EOS

THE NEXT STEP IN SMART-CONTRACTS?

Presented by

Tokenika

DISCLAIMER

- We are in no formal way associated with block.one, the company developing EOS code. We are just part of the emerging EOS community.

- We have no interest in you buying EOS tokens, and this certainly should not be treated as financial advice. Our goal is to encourage you to take interest in the concept and possibly consider building businesses on top of EOS.

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CONTENT

1. Our background

2. Quick survey

3. Major problems facing the crypto-space

4. Introduction to EOS

5. About Tokenika

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OUR BACKGROUND

- Strongly based in real-life businesses:
  manufacturing industry, real-estate, university education & public agencies

- We are blockchain veterans:
  Bitcoin, MaidSafe, BitShares, Ethereum, Steem & EOS

- We actively participate in the blockchain space:
  FinTech Week in London & Blockchain Summit in Shanghai

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OUR BACKGROUND

QUICK SURVEY - STATE OF THE BLOCKCHAIN 2017

1. How much in USD does BTC mining cost per day? What about ETH?

2. What is BTC average transaction fee? What about ETH?

3. How many transactions per second does Facebook require? What about Visa/MasterCard?

4. How many transactions per second is BTC able to process? What about ETH?

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QUICK SURVEY - RESULTS

1. How much in USD does BTC mining cost per day? What about ETH?

   BTC: 12 mln USD/day (4 bln USD/year)

   ETH: 6 mln USD/day (2 bln USD/year)

   Total raised by all ICOs so far: 3 bln USD

2. What is BTC average transaction fee? What about ETH?

   BTC: 3 USD

   ETH: 0.30 USD

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QUICK SURVEY - RESULTS

3. How many transactions per second does Facebook require? What about Visa/MasterCard?

   Facebook: 50,000 trxn/sec

   Visa/MasterCard: 20,000 trxn/sec

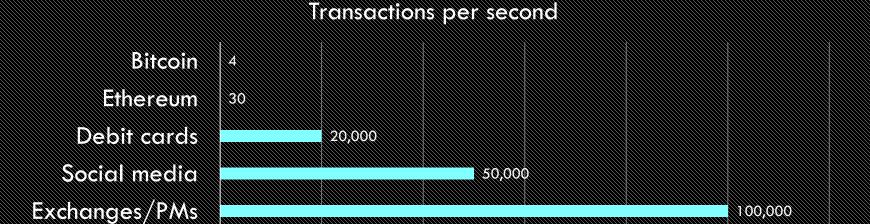4. How many transactions per second is BTC able to process? What about ETH?

   BTC: 4 trxn/sec

   ETH: 30 trxn/sec

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MAJOR PROBLEMS FACING THE CRYPTO-SPACE

Scalability	Transaction fees	Private key security	Blockchain governance
Smart-contracts running amok	High cost of app development	Bad user experience	No bridges between blockchains

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#1 SCALABILITY

- What is high-performance?

- Huge gap between what we can do and what we need to be able to do

- Second layer solutions:

  - State channels: Lightening Network / Raiden

  - Spliting into subchains: Ethereum's sharding & Plasma

- But none is any good if you need very fast sequential processing

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#2 HIGH & UNPREDICTABLE TRANSACTION FEES

- No economic viability at the current level of transaction fees

- Even if fees become low, they are still unpredictable

- Sometimes you need no fees at all (e.g. social media)

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#3 PRIVATE KEY SECURITY

- Increasing number of unsophisticated users

- Losing not only money: also identity & reputation

- Is this vulnerability an inherent blockchain feature?

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#4 BLOCKCHAIN GOVERNANCE

- Decentralized decision making:
  - business-as-usual situations
  - emergency situations

- Value systems cannot be encoded, blockchain is not a self-contained entity

- Different value systems = different people expect different outcomes

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#5 SMART-CONTRACTS RUNNING AMOK

- Formal verification is hard & never fully reliable

- Smart-contracts running out-of-control not part of Ethereum business model

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#6 HIGH COST OF APP DEVELOPMENT

- Nothing is coming to market

- Devs stuck on low-level stuff

- Complex things attempted in inefficient scripting environment

- Generic solutions built with smart-contracts will be expensive to use

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#7 BAD USER EXPERIENCE

- UX way below centralized apps

- Blockchain-based apps need to be indistinguishable from conventional apps

- Responsive front-end requires proper back-end infrastructure

- Devs still stuck on low-level stuff

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#8 NO BRIDGES BETWEEN BLOCKCHAINS

- Blockchains operate in their own silos

- (Almost) impossible to move value across blockchains

- Potential solutions are several years away (e.g. Polkadot, Cosmos)

- They'll require asynchronous communication

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MAJOR PROBLEMS FACING THE CRYPTO-SPACE

Scalability	Transaction fees	Private key security	Blockchain governance
Smart-contracts running amok	High cost of app development	Bad user experience	No bridges between blockchains

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WHAT IS EOS?

EOS is a general-purpose smart-contract platform, just like Ethereum.

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WHAT IS EOS?

EOS is a holistic approach to high-performance general-purpose consensus.

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"EOS IS THE BLOCKCHAIN FOR BUILDING COMMERCIAL SCALE DECENTRALIZED APPLICATIONS THAT ARE INDISTINGUISHABLE FROM CENTRALIZED ALTERNATIVES."

Daniel Larimer, CTO of block.one

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WHAT IS A DECENTRZLIZED APP?

- Decentralized Uber

- Decentralized exchange

- Decentralized prediction market

- Decentralized investment fund

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WHAT DO DECENTRALIZED APPS REQUIRE?

Scalable and
cheap to run

Free for the
users

Bug recovery

Upgradeable

Easily
accessible

No fancy
cryptographic
stuff

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HOW DOES EOS WORK?

EOS acts an operating system for running decentralized applications.

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HOW DOES EOS WORK?

Applications

Operating
System

Computer

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BLOCKCHAIN EVOLUTION

Payment system (Bitcoin) → Smart-contract system (Ethereum) → Operating system for decentralized applications (EOS)

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WHAT FEATURES MAKE EOS UNIQUE?

Processing power

Infrastructure for apps

Publish source code, not assembly

Wide context

No transaction fees

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#1 PROCESSING POWER

- Blocks produced exactly every 3 seconds (or even 500 ms)

- Consensus over events (or messages) instead of consensus over state

- Seqential processing technology borrowed from LMAX exchange which processes millions of transactions on a single thread

- Parallel processing via separation of authentication from action

- No concept of gas

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#2 WIDE CONTEXT

- Errors in smart-contracts & conflicts between people are unavoidable

- Built-in governance mechanisms:

  - Constitution encoded in the blockchain (legally binding)

  - Arbitration for resolving disputes

  - Shareholders voting on important decisions (e.g. self-funded community benefit apps)

- Block producers able to freeze & fix broken apps

- Designed with the needs of serious businesses in mind

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#3 INFRASTRUCTURE FOR APPS

- Common/low-level features & services embedded in the blockchain: account permissions, account recovery, scheduling, authentication, inter-app communication, biometric 2nd factor validation

- Private databases on smart-contract level

- Integrated storage solution based on IPFS, free to use

- App devs only need to write code for what's unique for their application

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#4 NO TRANSACTION FEES

- EOS token is never consumed, no concept of gas

- Spam protection achieved via rate limiting

- If you own 1% of the tokens, you own 1% of the network

- You can own blockchain resources or rent them on pay-as-you-go basis

- Monetization strategy is the application choice, not the platform it's running on

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#5 PUBLISH SOURCE CODE, NOT ASSEMBLY
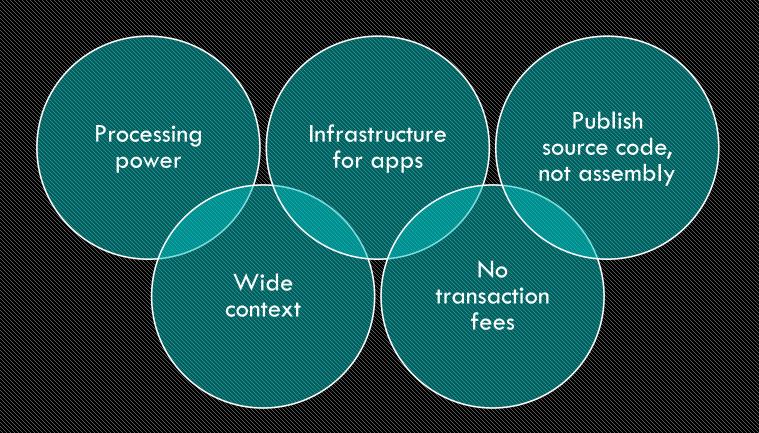
- Source code is sacred, as it captures human intentions

- Source code can be recompiled in the future

- Opens up EOS for multiple virtual machines

- Upgradable smart-contracts become possible
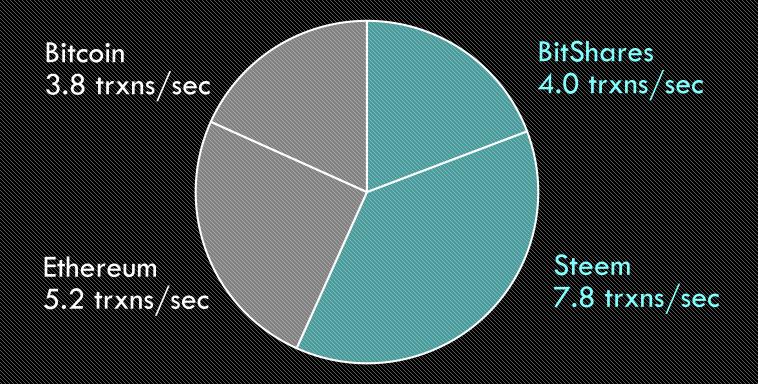
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CONCRETE VS. ABSTRACT

Attempt to generalize something that you have not figured out how to build yet.

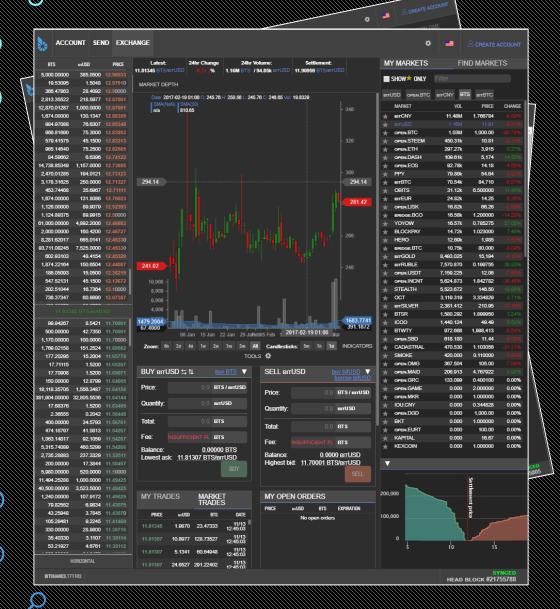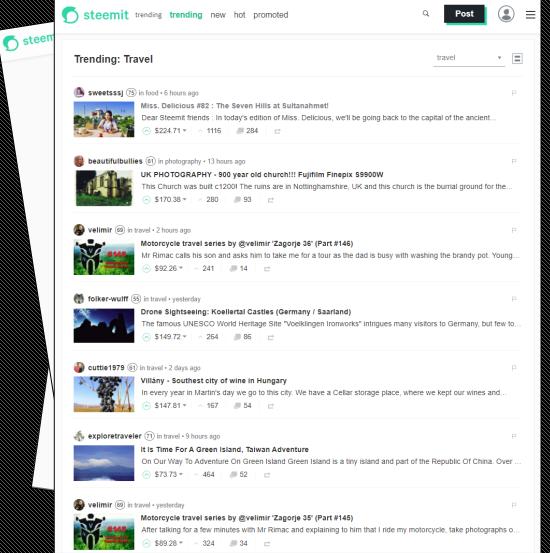Figure out how to build something first and then start generalizing it.

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Left panel (BitShares Exchange)

ACCOUNT SEND EXCHANGE CREATE ACCOUNT

Latest: 11.81345 BTS/bitUSD
24hr Change: -6.31 %
24hr Volume: 1.16M BTS / 94.85k bitUSD
Settlement: 11.90959 BTS/bitUSD

MARKET DEPTH

MY MARKETS   FIND MARKETS

SHOW ★ ONLY   Filter

bitUSD OPEN.BTC bitCNY BTS bitBTC

MARKET	VOL	PRICE	CHANGE
bitCNY	11.48M	1.766784	-6.89%
bitUSD	1.16M	11.81	-2.31%
OPEN.BTC	1.03M	1,000.00	-96.79%
OPEN.STEEM	450.31k	10.81	-2.19%
OPEN.ETH	297.27k	3,915	0.37%
OPEN.DASH	109.61k	5,174	14.53%
OPEN.EOS	92.78k	14.18	-4.56%
PPY	79.86k	54.64	-0.82%
bitBTC	70.54k	84,710	-6.57%
OBITS	31.12k	6.500000	11.45%
bitEUR	24.82k	14.25	-6.36%
OPEN.LISK	16.82k	66.26	-0.50%
BRIDGE.BCO	16.58k	1.200000	-14.29%
YOYOW	16.57k	0.785275	57.05%
BLOCKPAY	14.72k	1.023000	7.46%
HERO	12.69k	1,985	-1.50%
BRIDGE.BTC	10.75k	80,000	-0.09%
bitGOLD	8,493.025	15,194	-5.12%
bitRUBLE	7,570.870	0.199755	39.83%
OPEN.USDT	7,150.225	12.06	-7.65%
OPEN.INCNT	5,824.873	1.842782	-30.45%
STEALTH	5,523.672	146.50	19.95%
OCT	3,119.319	3.334820	0.71%
bitSILVER	2,381.412	210.95	-10.18%
BTSR	1,580.292	1.899650	3.24%
ICOO	1,440.124	49.49	5.52%
BTWTY	972.668	1,908.413	-5.54%
OPEN.SBD	618.180	11.44	-6.05%
CADASTRAL	470.530	1.103056	-21.21%
SMOKE	420.000	0.110000	-5.96%
OPEN.OMG	367.504	105.00	-7.89%
OPEN.MAID	206.913	4.767922	0.68%
OPEN.GRC	133.090	0.400100	0.00%
OPEN.GAME	0.000	2.000000	0.00%
OPEN.MKR	0.000	1.000000	0.00%
IOU.CNY	0.000	0.344828	0.00%
OPEN.DGD	0.000	1.000.00	0.00%
BKT	0.000	1.000000	0.00%
OPEN.EURT	0.000	100.00	0.00%
KAPITAL	0.000	16.67	0.00%
KEXCOIN	0.000	1.000000	0.00%

BUY bitUSD   buy BTS
SELL bitUSD   buy bitUSD / borrow bitUSD

MY TRADES   MARKET TRADES
MY OPEN ORDERS   No open orders

HEAD BLOCK #21755788   SYNCED

Right panel (Steemit)

steemit   trending   trending   new   hot   promoted   Post

Trending: Travel   travel

sweetsssj (75) in food • 6 hours ago
Miss. Delicious #82 : The Seven Hills at Sultanahmet!
Dear Steemit friends : In today's edition of Miss. Delicious, we'll be going back to the capital of the ancient...
$224.71   1116   284

beautifulbullies (61) in photography • 13 hours ago
UK PHOTOGRAPHY - 900 year old church!!! Fujifilm Finepix S9900W
This Church was built c1200! The ruins are in Nottinghamshire, UK and this church is the burrial ground for the...
$170.38   280   93

velimir (69) in travel • 2 hours ago
Motorcycle travel series by @velimir 'Zagorje 36' (Part #146)
Mr Rimac calls his son and asks him to take me for a tour as the dad is busy with washing the brandy pot. Young...
$92.26   241   14

folker-wulff (55) in travel • yesterday
Drone Sightseeing: Koellertal Castles (Germany / Saarland)
The famous UNESCO World Heritage Site "Voelklingen Ironworks" intrigues many visitors to Germany, but few to...
$149.72   264   86

cuttie1979 (61) in travel • 2 days ago
Villány - Southest city of wine in Hungary
In every year in Martin's day we go to this city. We have a Cellar storage place, where we kept our wines and...
$147.81   167   54

exploretraveler (71) in travel • 9 hours ago
It Is Time For A Green Island, Taiwan Adventure
On Our Way To Adventure On Green Island Green Island is a tiny island and part of the Republic Of China. Over ...
$73.73   464   52

velimir (69) in travel • yesterday
Motorcycle travel series by @velimir 'Zagorje 35' (Part #145)
After talking for a few minutes with Mr Rimac and explaining to him that I ride my motorcycle, take photographs o...
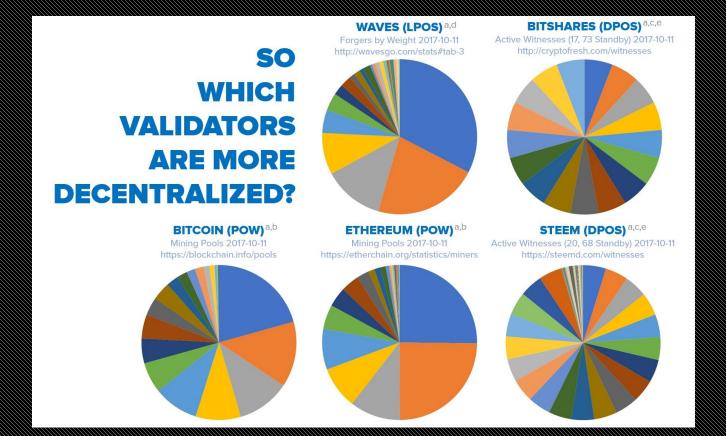$89.28   324   34

DPOS – DELEGATED PROOF OF STAKE

- Elected block producers (a.k.a. witnesses)

- Powered by reputation: hard to earn, easy to lose

- Confirms transactions with 99.9% certainty in an average of just 1.5 sec

- Efficient decision making, yet ultimate power always rests with the shareholders

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DPOS – HOW DECENTRALIZED IS IT?

SO WHICH VALIDATORS ARE MORE DECENTRALIZED?

WAVES (LPOS) [a,d]
Forgers by Weight 2017-10-11
http://wavesgo.com/stats#tab-3

BITSHARES (DPOS) [a,c,e]
Active Witnesses (17, 73 Standby) 2017-10-11
http://cryptofresh.com/witnesses

BITCOIN (POW) [a,b]
Mining Pools 2017-10-11
https://blockchain.info/pools

ETHEREUM (POW) [a,b]
Mining Pools 2017-10-11
https://etherchain.org/statistics/miners

STEEM (DPOS) [a,c,e]
Active Witnesses (20, 68 Standby) 2017-10-11
https://steemd.com/witnesses

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DPOS – HOW RESILIENT IS IT?

- Someone with even 50% of the active voting power is unable to select even a single producer on their own

- When in trouble, the system degrades in a graceful, detectable manner that is trivial to recover from

- Continues to function even when a majority of producers fail, or a large minority of producers go rouge

WHAT ARE THE STRONG POINTS?

- Concept proved in practice

- Web Assembly as a virtual machine

- Strong financial backing: Brock Pierce & Bo Shen (Fenbushi Capital)

- Commitment to spend 1 bln USD to boost the ecosystem

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" EOS IS THE MOST WELL FUNDED PROJECT IN HISTORY AND WE PLAN TO SOON ANNOUNCE A PROGRAM FOR UP TO ONE BILLION USD OF CAPITAL FOR EOS PROJECTS. "

Brendan Blumer, CEO of block.one

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WHAT ARE THE WEAK POINTS?

- Low awareness and quite a lot of negative (undeserved?) perception

- Almost non-existent ecosystem and very few developers

- C++ has a very steep learning curve

- Not live yet

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EOS ROADMAP

Project started in
Q1 2017

December 2017
public testnet

Q1 & Q2 2018
devoted to testing
and building
development tools
& docs

MVP stage called
EOS Dawn 1.0

January 2018
all major
functionalities
deployed

The EOS
blockchain goes
live in June 2018,
most probably
with the parallel
processing feature
already enabled

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MAJOR PROBLEMS - REVISITED

Scalability	Enormous processing power: both sequential & parallel
Transaction fees	No transaction fees
Private key security	Account recovery & 2nd factor authentication built-in
Blockchain governance	Implemented via reputation-based consensus mechanism
Smart-contracts running amok	Block producers able to freeze & fix broken apps
High cost of app development	All common features built-in, entire back-end infrastructure supplied
Bad user experience	Back-end support for responsive front-end & web toolkit for UI
No bridges between blockchains	Asynchronous communication built-in

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EOS WRAP-UP

- Most important: the way EOS is going to operate

- Incremental improvement to stuff that's already been proven to work

- Extremely business oriented

- Can other systems copy EOS solutions?

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ABOUT TOKENIKA

- Focus on blockchain-based fundraising and digital asset management solutions, e.g. Neufund, Melonport, Iconomi

- Software house dedicated to building dApps (both on EOS and ETH)

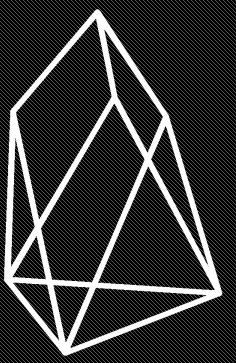- Aiming to be elected as one of the 20 block producers for EOS

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WHAT DO WE NEED?

- Not looking for funding, looking for ways to spend money

- Looking for good ideas that can be converted into dApps

- Hiring developers with background in C++ and/or ETH smart-contracts

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