

DELEGATED PROOF OF STAKE

VLADIMIR KOMENDANTSKIY

POA NETWORK

DLT-EDI // 28TH FEBRUARY 2019

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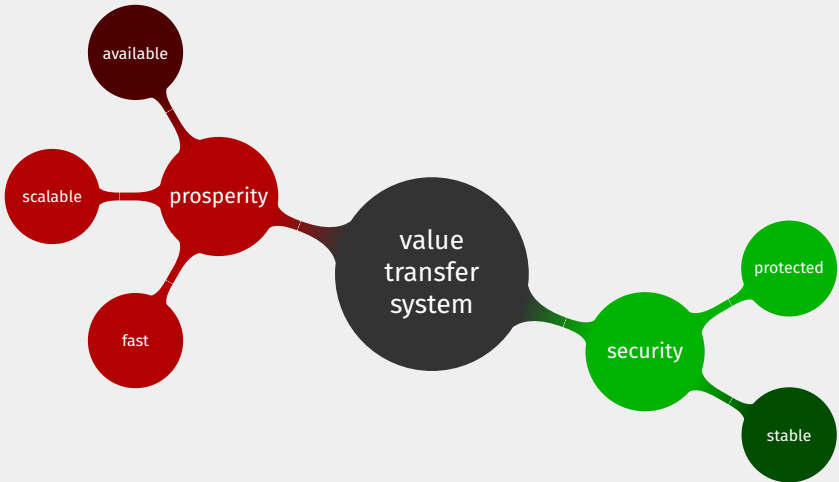
1 Motivation

2 Definition

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MOTIVATION

IDEALISED VALUE TRANSFER SYSTEM



DEFINITION

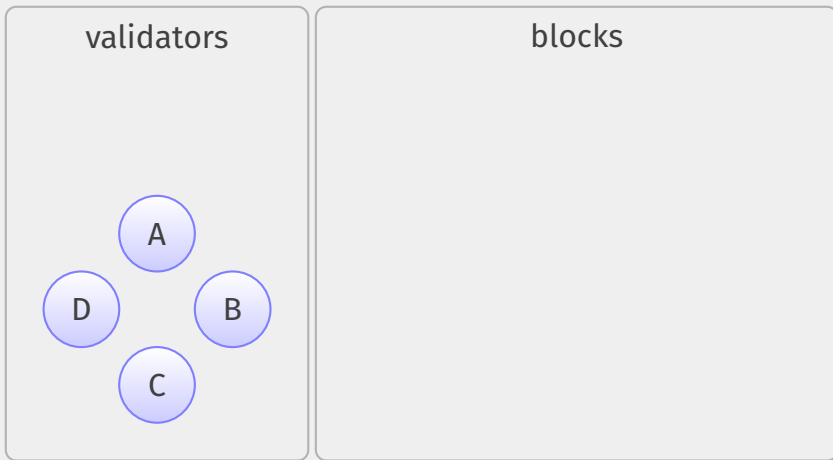
DELEGATED PROOF OF STAKE CONSENSUS MODULE

- Provides economic incentive for honest and decentralised protocol execution.
- *Validators* (block producers) are selected, or *delegated*, from participants.
- Participants can stake on
 - ▶ themselves to get selected as a validator,
 - ▶ others to get a share if and when they are selected.
- Validators are chosen based on
 - ▶ the amount at stake,
 - ▶ a randomness beacon.

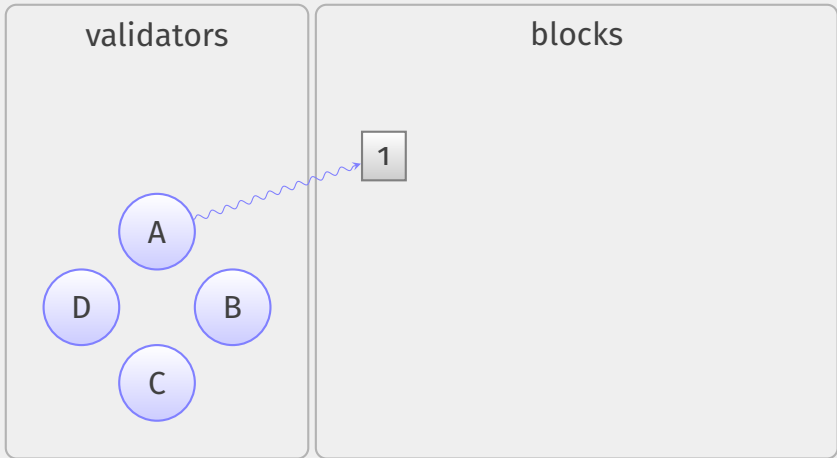
INCENTIVES

- **Honesty.** A node with malicious behaviour is reported and removed, and its stake confiscated.
- **Increased throughput.** Participants launch more consensus nodes (servers) to increase the probability of selection.

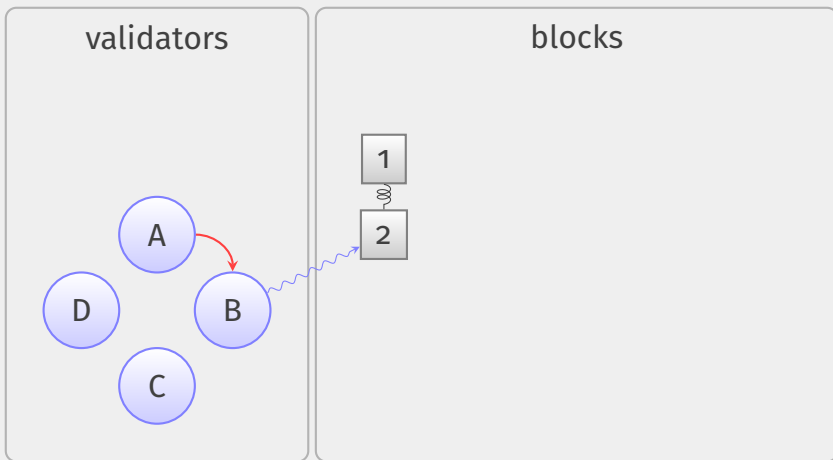
BASE CONSENSUS PROTOCOL: AuRa



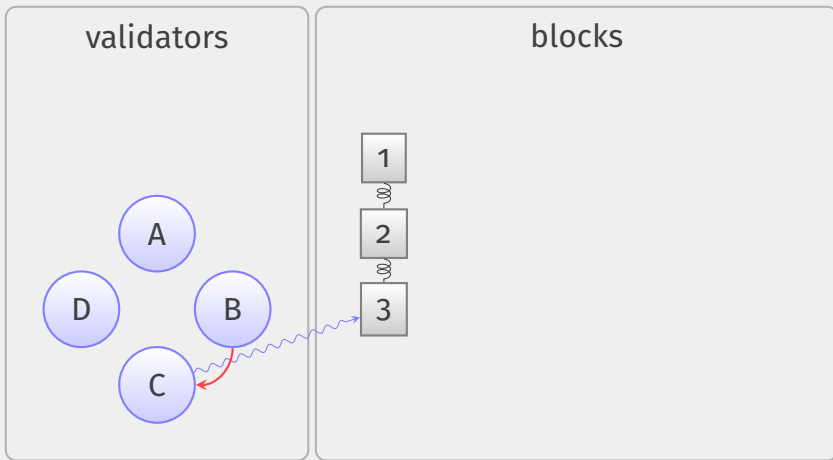
BASE CONSENSUS PROTOCOL: AuRa



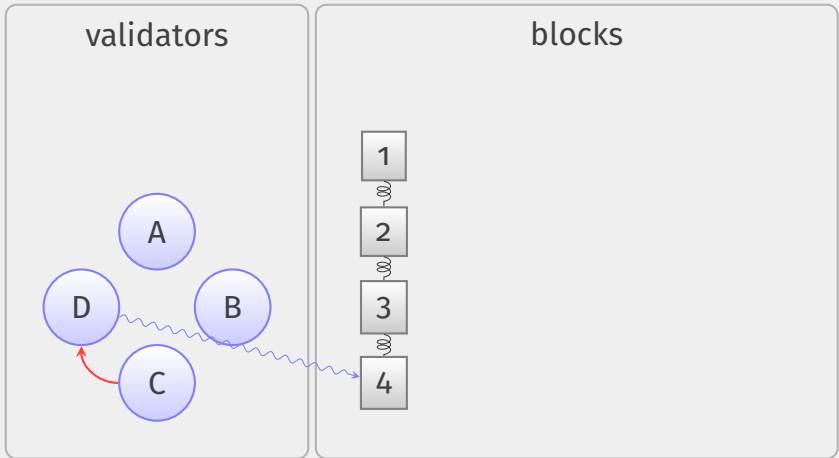
BASE CONSENSUS PROTOCOL: AuRA



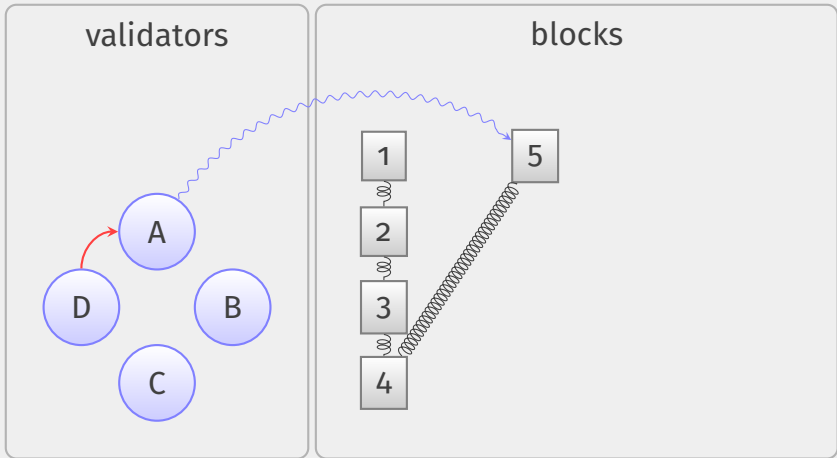
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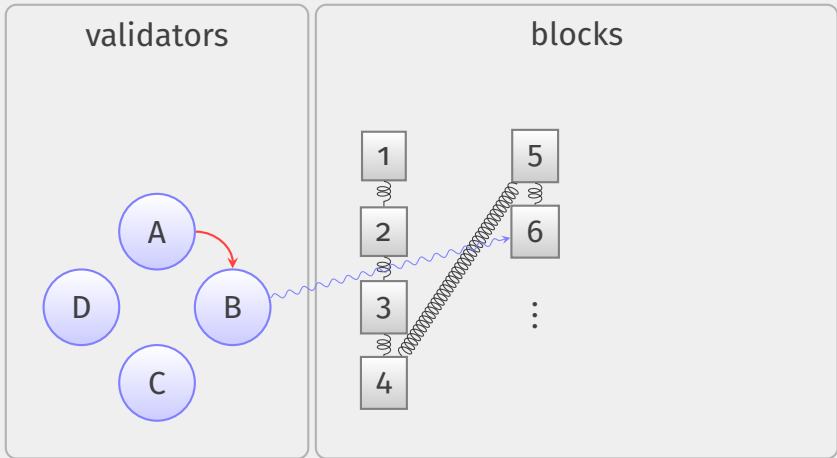
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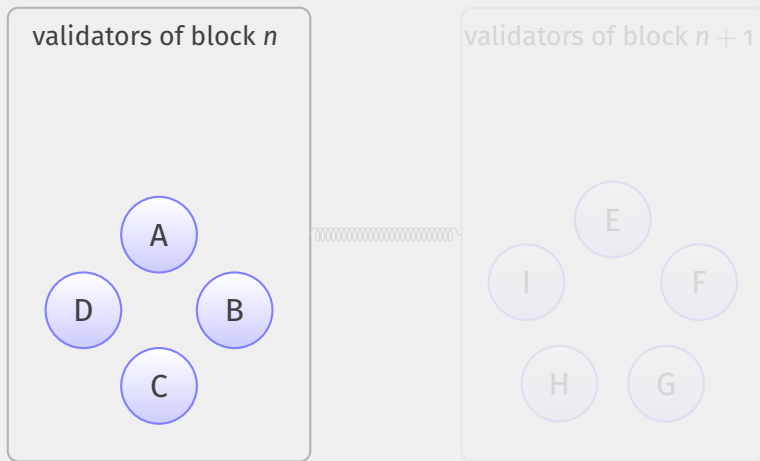
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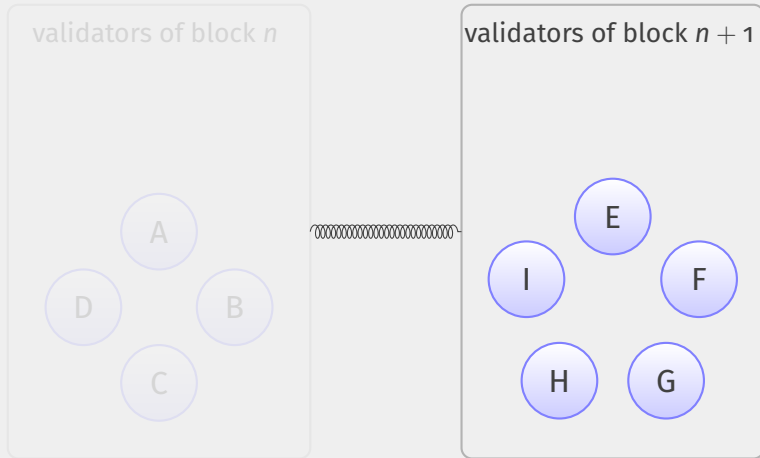
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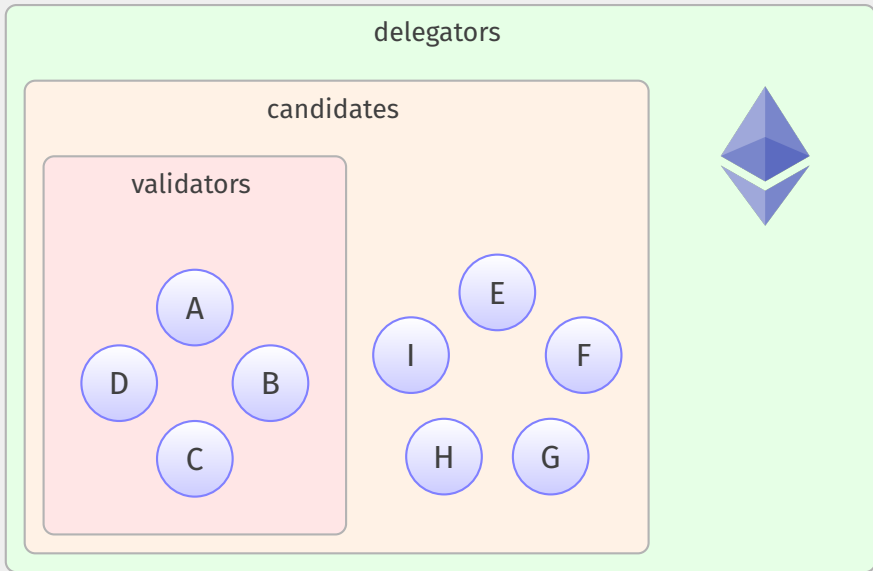
GOVERNANCE EVENT: VALIDATOR SET CHANGE



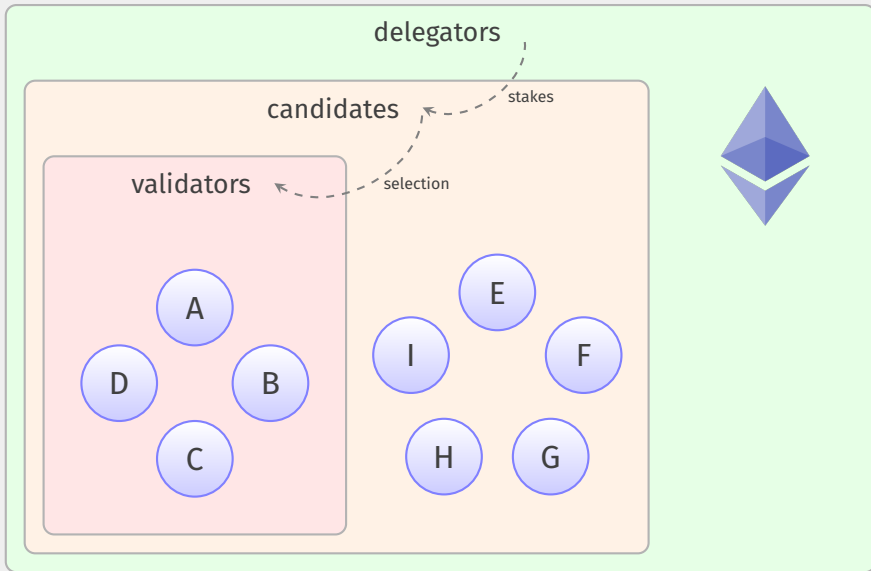
GOVERNANCE EVENT: VALIDATOR SET CHANGE



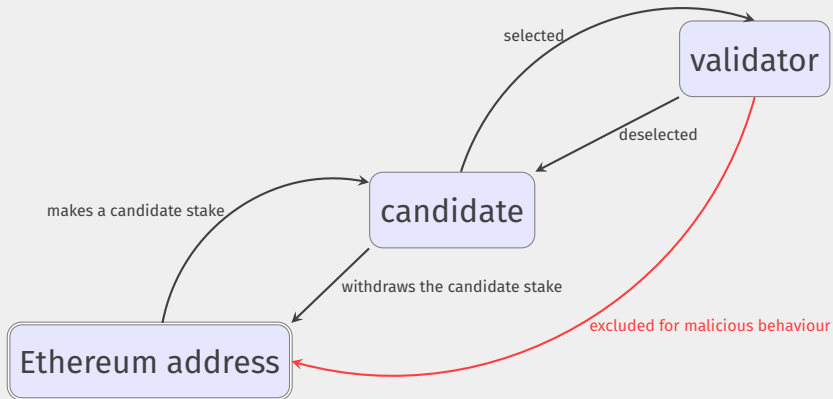
PARTICIPANTS (STAKEHOLDERS)



PARTICIPANTS (STAKEHOLDERS)



PARTICIPANT TRANSITIONS



RULES

GENESIS

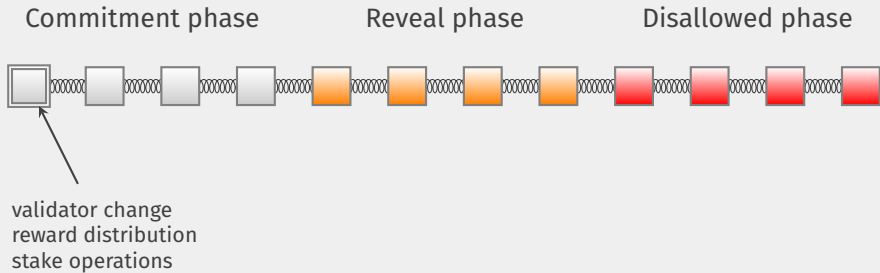
Addresses contained in the genesis block:

- governance contract owner
- initial validators

... and DPoS **parameters**:

- MAX_CANDIDATES
- MAX_VALIDATORS
- CANDIDATE_MIN_STAKE
- DELEGATOR_MIN_STAKE
- STAKING_EPOCH_PERIOD

STAKING EPOCH

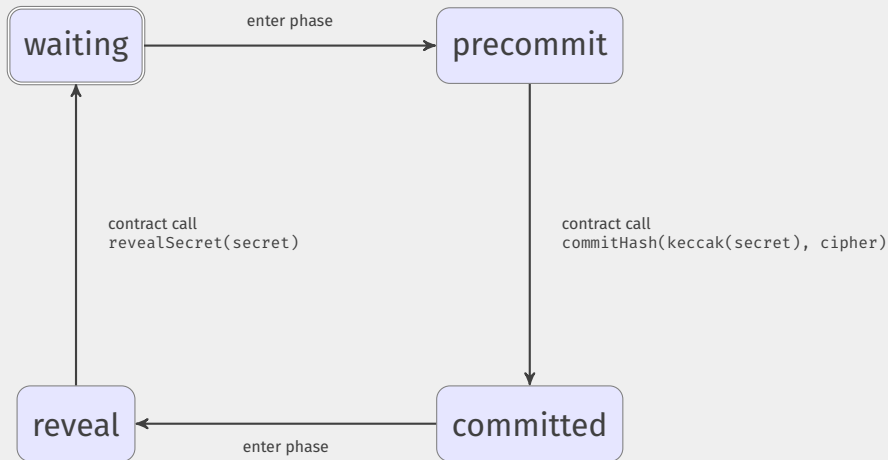


VALIDATOR SELECTION

Starting from the second epoch, validators are determined by

- the distributed randomness of the previous staking epoch,
- the amount at stake for each candidate validator,
- extra tuning parameters of the economic model.

RANDOMNESS BEACON



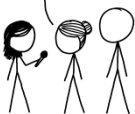
FURTHER REFERENCES

1. POA Network DPoS whitepaper (upcoming, 2019)
2. DPoS DAO Solidity contracts:
<https://github.com/poanetwork/posdao-contracts>
3. These slides:
<https://github.com/vkomenda/dlt-edi-2019-02-28>
4. Voting software: <https://xkcd.com/2030/>

ASK THE ENGINEER

ASKING AIRCRAFT DESIGNERS
ABOUT AIRPLANE SAFETY:

NOTHING IS EVER FOOLPROOF,
BUT MODERN AIRLINERS ARE
INCREDIBLY RESILIENT. FLYING IS
THE SAFEST WAY TO TRAVEL.



ASKING BUILDING ENGINEERS
ABOUT ELEVATOR SAFETY:

ELEVATORS ARE PROTECTED BY
MULTIPLE TRIED-AND-TESTED
FAILSAFE MECHANISMS. THEY'RE
NEARLY INCAPABLE OF FALLING.



ASKING SOFTWARE
ENGINEERS ABOUT
COMPUTERIZED VOTING:

THAT'S TERRIFYING.



WAIT, REALLY?

DON'T TRUST VOTING SOFTWARE. AND DON'T
LISTEN TO ANYONE WHO TELLS YOU IT'S SAFE.

WHY?

I DON'T QUITE KNOW HOW TO PUT THIS, BUT
OUR ENTIRE FIELD IS BAD AT WHAT WE DO,
AND IF YOU RELY ON US, EVERYONE WILL DIE.



THEY SAY THEY'VE FIXED IT WITH
SOMETHING CALLED "BLOCKCHAIN."

AAAAA!!!

WHATEVER THEY SOLD
YOU, DON'T TOUCH IT.
BURY IT IN THE DESERT.
WEAR GLOVES.

