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INTRODUCTION

- A publicly accessible and immutable content blockchain.
- Fast and fee-less digital token (STEEM) .
- Steem is the first publicly accessible database for immutably stored content in the form of plain text, along with an in-built incentivization mechanism.
- People earn STEEM by using their brain ("Proof-of-Brain").

STEEMIT CURRENCY UNITS

1. **Steem (STEEM)** : It is the fundamental unit of the Steem blockchain.
2. **Steem Power (SP)** : Long-term capital investment for steemit.
3. **Steem Dollars (SBD)** : Stable Steem currency.

STEEM

0.000 STEEM ▾

Tradeable tokens that may be transferred anywhere at anytime.

Steem can be converted to STEEM POWER in a process called powering up.

STEEM POWER

0.004 STEEM ▾

Influence tokens which give you more control over post payouts and allow you to earn on curation rewards.

(+15.083 STEEM)

Part of dreadedlama's STEEM POWER is currently delegated. Delegation is donated for influence or to help new users perform

actions on steemit. Your delegation amount can fluctuate.

STEEM DOLLARS

$0.000 ▾

Tokens worth about $1.00 of STEEM, currently collecting 0% APR.

SAVINGS

0.000 STEEM ▾

Balance subject to 3 day withdraw waiting period,STEEM DOLLARS currently collecting 0% APR.

$0.000 ▾

Estimated Account Value

$0.01

The estimated value is based on an average value of Steem in US dollars.

Attack Protections

- **Mitigating Timing Attacks** : Steem levels the playing field by requiring all conversion requests to be delayed for three and a half days (STEEM - SBD).
- **Minimizing Abuse of Conversions** : The blockchain decides when to create SBD and who should get it.
- **Sustainable Debt to Ownership Ratios** : The blockchain prevents the debt-to-ownership ratio from getting too high, by reducing the amount of STEEM awarded through SBD conversions and thus also maintaining SBD value close to $1.
- **Interests** : SBD owners get 10% annual interest on their total SBD.

- **Voting Abuse** : A user has 100% power, which gets reduced with each upvote.
- **Distribution** : Payouts are done 7 days after posting the content.
  - 90% of total generated STEEM each day goes to those who hold SP, rest 10% to content creators and curators.
  - The creator gets on 75% of the total rewards, rest 25% goes to curators.
  - Content Creators get the rewards as 100% SP or 50% SP and 50% SBD.
  - The payout split depends on how long after posting the vote was cast, using a linear function.
- **SP Conversion** : To withdraw all the SP one has, it takes 13 weeks.

Consensus in Steem

- The consensus algorithm adopted by Steem is similar to the consensus algorithm adopted by companies throughout the world.
- People with a vested interest in the future value of Steem vote to select individuals responsible for including testimony in the public record.
- Voting is weighted proportional to each individual's vested interest.
- With Steem, block production is done in rounds.
- Each round 21 witnesses are selected to create and sign blocks of transactions.
- Twenty (20) of these witnesses are selected by approval voting and one is timeshared by every witness that didn't make it into the top 20 proportional to their total votes.

- Any witness who misses a block and hasn't produced in the last 24 hours will be disabled until they update their block.
- Because the active witnesses are known in advance, Steem is able to schedule witnesses to produce blocks every 3 seconds.

Basically, steem works on Delegated Proof of Stake (DPoS) consensus algorithm.

DPoS

- People in a particular cryptocurrency community vote for Witnesses to secure their computer network.
- Only the top 100 Witnesses are paid for their service. The top 20 earn a regular salary. Because many want to become a Witness, there are hundreds of backup Witnesses.
- People's vote strength is determined by how many tokens they hold. This means that people who have more tokens will influence the network more than people who have very few tokens.
- If a Witness starts acting irresponsible, or stops doing a quality job securing the network, people in the community can remove their votes, essentially firing the bad actor. Voting is always ongoing.
- This system works because it is able to remove bad actors from the system and at the same time recognize new valuable members.
- The system is dependent upon active voters in the community

STEEM Witness

A STEEM witness is a person who operates a **witness server** (which produces blocks), and **publishes a price feed** of STEEM/USD to the network.

Roles of Witness:

- They're the main producer of blocks.

- They maintain a price feed, which is how SBD functions.

- They play the role of consensus (decide whether to hard fork or not).

A witness is paid proportionally to how high they are in the witness ranks, excluding the top 19 witnesses (who get 1 block every ~63 seconds).

Block Mining

Blocks are produced in "rounds", which are 21 blocks long, and blocks are created every 3 seconds.

During each 21 block round, the blocks are distributed as such:
- 19 blocks go to the top 19 voted witnesses (who are slightly shuffled to avoid witnesses purposely skipping blocks)
- 1 block goes to a Proof-of-Work miner, who becomes a witness for just 1 block.
- 1 semi-random witness outside of the top 19, which is influenced by their ranking.

Problem With Transaction Fees.

- Steem goes to great lengths to reward people for contributing to the network. It would be counterproductive to turn around and charge people every time.
- Blockchain Technology currently depends on transaction fees to prevent spams and worthless transactions in the network.
- Introducing transaction fee in STEEM is like solving the gmail spam problem by introducing small fees on every email.
- Micropayments

STEEM has solved the two underlying problems with micropayments.

1) Problem: TRANSACTION FEES

Solution: STEEM has no transaction Fees.

2) Problem: People don't like micropayments because they are too much trouble.

Solution: Can you upclick on an arrow button? That's how simple it is to "micropay" someone using Steemit

Prevention from Spams

The only reason to charge a fee would be as a deterrent to prevent users from completing an unreasonable amount of transactions, which could potentially impact the performance of the blockchain.

In order to place reasonable limits on the system use, each user is given a limited bandwidth.Whenever users perform blockchain operations such as token transfers, posting content, and voting, it uses up a portion of their bandwidth. Bandwidth limits adjust based on network use, so users have a higher bandwidth allowance when the network usage is low. The amount of bandwidth that an account is allowed is directly proportional to the amount of Steem Power a user has, so users can always increase their bandwidth allowance by getting additional Steem Power

Sybil Attack

Centralized websites prevent spam through rate limiting and some form of ID verification. Even something as simple as reCAPTCHA is sufficient to limit the creation of fake accounts. If someone abuses their account then centralized websites are free to block the account.

In a decentralized system there is no direct way to ban users nor centralized provider able to host a reCAPTCHA and enforce rate limiting of accounts.

Performance and Scalability

- Steemit Network is built upon Graphene Blockchain platform.
- Graphene is highly performant and has been observed to sustain over 1000 transactions per second on a distributed test network and can be scaled to over 10,000 transactions per second with improvements to server capacity and communication protocols.
- Current version of Steem can handle a user base greater than **Reddit**.
- The total interaction on Reddit per second sums up to 250 transactions per second, while Steem can easily deliver a greater value of upto 10,000 transaction per second.

How is the Scalability achieved?

Steem utilizes lessons from popular Cryptocurrency exchange LMAX that can handle over 6 million transactions per second. The key points to achieve it are:

- Keep everything in memory.
- Keep the core business logic in a single thread.
- Keep cryptographic operations (hashes and signatures) out of the core business logic
- Divide validation into state-dependent and state-independent checks.
- Use an object oriented data model.

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