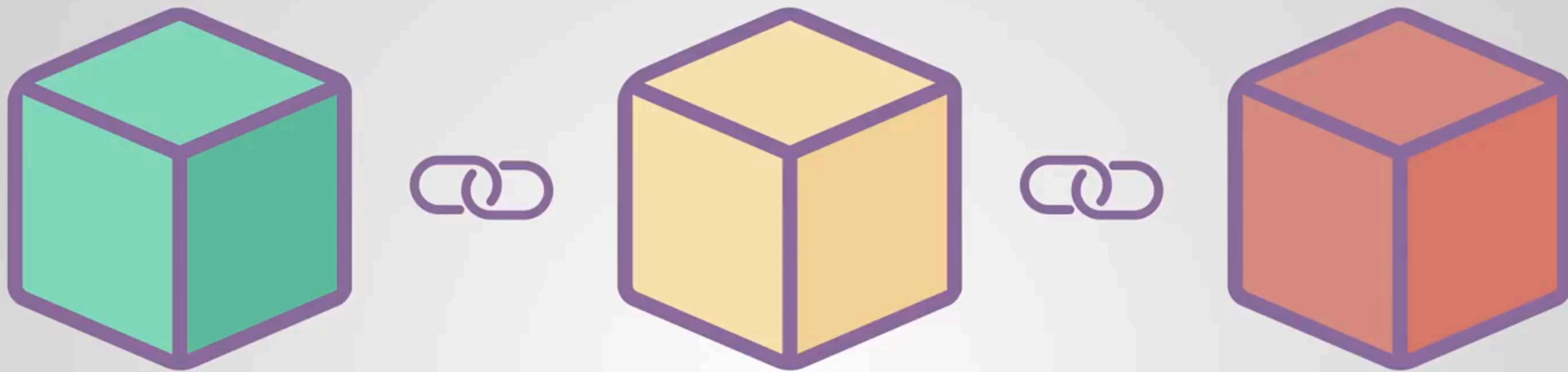


Bitcoin Visualization Workshop

Bitcoin features

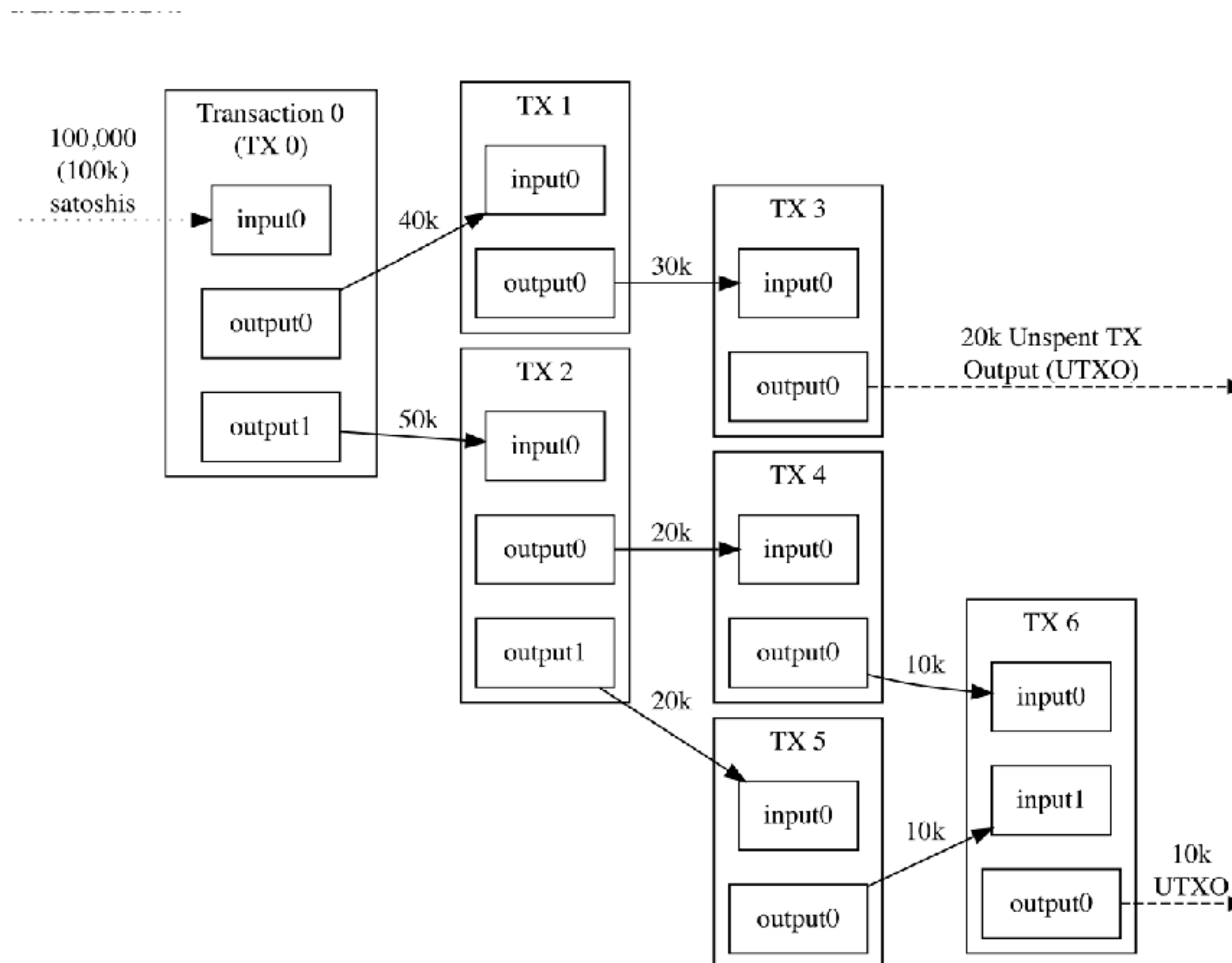
All information are public (software is open-source too)
&
Decentralized
&
Peer-to-Peer network



Blockchain

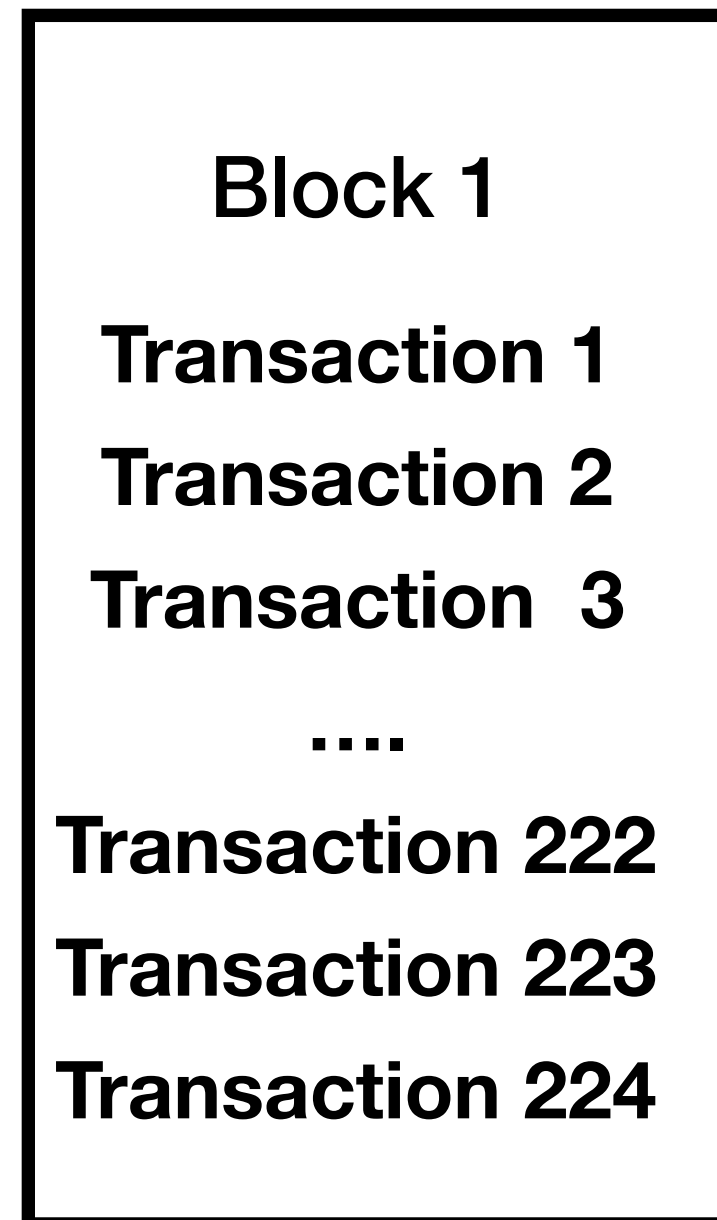
— *Simply explained* —

Transaction



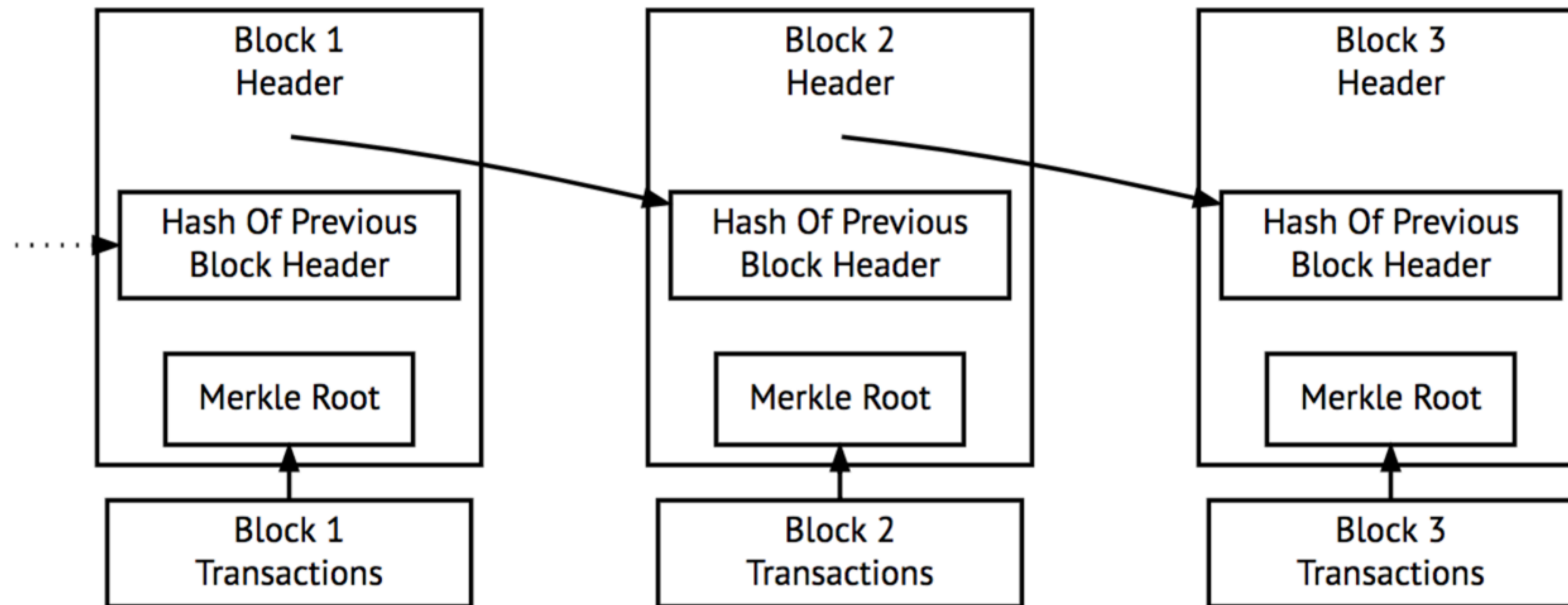
Triple-Entry Bookkeeping (Transaction-To-Transaction Payments) As Used By Bitcoin

Block



Each block represents a set of transactions (or events) that happened over a particular period.

Blockchain



Simplified Bitcoin Block Chain

what we are going to use are in our workshop

+blockchain events

numbers of transactions, total BTC sent, etc...

+transaction events

value, etc..

+market data(exchange rates)

\$US <> BTC etc..

currency data from the major bitcoin exchanges

+archiving data(for data mining)

References

Bitcoin basic mechanism

Whitepaper by Satoshi Nakamoto

<https://bitcoin.org/bitcoin.pdf>

Bitcoin basic info

- Bitcoin Wiki

https://en.bitcoin.it/wiki/Protocol_documentation

<https://en.bitcoin.it/wiki/Script>

<https://en.bitcoin.it/wiki/Coinbase>

Global Bitcoin Nodes Distribution

<https://bitnodes.earn.com>

BITNODES

Bitnodes is currently being developed to estimate the size of the Bitcoin network by finding all the reachable nodes in the network.

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GLOBAL BITCOIN NODES DISTRIBUTION

Reachable nodes as of Sat Jan 20 2018 19:51:42 GMT+0900 (JST).

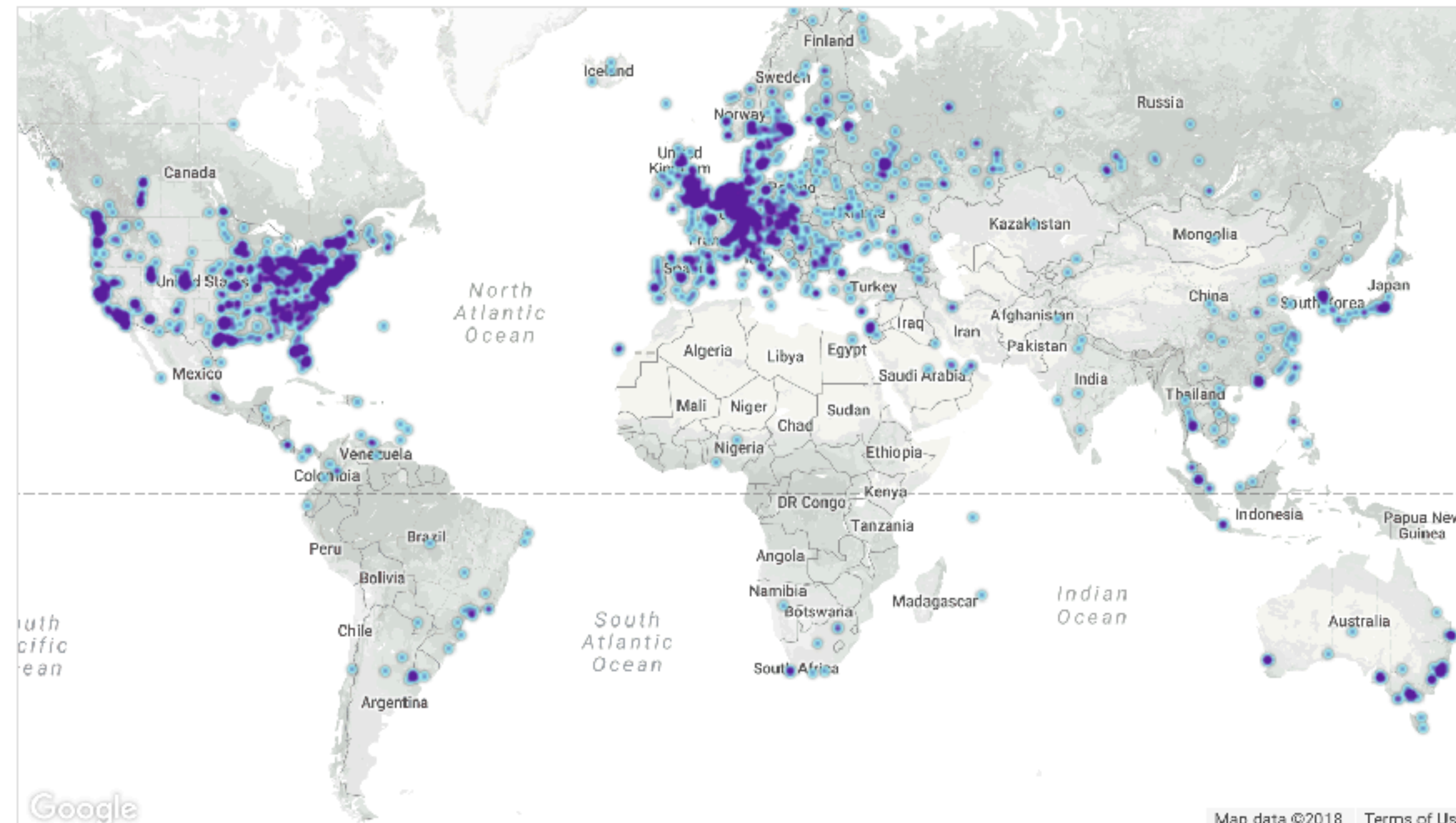
11612 NODES

[24-hour charts >>](#)

Top 10 countries with their respective number of reachable nodes are as follow.

RANK	COUNTRY	NODES
1	United States	3166 (27.26%)
2	Germany	1983 (17.08%)
3	China	827 (7.12%)
4	France	771 (6.64%)
5	Netherlands	529 (4.56%)
6	Canada	449 (3.87%)
7	United Kingdom	433 (3.73%)
8	Russian Federation	395 (3.40%)
9	n/a	294 (2.53%)
10	Singapore	255 (2.20%)

[More \(103\) >>](#)

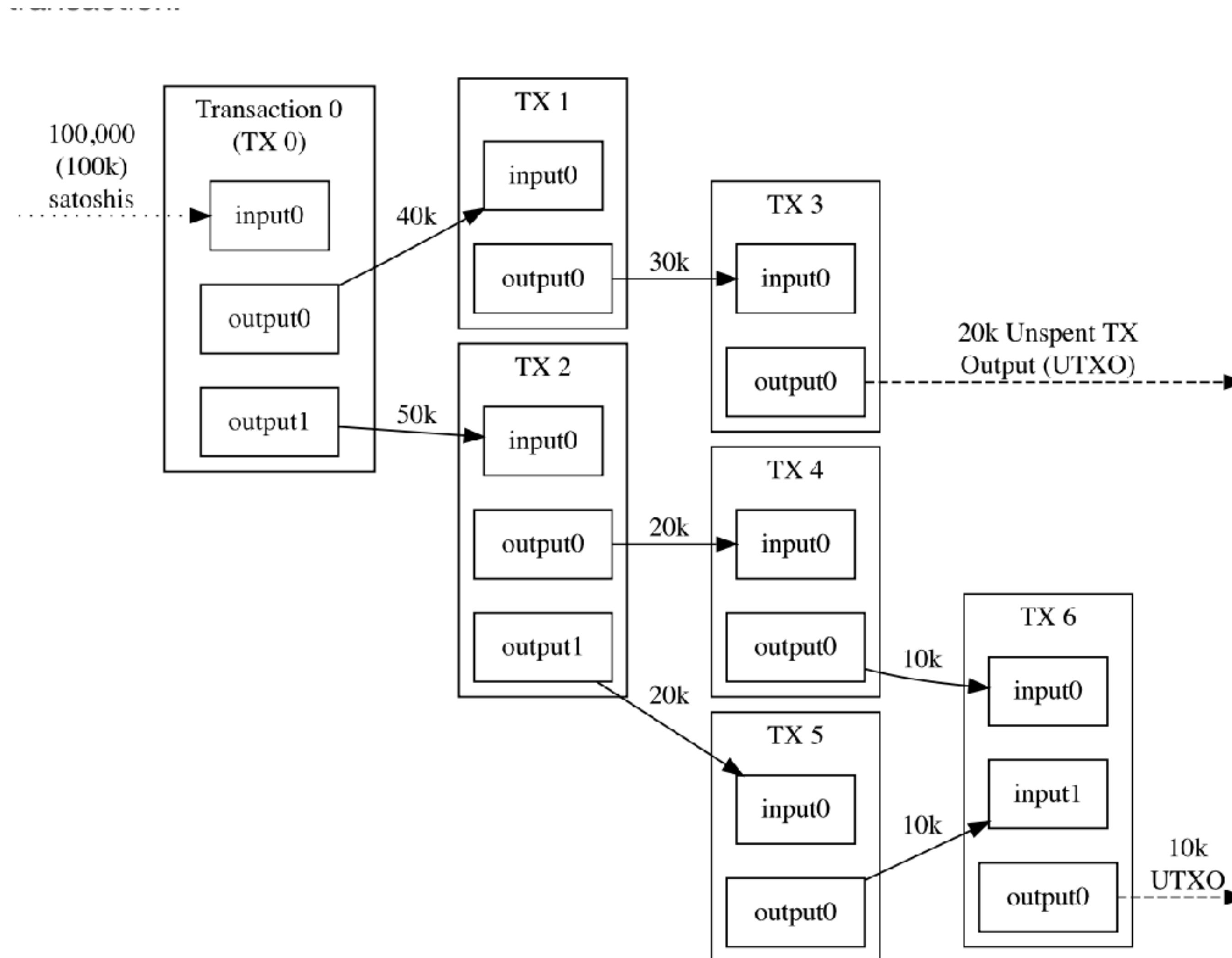


Map shows concentration of reachable Bitcoin nodes found in countries around the world.

[LIVE MAP](#)

Bitcoin Developer Guide

<https://bitcoin.org/en/developer-guide>



Triple-Entry Bookkeeping (Transaction-To-Transaction Payments) As Used By Bitcoin

BLOCKCHAIN.info

BLOCKCHAIN

WALLET

DATA

API

ABOUT



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LATEST BLOCKS

SEE MORE →

Height	Age	Transactions	Total Sent	Relayed By	Size (kB)	Weight (kWU)
505160	5 minutes	2188	15,761.19 BTC	BTC.com	1,195.43	3,992.7
505159	26 minutes	1239	7,009.90 BTC	AntPool	1,067.47	3,992.34
505158	35 minutes	901	4,425.95 BTC	AntPool	1,034.53	3,992.76
505157	42 minutes	1393	10,827.65 BTC	AntPool	1,053.5	3,992.54

NEW TO DIGITAL CURRENCIES?

Like paper money and gold before it, bitcoin and ether allow parties to exchange value. Unlike their predecessors, they are digital and decentralized. For the first time in history, people can exchange value without intermediaries which translates to greater control of funds and lower fees.

[BUY BITCOIN →](#)

[LEARN MORE →](#)

[GET A FREE WALLET →](#)

SEARCH

You may enter a block height, address, block hash, transaction hash, hash160, or ipv4 address...



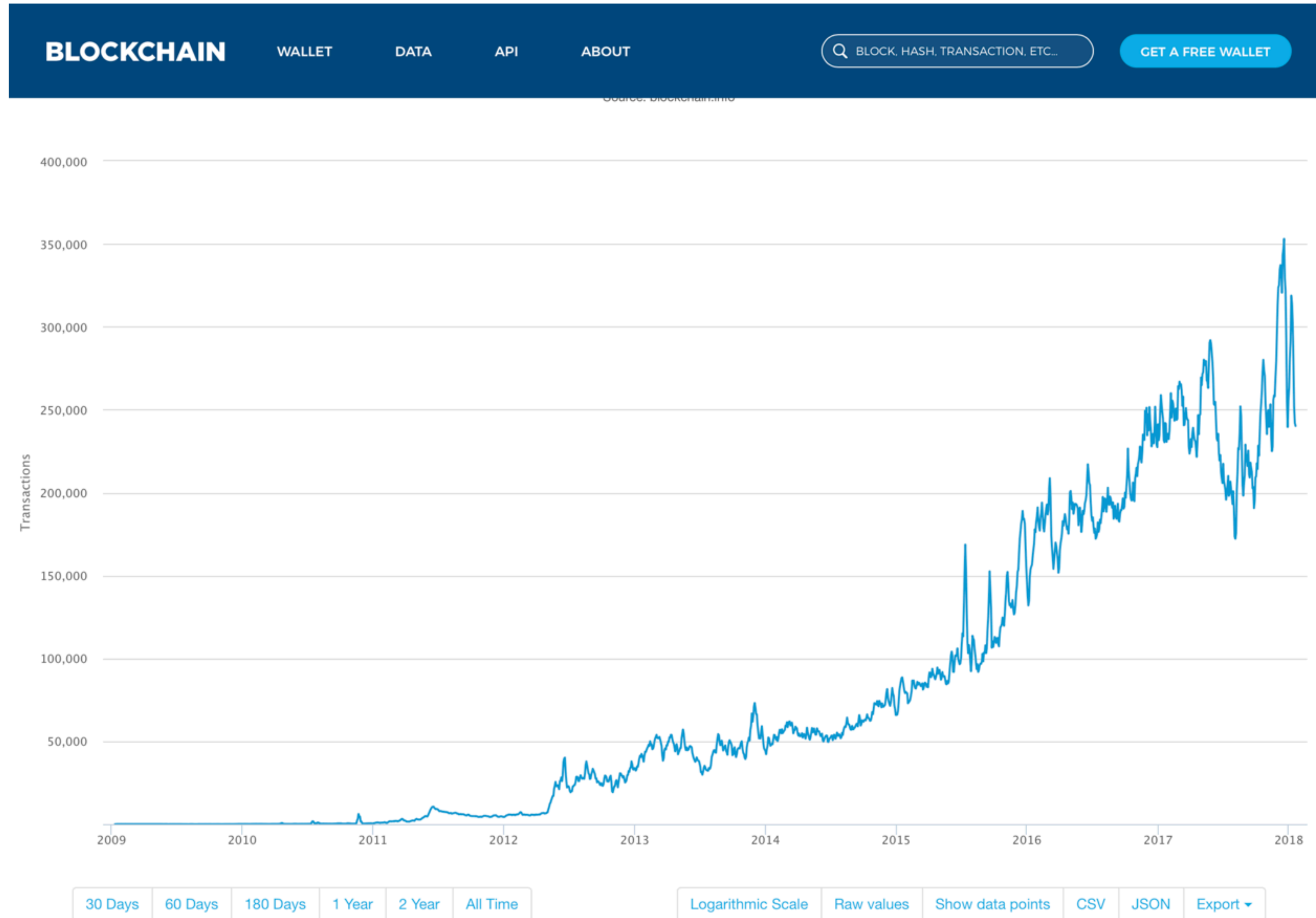
Address / ip / SHA hash

Search

we are going to use BLOCKCHAIN's api->>> <https://blockchain.info/api>

The number of daily confirmed Bitcoin transactions at BLOCKCHAIN.info

<https://blockchain.info/charts/n-transactions?timespan=all&daysAverageString=7>



View information about a bitcoin transaction

ex. a view of txid = 86e06fed6f597dc212e72556a84660d84e9536e081719624a0a30a685238d0d7

https://blockchain.info/tx/86e06fed6f597dc212e72556a84660d84e9536e081719624a0a30a685238d0d7

BLOCKCHAIN

WALLET

DATA

API

ABOUT

Q

BLOCK, HASH, TRANSACTION, ETC...

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Transaction

View information about a bitcoin transaction

86e06fed6f597dc212e72556a84660d84e9536e081719624a0a30a685238d0d7

1Nhn2D1FqzDCJqCsh6JJEGKjWXac7PaSHy

➔

1C9H6kbUo2jfZLhyVrH8kLNcXerMMRfQKg

1Hhr7qmw4dq1P71c1a8tm8e3CrxKrUTKYE

0.25807784 BTC

0.21070919 BTC

0.46878703 BTC

Summary

Size

225 (bytes)

Weight

900

Received Time

2014-12-03 03:51:26

Included In Blocks

332658 (2014-12-03 03:52:36 + 1 minutes)

Confirmations

172507 Confirmations

Visualize

View Tree Chart

Inputs and Outputs

Total Input

0.46888703 BTC

Total Output

0.46878703 BTC

Fees

0.0001 BTC

Fee per byte

44.444 sat/B

Fee per weight unit

11.111 sat/WU

Estimated BTC Transacted

0.21070919 BTC

Scripts

Show scripts & coinbase


we can get this view data by call BLOCKCHAIN API

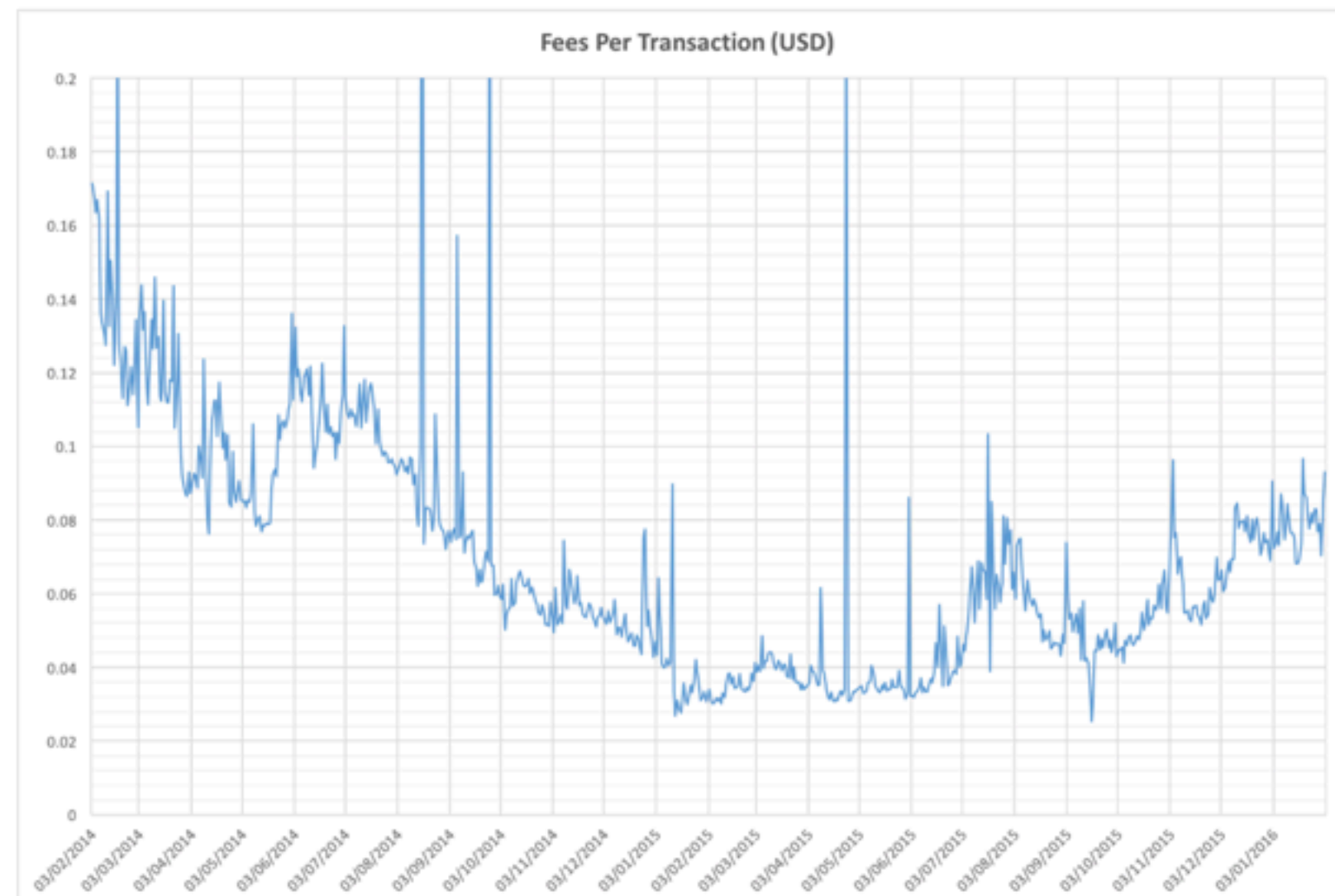
Important Articles about Bitcoin () at #hashingit.com

<http://hashingit.com/analysis>

A Market For Bitcoin Transaction Fees?

Details

 Published: 03 February 2016



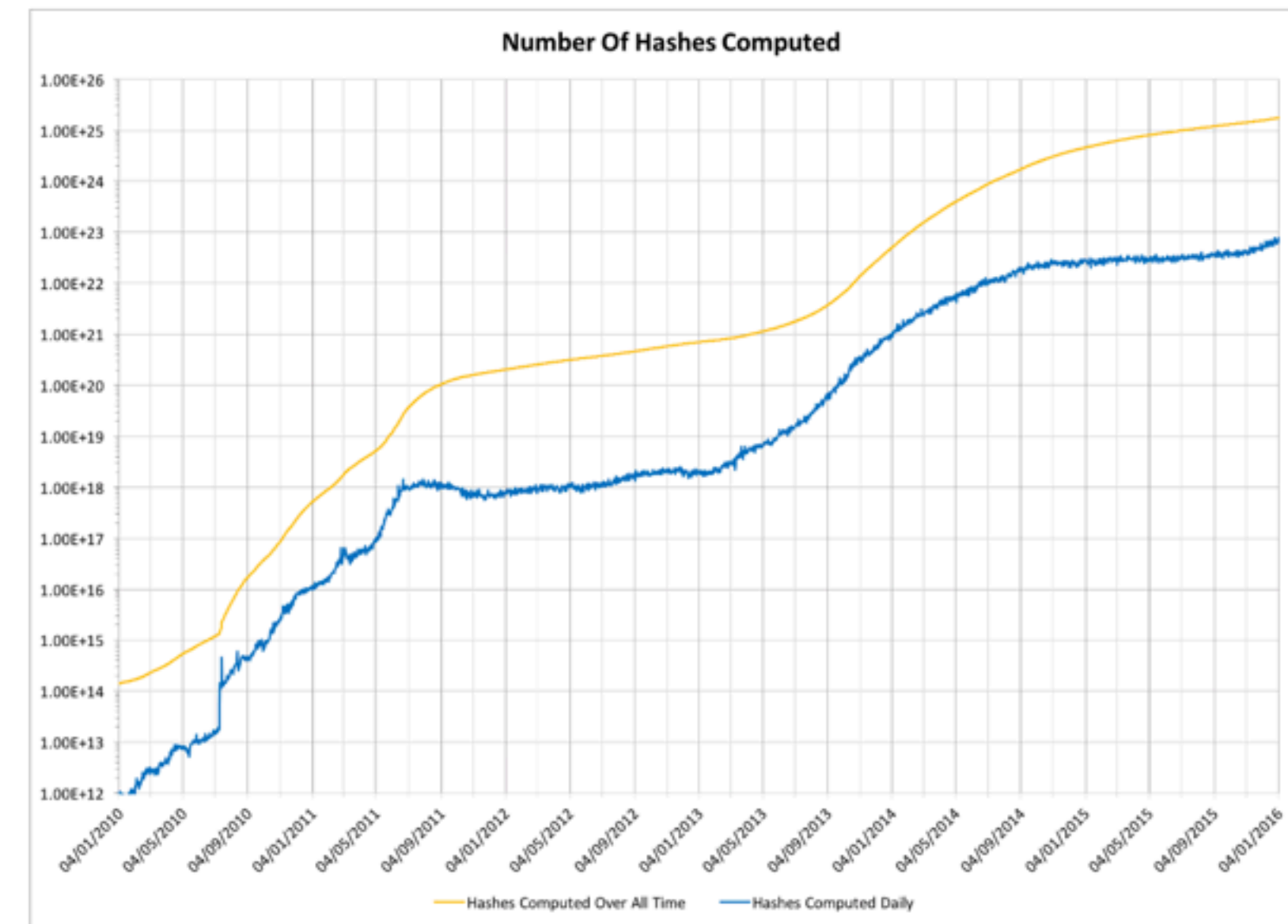
Most participants in the ongoing Bitcoin block size debates have a point of agreement; that a shortage of block space should have an effect on transaction fees. Arguments aside, then, let's see what has actually been happening. Are fees going through the roof? Are miners going to be celebrating a potential offset to the block reward halving that looms in July 2016? The results seem a little surprising!

[Read more: A Market For Bitcoin Transaction Fees?](#)

Behold Mighty Exahash, Hammer Of The Blocks!

Details

 Published: 06 January 2016



"Exahash" sounds like it could well have been the hammer of the Norse Gods of old as it defeated all in battle. In the Bitcoin world of early 2016, however, a mining network that achieves one exahash per second will soon become part of the new folklore. It will, as others before it, quantitatively destroy all earlier incarnations of itself.

Common wisdom that this ever-increasing hash rate makes the Bitcoin network continually stronger, but what does that strength mean? What is it stronger than? What guarantees does it offer? The answer, as so often, is perhaps less clear-cut than we might first imagine!

[Read more: Behold Mighty Exahash, Hammer Of The Blocks!](#)

More info

<http://lopp.net/bitcoin.html>

Example of visualization

1. convert value to position
2. convert value to size
3. convert value to speed
4. convert value to color

Example of mining

1. Check the specific address's activity
(find by address)
2. Find the most active address.
(sort by transaction frequency)
3. Visualize the timeline
(timestamp, tx_in)
4. Animate the timeline
(timestamp, tx_in)