJTQBSdnaZCkxuCU7SSwjM	6 MB
fonts QmX7GQcyrVaKnS24y6nvU4LEB9hkcK5TkxoxRBaGFUUD6Q	893 KB
images QmT9hf4GWo7mrUWDEEhWAyhC1h8WMwtTXZh4o1UC4wsq1c	3 MB
index.html QmWdH3ACppeCbE2B8khZMN6cvz6gfSFjF13gbyYznNZLhX	20 KB
js QmVVqTzppAnPa1NLoSPM8pc3a6LWF4qXtFgCPApVuG7xU9	752 KB
legal QmeGqh8R8VJ6G2cd1XmrppQU1GziAdGThjRe1t3WHaxBSV	11 KB
media	

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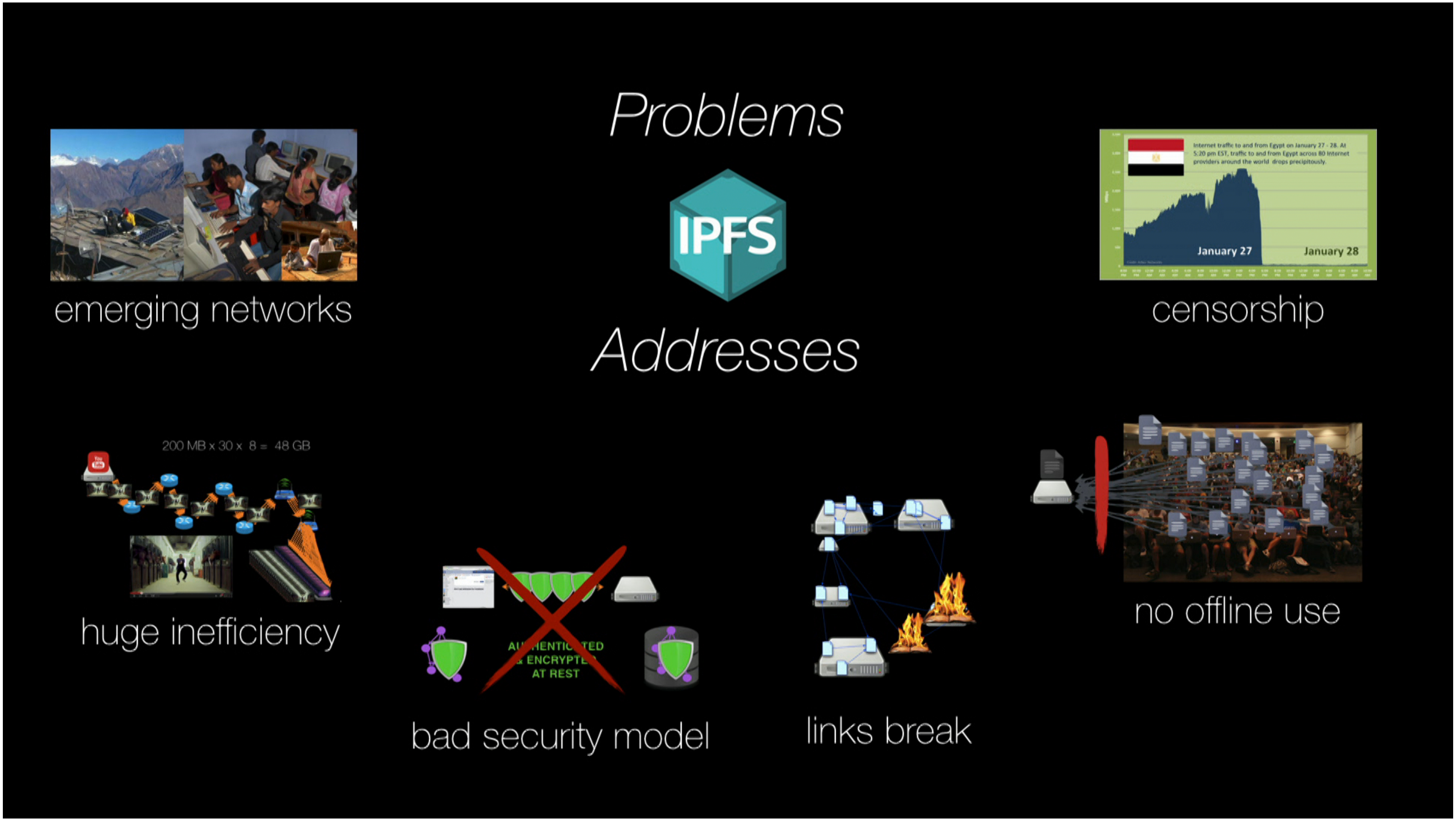


Problems

IPFS

Addresses

emerging networks

Internet traffic to and from Egypt on January 27 - 28. At 5:20 pm EST, traffic to and from Egypt across 80 Internet providers around the world drops precipitously.

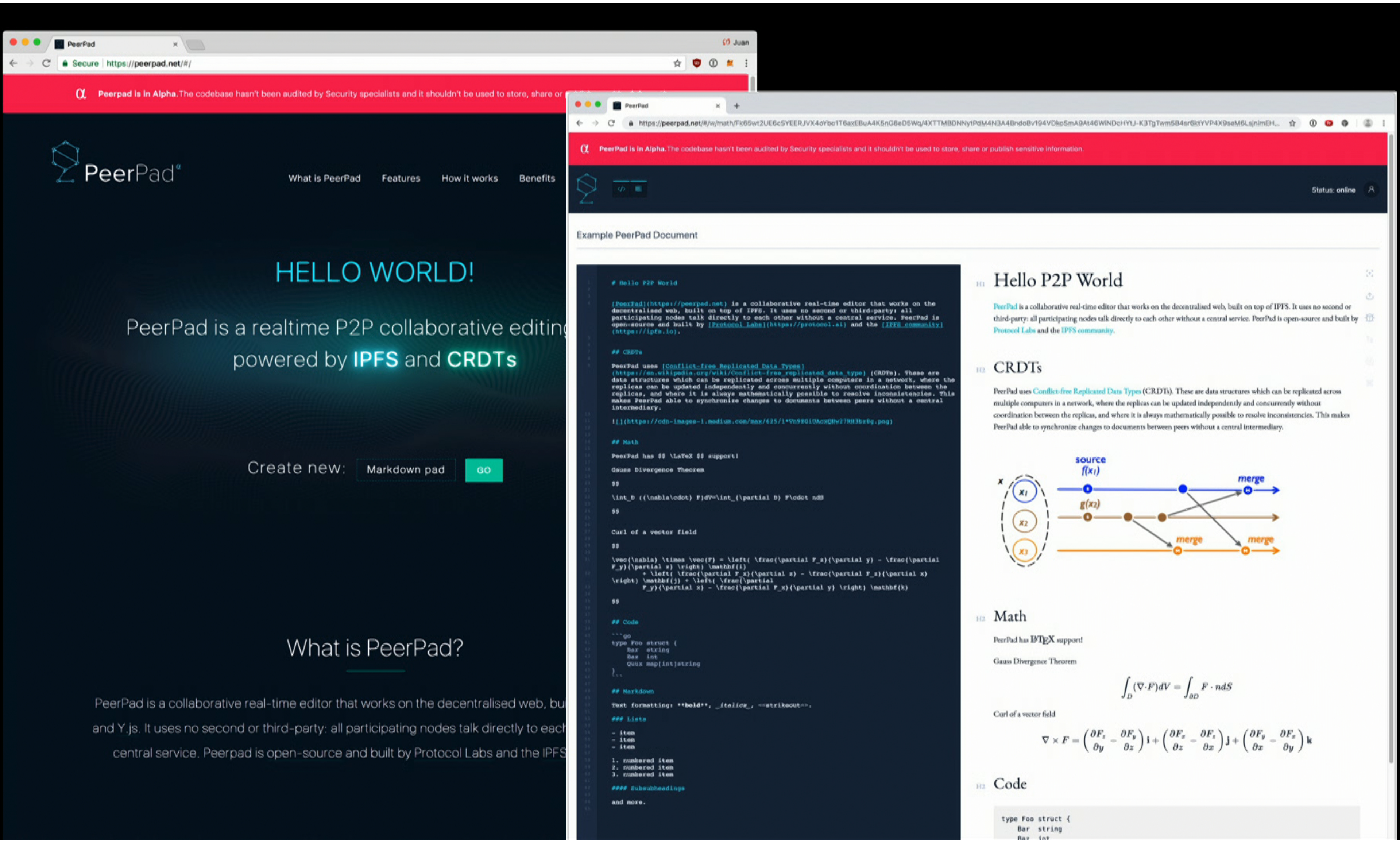
censorship

huge inefficiency

bad security model

links break

no offline use



PeerPad
Juan
Secure https://peerpad.net/#/
α
Peerpad is in Alpha. The codebase hasn't been audited by Security specialists and it shouldn't be used to store, share or
PeerPad
What is PeerPad
Features
How it works
Benefits
Create new:
Markdown pad
GO
PeerPad
https://peerpad.net/#/w/math/Fk65wt2UE6c5YEERJVX4oYbo1T6axEBuA4K5nG8eD5Wq/4XTTMBDNNytPdM4N3A4BndoBv194VDkoSmA9At46WNDcHYtJ-K3TgTwm5B4sr6ktYVP4X9seM6LsjnimEH...
α
PeerPad is in Alpha. The codebase hasn't been audited by Security specialists and it shouldn't be used to store, share or publish sensitive information.
Status: online
H1
H2
source
$f(x_1)$
$g(x_2)$
x
x_1
x_2
x_3
merge
merge
merge

HELLO WORLD!

PeerPad is a realtime P2P collaborative editing
powered by **IPFS** and **CRDTs**

What is PeerPad?

PeerPad is a collaborative real-time editor that works on the decentralised web, bu
and Y.js. It uses no second or third-party: all participating nodes talk directly to each
central service. Peerpad is open-source and built by Protocol Labs and the IPFS

Example PeerPad Document

~~~
# Hello P2P World

[PeerPad](https://peerpad.net) is a collaborative real-time editor that works on the
decentralised web, built on top of IPFS. It uses no second or third-party: all
participating nodes talk directly to each other without a central service. PeerPad is
open-source and built by [Protocol Labs](https://protocol.ai) and the [IPFS community]
(https://ipfs.io).

## CRDTs

PeerPad uses [Conflict-free Replicated Data Types]
(https://en.wikipedia.org/wiki/Conflict-free_replicated_data_type) (CRDTs). These are
data structures which can be replicated across multiple computers in a network, where the
replicas can be updated independently and concurrently without coordination between the
replicas, and where it is always mathematically possible to resolve inconsistencies. This
makes PeerPad able to synchronize changes to documents between peers without a central
intermediary.

![](https://cdn-images-1.medium.com/max/625/1*Vn9ZGIUAcxQHw27RH3bz8g.png)

## Math

PeerPad has $$ \LaTeX $$ support!

Gauss Divergence Theorem

$$

\int_D ({\nabla\cdot} F)dV=\int_{\partial D} F\cdot ndS

$$


Curl of a vector field

$$

\vec{\nabla} \times \vec{F} = \left( \frac{\partial F_z}{\partial y} - \frac{\partial
F_y}{\partial z} \right) \mathbf{i}
        + \left( \frac{\partial F_x}{\partial z} - \frac{\partial F_z}{\partial x}
\right) \mathbf{j} + \left( \frac{\partial
        F_y}{\partial x} - \frac{\partial F_x}{\partial y} \right) \mathbf{k}

$$


## Code

```go
type Foo struct {
    Bar  string
    Baz  int
    Quux map[int]string
}
```

## Markdown

Text formatting: **bold**, _italics_, ~~strikeout~~.

### Lists

- item
- item
- item

1. numbered item
2. numbered item
3. numbered item

#### Subsubheadings

and more.
~~~

Hello P2P World

PeerPad is a collaborative real-time editor that works on the decentralised web, built on top of IPFS. It uses no second or third-party: all participating nodes talk directly to each other without a central service. PeerPad is open-source and built by Protocol Labs and the IPFS community.

CRDTs

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Math

PeerPad has $\LaTeX$ support!

Gauss Divergence Theorem

$$\int_D (\nabla \cdot F)dV = \int_{\partial D} F \cdot ndS$$

Curl of a vector field

$$\nabla \times F = \left(\frac{\partial F_z}{\partial y} - \frac{\partial F_y}{\partial z}\right)\mathbf{i} + \left(\frac{\partial F_x}{\partial z} - \frac{\partial F_z}{\partial x}\right)\mathbf{j} + \left(\frac{\partial F_y}{\partial x} - \frac{\partial F_x}{\partial y}\right)\mathbf{k}$$

Code

```
type Foo struct {
    Bar  string
    Baz  int
```

Archiving and Distributing Precious Data

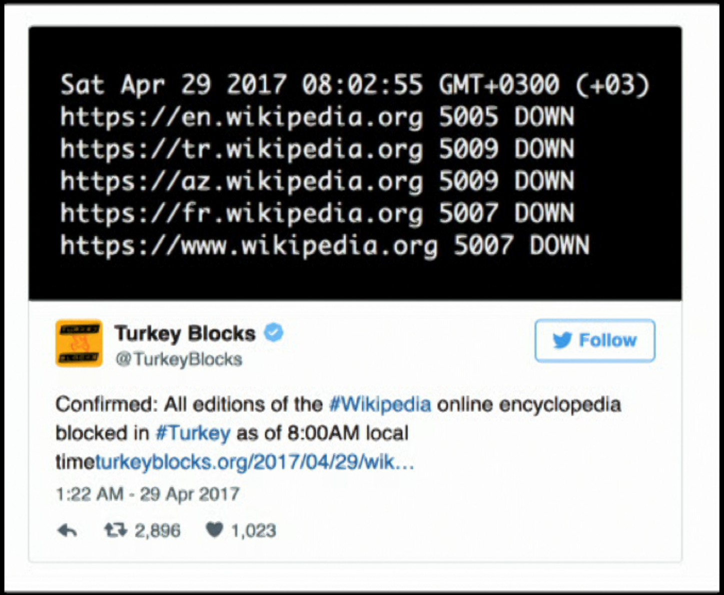
from these organizations and many more

IPFS Cluster

DDS SIG

IPFS Archives

Distributed Wikipedia Mirror



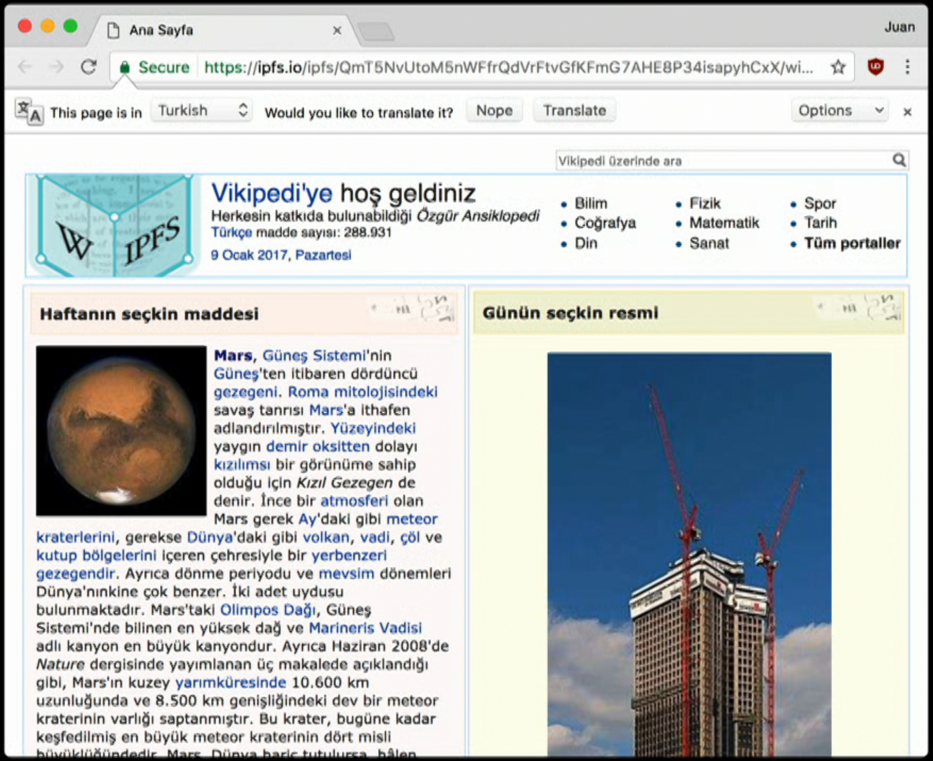
```
Sat Apr 29 2017 08:02:55 GMT+0300 (+03)
https://en.wikipedia.org 5005 DOWN
https://tr.wikipedia.org 5009 DOWN
https://az.wikipedia.org 5009 DOWN
https://fr.wikipedia.org 5007 DOWN
https://www.wikipedia.org 5007 DOWN
```

Turkey Blocks
@TurkeyBlocks

Confirmed: All editions of the #Wikipedia online encyclopedia blocked in #Turkey as of 8:00AM local timeturkeyblocks.org/2017/04/29/wik...

1:22 AM - 29 Apr 2017

2,896 1,023



Ana Sayfa
Juan
Secure
https://ipfs.io/ipfs/QmT5NvUtoM5nWFfrQdVrFtvGfKFmG7AHE8P34isapyhCxX/wi...
This page is in Turkish Would you like to translate it?
Nope
Translate
Options
Vikipedi üzerinde ara

Vikipedi'ye hoş geldiniz
Herkesin katkıda bulunabildiği *Özgür Ansiklopedi*
Türkçe madde sayısı: 288.931
9 Ocak 2017, Pazartesi

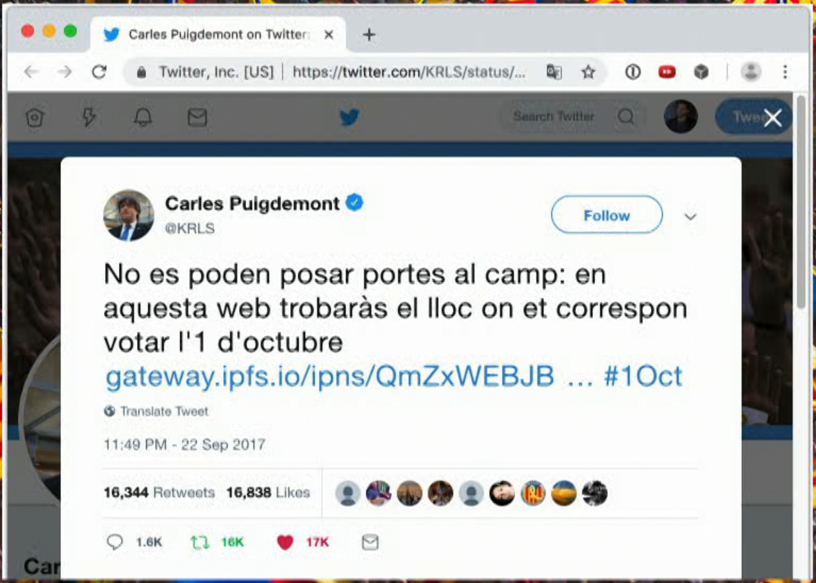
- Bilim
- Coğrafya
- Din
- Fizik
- Matematik
- Sanat
- Spor
- Tarih
- **Tüm portaller**

Haftanın seçkin maddesi

Mars, Güneş Sistemi'nin Güneş'ten itibaren dördüncü gezegeni. Roma mitolojisindeki savaş tanrısı Mars'a ithafen adlandırılmıştır. Yüzeyindeki yaygın demir oksitten dolayı kızılımsı bir görünüme sahip olduğu için *Kızıl Gezegen* de denir. İnce bir atmosferi olan Mars gerek Ay'daki gibi meteor kraterlerini, gerekse Dünya'daki gibi volkan, vadi, çöl ve kutup bölgelerini içeren çehresiyle bir yerbenzeri gezegendir. Ayrıca dönme periyodu ve mevsim dönemleri Dünya'nınkine çok benzer. İki adet uydusu bulunmaktadır. Mars'taki Olimpos Dağı, Güneş Sistemi'nde bilinen en yüksek dağ ve Marineris Vadisi adlı kanyon en büyük kanyondur. Ayrıca Haziran 2008'de *Nature* dergisinde yayımlanan üç makalede açıklandığı gibi, Mars'ın kuzey yarımküresinde 10.600 km uzunluğunda ve 8.500 km genişliğindeki dev bir meteor kraterinin varlığı saptanmıştır. Bu krater, bugüne kadar keşfedilmiş en büyük meteor kraterinin dört misli büyüklüğündedir. Mars, Dünya hariç tutulursa, hâlen

Günün seçkin resmi

Referendum in Catalunya


Carles Puigdemont on Twitter
Twitter, Inc. [US] | https://twitter.com/KRLS/status/...
Search Twitter
Follow
Translate Tweet

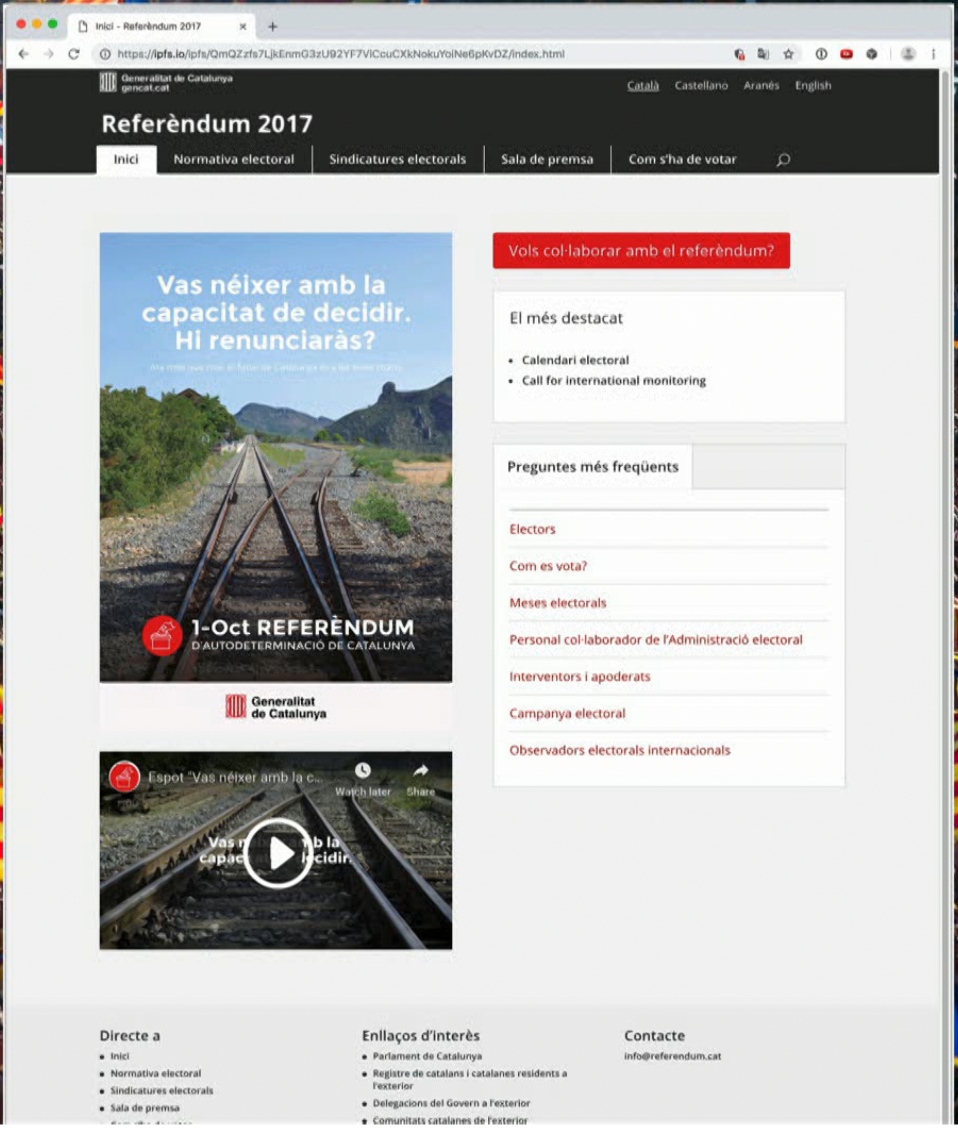
Carles Puigdemont
@KRLS

No es poden posar portes al camp: en aquesta web trobaràs el lloc on et correspon votar l'1 d'octubre gateway.ipfs.io/ipns/QmZxWEBJB … #1Oct

11:49 PM - 22 Sep 2017

16,344 Retweets 16,838 Likes

1.6K 16K 17K


Inici - Referèndum 2017
https://ipfs.io/ipfs/QmQZzfs7LjkEnmG3zU92YF7ViCcuCXkNokuYoiNe6pKvDZ/index.html
Generalitat de Catalunya
gencat.cat
Català Castellano Aranés English
Inici
Normativa electoral
Sindicatures electorals
Sala de premsa
Com s'ha de votar
Vas néixer amb la capacitat de decidir. Hi renunciaràs?
1-Oct REFERÈNDUM D'AUTODETERMINACIÓ DE CATALUNYA
Generalitat de Catalunya
Espot "Vas néixer amb la c...
Watch later
Share
Vols col·laborar amb el referèndum?

Referèndum 2017

El més destacat

- Calendari electoral
- Call for international monitoring

Preguntes més freqüents

- Electors
- Com es vota?
- Meses electorals
- Personal col·laborador de l'Administració electoral
- Interventors i apoderats
- Campanya electoral
- Observadors electorals internacionals

Directe a

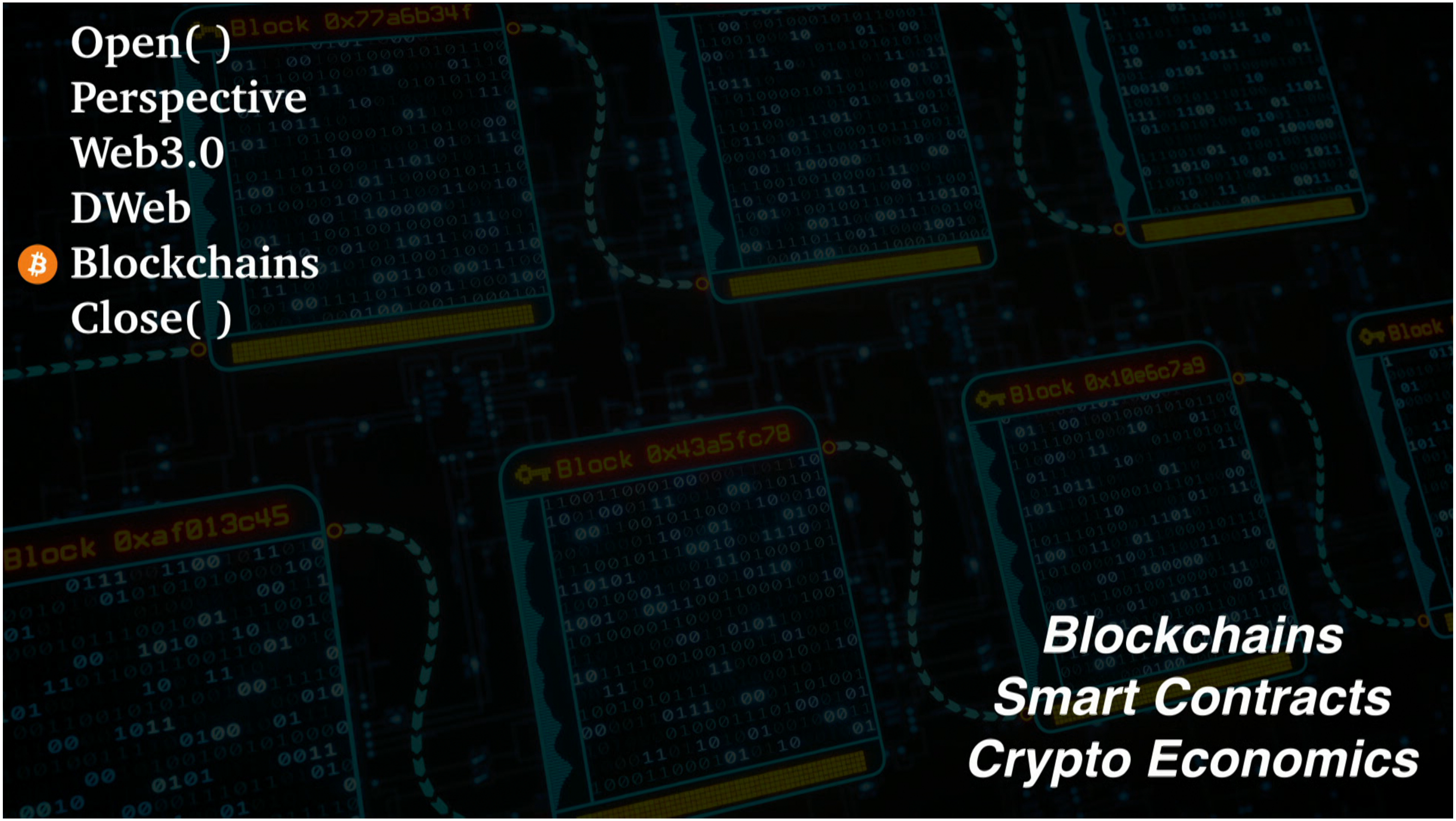
- Inici
- Normativa electoral
- Sindicatures electorals
- Sala de premsa

Enllaços d'interès

- Parlament de Catalunya
- Registre de catalans i catalanes residents a l'exterior
- Delegacions del Govern a l'exterior
- Comunitats catalanes de l'exterior

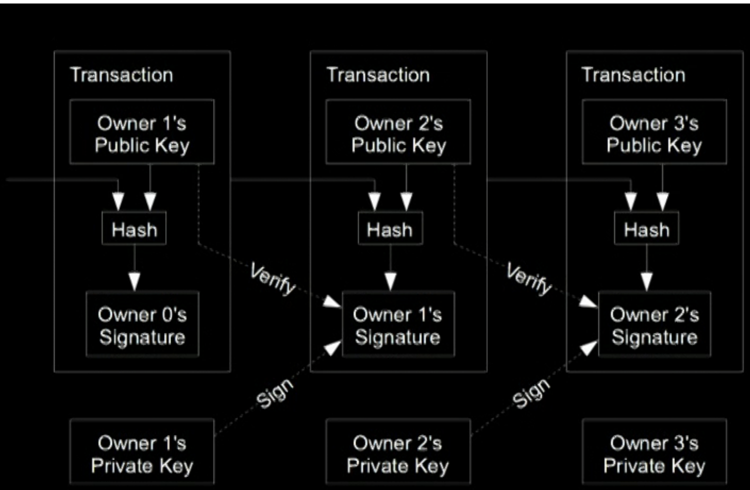
Contacte

info@referendum.cat



Open( )
Perspective
Web3.0
DWeb
Blockchains
Close( )

Blockchains
Smart Contracts
Crypto Economics



Transaction

Owner 1's Public Key

Hash

Owner 0's Signature

Owner 1's Private Key

Transaction

Owner 2's Public Key

Hash

Owner 1's Signature

Owner 2's Private Key

Transaction

Owner 3's Public Key

Hash

Owner 2's Signature

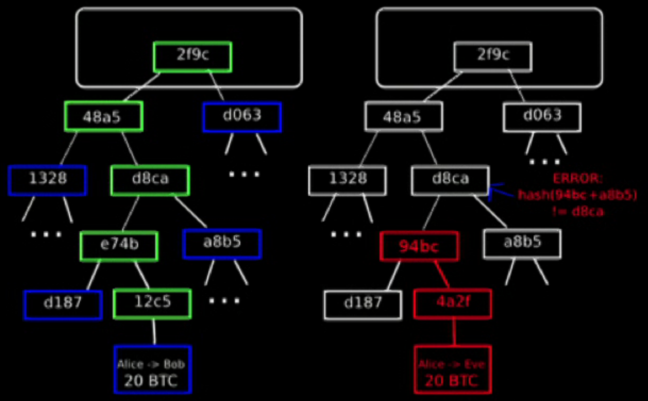
Owner 3's Private Key

Verify

Sign

Verify

Sign



2f9c

48a5

d063

1328

d8ca

...

...

e74b

a8b5

d187

12c5

...

Alice -> Bob
20 BTC

2f9c

48a5

d063

1328

d8ca

...

ERROR:
hash(94bc+a8b5)
!= d8ca

...

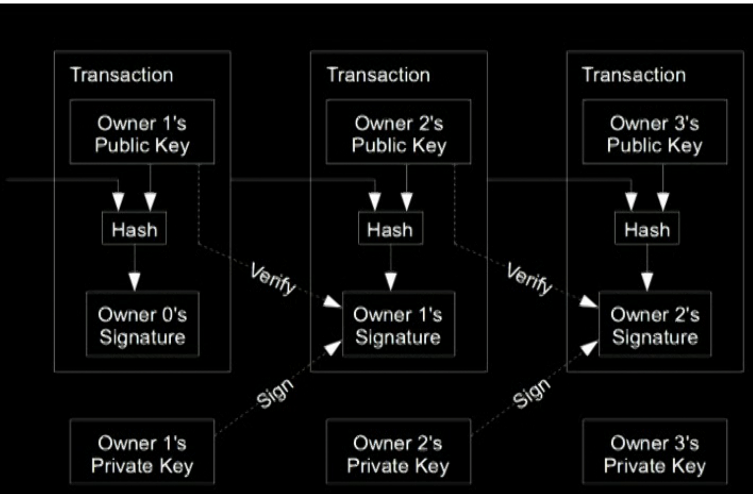
94bc

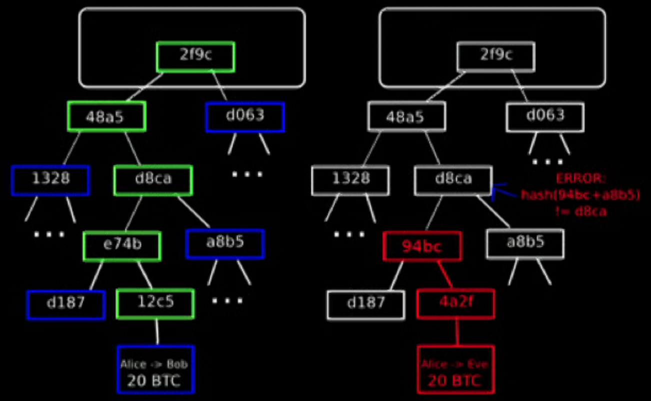
a8b5

d187

4a2f

Alice -> Eve
20 BTC


Transaction
Owner 1's Public Key
Hash
Owner 0's Signature
Owner 1's Private Key
Verify
Sign
Transaction
Owner 2's Public Key
Hash
Owner 1's Signature
Owner 2's Private Key
Verify
Sign
Transaction
Owner 3's Public Key
Hash
Owner 2's Signature
Owner 3's Private Key


2f9c
48a5
d063
1328
d8ca
e74b
a8b5
d187
12c5
Alice -> Bob
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1328
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d187
4a2f
Alice -> Eve
20 BTC
ERROR:
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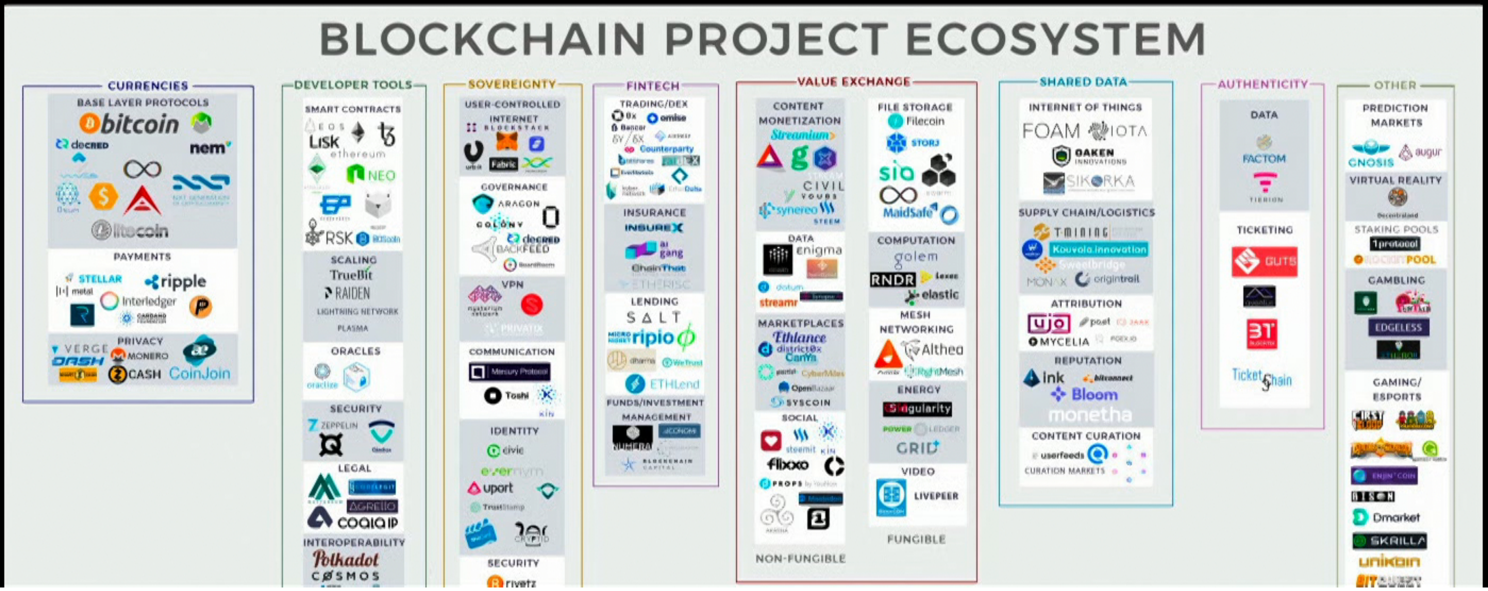
!= d8ca


BLOCKCHAIN PROJECT ECOSYSTEM
CURRENCIES
BASE LAYER PROTOCOLS
bitcoin
decred
nem
litecoin
PAYMENTS
STELLAR
ripple
Interledger
PRIVACY
VERGE
DASH
MONERO
ZCASH
CoinJoin
DEVELOPER TOOLS
SMART CONTRACTS
EOS
Lisk
ethereum
NEO
RSK
SCALING
TrueBit
RAIDEN
LIGHTNING NETWORK
PLASMA
ORACLES
oraclize
SECURITY
ZEPPELIN
LEGAL
AGRELLO
codaIP
INTEROPERABILITY
Polkadot
COSMOS
SOVEREIGNTY
USER-CONTROLLED INTERNET
BLOCKSTACK
Fabric
GOVERNANCE
ARAGON
COLONY
decred
BACKFEED
VPN
mysterium network
PRIVATIX
COMMUNICATION
Mercury Protocol
Toshi
kin
IDENTITY
civic
evernym
uport
TrustStamp
SECURITY
rivetz
FINTECH
TRADING/DEX
0x
omise
Bancor
Counterparty
INSURANCE
INSUREX
gang
ChainThat
ETHERISC
LENDING
SALT
ripio
dharma
WeTrust
ETHLend
FUNDS/INVESTMENT MANAGEMENT
NUMERAI
VALUE EXCHANGE
CONTENT MONETIZATION
Streamium
CIVIL
synereo
STEEM
DATA
enigma
streamr
MARKETPLACES
Ethlance
district0x
OpenBazaar
SYSCOIN
SOCIAL
steemit
kin
flixxo
PROPS
NON-FUNGIBLE
FILE STORAGE
Filecoin
STORJ
sia
MaidSafe
COMPUTATION
golem
RNDR
elastic
MESH NETWORKING
Althea
RightMesh
ENERGY
Singularity
POWER LEDGER
GRID+
VIDEO
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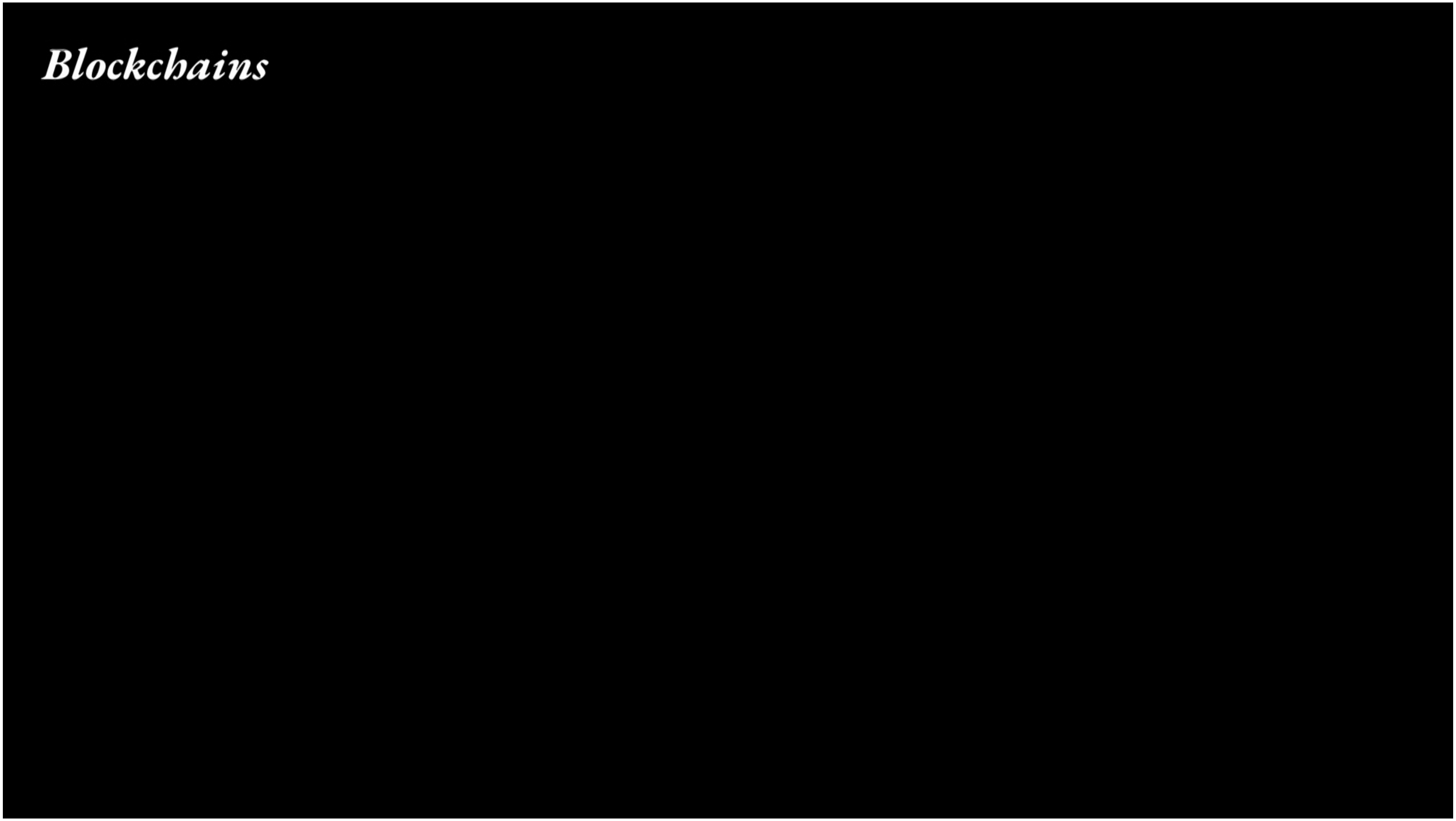
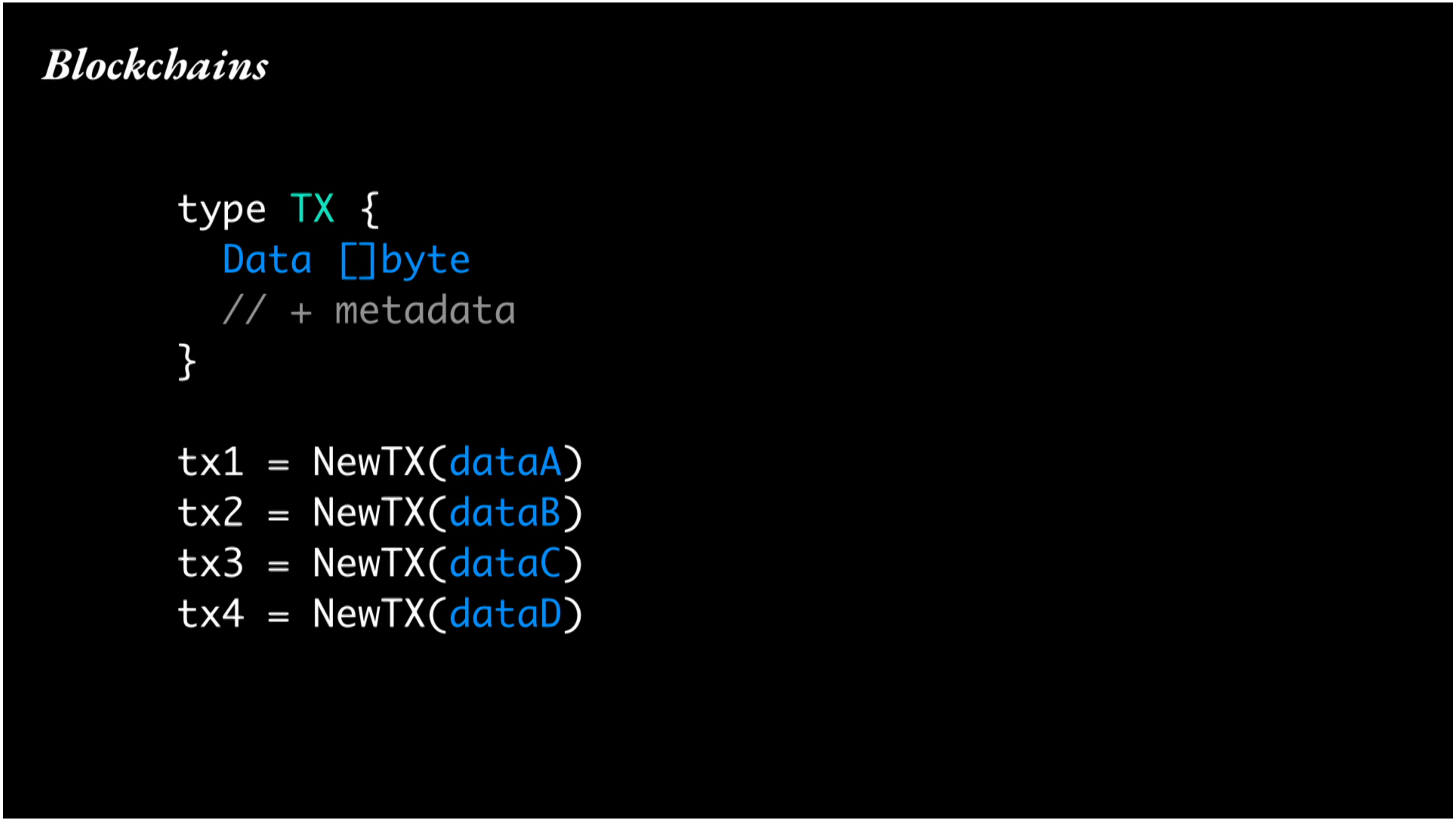
Kouvola Innovation
MONAX
origintrail
ATTRIBUTION
ujo
MYCELIA
REPUTATION
ink
Bloom
monetha
CONTENT CURATION
userfeeds
CURATION MARKETS
AUTHENTICITY
DATA
FACTOM
TIERION
TICKETING
GUTS
TicketChain
OTHER
PREDICTION MARKETS
GNOSIS
augur
VIRTUAL REALITY
STAKING POOLS
1protocol
POOL
GAMBLING
EDGELESS
GAMING/ESPORTS
Dmarket
SKRILLA
unikoin



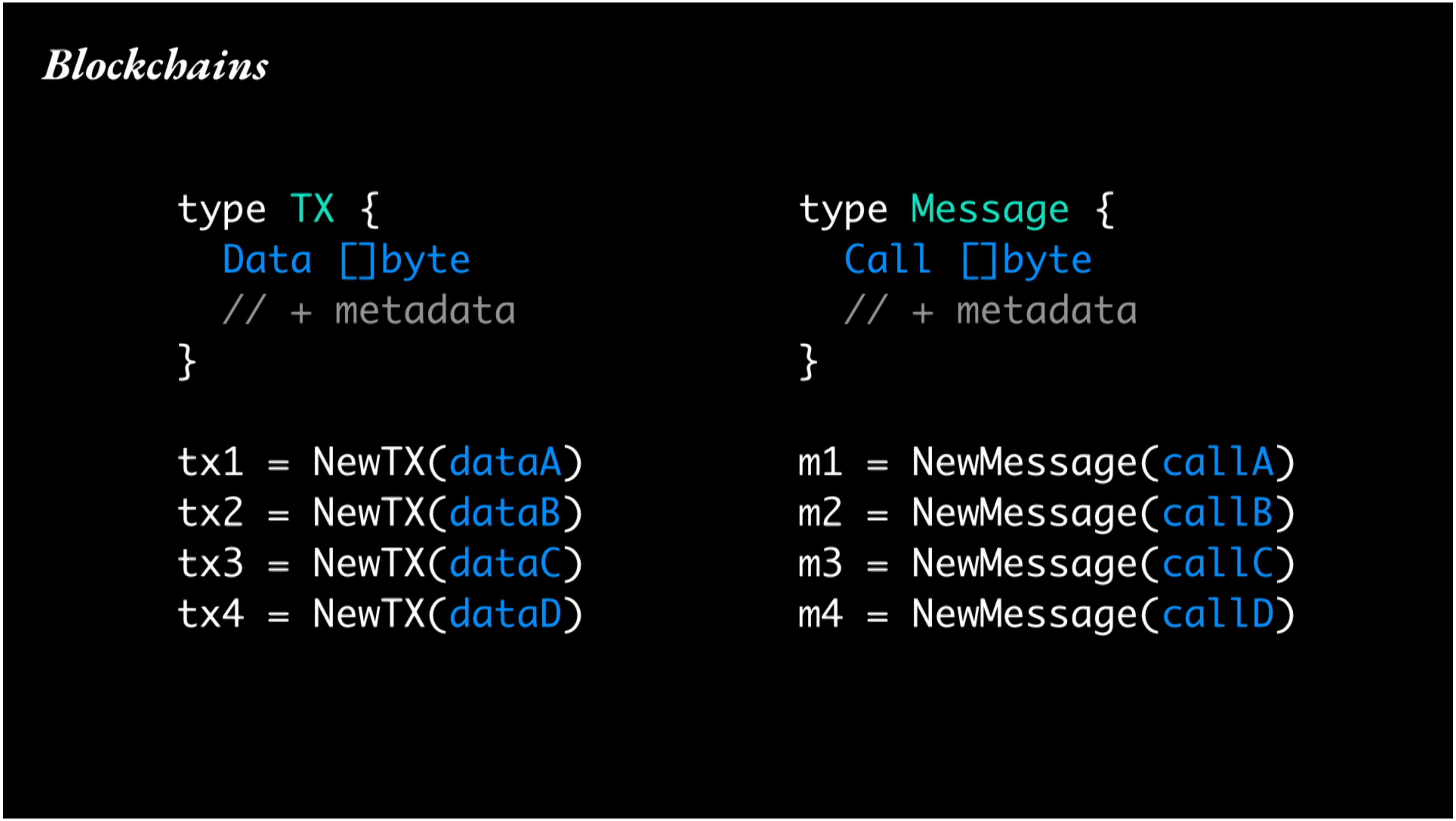
Blockchains

Blockchains



Blockchains

```
type TX {
  Data []byte
  // + metadata
}

tx1 = NewTX(dataA)
tx2 = NewTX(dataB)
tx3 = NewTX(dataC)
tx4 = NewTX(dataD)
```



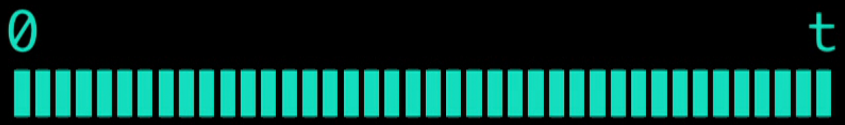
Blockchains

```
type TX {
  Data []byte
  // + metadata
}

tx1 = NewTX(dataA)
tx2 = NewTX(dataB)
tx3 = NewTX(dataC)
tx4 = NewTX(dataD)
```

```
type Message {
  Call []byte
  // + metadata
}

m1 = NewMessage(callA)
m2 = NewMessage(callB)
m3 = NewMessage(callC)
m4 = NewMessage(callD)
```

Blockchains

```
type Blockchain1 {
  txs []TX
  // + metadata

  AddTx(tx) Result
  GetTx(i) TX
  Length() int
}

C = NewBlockchain()
C.AddTx(tx1)
C.AddTx(tx2)
C.AddTx(tx3)
```



Blockchains

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  txs []TX
  // + metadata

  AddTx(tx) Result
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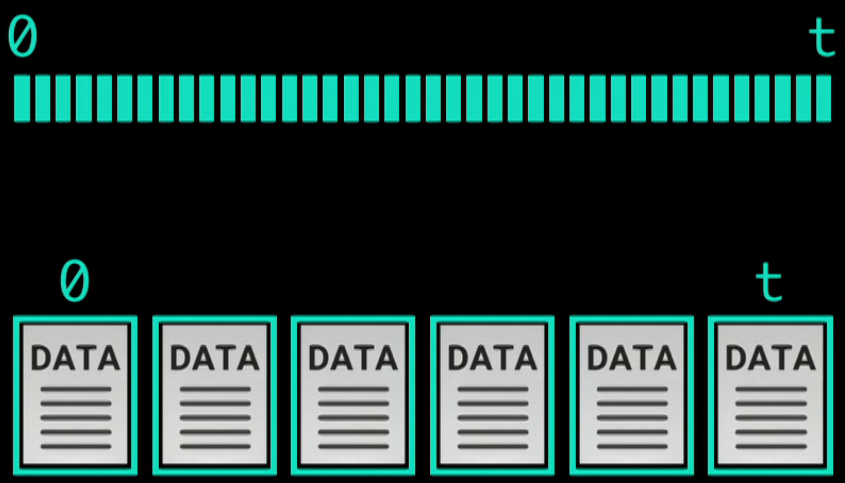
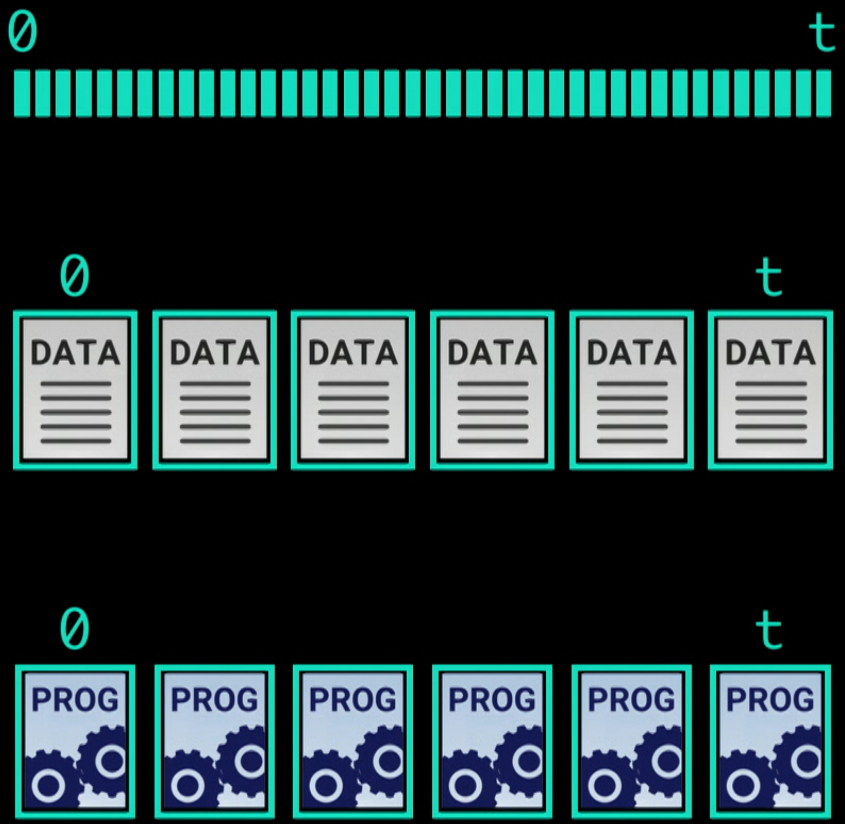
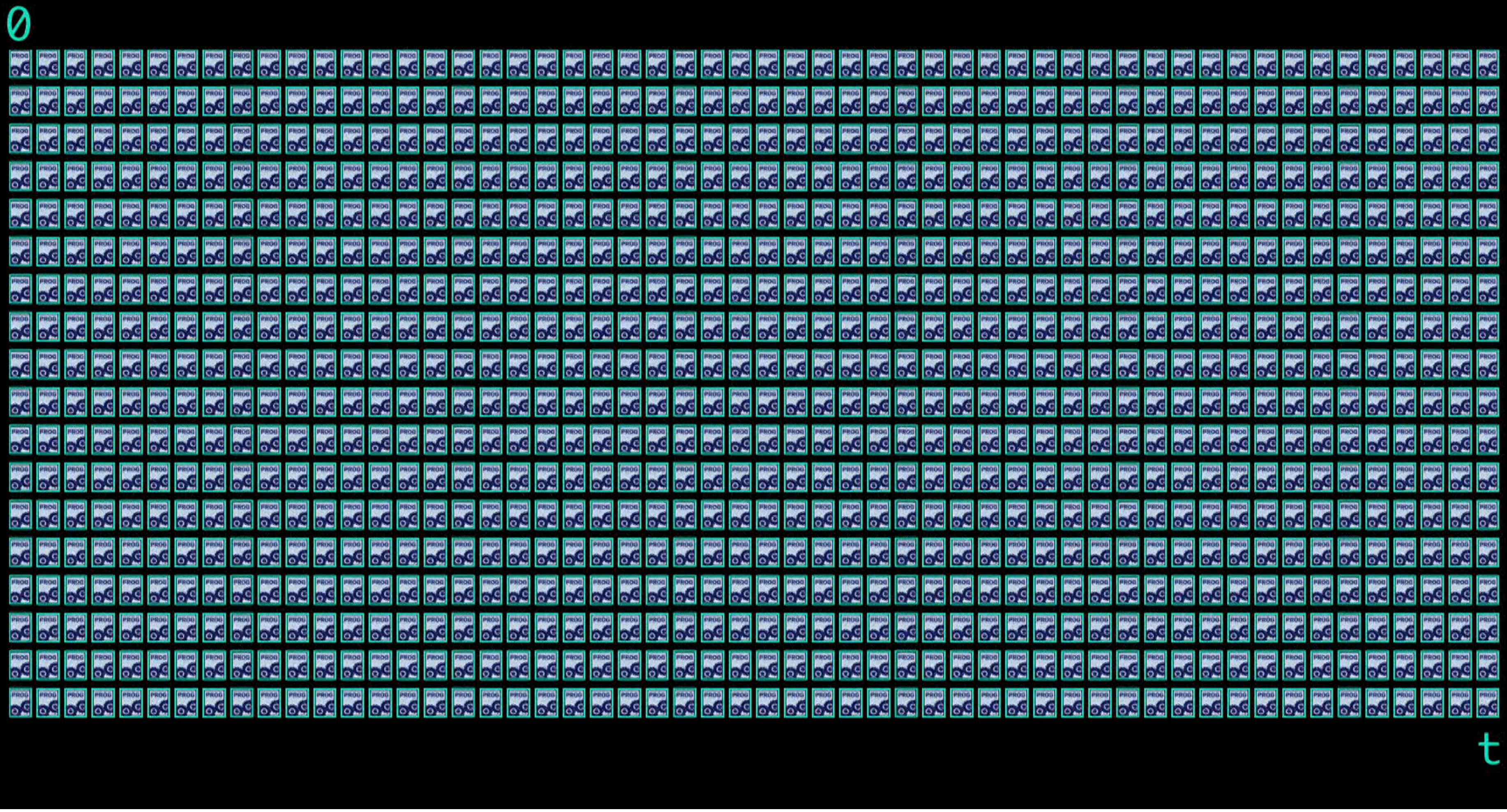


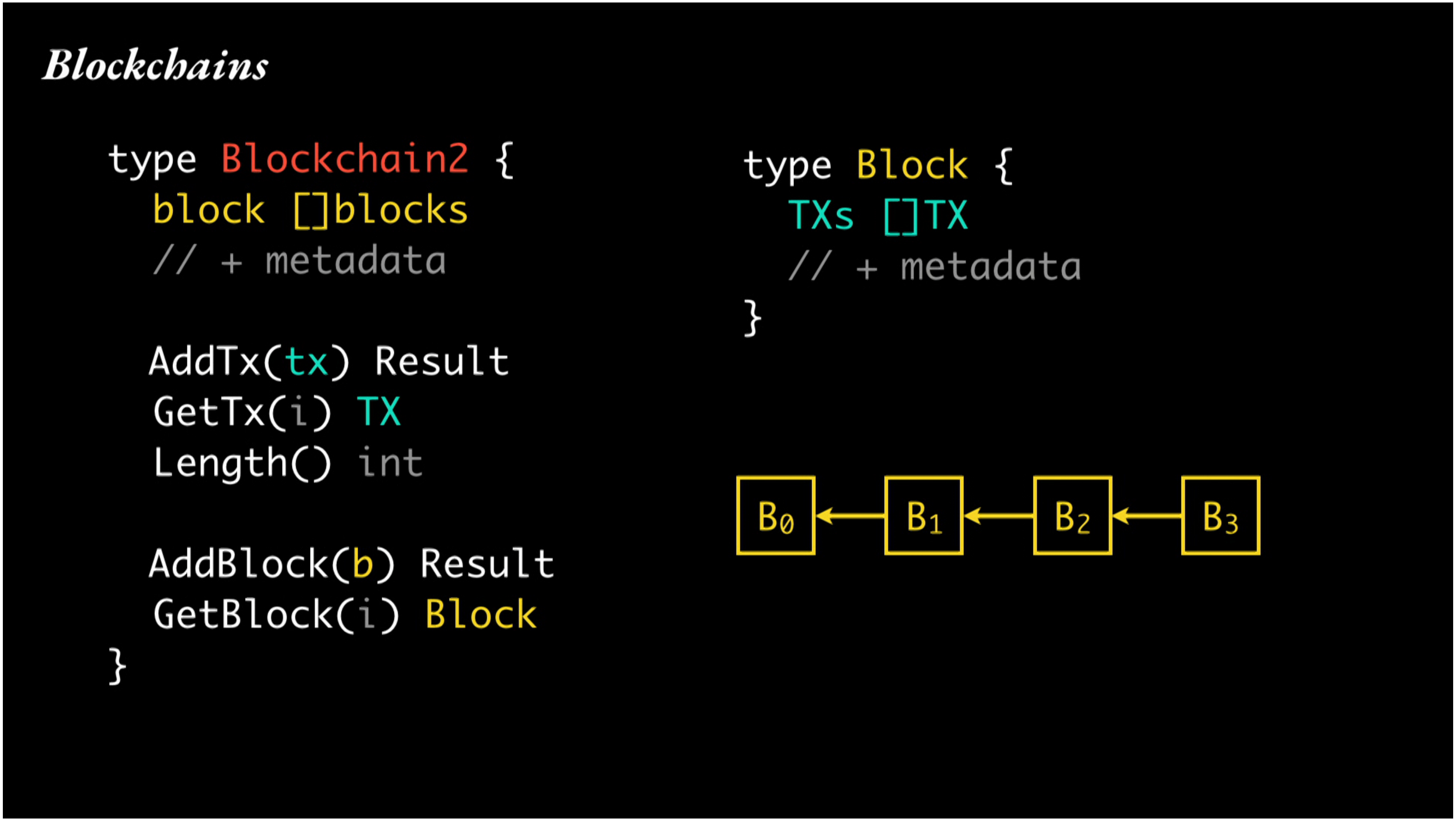
Blockchains

```
type Blockchain1 {
  txs []TX
  // + metadata

  AddTx(tx) Result
  GetTx(i) TX
  Length() int
}

C = NewBlockchain()
C.AddTx(tx1)
C.AddTx(tx2)
C.AddTx(tx3)
```



Blockchains



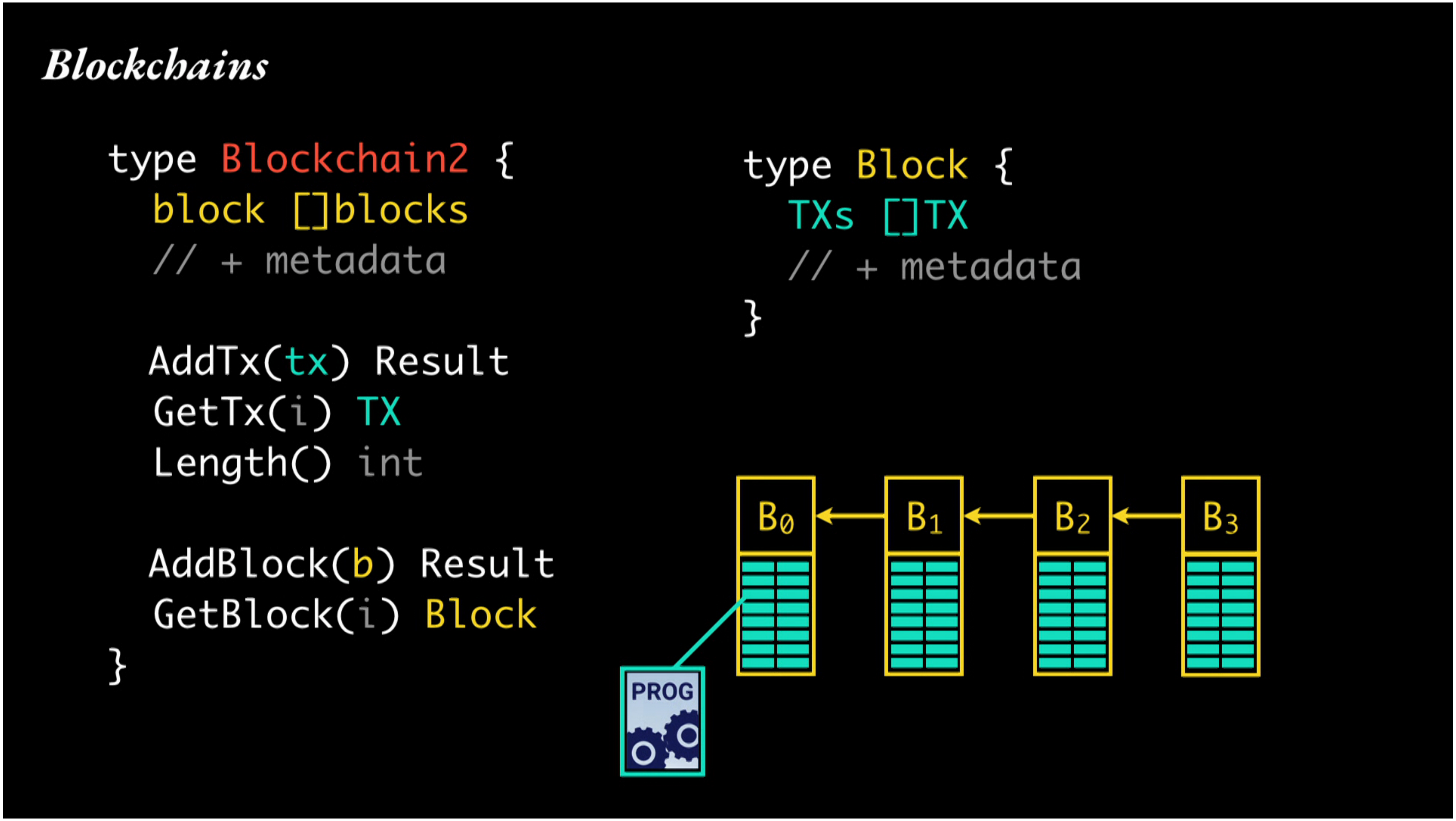


Blockchains

```
type Blockchain2 {
  block []blocks
  // + metadata

  AddTx(tx) Result
  GetTx(i) TX
  Length() int

  AddBlock(b) Result
  GetBlock(i) Block
}
```

```
type Block {
  TXs []TX
  // + metadata
}
```

$B_0 \leftarrow B_1 \leftarrow B_2 \leftarrow B_3$



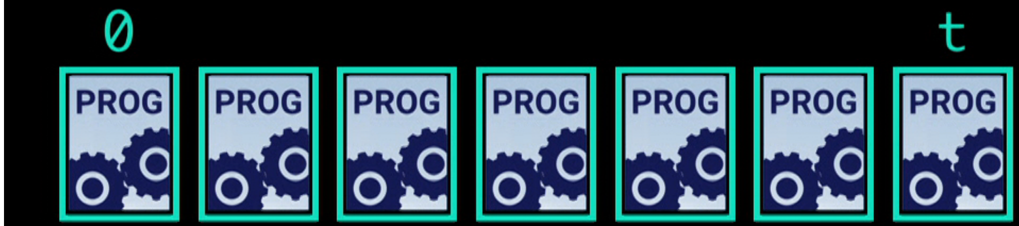
Blockchains

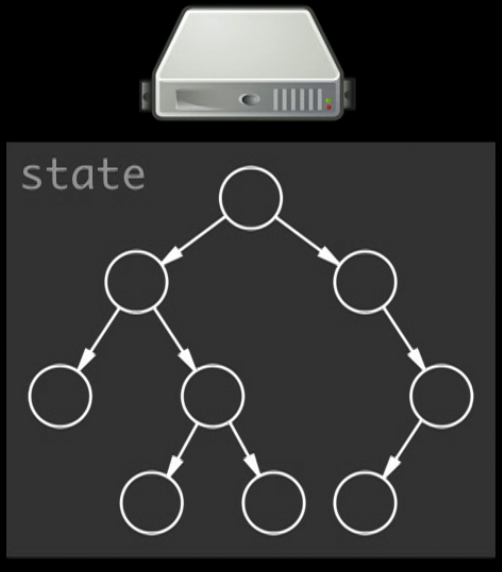
```
type Blockchain2 {
  block []blocks
  // + metadata

  AddTx(tx) Result
  GetTx(i) TX
  Length() int

  AddBlock(b) Result
  GetBlock(i) Block
}
```

```
type Block {
  TXs []TX
  // + metadata
}
```

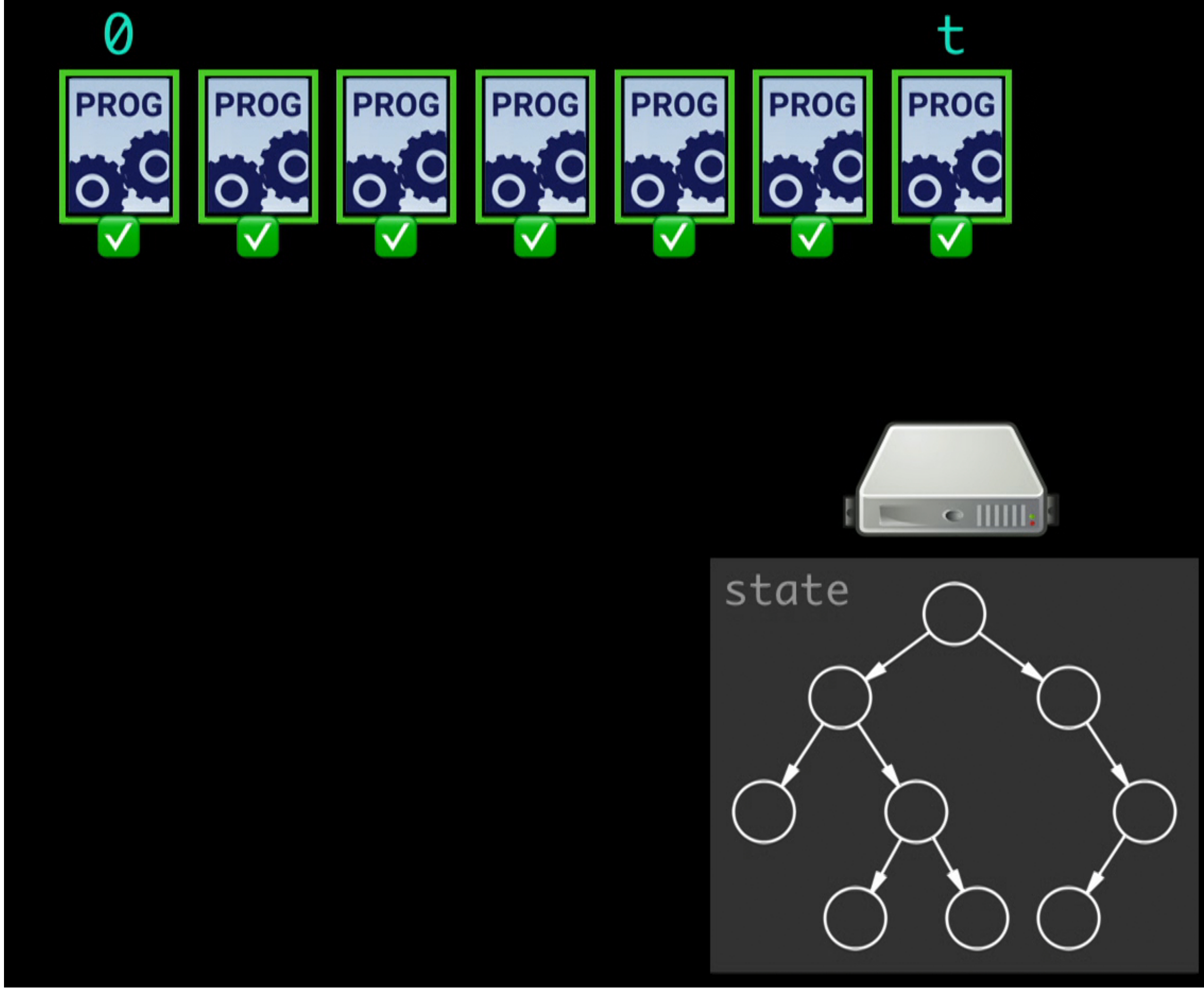
Blockchains

Computation Model

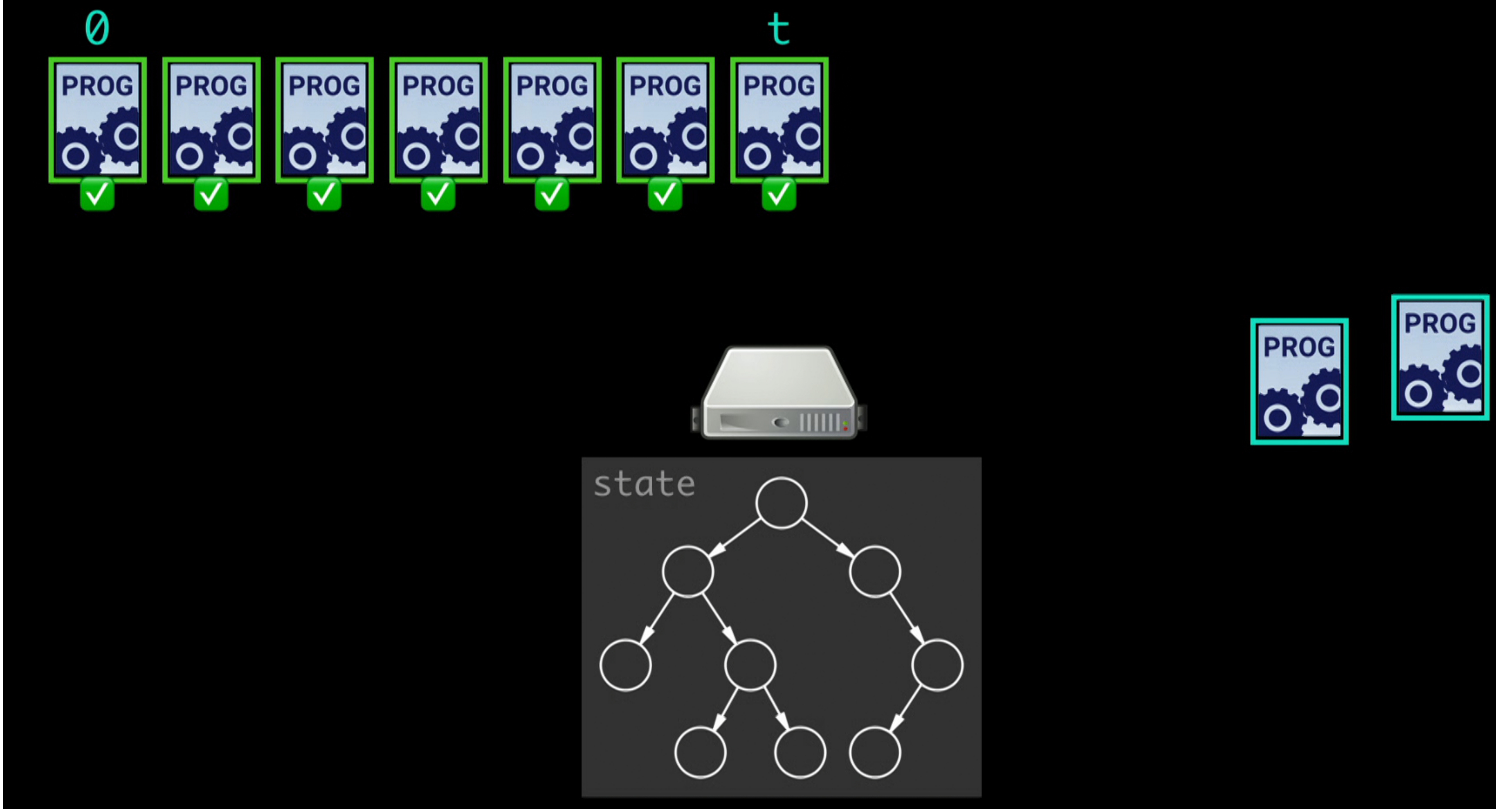




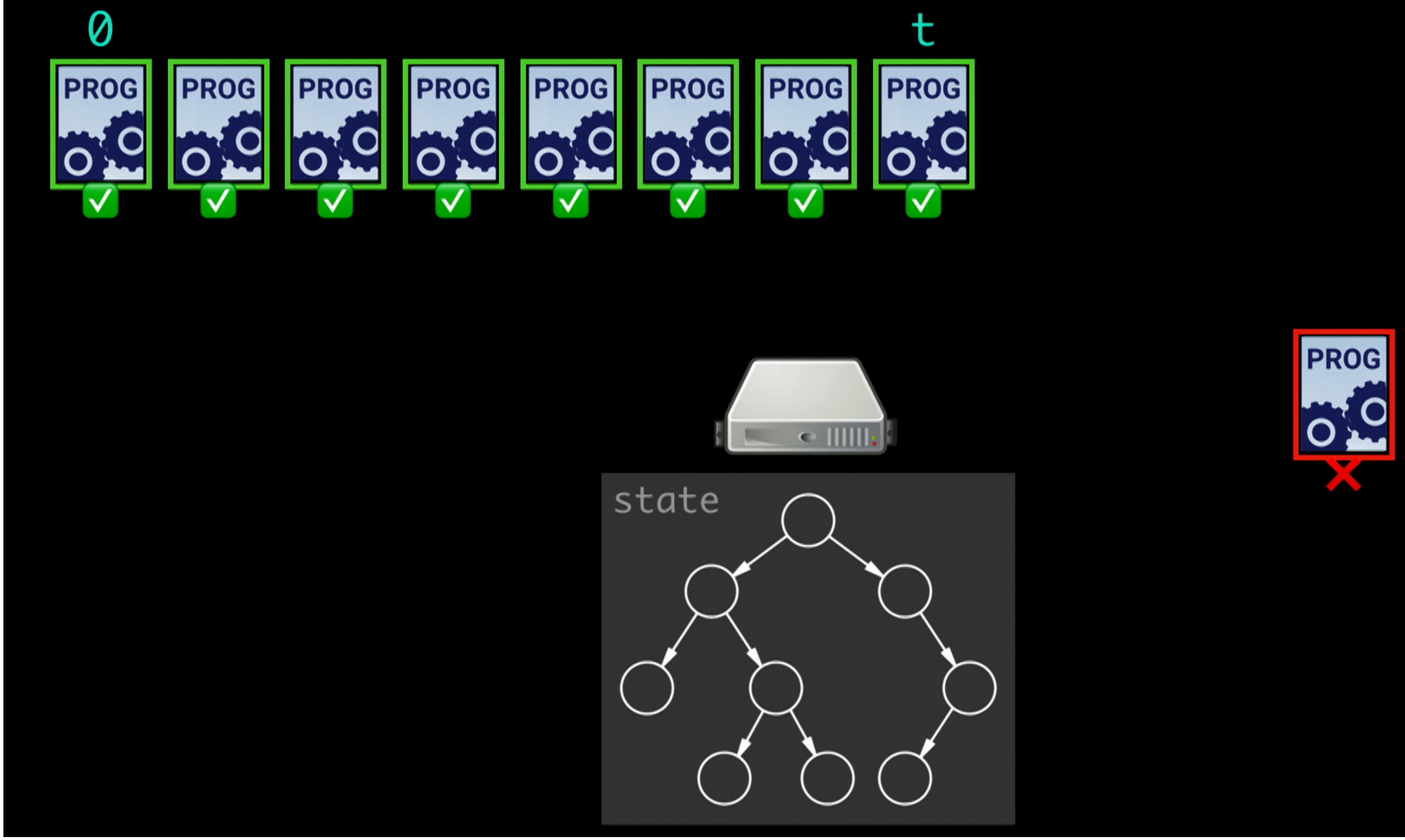
Blockchains



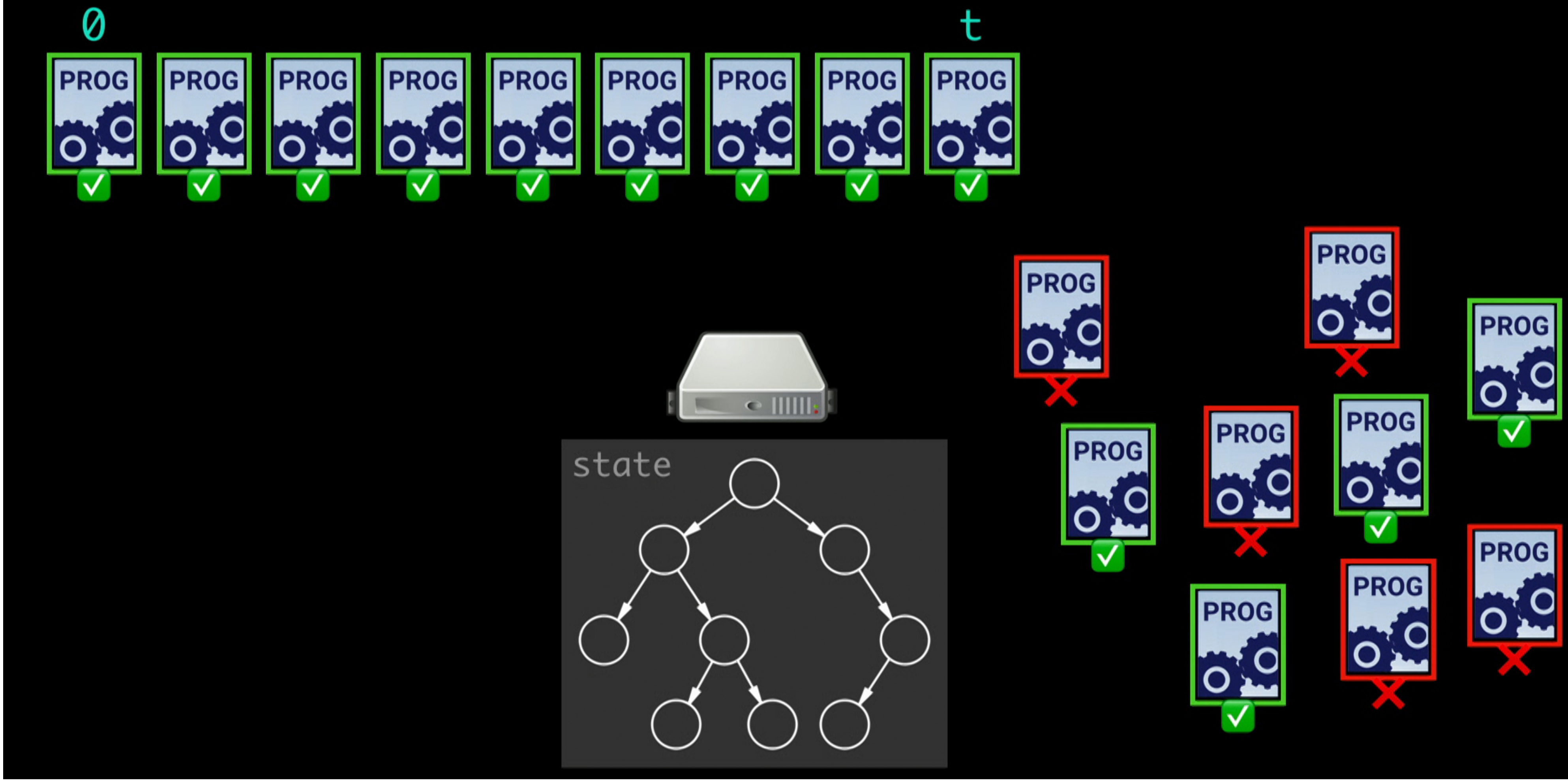
Blockchains



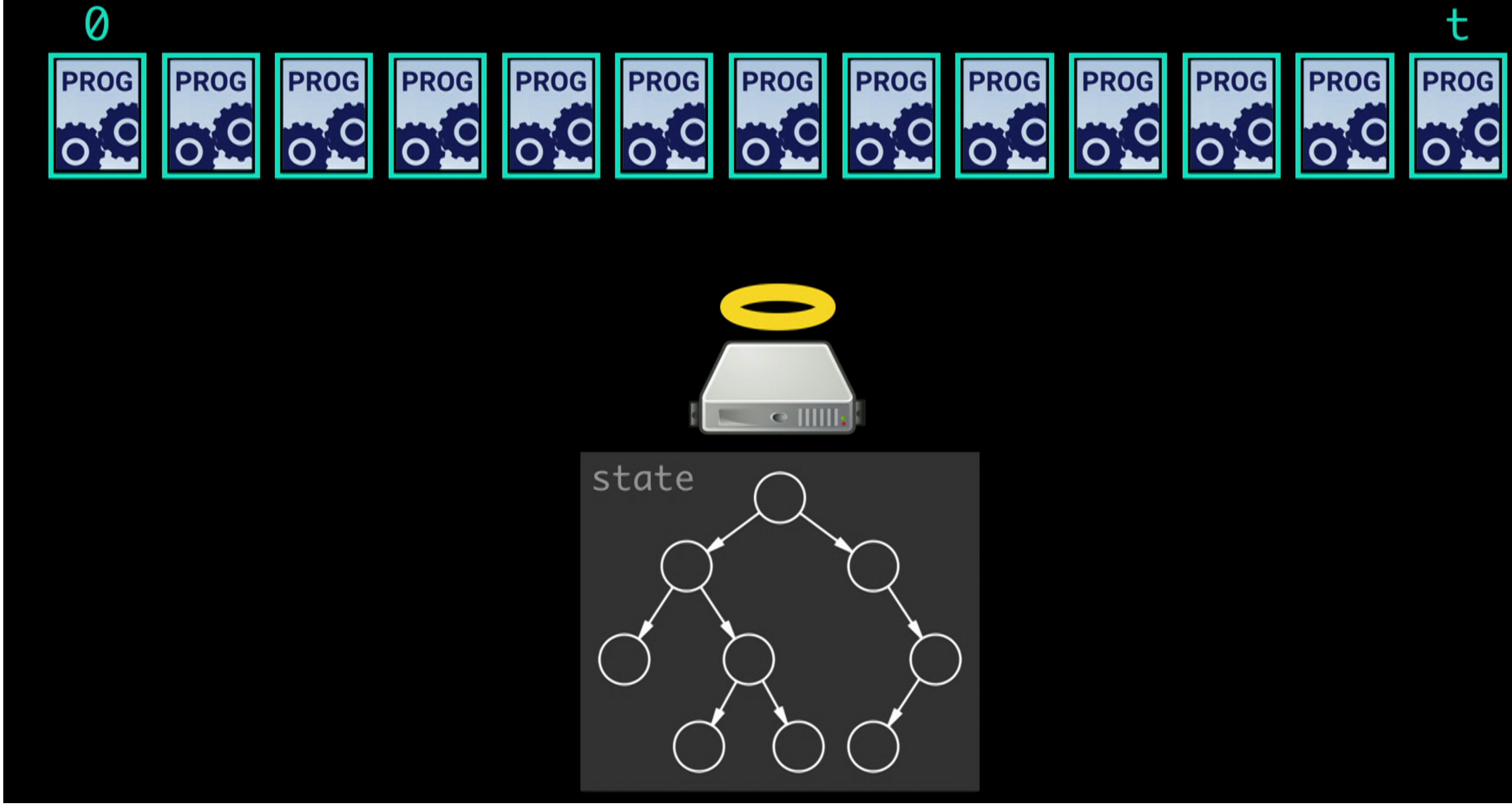
Blockchains



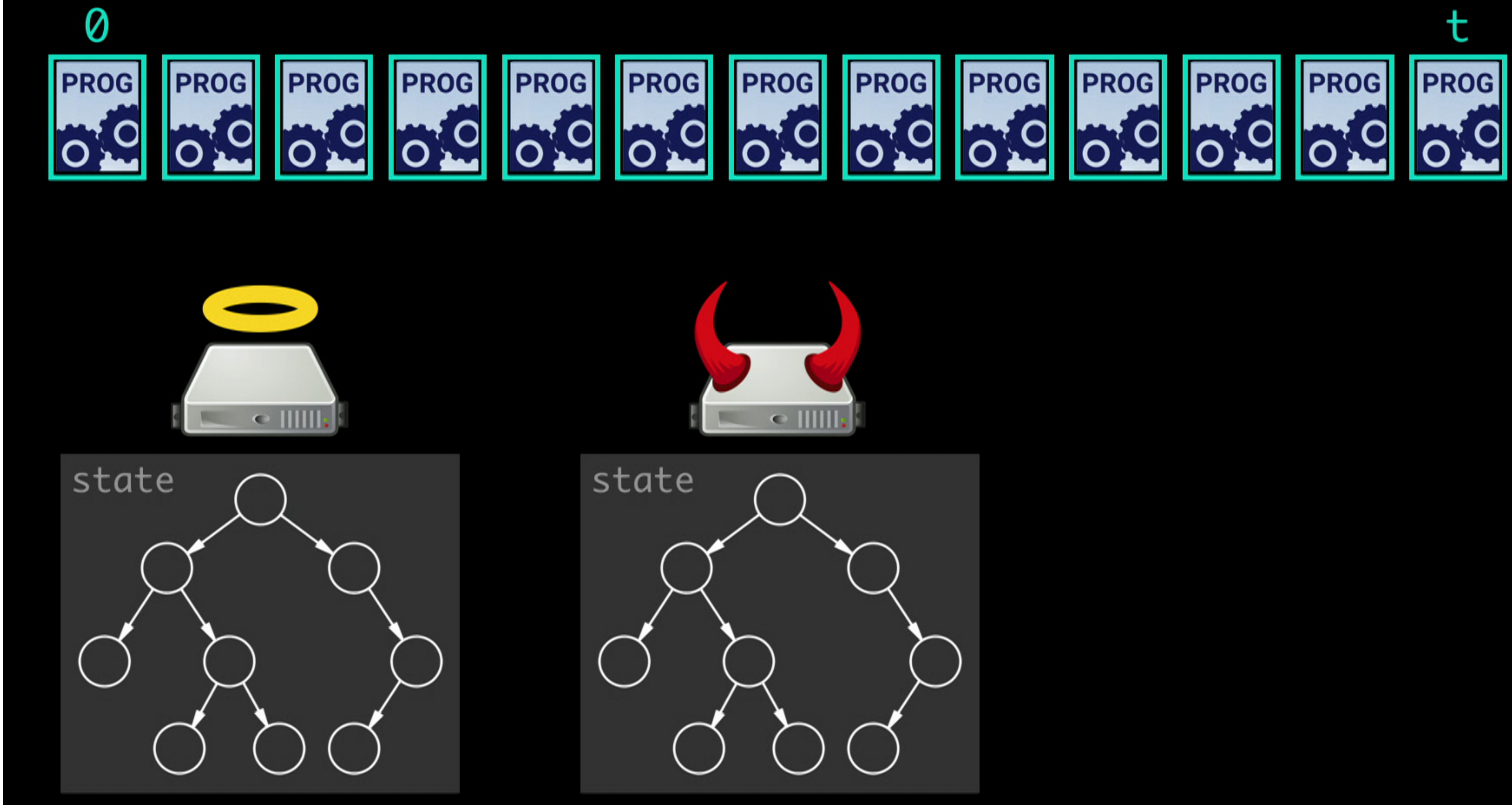
Blockchains



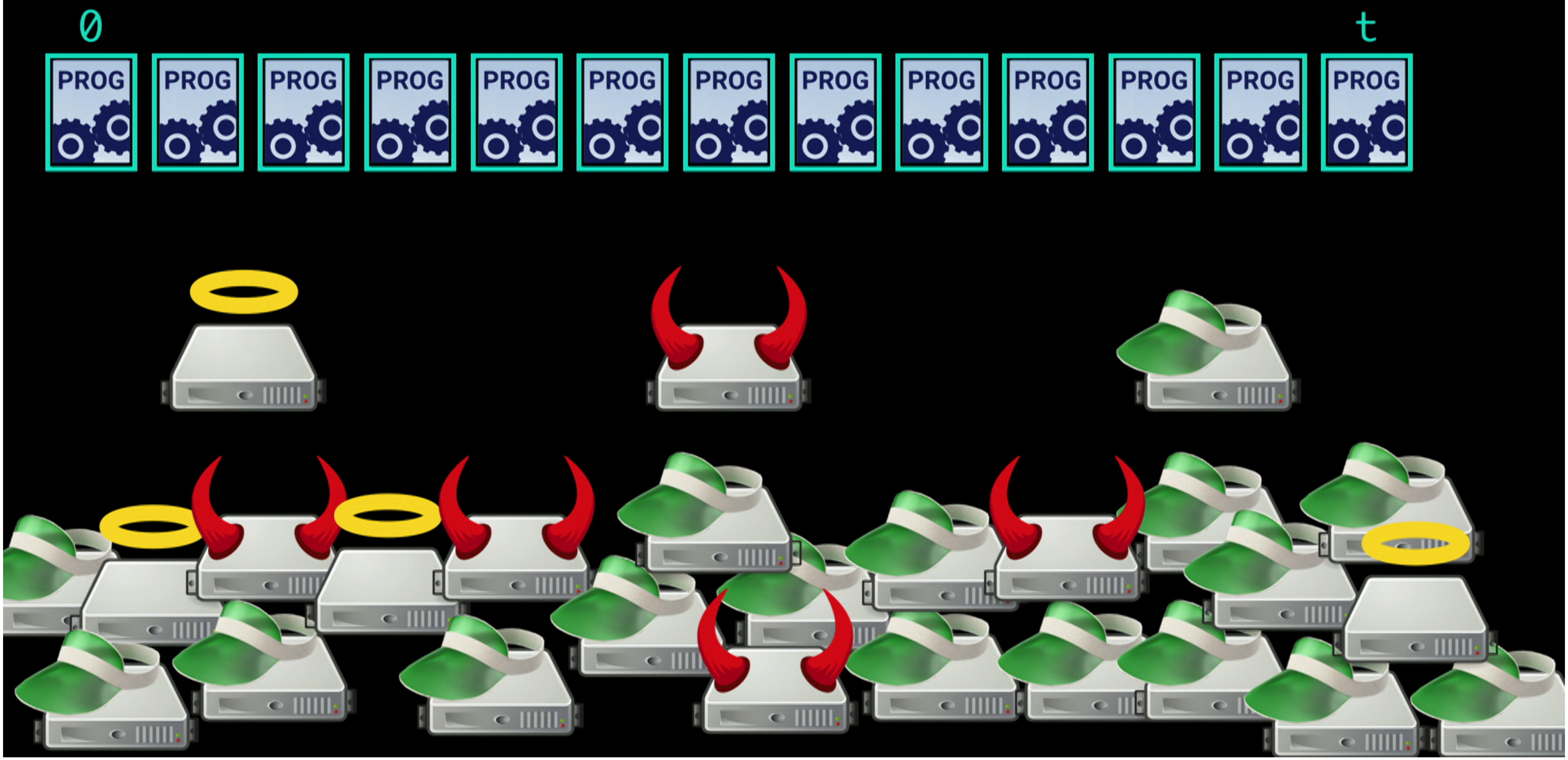
Blockchains

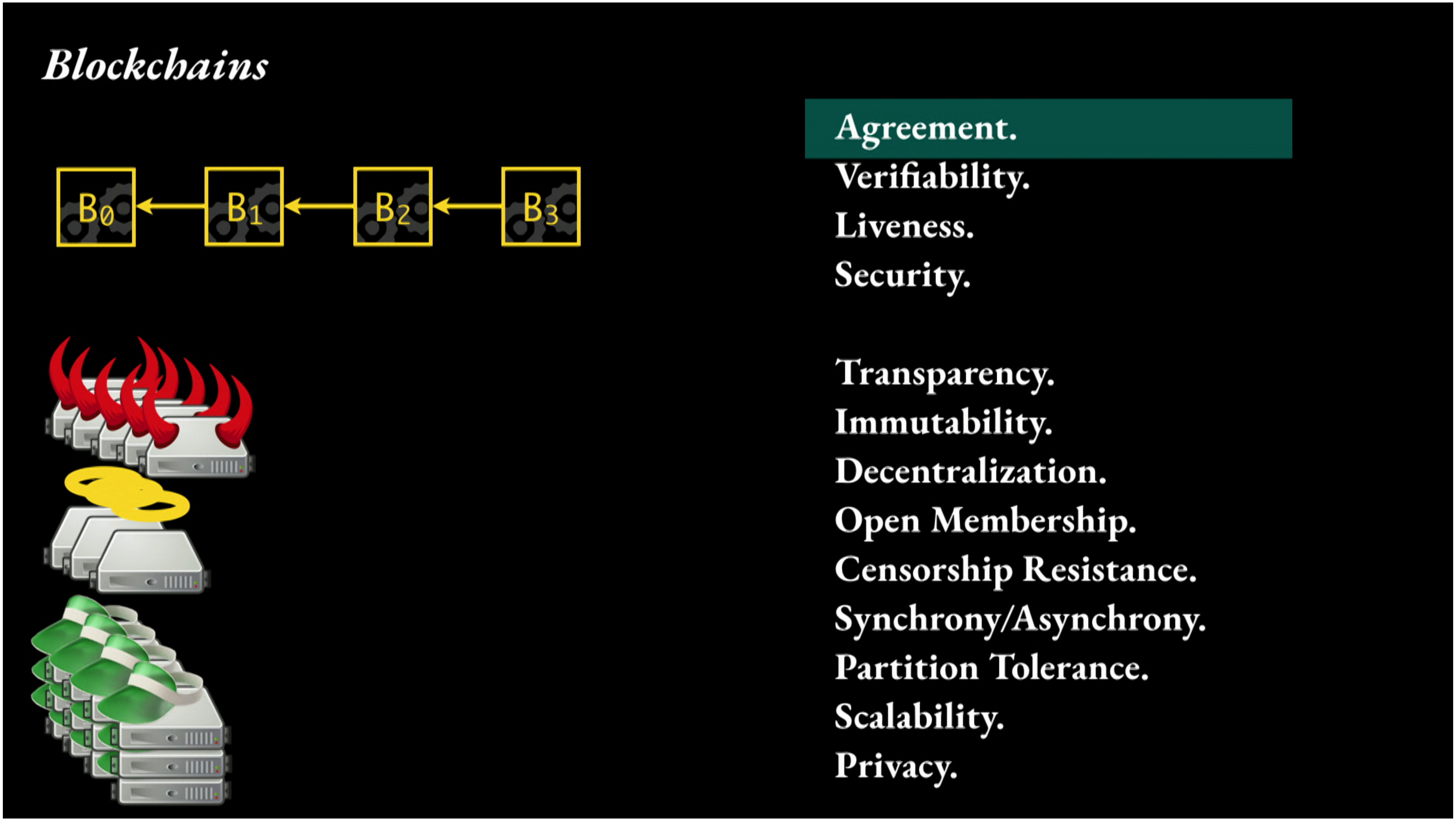


Blockchains



Blockchains



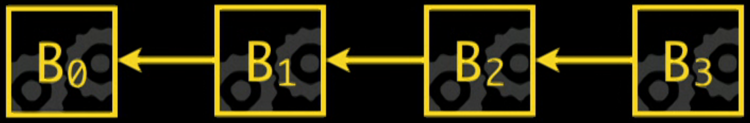


Blockchains

Agreement.
Verifiability.
Liveness.
Security.

Transparency.
Immutability.
Decentralization.
Open Membership.
Censorship Resistance.
Synchrony/Asynchrony.
Partition Tolerance.
Scalability.
Privacy.

Blockchains



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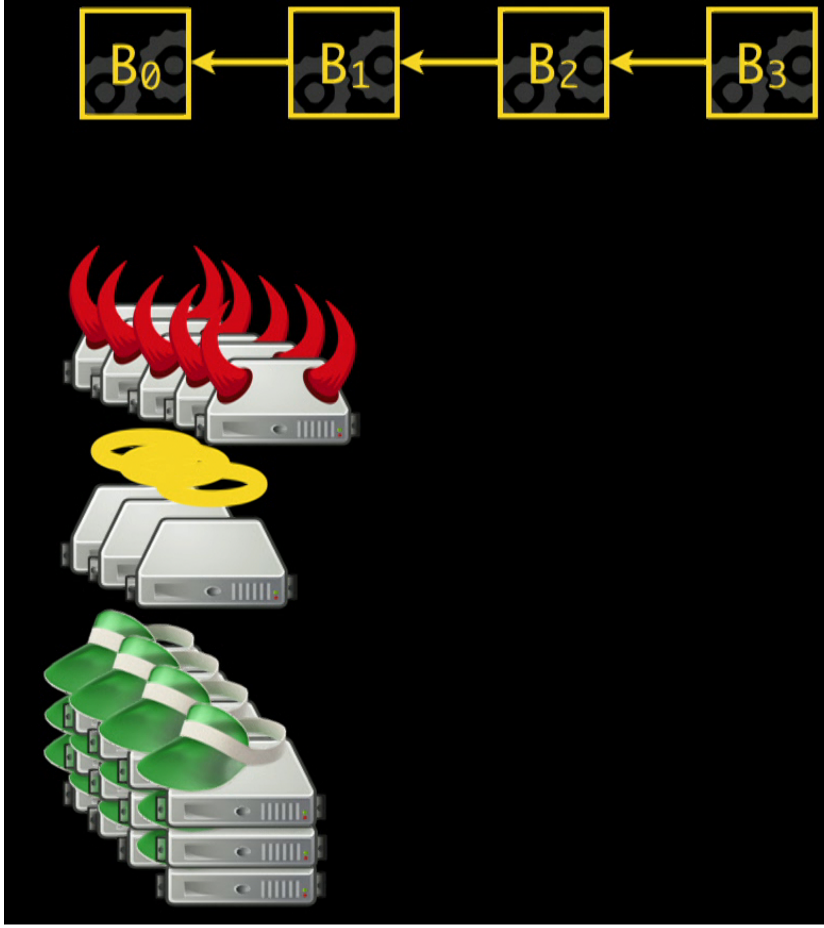

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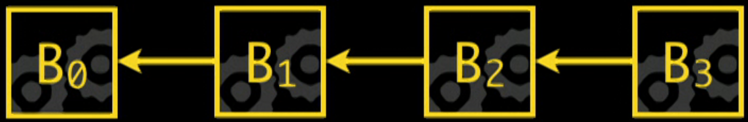

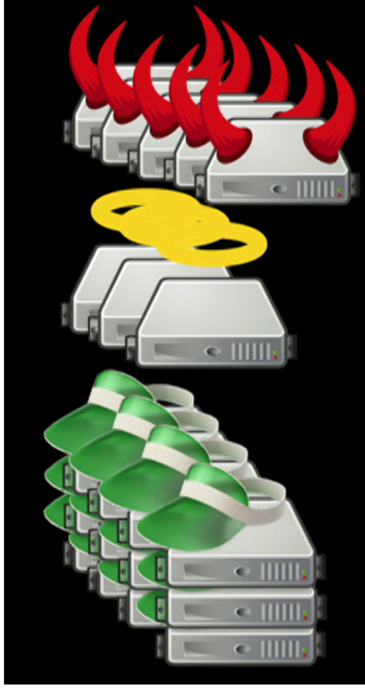

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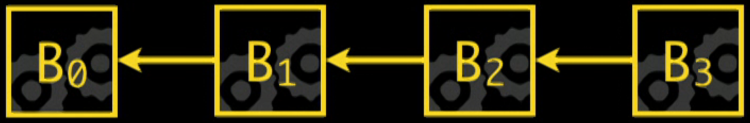

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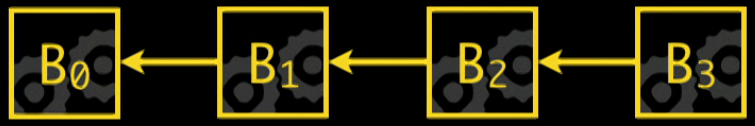

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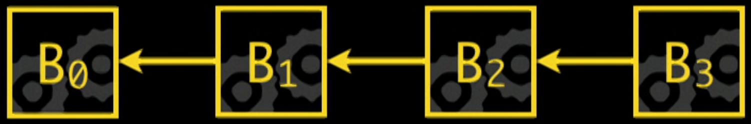

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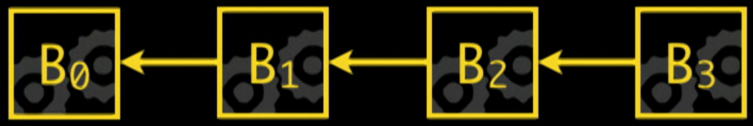

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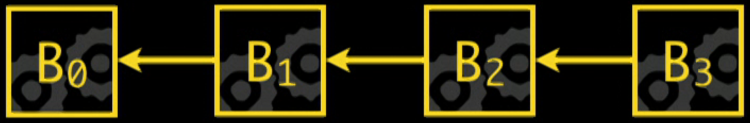

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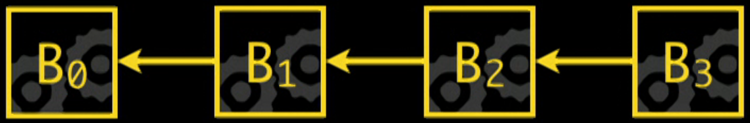

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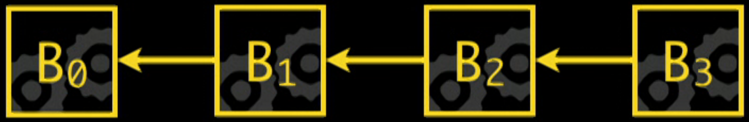

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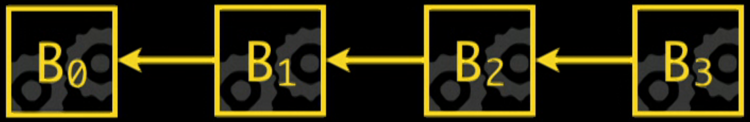
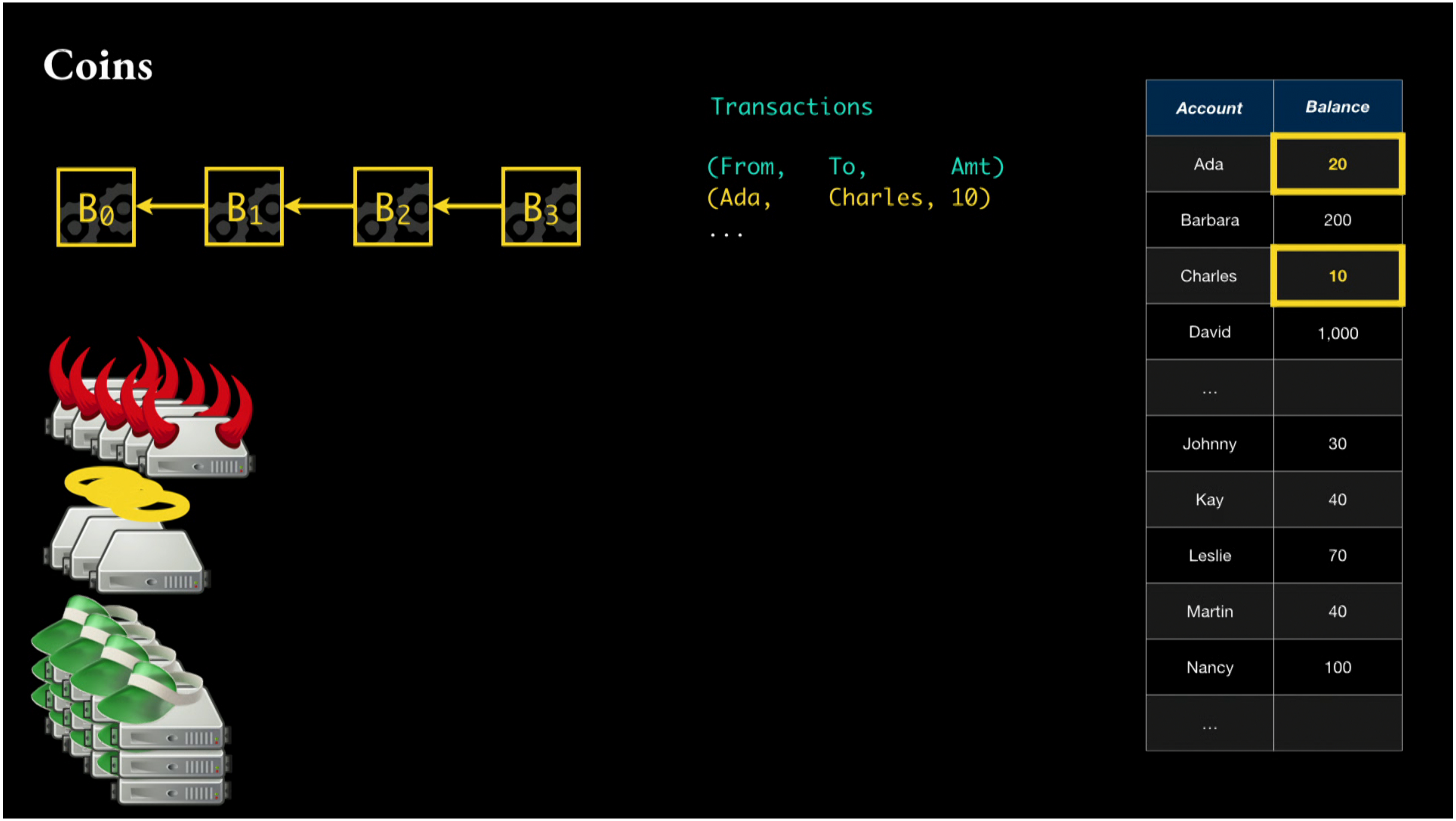
Coins



Transactions

(From, To, Amt)

Account	Balance
Ada	30
Barbara	200
Charles	0
David	1,000
…	
Johnny	30
Kay	40
Leslie	70
Martin	40
Nancy	100
…	



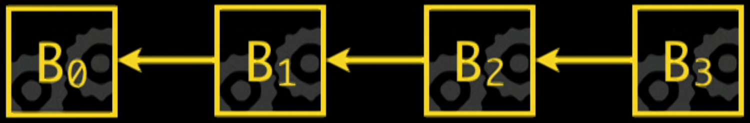
Coins

Transactions

```
(From,   To,        Amt)
(Ada,    Charles, 10)
...
```

Account	Balance
Ada	20
Barbara	200
Charles	10
David	1,000
...	
Johnny	30
Kay	40
Leslie	70
Martin	40
Nancy	100
...	

Coins

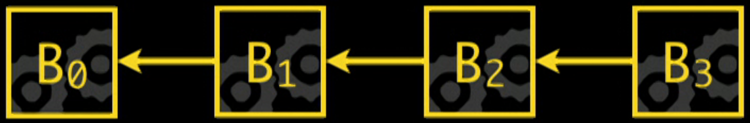


Transactions

```
(From,    To,       Amt)
(Ada,     Charles,  10)
(Nancy,   Leslie,   40)
...
```

Account	Balance
Ada	20
Barbara	200
Charles	10
David	1,000
…	
Johnny	30
Kay	40
Leslie	**110**
Martin	40
Nancy	**60**
…	

Coins

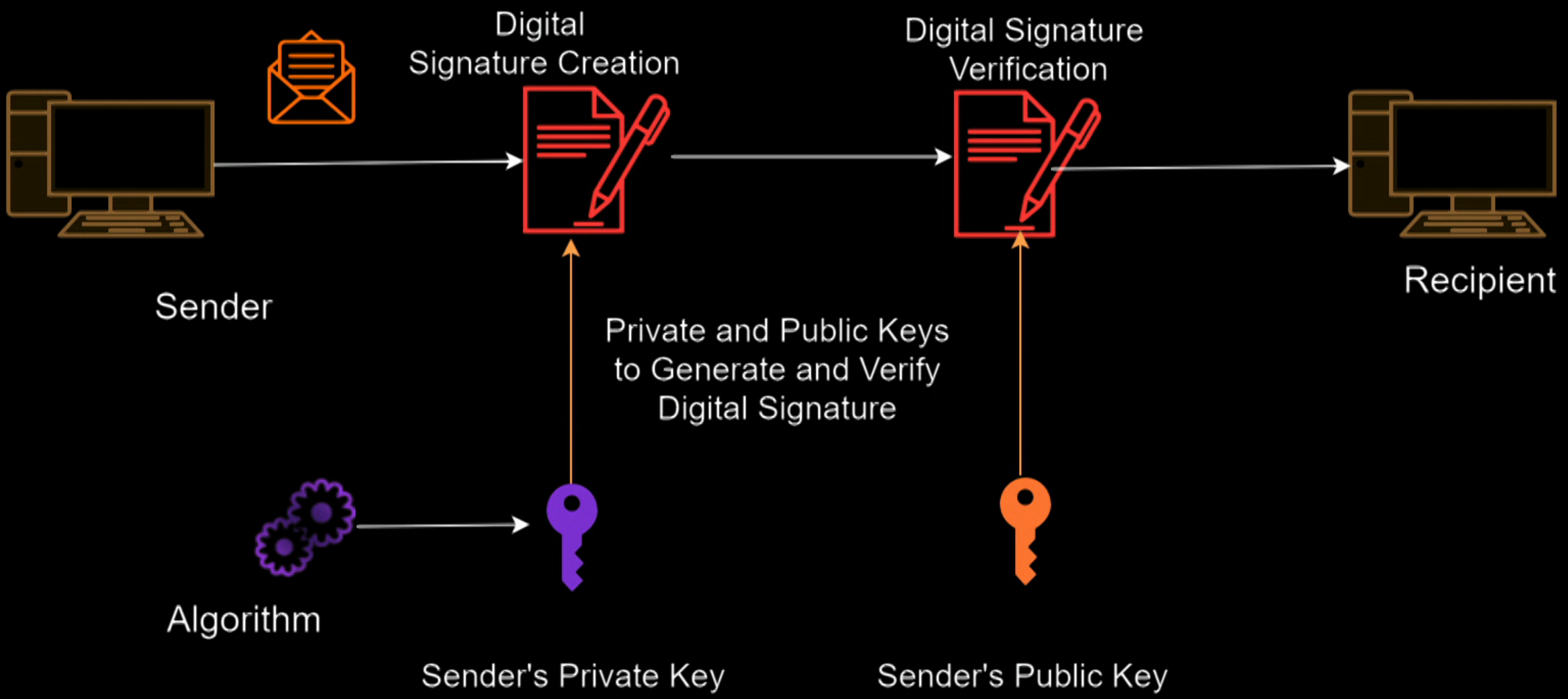


Transactions

```
(From,    To,       Amt)
(Ada,     Charles,  10)
(Nancy,   Leslie,   40)
(Leslie,  Barbara,  90)
(Johnny,  Kay,      50)
...
```

Account	Balance
Ada	20
Barbara	290
Charles	10
David	1,000
...	
Johnny	30
Kay	40
Leslie	20
Martin	40
Nancy	60
...	

Digital Signatures



Digital Signature Creation

Digital Signature Verification

Sender

Recipient

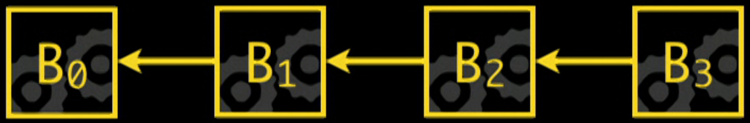
Private and Public Keys to Generate and Verify Digital Signature

Algorithm

Sender's Private Key

Sender's Public Key

Coins



Transactions

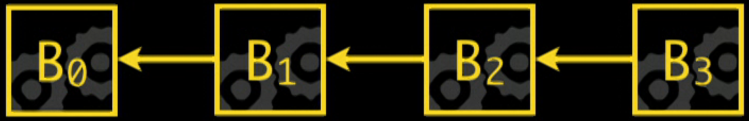
```
((From,  To,    Amt), TxSig)
((PK1,   PK3,   10),  σ1)
((PK14,  PK12,  40),  σ14)
((PK12,  PK2,   90),  σ12)
…
```

Sender

```
   tx  := (PK12,  PK2,   90)
```

Account	Balance
PubKey1	20
PubKey2	290
PubKey3	10
PubKey4	1,000
…	
PubKey10	30
PubKey11	40
PubKey12	20
PubKey13	40
PubKey14	60
…	

Coins



Transactions

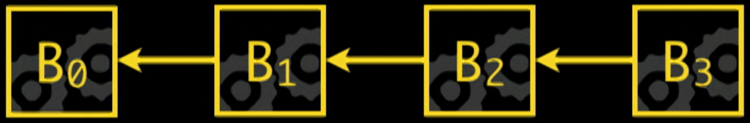
```
((From,  To,    Amt), TxSig)
((PK1,   PK3,   10),  σ1)
((PK14,  PK12,  40),  σ14)
((PK12,  PK2,   90),  σ12)
…
```

Sender

```
    tx  := (PK12,  PK2,   90)
    σ12 := Sign(SK12, tx)
```

Account	Balance
PubKey1	20
PubKey2	290
PubKey3	10
PubKey4	1,000
…	
PubKey10	30
PubKey11	40
PubKey12	20
PubKey13	40
PubKey14	60
…	

Coins



Transactions

```
((From,   To,     Amt),  TxSig)
((PK1,    PK3,    10),   σ1)
((PK14,   PK12,   40),   σ14)
((PK12,   PK2,    90),   σ12)
…
```

Account	Balance
PubKey1	20
PubKey2	290
PubKey3	10
PubKey4	1,000
…	
PubKey10	30
PubKey11	40
PubKey12	20
PubKey13	40
PubKey14	60
…	

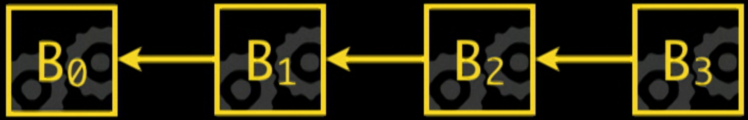
Sender

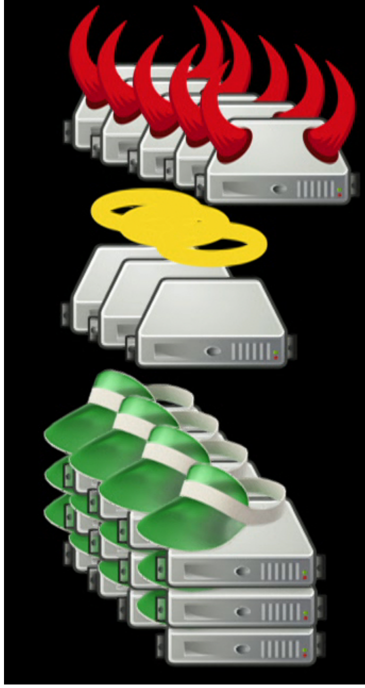
```
    tx  := (PK12,  PK2,   90)
    σ12 := Sign(SK12, tx)
```

Verifier

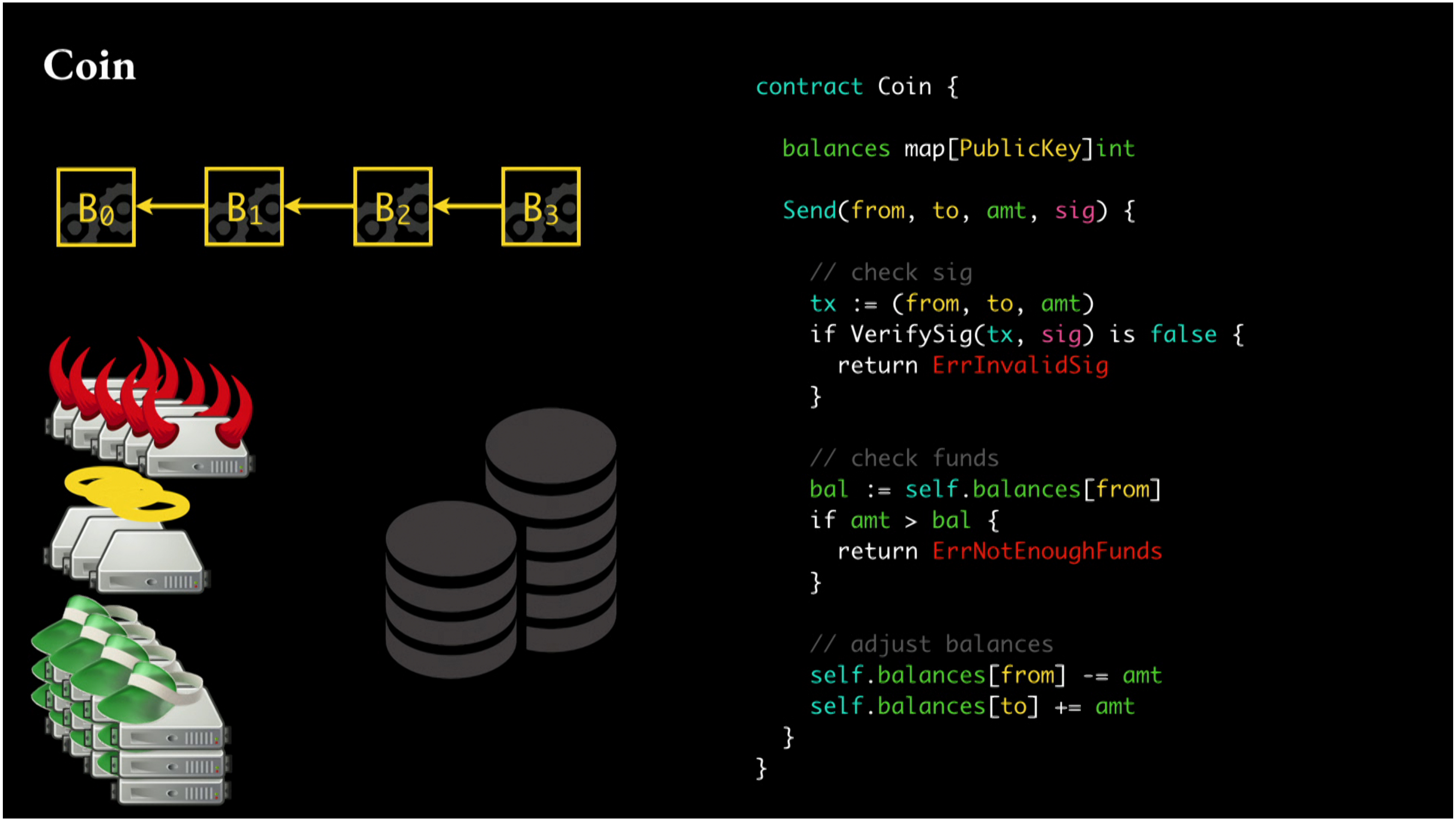
```
    {✅,❌} := VerifySig(PK12, tx, σ12)
```

Coin





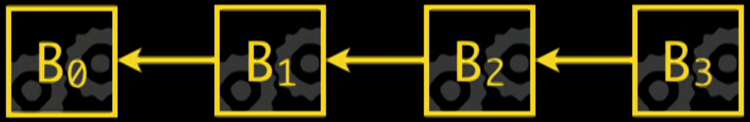
```
contract Coin {

  balances map[PublicKey]int

  Send(from, to, amt, sig) {









  }
}
```



Coin

```
contract Coin {

  balances map[PublicKey]int

  Send(from, to, amt, sig) {

    // check sig
    tx := (from, to, amt)
    if VerifySig(tx, sig) is false {
      return ErrInvalidSig
    }

    // check funds
    bal := self.balances[from]
    if amt > bal {
      return ErrNotEnoughFunds
    }

    // adjust balances
    self.balances[from] -= amt
    self.balances[to] += amt
  }
}
```

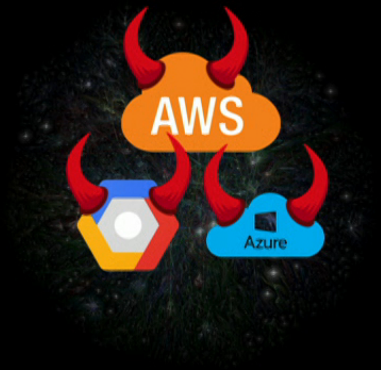
Multiple Signatures



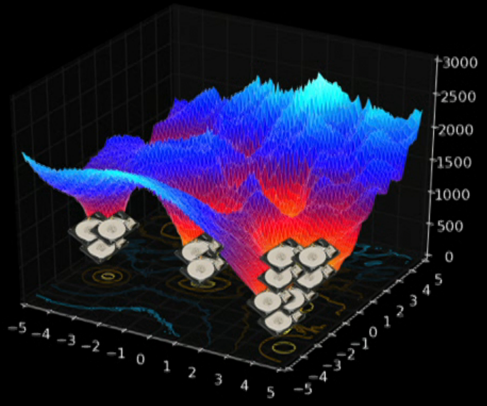
```
contract MultiSig {

  signers   []PublicKey
  auths     map[int][]PublicKey
  threshold int

  Authorize(signer, entry, sig) {
    // check sig
    if !VerifySig((signer, entry), sig) {
      return ErrInvalidSig
    }

    // add signer authorization
    self.auths[entry].add(signer)
  }

  Authorizations(entry) int {
    return len(self.auths[entry])
  }

  IsAuthorized(entry) int {
    num := self.Authorizations(entry)
    return num >= self.threshold
  }
}
```

Filecoin

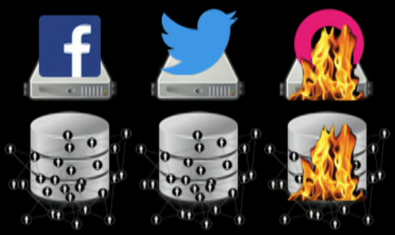
Problems Filecoin Addresses



Decentralized Cloud



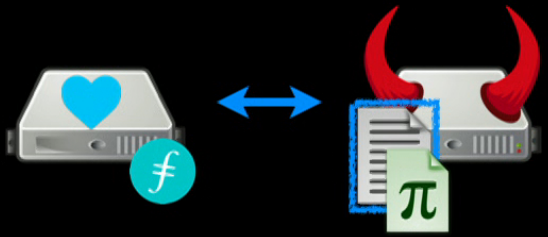
Optimize Storage



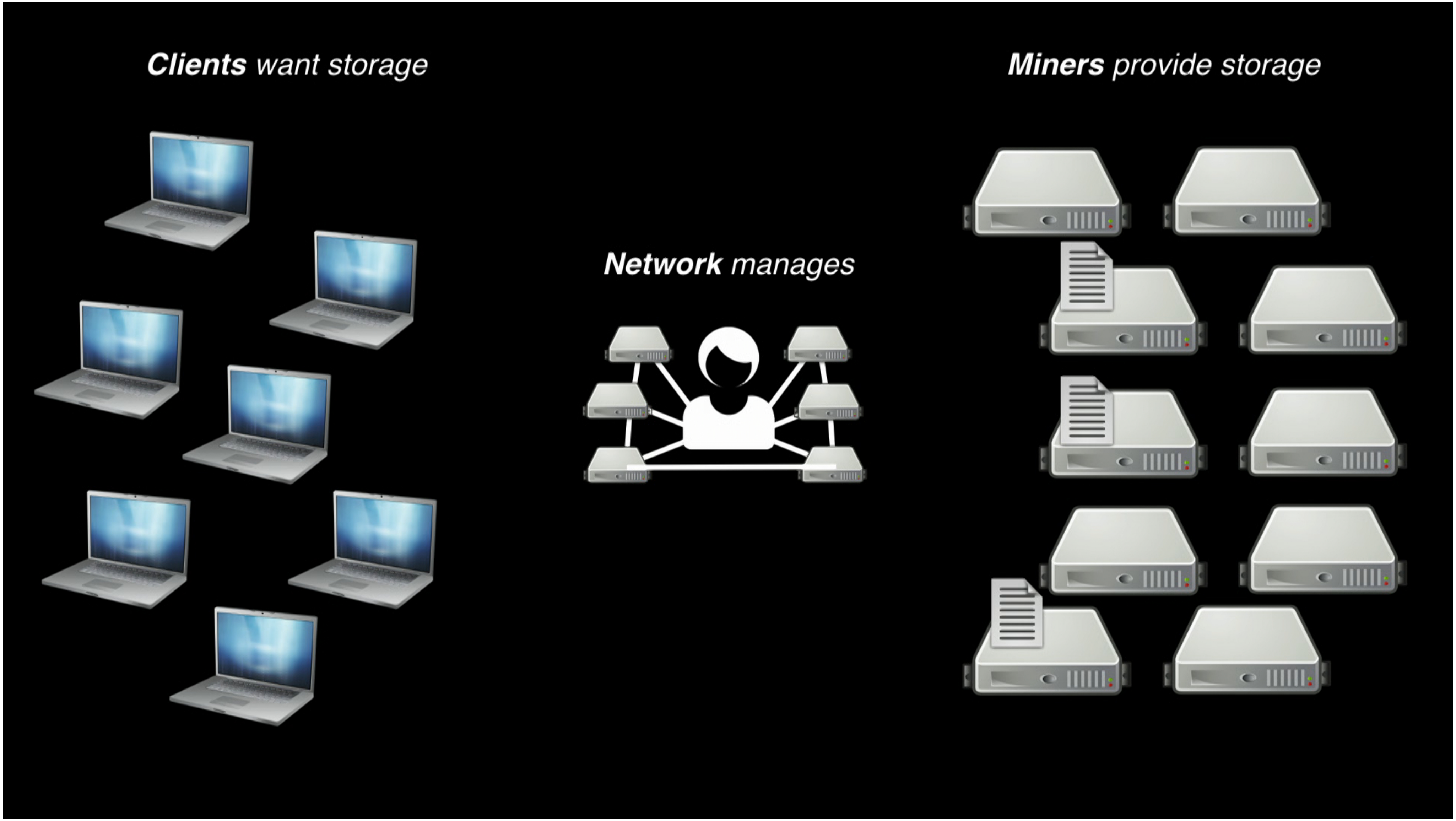
Data Control & App Death

10k
8k
6k
4k
2k
0
ƒ6.00
ƒ6.01
ƒ6.02
ƒ5.2
ƒ5.4
ƒ5.6
ƒ5.8
ƒ6.2
ƒ6.4
ƒ6.6
ƒ6.8

Efficient Storage Market



Verifiable Storage

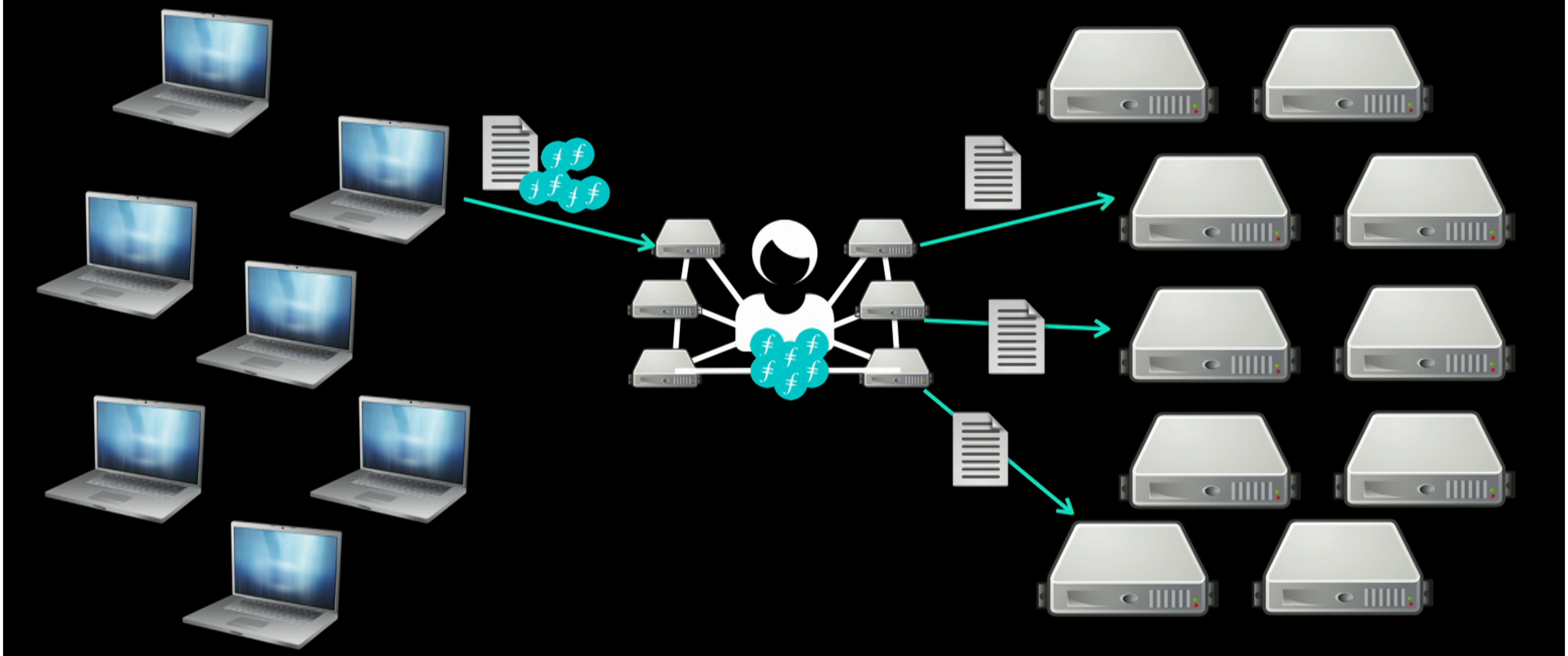


Clients *want storage*

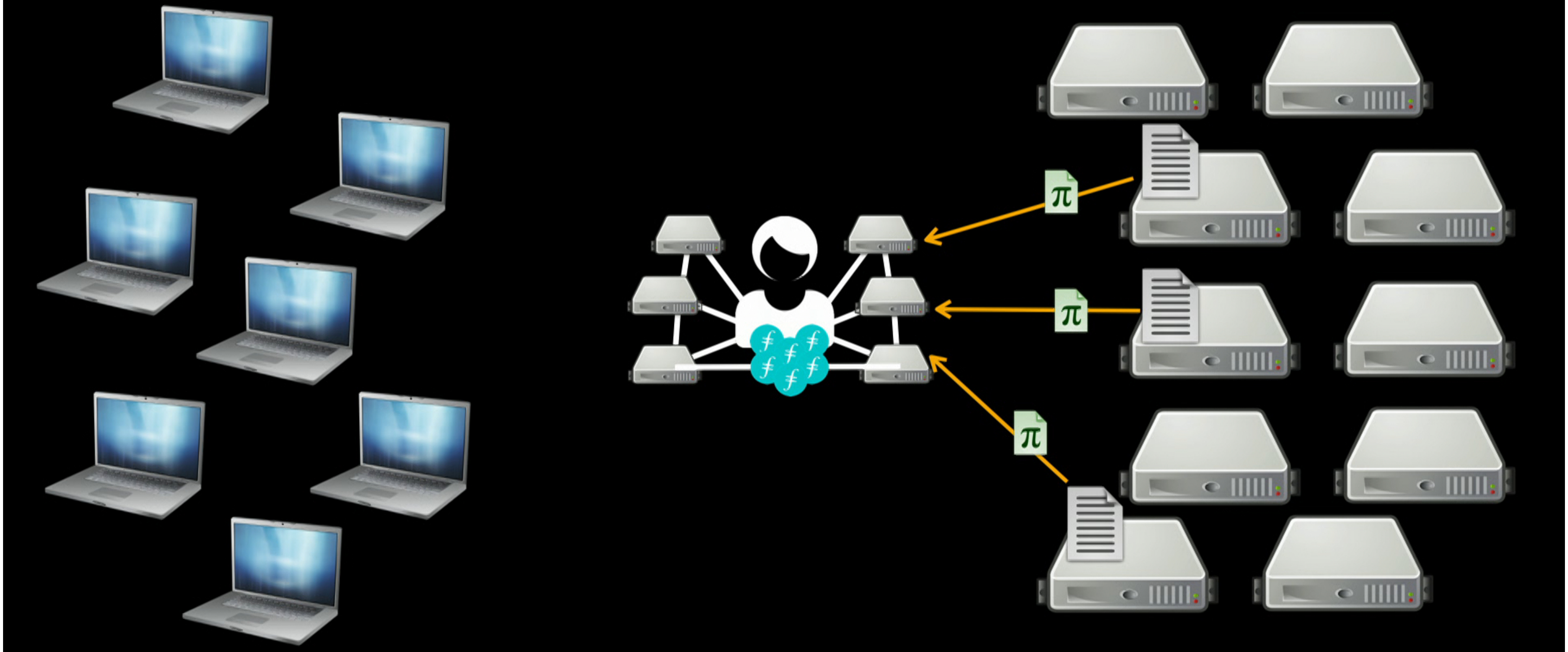
Network *manages*

Miners *provide storage*

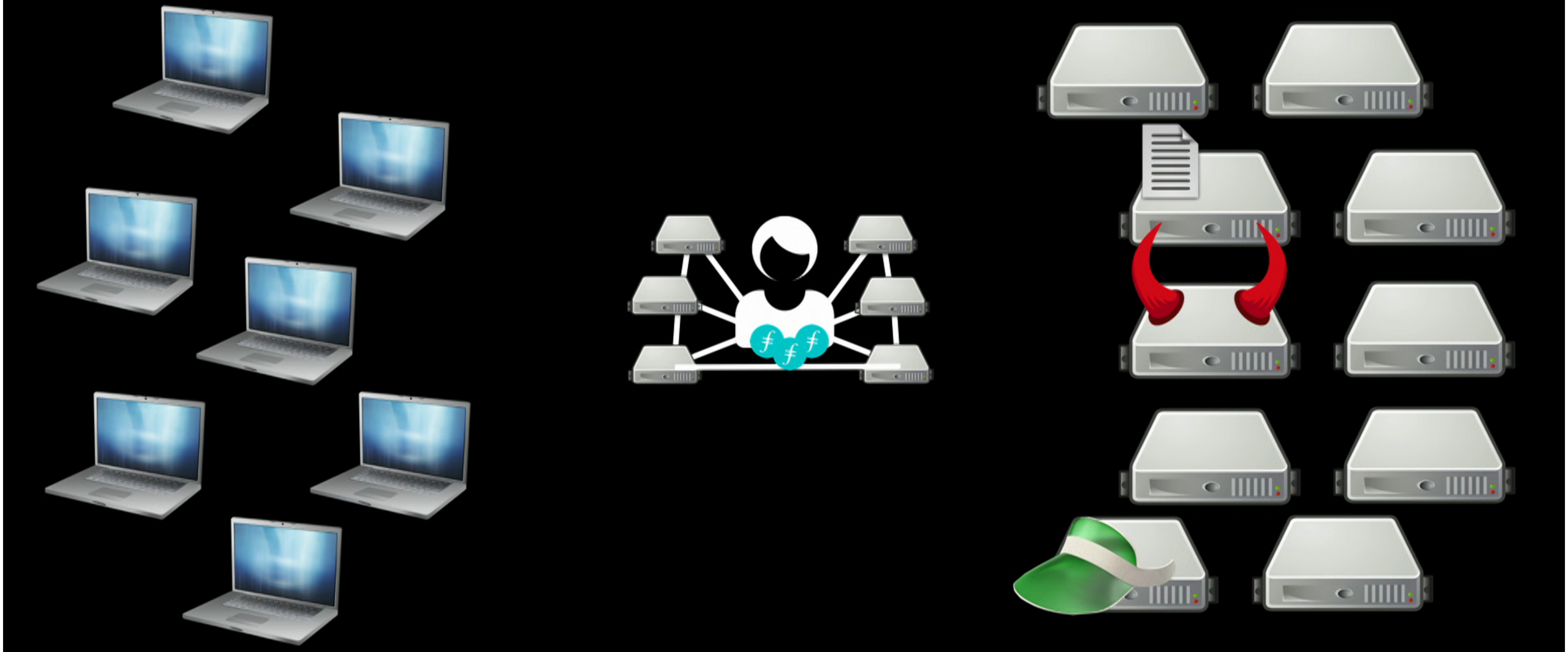
The **Network** acts as an intermediary between **Clients** and **Miners**



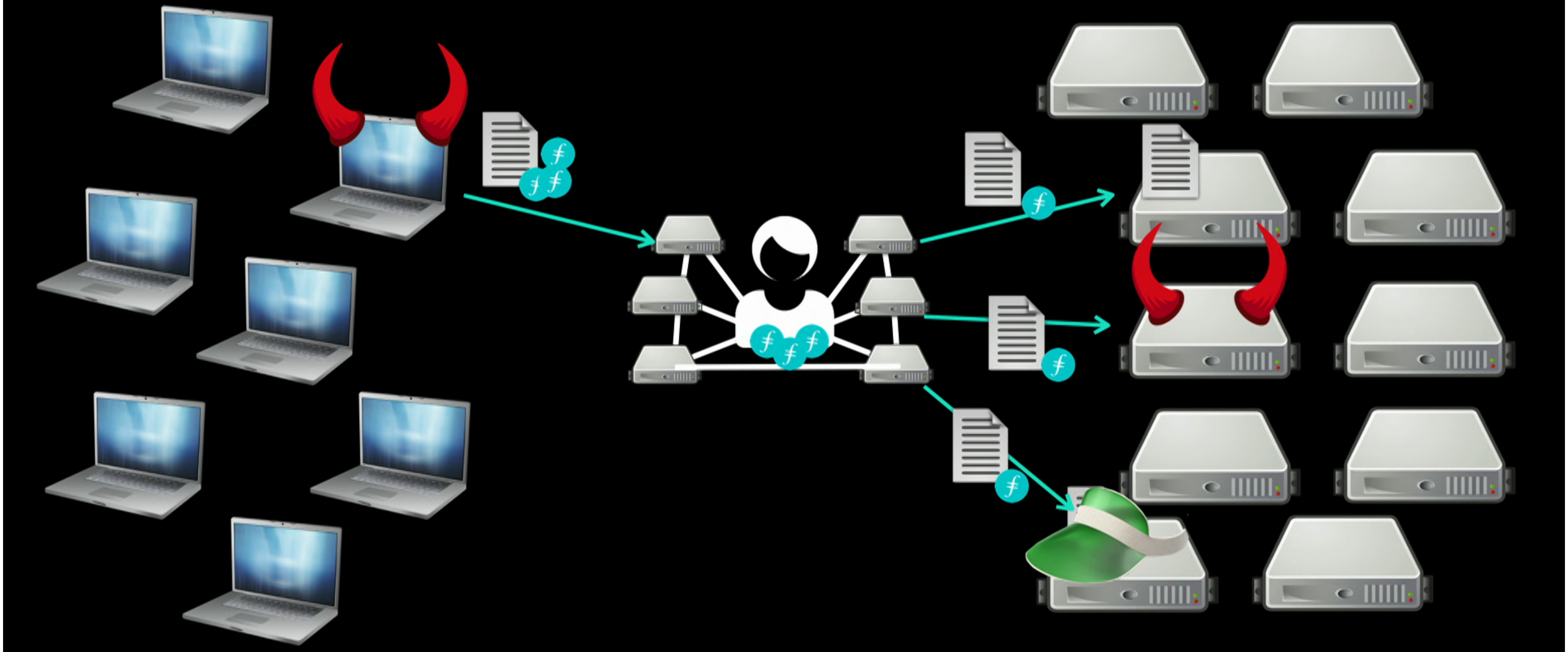
The **Network** checks miners are storing data over time



Malicious and **Rational** miners will try to cheat.
The **Network** must prevent attacks or catch them.

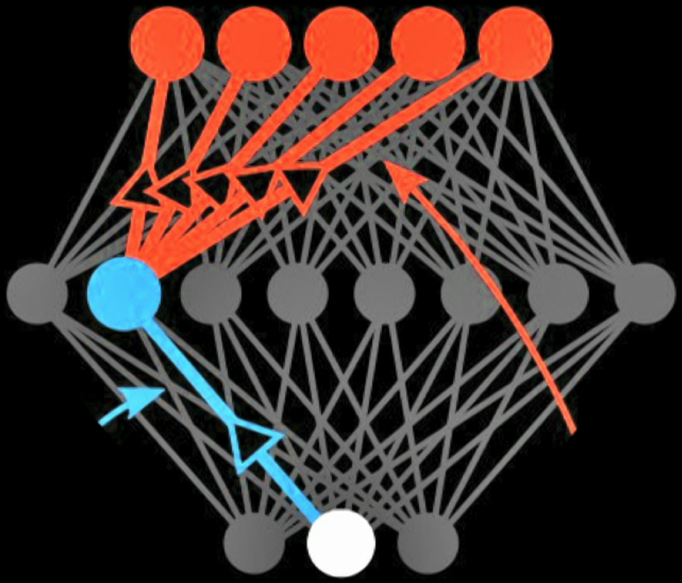


The **Network** cannot even trust **Clients.**
They may be or collude with malicious **Miners** trying to earn additional rewards.

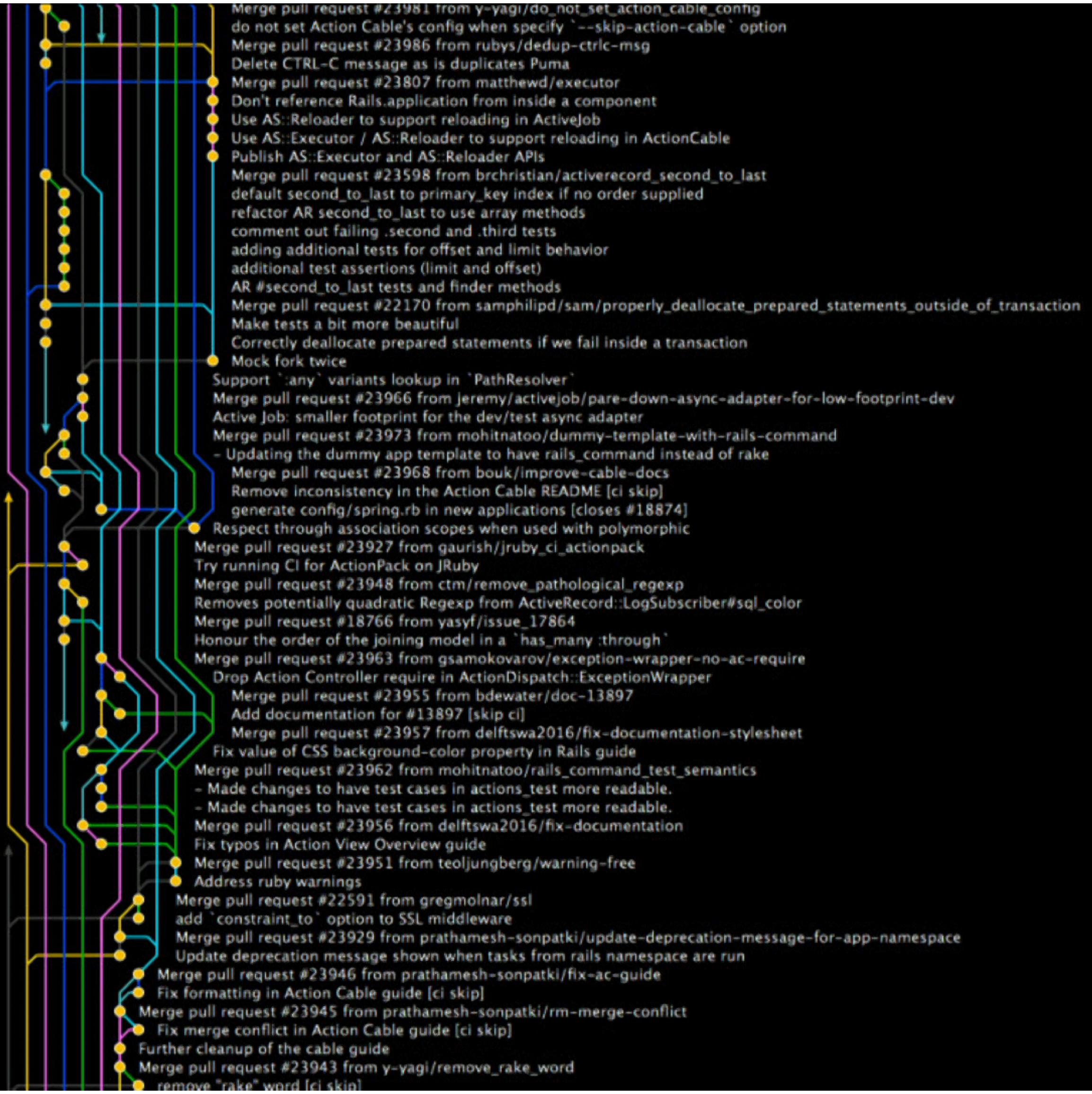


How can we assign credit for the success among the multitude of decisions?

— Marvin Minsky, 1960

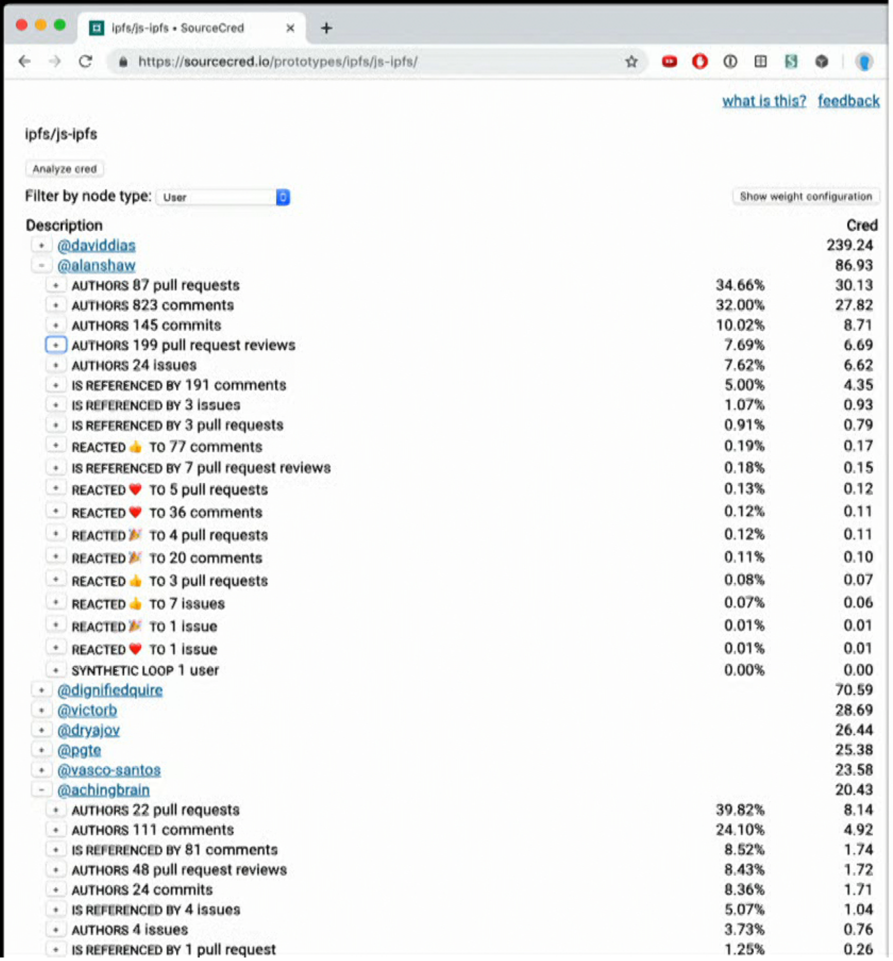


```
> git log
> git blame
```



```
Merge pull request #23981 from y-yagi/do_not_set_action_cable_config
do not set Action Cable's config when specify `--skip-action-cable` option
Merge pull request #23986 from rubys/dedup-ctrlc-msg
Delete CTRL-C message as is duplicates Puma
Merge pull request #23807 from matthewd/executor
Don't reference Rails.application from inside a component
Use AS::Reloader to support reloading in ActiveJob
Use AS::Executor / AS::Reloader to support reloading in ActionCable
Publish AS::Executor and AS::Reloader APIs
Merge pull request #23598 from brchristian/activerecord_second_to_last
default second_to_last to primary_key index if no order supplied
refactor AR second_to_last to use array methods
comment out failing .second and .third tests
adding additional tests for offset and limit behavior
additional test assertions (limit and offset)
AR #second_to_last tests and finder methods
Merge pull request #22170 from samphilipd/sam/properly_deallocate_prepared_statements_outside_of_transaction
Make tests a bit more beautiful
Correctly deallocate prepared statements if we fail inside a transaction
Mock fork twice
Support `:any` variants lookup in `PathResolver`
Merge pull request #23966 from jeremy/activejob/pare-down-async-adapter-for-low-footprint-dev
Active Job: smaller footprint for the dev/test async adapter
Merge pull request #23973 from mohitnatoo/dummy-template-with-rails-command
- Updating the dummy app template to have rails_command instead of rake
Merge pull request #23968 from bouk/improve-cable-docs
Remove inconsistency in the Action Cable README [ci skip]
generate config/spring.rb in new applications [closes #18874]
Respect through association scopes when used with polymorphic
Merge pull request #23927 from gaurish/jruby_ci_actionpack
Try running CI for ActionPack on JRuby
Merge pull request #23948 from ctm/remove_pathological_regexp
Removes potentially quadratic Regexp from ActiveRecord::LogSubscriber#sql_color
Merge pull request #18766 from yasyf/issue_17864
Honour the order of the joining model in a `has_many :through`
Merge pull request #23963 from gsamokovarov/exception-wrapper-no-ac-require
Drop Action Controller require in ActionDispatch::ExceptionWrapper
Merge pull request #23955 from bdewater/doc-13897
Add documentation for #13897 [skip ci]
Merge pull request #23957 from delftswa2016/fix-documentation-stylesheet
Fix value of CSS background-color property in Rails guide
Merge pull request #23962 from mohitnatoo/rails_command_test_semantics
- Made changes to have test cases in actions_test more readable.
- Made changes to have test cases in actions_test more readable.
Merge pull request #23956 from delftswa2016/fix-documentation
Fix typos in Action View Overview guide
Merge pull request #23951 from teoljungberg/warning-free
Address ruby warnings
Merge pull request #22591 from gregmolnar/ssl
add `constraint_to` option to SSL middleware
Merge pull request #23929 from prathamesh-sonpatki/update-deprecation-message-for-app-namespace
Update deprecation message shown when tasks from rails namespace are run
Merge pull request #23946 from prathamesh-sonpatki/fix-ac-guide
Fix formatting in Action Cable guide [ci skip]
Merge pull request #23945 from prathamesh-sonpatki/rm-merge-conflict
Fix merge conflict in Action Cable guide [ci skip]
Further cleanup of the cable guide
Merge pull request #23943 from y-yagi/remove_rake_word
remove "rake" word [ci skip]
```

Sourcecred



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Filter by node type: User

Show weight configuration

Description		Cred
+ @daviddias		239.24
− @alanshaw		86.93
+ AUTHORS 87 pull requests	34.66%	30.13
+ AUTHORS 823 comments	32.00%	27.82
+ AUTHORS 145 commits	10.02%	8.71
+ AUTHORS 199 pull request reviews	7.69%	6.69
+ AUTHORS 24 issues	7.62%	6.62
+ IS REFERENCED BY 191 comments	5.00%	4.35
+ IS REFERENCED BY 3 issues	1.07%	0.93
+ IS REFERENCED BY 3 pull requests	0.91%	0.79
+ REACTED 👍 TO 77 comments	0.19%	0.17
+ IS REFERENCED BY 7 pull request reviews	0.18%	0.15
+ REACTED ❤️ TO 5 pull requests	0.13%	0.12
+ REACTED ❤️ TO 36 comments	0.12%	0.11
+ REACTED 🎉 TO 4 pull requests	0.12%	0.11
+ REACTED 🎉 TO 20 comments	0.11%	0.10
+ REACTED 👍 TO 3 pull requests	0.08%	0.07
+ REACTED 👍 TO 7 issues	0.07%	0.06
+ REACTED 🎉 TO 1 issue	0.01%	0.01
+ REACTED ❤️ TO 1 issue	0.01%	0.01
+ SYNTHETIC LOOP 1 user	0.00%	0.00
+ @dignifiedquire		70.59
+ @victorb		28.69
+ @dryajov		26.44
+ @pgte		25.38
+ @vasco-santos		23.58
− @achingbrain		20.43
+ AUTHORS 22 pull requests	39.82%	8.14
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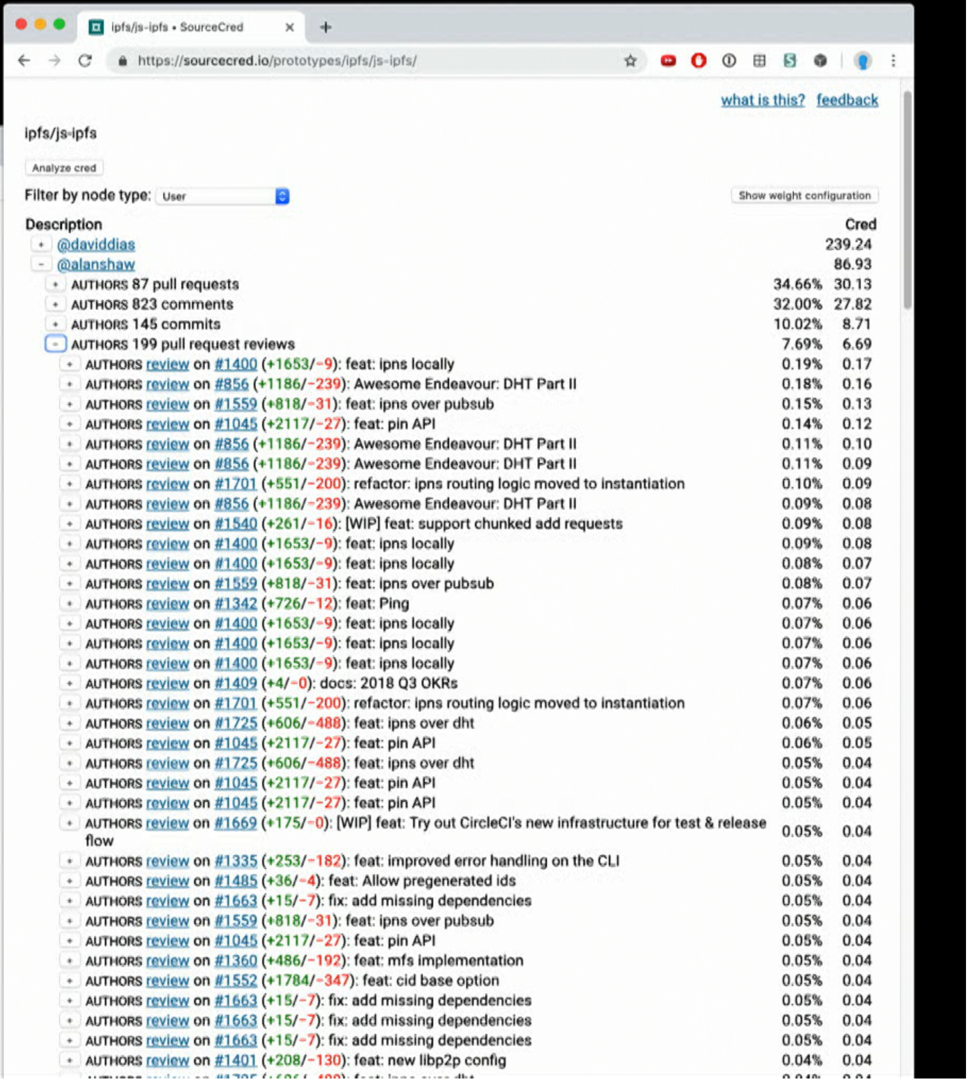
+ IS REFERENCED BY 81 comments	8.52%	1.74
+ AUTHORS 48 pull request reviews	8.43%	1.72
+ AUTHORS 24 commits	8.36%	1.71
+ IS REFERENCED BY 4 issues	5.07%	1.04
+ AUTHORS 4 issues	3.73%	0.76
+ IS REFERENCED BY 1 pull request	1.25%	0.26



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+ AUTHORS review on #1400 (+1653/−9): feat: ipns locally	0.19%	0.17
+ AUTHORS review on #856 (+1186/−239): Awesome Endeavour: DHT Part II	0.18%	0.16
+ AUTHORS review on #1559 (+818/−31): feat: ipns over pubsub	0.15%	0.13
+ AUTHORS review on #1045 (+2117/−27): feat: pin API	0.14%	0.12
+ AUTHORS review on #856 (+1186/−239): Awesome Endeavour: DHT Part II	0.11%	0.10
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+ AUTHORS review on #1701 (+551/−200): refactor: ipns routing logic moved to instantiation	0.10%	0.09
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+ AUTHORS review on #1540 (+261/−16): [WIP] feat: support chunked add requests	0.09%	0.08
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+ AUTHORS review on #1342 (+726/−12): feat: Ping	0.07%	0.06
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+ AUTHORS review on #1400 (+1653/−9): feat: ipns locally	0.07%	0.06
+ AUTHORS review on #1400 (+1653/−9): feat: ipns locally	0.07%	0.06
+ AUTHORS review on #1409 (+4/−0): docs: 2018 Q3 OKRs	0.07%	0.06
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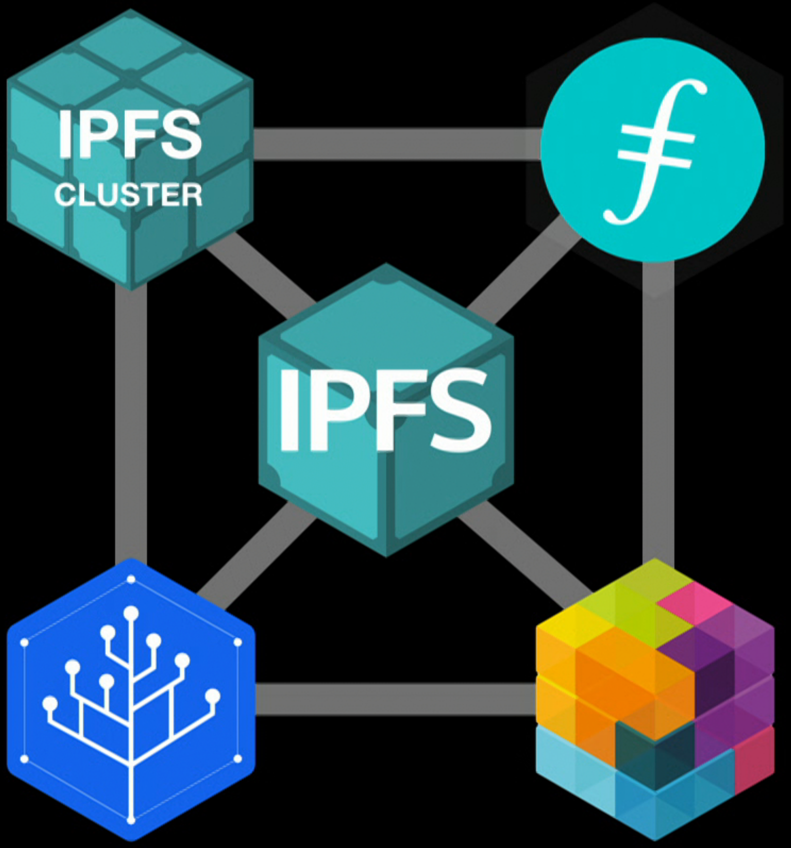
+ AUTHORS review on #1725 (+606/−488): feat: ipns over dht	0.06%	0.05
+ AUTHORS review on #1045 (+2117/−27): feat: pin API	0.06%	0.05
+ AUTHORS review on #1725 (+606/−488): feat: ipns over dht	0.05%	0.04
+ AUTHORS review on #1045 (+2117/−27): feat: pin API	0.05%	0.04
+ AUTHORS review on #1045 (+2117/−27): feat: pin API	0.05%	0.04
+ AUTHORS review on #1669 (+175/−0): [WIP] feat: Try out CircleCI's new infrastructure for test & release flow	0.05%	0.04
+ AUTHORS review on #1335 (+253/−182): feat: improved error handling on the CLI	0.05%	0.04
+ AUTHORS review on #1485 (+36/−4): feat: Allow pregenerated ids	0.05%	0.04
+ AUTHORS review on #1663 (+15/−7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1559 (+818/−31): feat: ipns over pubsub	0.05%	0.04
+ AUTHORS review on #1045 (+2117/−27): feat: pin API	0.05%	0.04
+ AUTHORS review on #1360 (+486/−192): feat: mfs implementation	0.05%	0.04
+ AUTHORS review on #1552 (+1784/−347): feat: cid base option	0.05%	0.04
+ AUTHORS review on #1663 (+15/−7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1663 (+15/−7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1663 (+15/−7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1401 (+208/−130): feat: new libp2p config	0.04%	0.04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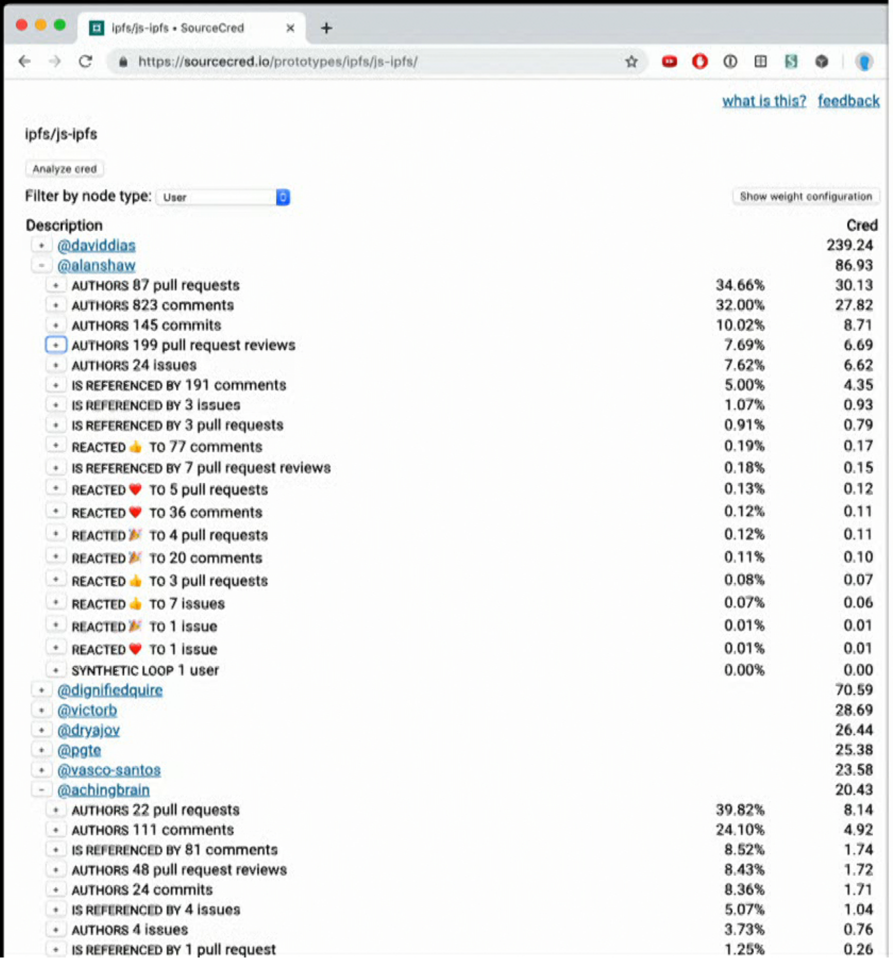

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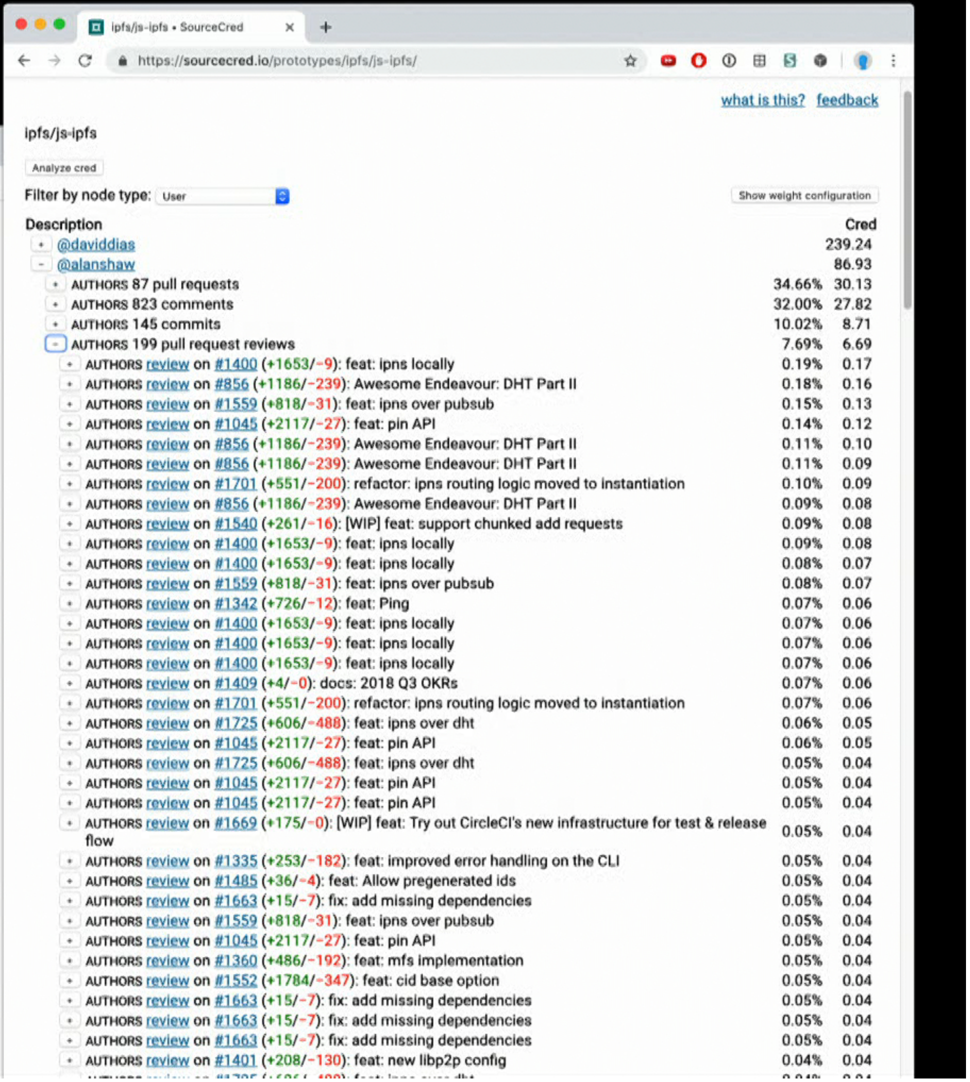

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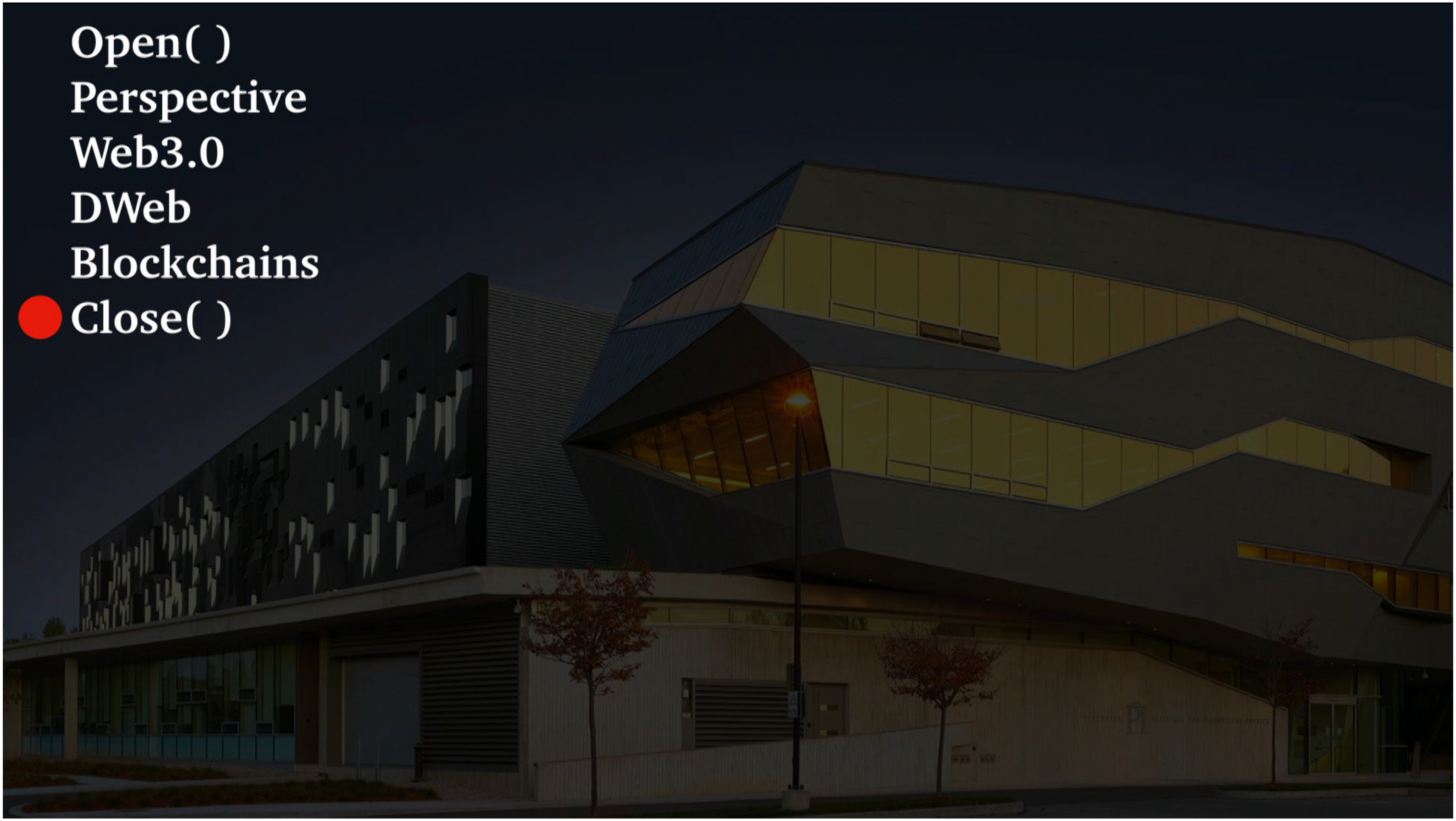
+ AUTHORS review on #1725 (+606/-488): feat: ipns over dht	0.06%	0.05
+ AUTHORS review on #1045 (+2117/-27): feat: pin API	0.06%	0.05
+ AUTHORS review on #1725 (+606/-488): feat: ipns over dht	0.05%	0.04
+ AUTHORS review on #1045 (+2117/-27): feat: pin API	0.05%	0.04
+ AUTHORS review on #1045 (+2117/-27): feat: pin API	0.05%	0.04
+ AUTHORS review on #1669 (+175/-0): [WIP] feat: Try out CircleCI's new infrastructure for test & release flow	0.05%	0.04
+ AUTHORS review on #1335 (+253/-182): feat: improved error handling on the CLI	0.05%	0.04
+ AUTHORS review on #1485 (+36/-4): feat: Allow pregenerated ids	0.05%	0.04
+ AUTHORS review on #1663 (+15/-7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1559 (+818/-31): feat: ipns over pubsub	0.05%	0.04
+ AUTHORS review on #1045 (+2117/-27): feat: pin API	0.05%	0.04
+ AUTHORS review on #1360 (+486/-192): feat: mfs implementation	0.05%	0.04
+ AUTHORS review on #1552 (+1784/-347): feat: cid base option	0.05%	0.04
+ AUTHORS review on #1663 (+15/-7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1663 (+15/-7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1663 (+15/-7): fix: add missing dependencies	0.05%	0.04
+ AUTHORS review on #1401 (+208/-130): feat: new libp2p config	0.04%	0.04
AUTHORS review on #1725 (+606/-488): feat: ipns over dht	0.04%	0.04



Open( )

Perspective

Web3.0

DWeb

Blockchains

● Close( )