



Ministerstwo
Cyfryzacji

decentralized transactional data

NGI Forum

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transactional data



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information that documents an exchange,
agreement or transfer between parties

any agreement or exchange of commercial or legal
significance

describing an event

time dimension/numerical value

related to personal data



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decentralization



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types

architectural

political

logical



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reasons

fault tolerance

attack resistance

collusion resistance



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blockchains

architecturally decentralized: no SPF

politically decentralized: no one controls them

logically centralized: state system behaves like single computers

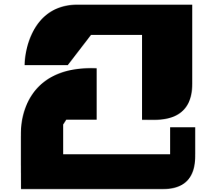


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measures



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Public Blockchains have Subsystems

If an essential subsystem is centralized, the system is centralized.

Mining
(by reward)

Client
(by codebase)

Developers
(by commits)

Exchanges
(by volume)

Nodes
(by country)

Ownership
(by addresses)



minimum number of entities in a given subsystem
required to get to 51% of the total capacity

Subsystem	Measure	Bitcoin (Gini)	Bitcoin (Nakamoto)	Ethereum (Gini)	Ethereum (Nakamoto)	Bitcoin (Data Source)	Ethereum (Data Source)
Mining	Block reward	0.4	5	0.82	3	blockchain.info/pools	etherscan.io/stat/miner?range=1&blocktype=
Client	Unique codebases	0.915	1	0.92	1	bitnodes.21.co/api/#list-nodes	ethernodes.org/network/1/nodes
Developer	Commits to main client	0.79	5	0.91	2	github.com/bitcoin/bitcoin	github.com/ethereum/go-ethereum
Exchange	24 hour volume	0.83	5	0.85	5	coinmarketcap.com/currencies/bitcoin/#markets	coinmarketcap.com/currencies/ethereum/#markets
Node	Distribution across countries	0.84	3	0.85	4	bitnodes.21.co/api/#list-nodes	ethernodes.org/network/1/nodes
Owner	Distribution across addresses with >\$500k [Jul 2017]	0.65	456	0.76	72	bitinfocharts.com/top-100-richest-bitcoin-	etherscan.io/accounts
Maximum Gini / Min Nakamoto		0.915	1	0.92	1		





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governance



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the more decentralized, the harder to govern

efficiency vs. fairness

data privacy



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where we are?



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risk management

research projects

regtech



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