Intellectual Property on the Blockchain

Marta Belcher

Bitcoin: A Peer-to-Peer Electronic Cash System

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Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

1. Introduction

Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust based model. Completely non-reversible transactions are not really possible, since financial institutions cannot avoid mediating disputes. The cost of mediation increases transaction costs, limiting the minimum practical transaction size and cutting off the possibility for small casual transactions, and there is a broader cost in the loss of ability to make non-reversible payments for non-reversible services. With the possibility of reversal, the need for trust spreads. Merchants must be wary of their customers, hassling them for more information than they would otherwise need. A certain percentage of fraud is accepted as unavoidable. These costs and payment uncertainties can be avoided in person by using physical currency, but no mechanism exists to make payments over a communications channel without a trusted party.

What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party. Transactions that are computationally impractical to reverse would protect sellers from fraud, and routine escrow mechanisms could easily be implemented to protect buyers. In this paper, we propose a solution to the double-spending problem using a peer-to-peer distributed timestamp server to generate computational proof of the chronological order of transactions. The system is secure as long as honest nodes collectively control more CPU power than any cooperating group of attacker nodes.


Newsweek
03.14.2014
BITCOIN'S FACE
THE MYSTERY MAN BEHIND THE CRYPTO-CURRENCY

the double spending problem

traditional solution to the double spending problem: central authorities keep ledgers

Alice goes to her bank and requests to send $20 to Bob → **Alice's bank updates its ledger and subtracts $20 from Alice's account** → **Alice's bank communicates with Bob's bank** → **Bob's bank updates its ledger and adds $20 to Bob's account** → **Bob now has access to the $20 from Alice**

satoshi’s solution

create a public digital ledger that everyone can see

keep a record of every transaction that has ever happened on the ledger

once a transaction is added to the ledger, don’t allow anyone to change it ever

store copies of the ledger on many peoples’ computers (not one central authority’s)

blockchain = chain of blocks = stack of pages in a public ledger

Every 10 minutes, a new "page" (or block) is added to the ledger (or added to the chain of blocks)

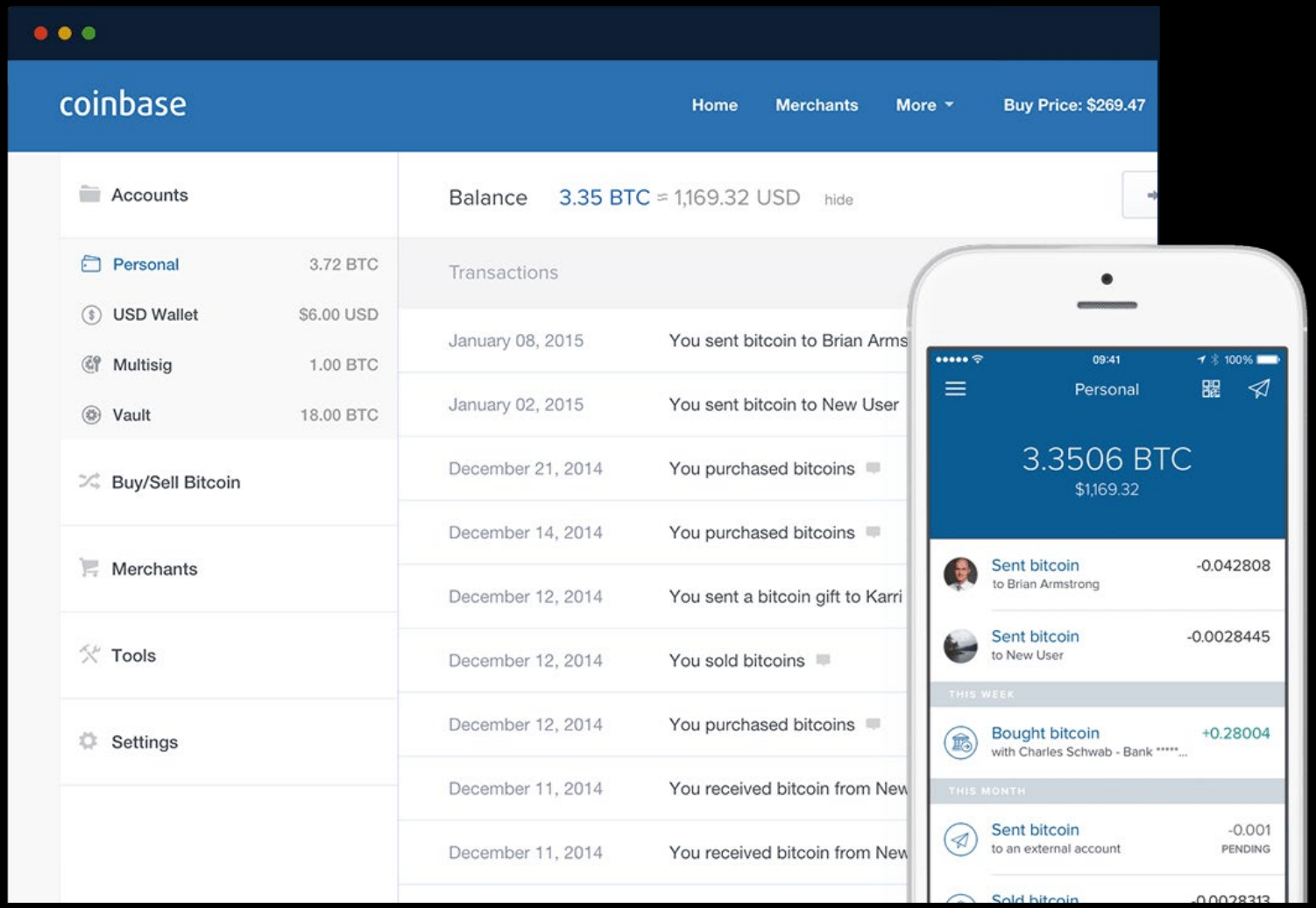
Each block is a "page" in the ledger listing all of the transactions in the last 10 minutes

Everyone can see the ledger; all transactions are permanently, publicly recorded

transaction on the public ledger

from (user)	to (user)	amount (btc)	timestamp (unix)
1BvBMSEYstWetqTFn5Au4m4GFg7xJaNVN2	**3J98t1WpEZ73CNmQviecrnyiWrnqRhWNLy**	**2.045032802**	**1 095 379 198.75**

User 3J98t1WpEZ73CNmQviecrnyiWrnqRhWNLy will automatically have access to the 2.045032802 bitcoins using a private key (“password”) that corresponds to the public “username”—for example 5HpHagT65TZzG1PH3CSu63k8DbpvD8s5ip4nEB3kEsreAnchuDf


coinbase
Home
Merchants
More
Buy Price: $269.47
Accounts
Personal 3.72 BTC
USD Wallet $6.00 USD
Multisig 1.00 BTC
Vault 18.00 BTC
Buy/Sell Bitcoin
Merchants
Tools
Settings
Balance 3.35 BTC = 1,169.32 USD hide
Transactions
January 08, 2015 You sent bitcoin to Brian Arms
January 02, 2015 You sent bitcoin to New User
December 21, 2014 You purchased bitcoins
December 14, 2014 You purchased bitcoins
December 12, 2014 You sent a bitcoin gift to Karri
December 12, 2014 You sold bitcoins
December 12, 2014 You purchased bitcoins
December 11, 2014 You received bitcoin from New
December 11, 2014 You received bitcoin from New
09:41
100%
Personal
3.3506 BTC
$1,169.32
Sent bitcoin
to Brian Armstrong
-0.042808
Sent bitcoin
to New User
-0.0028445
THIS WEEK
Bought bitcoin
with Charles Schwab - Bank *****...
+0.28004
THIS MONTH
Sent bitcoin
to an external account
-0.001
PENDING

mining: how new bitcoins are created

Miners' computers generate random solutions and plug them in until they find one that works

In so doing, the miners' computers are actually dedicating computing power to helping to keep up the network

One miner finds the solution and broadcasts it to the other miners' computers

Other miners' computers stop what they're doing and use a local copy of the last block to check the answer

When 51% agree that the correct solution has been found, the miner that found the solution gets 25 newly created bitcoins

The winning miner's computer inscribes the last 10 minutes of transactions onto the public blockchain

Filecoin

Filecoin is a data storage network and electronic currency based on Bitcoin.

Earn Filecoin by
renting disk space

Use Filecoin to **store files**
in the network or to **transact**

Exchange Filecoin for other
currencies, like Bitcoin

Search Patents

BLOCKCHAIN SYSTEM TO WHICH PROOF-OF-TRANSACTION CONSENSUS ALGORITHM IS APPLIED, AND METHOD THEREFOR

Publication number: 20210004777

Abstract: A blockchain system is disclosed. A blockchain system according to one embodiment includes a plurality of nodes for communicating with each other through a distribution network and communicating with a blockchain client device outside the blockchain system, wherein each of the plurality of nodes can be configured to process transactions occurring in the blockchain system, collect vote items included in the transactions and including an account address corresponding to any one of the plurality of nodes, and elect, as a block generator, at least one of the plurality of nodes on the basis of the collected vote items. Other various embodiments identified through the specification are possible.

Type: Application
Filed: July 27, 2018
Publication date: January 7, 2021
Applicant: BLOCKCHAIN LABS INC.
Inventors: Yong Tae KIM, Byung Wan LIM

Dynamic blockchain system and method for providing efficient and secure distributed data access, data storage and data transport

Patent number: 10771240

Abstract: A dynamic blockchain system includes: at least one complete asset node server, including a complete asset manager and a complete asset storage; a plurality of hash asset node servers, each including a hash asset manager and an asset blockchain and; a dynamic blockchain management server, including a blockchain manager, a representation calculation function, and an asset map with a plurality of map records; and a blockchain management device; such that the dynamic blockchain management server validates a digital asset by lookup in the at least one complete asset node server and by verification of the digital asset by a random sampling in a statistically representative number of hash asset node servers in the plurality of hash asset node servers.

Type: Grant
Filed: June 11, 2019
Date of Patent: September 8, 2020
Assignee: Dynamic Blockchains Inc
Inventors: James A. Carson, Ryuta Richard Makino, Susan H. Glenn-Joseph

Method for registration of data in a blockchain database and a method for verifying data

Patent number: 10754848

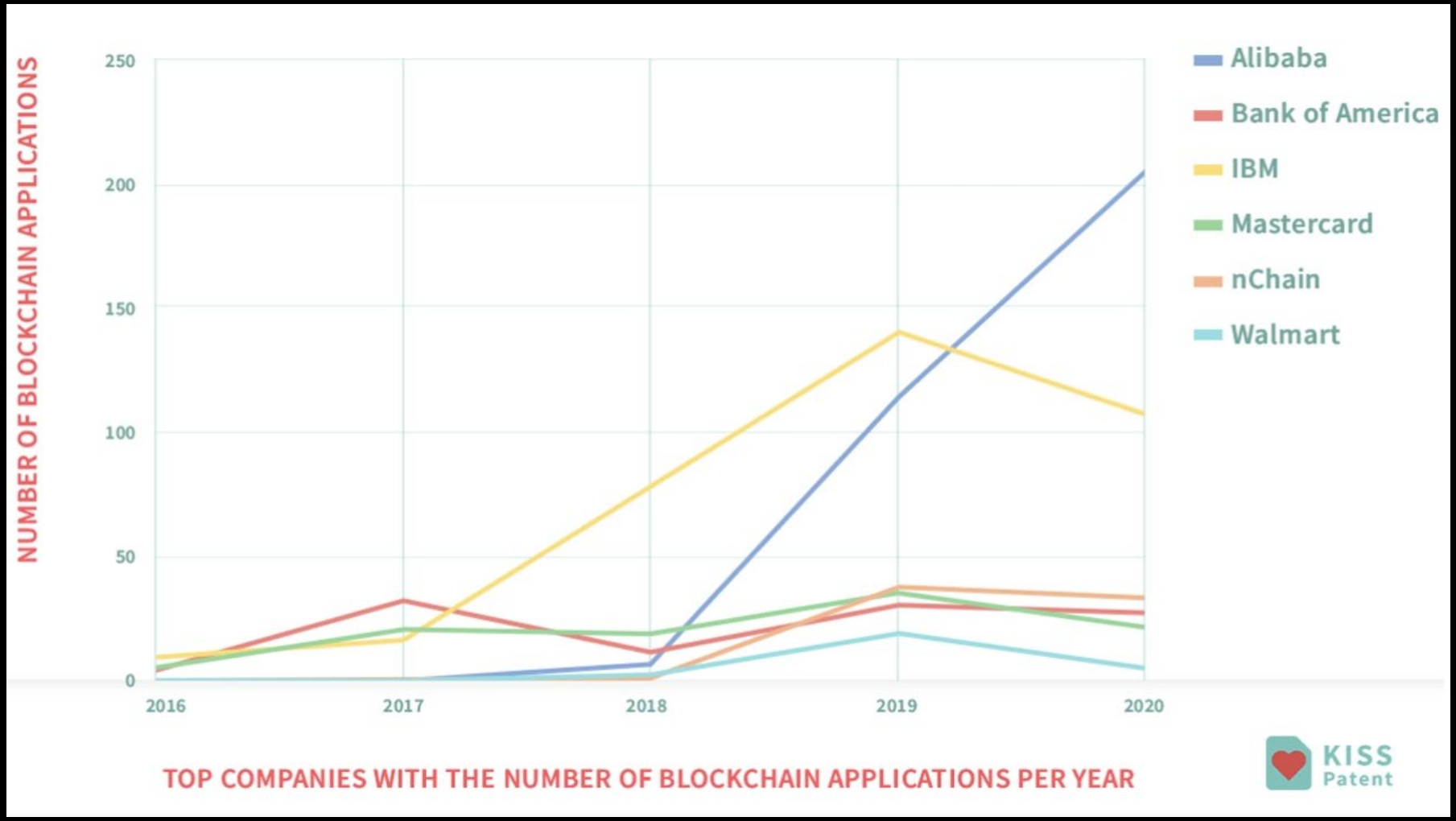
Abstract: The invention comprises a method for registration of data in a blockchain database, in which database transactions are constructed of standard data containers which may have a fixed size, in a system comprising one or more storage nodes for storing at least part of the blockchain database, one or more approval nodes for approving transactions in said blockchain database and a first computer for generating transactions in said blockchain database, said computer having access to said blockchain database and having access to a first private key. The invention further comprises a method for verifying data based on the aforementioned method for registration and a computer program product comprising program code stored on a computer readable medium, said program code comprising computer instructions for performing the method.

Type: Grant
Filed: August 14, 2018
Date of Patent: August 25, 2020
Assignee: COINFIRM BLOCKCHAIN LAB SP. Z O.O.
Inventors: Pawel Zygmunt Aleksander, Marcin Jozef Rabenda, Pawel Kuskowski, Jakub Fijolek

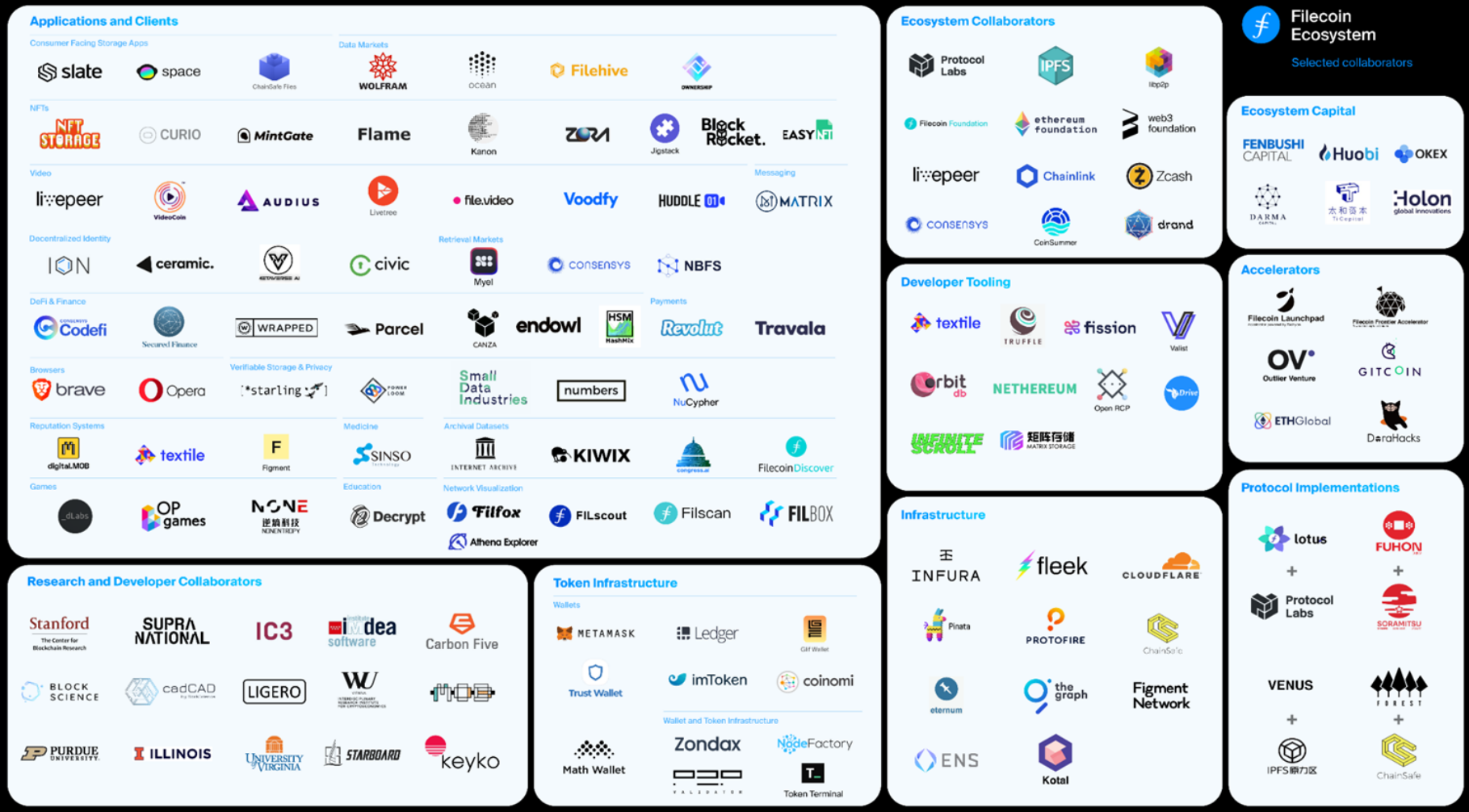
Method For Registration Of Data In A Blockchain Database And A Method For Verifying Data

Publication number: 20190377811

Abstract: The invention comprises a method for registration of data in a blockchain database, in which database


NUMBER OF BLOCKCHAIN APPLICATIONS
250
200
150
100
50
0
2016
2017
2018
2019
2020
Alibaba
Bank of America
IBM
Mastercard
nChain
Walmart
TOP COMPANIES WITH THE NUMBER OF BLOCKCHAIN APPLICATIONS PER YEAR
KISS
Patent


DPL


Filecoin Ecosystem
Selected collaborators
Applications and Clients
Consumer Facing Storage Apps
slate
space
ChainSafe Files
Data Markets
WOLFRAM
ocean
Filehive
OWNERSHIP
NFTs
NFT STORAGE
CURIO
MintGate
Flame
Kanon
ZORA
Jigstack
Block Rocket.
EASY NFT
Video
livepeer
VideoCoin
AUDIUS
Livetree
file.video
Voodfy
HUDDLE 01
Messaging
MATRIX
Decentralized Identity
ION
ceramic.
civic
Retrieval Markets
Myel
CONSENSYS
NBFS
DeFi & Finance
Codefi
Secured Finance
WRAPPED
Parcel
CANZA
endowl
HSM HashMix
Payments
Revolut
Travala
Browsers
brave
Opera
Verifiable Storage & Privacy
*starling
Small Data Industries
numbers
NuCypher
Reputation Systems
digitalMOB
textile
Figment
Medicine
SINSO
Archival Datasets
INTERNET ARCHIVE
KIWIX
congress.ai
FilecoinDiscover
Games
OP games
NONE
Education
Decrypt
Network Visualization
Filfox
FILscout
Filscan
FILBOX
Athena Explorer
Ecosystem Collaborators
Protocol Labs
IPFS
libp2p
Filecoin Foundation
ethereum foundation
web3 foundation
livepeer
Chainlink
Zcash
CONSENSYS
CoinSummer
drand
Ecosystem Capital
FENBUSHI CAPITAL
Huobi
OKEX
DARMA CAPITAL
Holon
Developer Tooling
textile
TRUFFLE
fission
Valist
orbit db
NETHEREUM
Open RCP
INFINITE SCROLL
Accelerators
Filecoin Launchpad
OV
Outlier Venture
GITCOIN
ETHGlobal
DoraHacks
Infrastructure
INFURA
fleek
CLOUDFLARE
Pinata
PROTOFIRE
ChainSafe
eternum
the graph
Figment Network
ENS
Kotal
Protocol Implementations
lotus
FUHON
Protocol Labs
SORAMITSU
VENUS
FOREST
IPFS 断点
ChainSafe
Research and Developer Collaborators
Stanford
The Center for Blockchain Research
SUPRA NATIONAL
IC3
idea software
Carbon Five
BLOCK SCIENCE
cadCAD
LIGERO
keyko
PURDUE UNIVERSITY
ILLINOIS
UNIVERSITY of VIRGINIA
STARBOARD
Token Infrastructure
Wallets
METAMASK
Ledger
Trust Wallet
imToken
coinomi
Wallet and Token Infrastructure
Zondax
NodeFactory
Math Wallet
Token Terminal

No. 18-956

IN THE

Supreme Court of the United States

GOOGLE, LLC,
Petitioner,

v.

ORACLE AMERICA, INC.,
Respondent.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF FOR AMICI CURIAE PYTHON SOFTWARE FOUNDATION, TIDELIFT, OPEN UK, AND PROTOCOL LABS, IN SUPPORT OF PETITIONER

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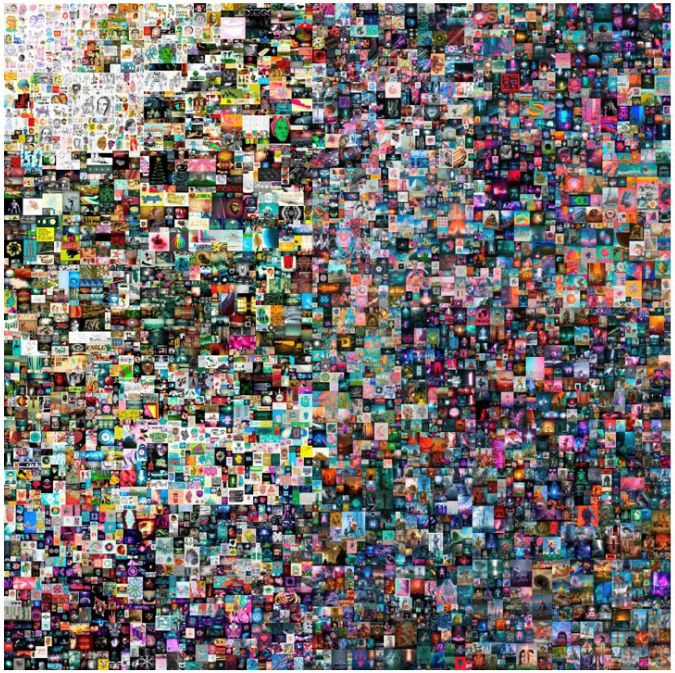
JPG File Sells for $69 Million, as 'NFT Mania' Gathers Pace

"Everydays — The First 5000 Days," by the artist known as Beeple, set a record for a digital artwork in a sale at Christie's.



"Everydays — The First 5000 Days" is a collage of all the images that the artist known as Beeple has been posting online each day since 2007. via Christie's

m@fil.org