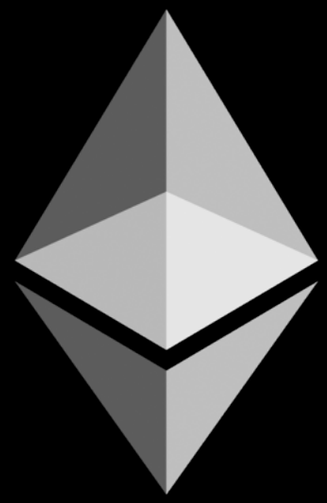
ETHEREUM

THE WORLD COMPUTER



TAYLOR GERRING

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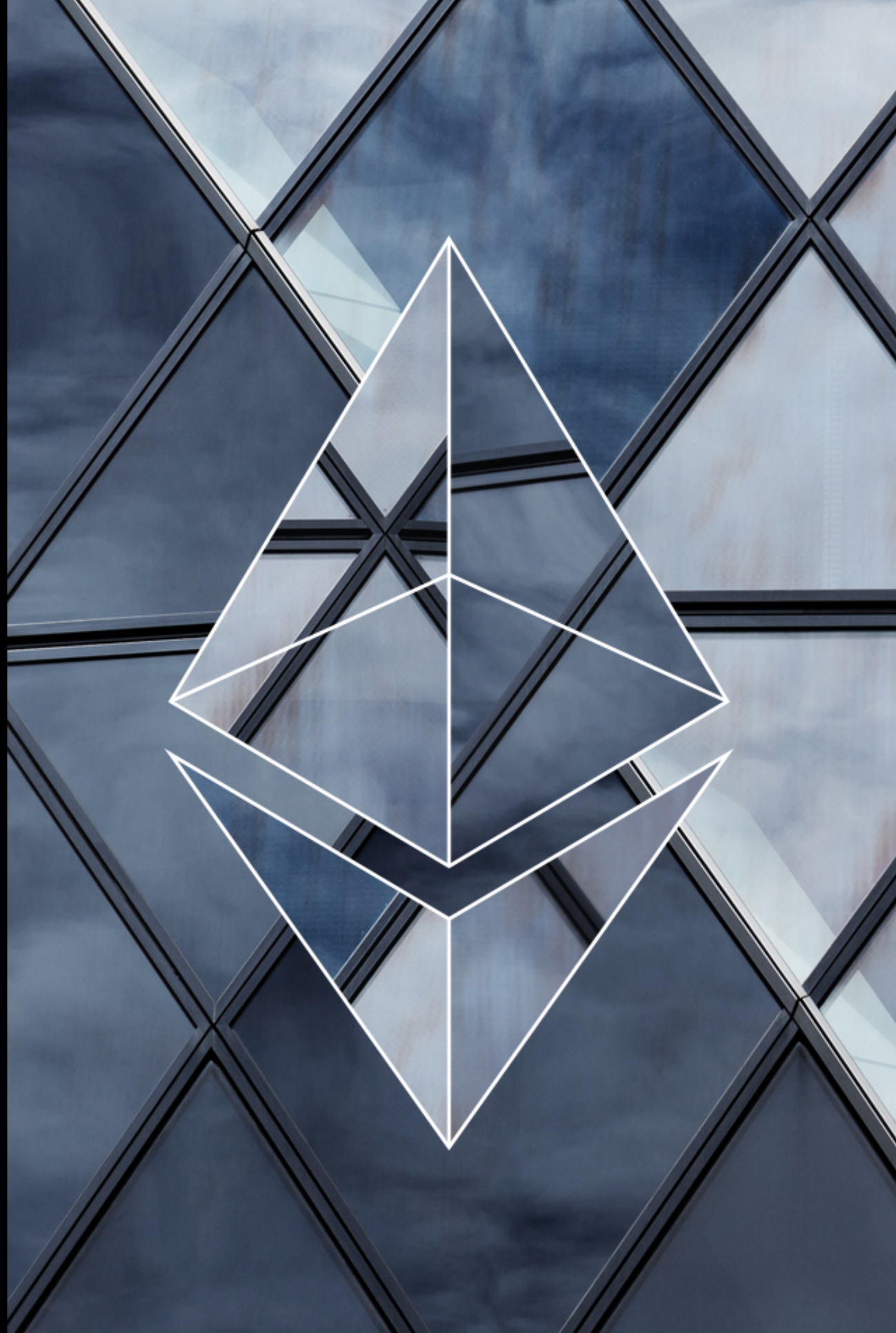
https://blockchainconsulting.expert
https://www.linkedin.com/in/taylorgerring

Hive Wallet
Ethereum
TheDAO
Blockchain training

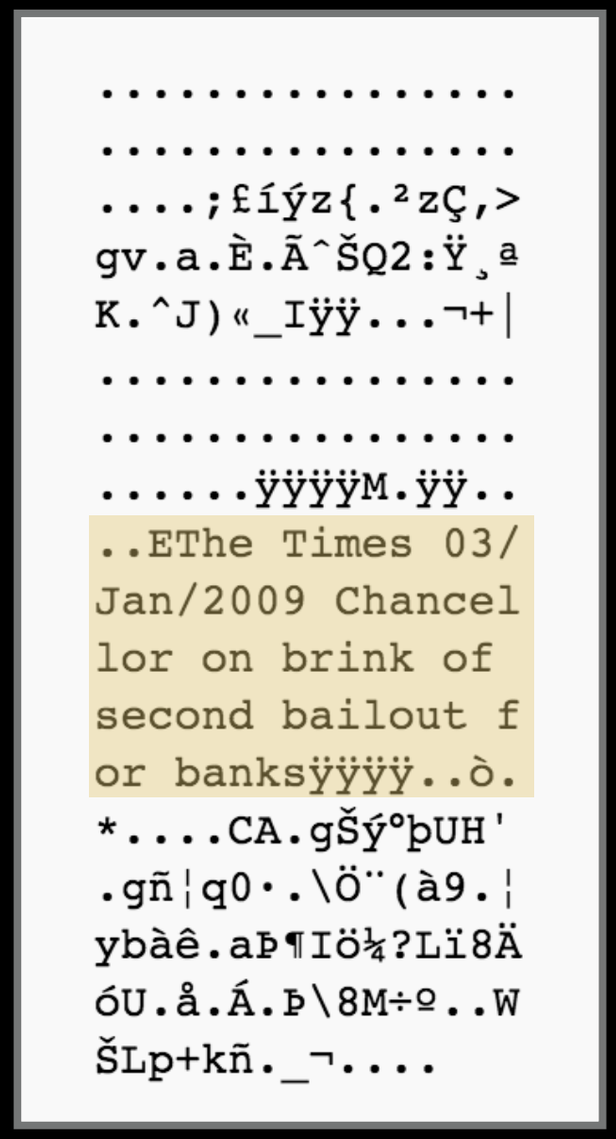
INCENTIVIZED VALIDATION

SATOSHI'S GIFT TO THE WORLD



BITCOIN

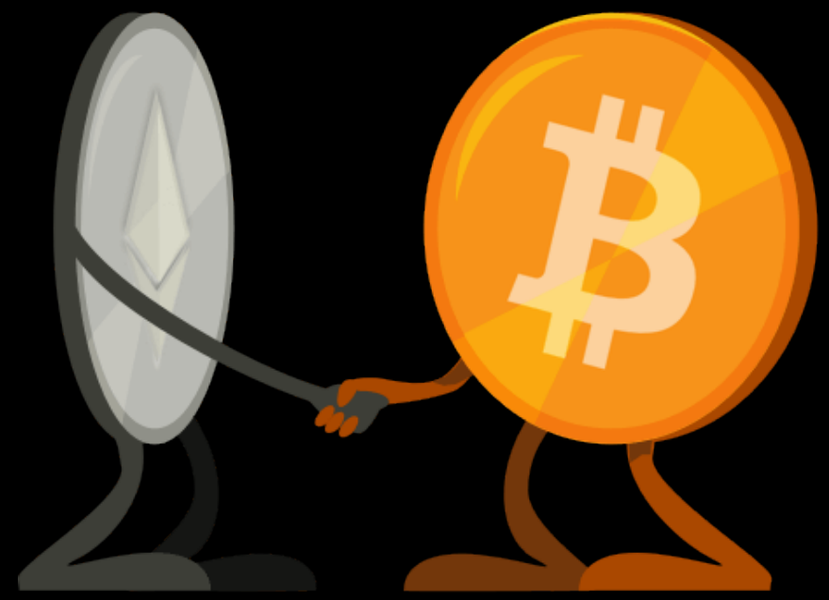
- "A Peer-to-Peer Electronic Cash System"
- Intentionally-limited scripting language
- UTXO-based
- Released January 3, 2009



ETHEREUM

- “Generalized state-transition machine”
- Turing-complete programming language
- Account-based
- Released July 30, 2015

BLOCKCHAINS



- Distributed immutable ledger
- Excel at coordination
- Especially between distrusting entities
- Digital uniqueness under owner authority

SMART CONTRACTS

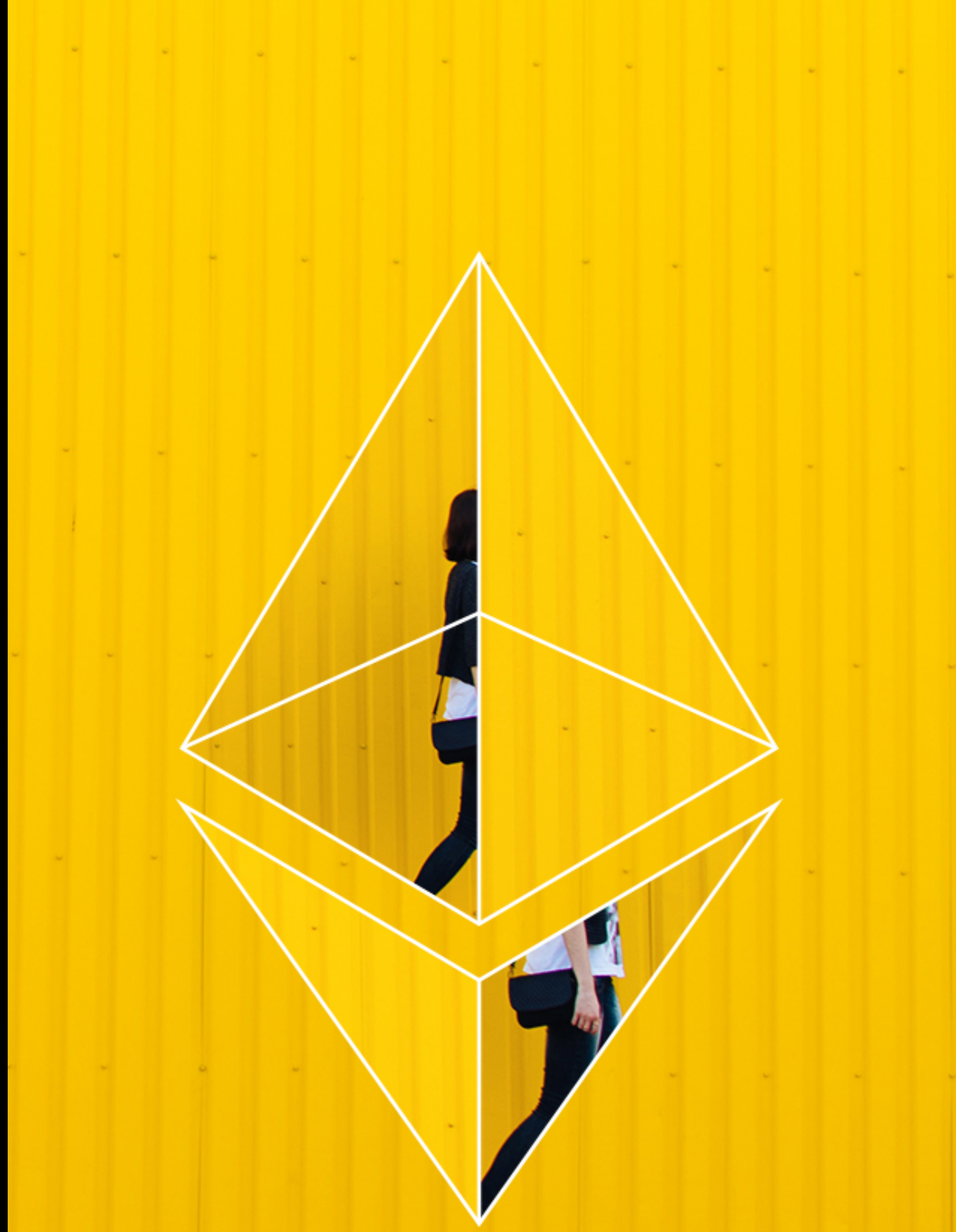
- Term coined by Nick Szabo in mid-90's
- Digital interaction & enforcement on blockchain
- Self-executing can mitigate loss & forgery
- IoT/M2M

DAOS

- Distributed Autonomous Organizations
- Community-supported digital entity
- Organized around Schelling points of functionality
- Allows for transparent governance on-chain

BLOCKCHAINS

A SOLUTION IN SEARCH OF A PROBLEM?

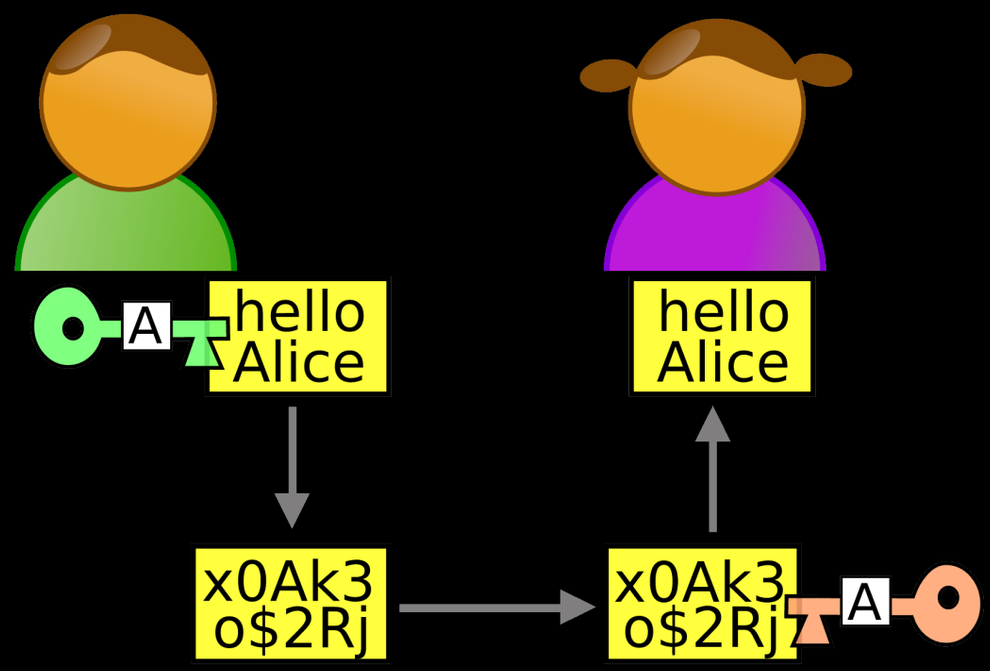


PROBLEM STATEMENTS

- Lack of transparency in certain areas
- Lack of privacy in other areas
- Lack of access/free-speech for some

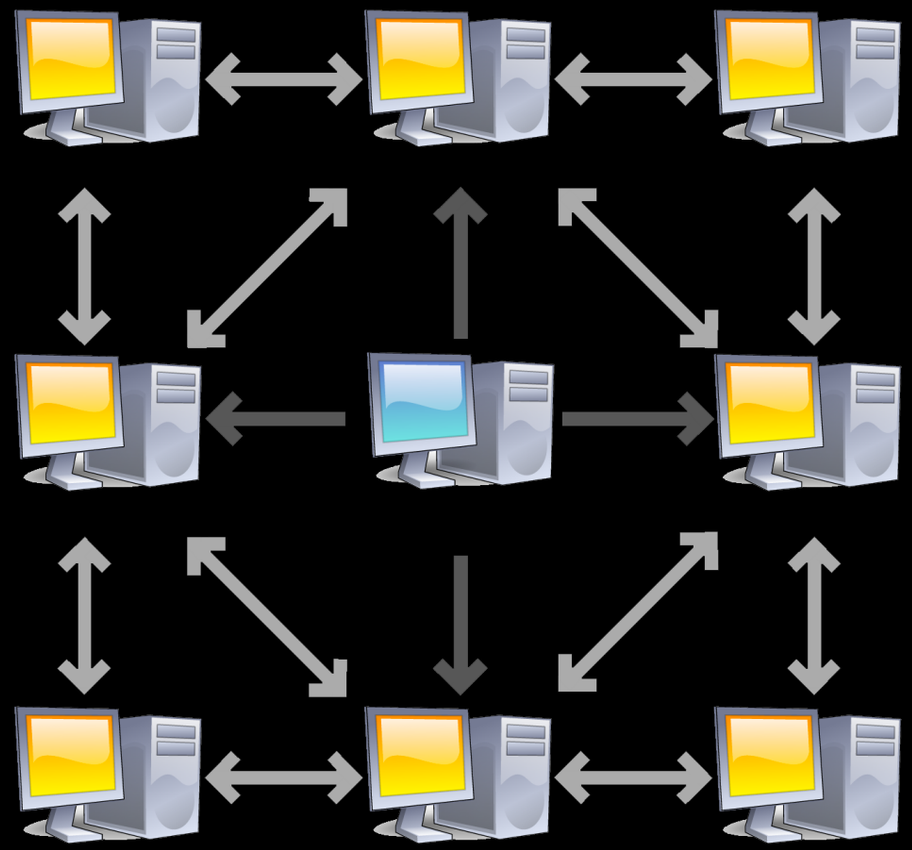
HOW TECHNOLOGY CAN HELP

- Asymmetric cryptography
- Signing & verifying
- Encryption & decryption



HOW TECHNOLOGY CAN HELP

- Peer-to-Peer
- Censorship resistance
- Fault-tolerance



HOW TECHNOLOGY CAN HELP

- Triple-entry accounting
- Cryptographic digest as receipt
- Immutable record of transactions

IMPORTANCE

- Individually important, but not exclusive to blockchains
- Opportunity is to combine these technologies for maximal benefit
- Provide concrete benefits to overcome network effect of less-secure legacy technologies

SMART CONTRACTS

BEYOND PROGRAMMABLE MONEY

A FEW POSSIBILITIES

- Documents as self-describing unique identifiers
  - IPFS/Swarm
- Track changes over time with shared ledger
  - Perfectly auditable log of events
- Granular access control with modern cryptography
  - Improving upon what PGP & OTR attempted

WORLD COMPUTER VISION

- Today's cloud consists of service layers owned and operated by large corporations
- Vision is to recreate these possibilities atop modern technology
- Allow for a re-engineering of the web
- Resist control by malicious entities

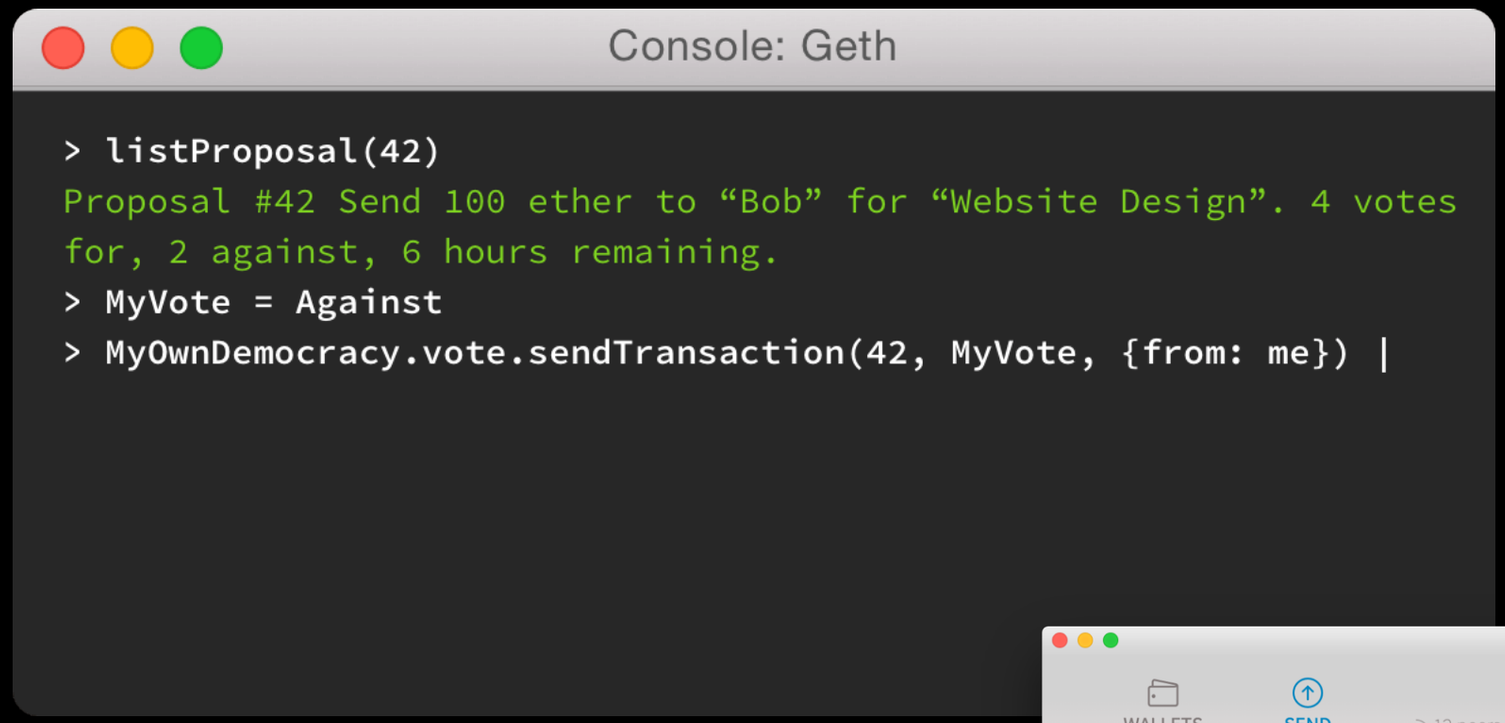
REIMAGINING THE BACK OFFICE

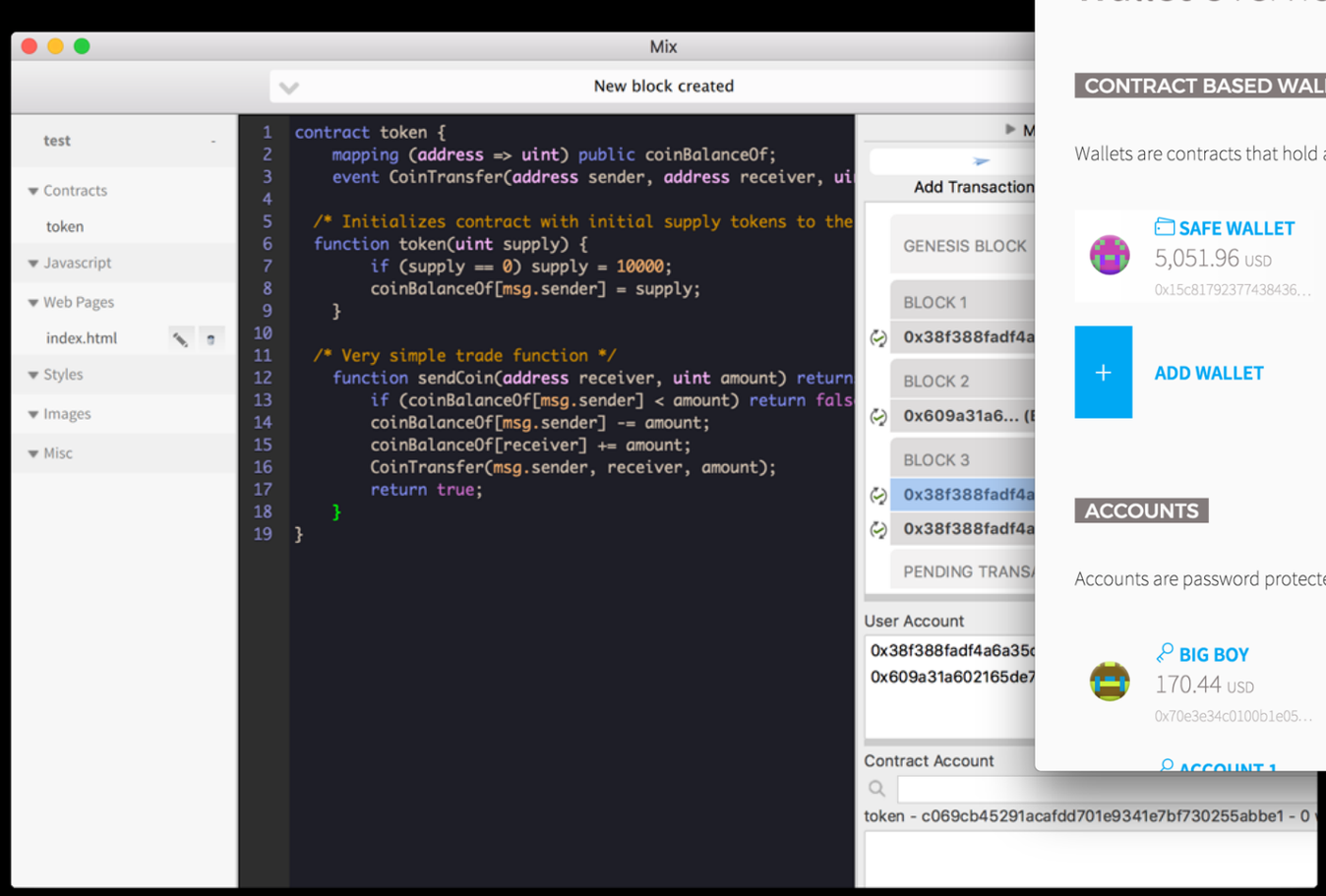
- No need to email documents—just send an identifier
  - Globally unique
  - Universally accessible
- Eviscerate fax once and for all
  - Paper copies introduce loss of fidelity
- Independence from provider shutdown/seizure

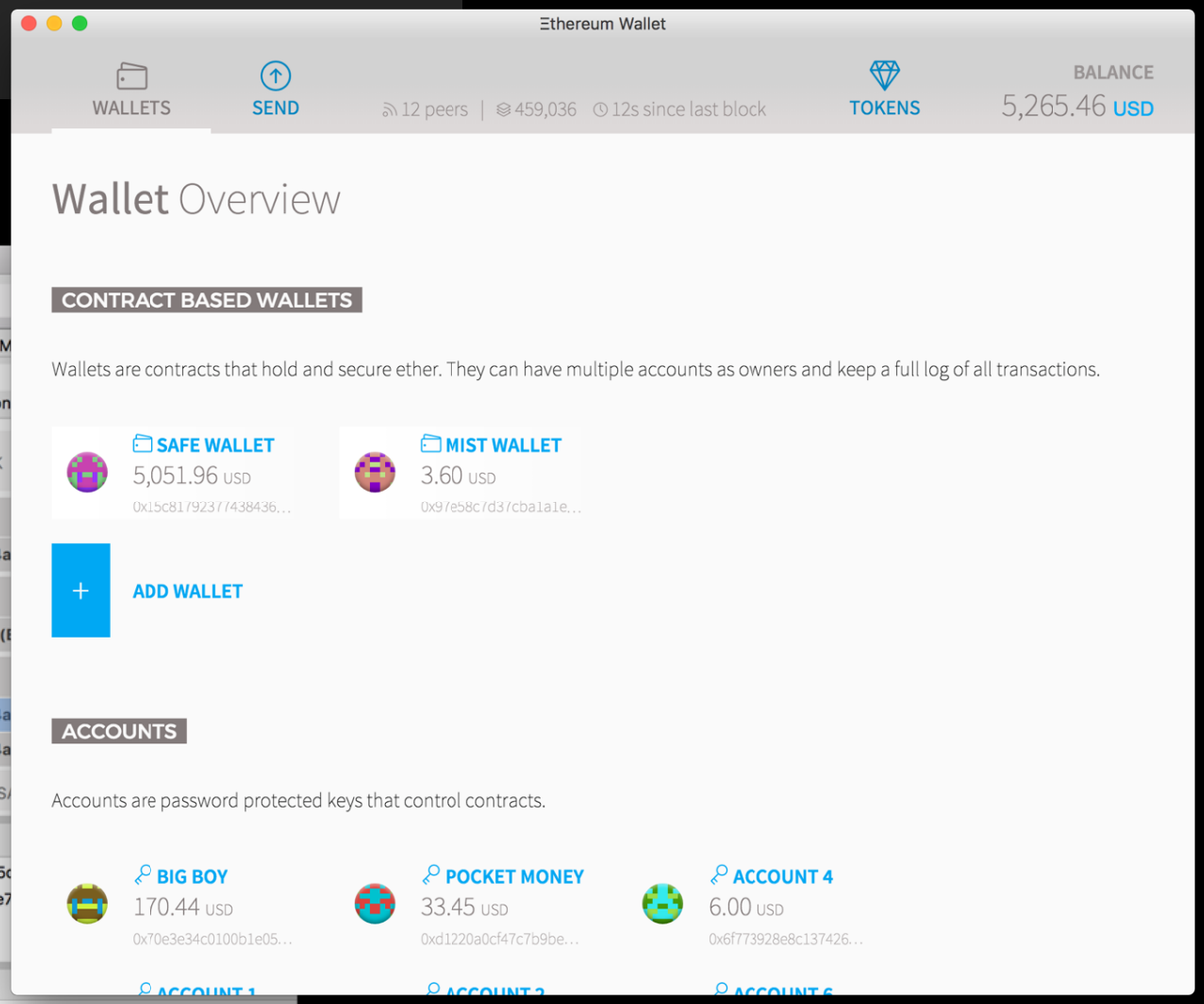
WHERE WE ARE

THE LONG ROAD AHEAD

- Geth Console
- Mix IDE
- Mist GUI



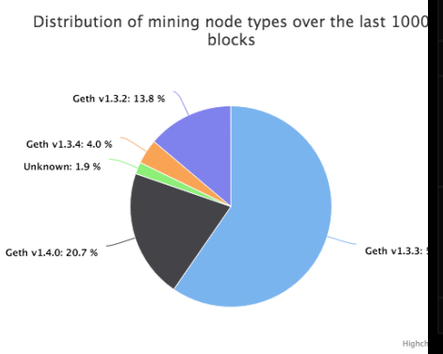


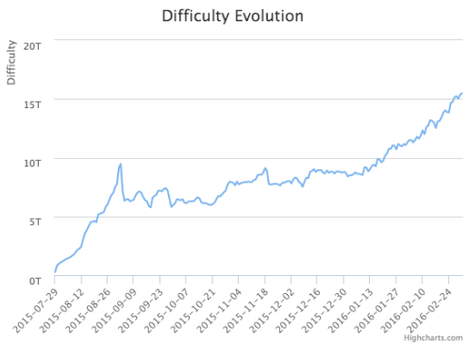


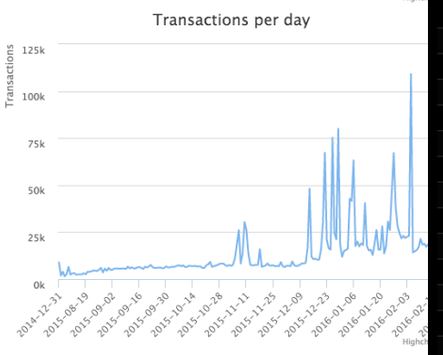
TECHNICAL ECOSYSTEM

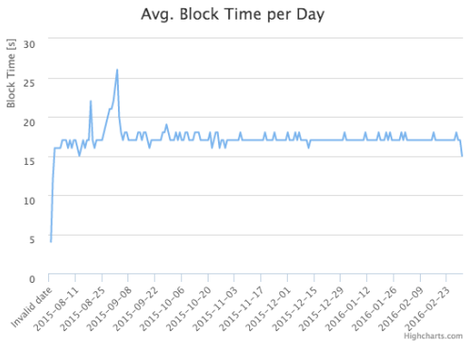
- Ethereum Virtual Machine implemented in 8+ languages!
  - Python, Java, C++, Haskell, Go, JavaScript, Rust, Ruby
  - Partial support: .NET
- Comprehensive test suite for VM, State, Blockchain, and RPC scenarios
  - No status board of all implementation statuses
- web3.js JavaScript library
  - Use JavaScript to interact with the blockchain DApp
  - No complicated crypto maths!

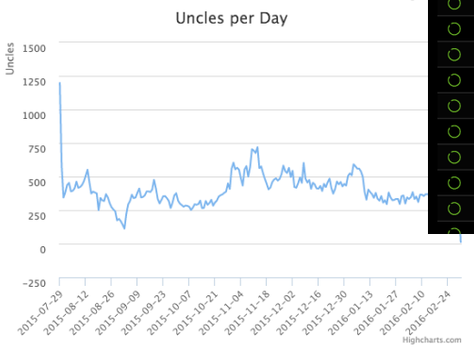
Basic Statistics

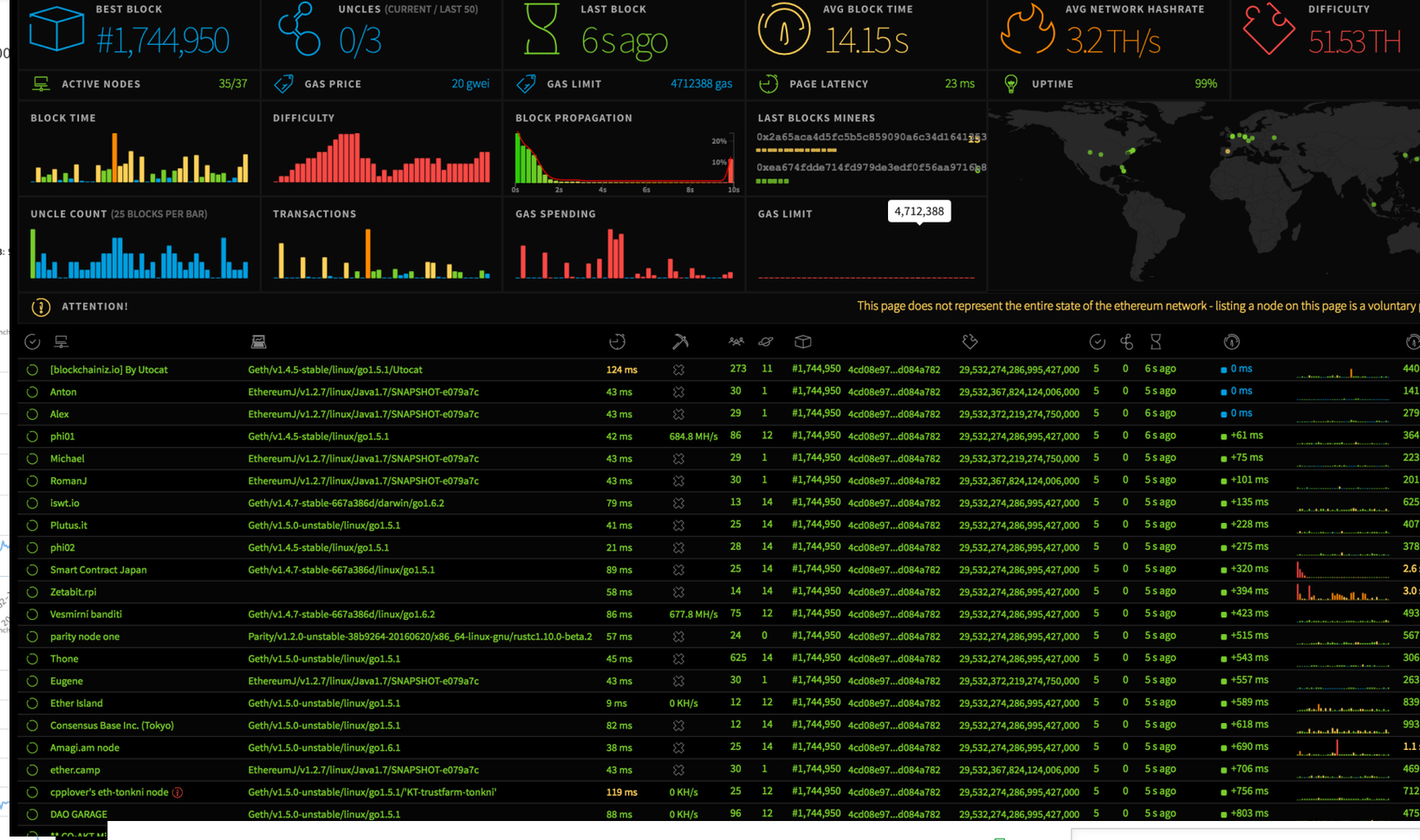












[blockchainiz.io] By Utocat	Geth/v1.4.5-stable/linux/go1.5.1/Utocat	124 ms		273	11	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	6 s ago	0 ms		440
Anton	EthereumJ/v1.2.7/linux/Java1.7/SNAPSHOT-e079a7c	43 ms		30	1	#1,744,950	4cd08e97...d084a782	29,532,367,824,124,006,000	5	0	5 s ago	0 ms		141
Alex	EthereumJ/v1.2.7/linux/Java1.7/SNAPSHOT-e079a7c	43 ms		29	1	#1,744,950	4cd08e97...d084a782	29,532,372,219,274,750,000	5	0	6 s ago	0 ms		279
phi01	Geth/v1.4.5-stable/linux/go1.5.1	42 ms	684.8 MH/s	86	12	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	6 s ago	+61 ms		364
Michael	EthereumJ/v1.2.7/linux/Java1.7/SNAPSHOT-e079a7c	43 ms		29	1	#1,744,950	4cd08e97...d084a782	29,532,372,219,274,750,000	5	0	5 s ago	+75 ms		223
RomanJ	EthereumJ/v1.2.7/linux/Java1.7/SNAPSHOT-e079a7c	43 ms		30	1	#1,744,950	4cd08e97...d084a782	29,532,367,824,124,006,000	5	0	5 s ago	+101 ms		201
iswt.io	Geth/v1.4.7-stable-667a386d/darwin/go1.6.2	79 ms		13	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+135 ms		625
Plutus.it	Geth/v1.5.0-unstable/linux/go1.5.1	41 ms		25	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+228 ms		407
phi02	Geth/v1.4.5-stable/linux/go1.5.1	21 ms		28	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+275 ms		378
Smart Contract Japan	Geth/v1.4.7-stable-667a386d/linux/go1.5.1	89 ms		25	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+320 ms		2.6
Zetabit.rpi		58 ms		14	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+394 ms		3.0
Vesmírní banditi	Geth/v1.4.7-stable-667a386d/linux/go1.6.2	86 ms	677.8 MH/s	75	12	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+423 ms		493
parity node one	Parity/v1.2.0-unstable-38b9264-20160620/x86_64-linux-gnu/rustc1.10.0-beta.2	57 ms		24	0	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+515 ms		567
Thone	Geth/v1.5.0-unstable/linux/go1.5.1	45 ms		625	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+543 ms		306
Eugene	EthereumJ/v1.2.7/linux/Java1.7/SNAPSHOT-e079a7c	43 ms		30	1	#1,744,950	4cd08e97...d084a782	29,532,372,219,274,750,000	5	0	5 s ago	+557 ms		263
Ether Island	Geth/v1.5.0-unstable/linux/go1.5.1	9 ms	0 KH/s	12	12	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+589 ms		839
Consensus Base Inc. (Tokyo)	Geth/v1.5.0-unstable/linux/go1.5.1	82 ms		12	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+618 ms		993
Amagi.am node	Geth/v1.5.0-unstable/linux/go1.6.1	38 ms		25	14	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+690 ms		1.1
ether.camp	EthereumJ/v1.2.7/linux/Java1.7/SNAPSHOT-e079a7c	43 ms		30	1	#1,744,950	4cd08e97...d084a782	29,532,367,824,124,006,000	5	0	5 s ago	+706 ms		469
cpplover's eth-tonkni node	Geth/v1.5.0-unstable/linux/go1.5.1/'KT-trustfarm-tonkni'	119 ms	0 KH/s	25	12	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+756 ms		712
DAO GARAGE	Geth/v1.5.0-unstable/linux/go1.5.1	88 ms	0 KH/s	96	12	#1,744,950	4cd08e97...d084a782	29,532,274,286,995,427,000	5	0	5 s ago	+803 ms		475

Community charts, graphs, and chain explorers

COMMUNITY GROWTH

- ~10 months public network
- Dapps (240 on dapps.ethercasts.com)
- Transactions (~0.50 TPS)
- Node count (~5500 nodes)
- Accounts (300,000+)
- ~300 meetups with 50,000 people (and growing!)

STATE OF THE ĐAPPS

Search

m
H in/ETH out
2016-03-02

Etheroll
James Britt
Ether dice game casino / gamble ether
proprietary
Live 2016-03-02

Syng
Jarrad Hope
open source mobile ethereum client
GPL
Working Prototype 2016-02-26

EthereumWall
LPMitchell
Decentralized unmoderated public message board
Live 2016-02-25

LΞTH
Inzhoop
LΞTH is the first hybrid mobile app to manage an Ethereum wallet
GPL
Working Prototype 2016-02-25

A smart co
Stealth Mod

reum
2016-02-18

EtherDoubler
Satoshi :)
The first doubler with verified contract
Live 2016-02-17

Solether
Francesco 'makevoid' + KristinaB
Autonomous Electrical Energy Entities - Prototype +EntityConcept
Unlicense
Working Prototype 2016-02-17

EtherAPIs
Péter Szilágyi & Jeffrey Wilcke
Micropayment platform for generic API calls
GPL
Working Prototype 2016-02-16

btcrelay
Joseph Chow
A bridge between the Bitcoin blockchain & Ethereum smart contracts
MIT
Working Prototype 2016-02-15

Ethere
Verifiable o
Working Pro

2016-02-15

Icebox
Christian Lundkvist
A cold storage solution for Ether
MIT
Live 2016-02-11

KingOfTheEtherThrone
Kieran Elby
Will make you a King or Queen, might grant you riches, and will immortalize your name.
proprietary
Working Prototype 2016-02-06

Dactuary
Vignesh Sundaresan
Decentralized actuary built on Ethereum
Concept 2016-02-04

insurETH
Thomas Bertani, Kristina Butkute, Francesco Canessa
P2P flight insurance
Apache
Work in Progress 2016-01-21

Ventu
Ry
Decentrali
Stealth Mod

dresses via
2016-01-05

dappsys
Nexus Dev
Solidity Contract System Framework
MIT
Working Prototype 2016-01-02

Dapple
Nexus Dev
smart contract package manager and build tool
MIT
Live 2016-01-02

Maker / Dai
Maker
Stable Cryptocurrency
MIT
Work In Progress 2016-01-02

KYC-chain
Edmund John
Proof of KYC Requirements
Concept 2015-12-27

Decentralize
Working Pro

Decentralized Twitter
etherforum
ethID
4G Capital Smart Contra

DREAMING FORWARD

A GLIMPSE OF THE FUTURE

THE WORLD COMPUTER: WHAT IS IT?

- Global trust machine
- Guaranteed execution
- Secure by default
- Censorship-resistant

TIP OF THE ICEBERG

- IoT
- VR/AR
- Futarchy
- Sharing economy
- Prediction markets
- Autonomous personal assistants

BLOCKCHAIN OPPORTUNITIES

- Digital assets that replicate real-world functionality
- Delegate transaction/interaction trust to protocol
- Rights & ownership proof
- Self-execution/enforcement of business logic
- Selective transparency & privacy
- Resilience to censorship/failure

INDUSTRY IMPACT

- Healthcare: individual ownership of medical records
- Legal system: efficient execution of contracts
- Title tracking: incorruptible log of ownership
- Supply chain management: provable sourcing & manufacturing

WORLD IMPACT

- Bring low-cost coordination technology to impoverished areas
- Ensure privacy for all netizens
- Guarantee access through anti-censorship principles
- Encourage collaboration from local to global