DFINITY

Staking on the Internet Computer

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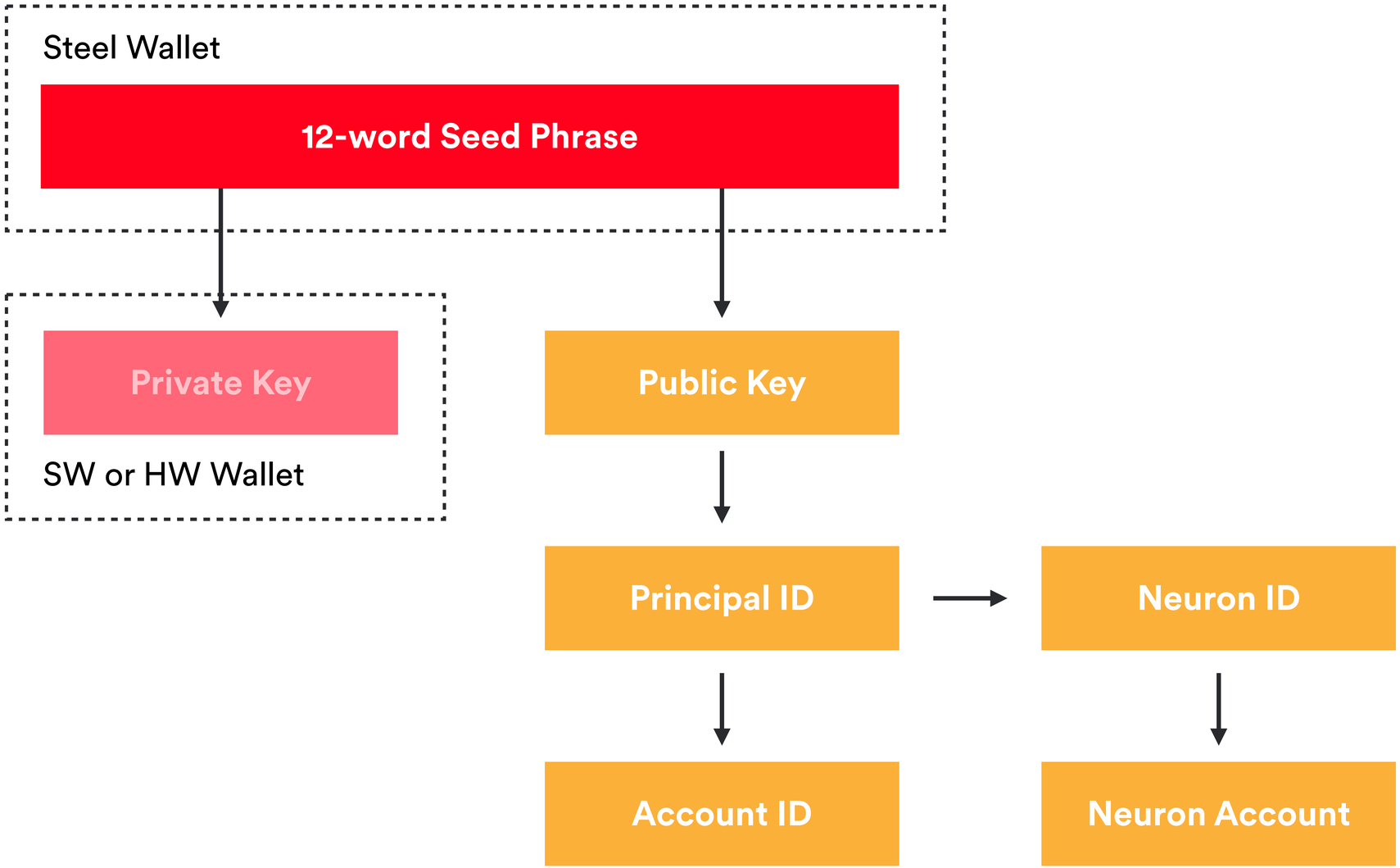
Principal Engineer

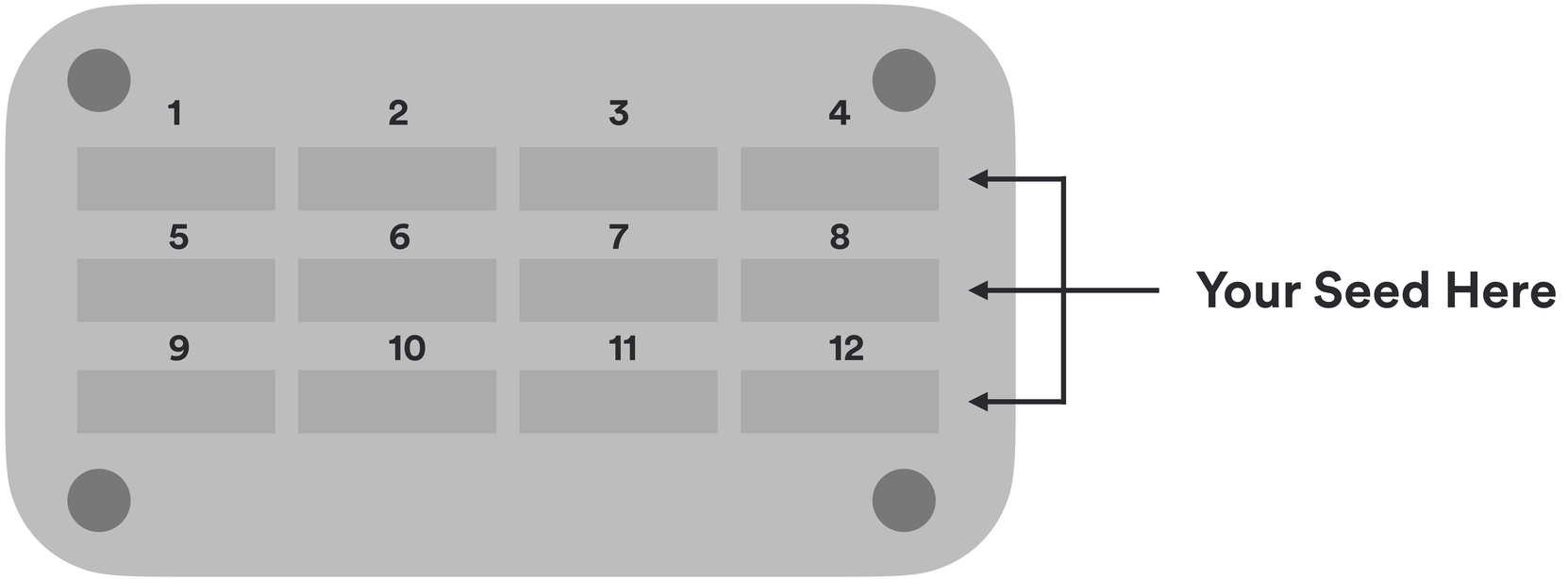
What is Staking?

- **Staking:** tokens are held by the network in exchange for the ability to vote on proposals

- The act of voting generates rewards as compensation for tokens being kept illiquid over a certain term


Steel Wallet
12-word Seed Phrase
Private Key
SW or HW Wallet
Public Key
Principal ID
Neuron ID
Account ID
Neuron Account

Seed Wallets



Voting Power and Rewards

- A neuron’s voting power is its stake, multiplied by possible bonuses
- Reward is minted and distributed each day, in exchange for voting
- Reward is based on the percentage of votes participated in each day

Calculating Return

- Future returns cannot be predicted with accuracy
  - We can only know recent returns

- It depends not only on the amount staked and for how long
  - but also on total supply and the number of competing stakeholders

Base Rewards

- At genesis, rewards are calculated as 10% of supply (~46mm)
- After 8 years, rewards will be calculated as 5% of supply at that time (??mm)
- This percentile figure declines linearly from genesis until the 8th year

What is a Neuron?

- A **neuron** is a ledger account controlled by the Governance canister

- … plus several other details that affect its voting power

Neuron Attributes

- Neuron Id
- Stake
- Dissolve Delay
- Dissolve State
- Non-Dissolving Age
- Maturity
- Followees and Topics
- Hot Keys

Stake

- Amount of ICP held in a Neuron’s account
- Stake can be increased at any time, but withdrawal requires that certain conditions to be met

Dissolve Delay

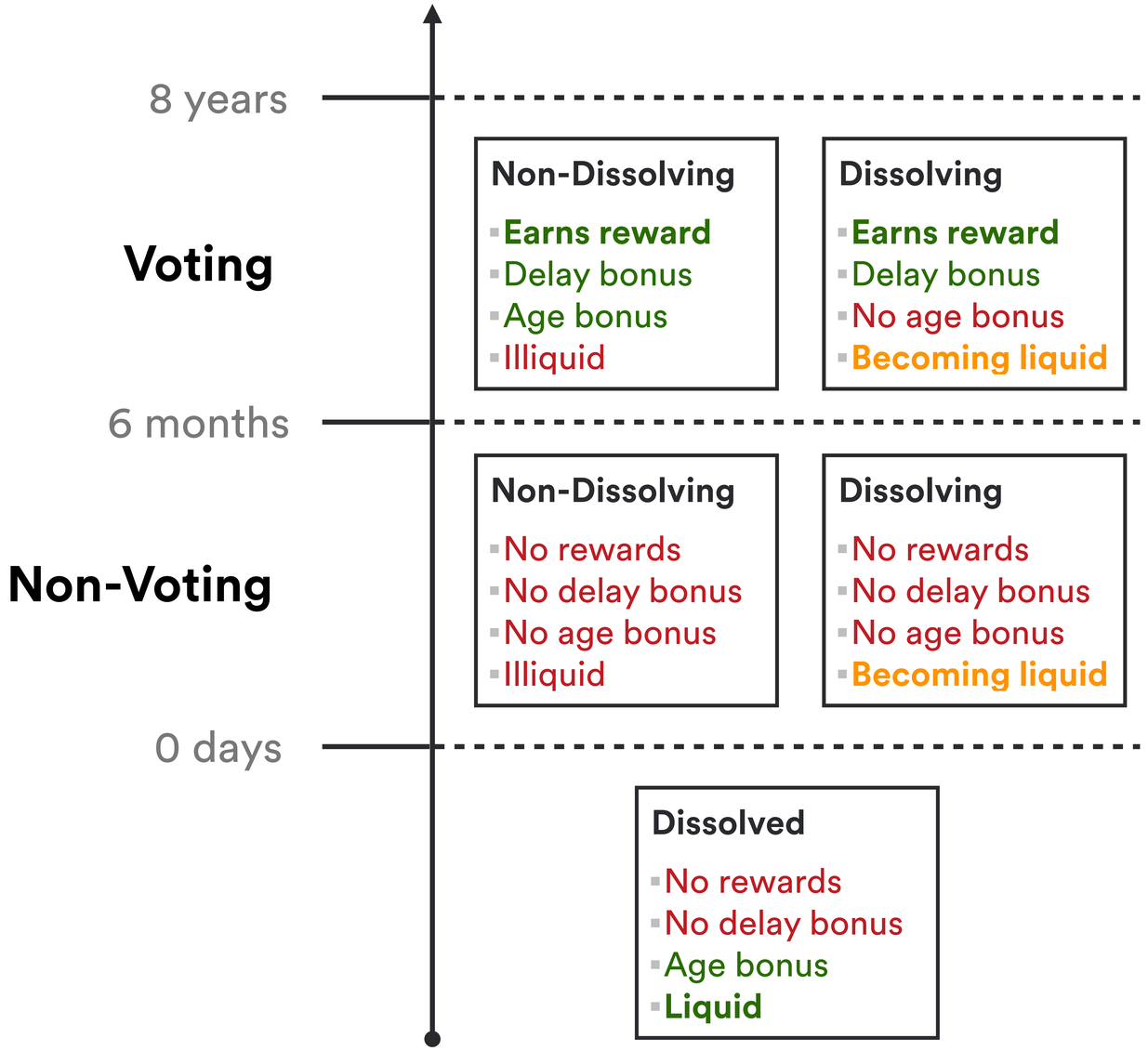
- Minimum time a Neuron must wait before its stake can be withdrawn
- A neuron must be in a dissolving state for this delay to decrease
- The larger the delay, the greater the bonus to voting power
  - A delay of 6 months offers a bonus of 1.06x
  - A delay of 8 years offers a bonus of 2x
  - Anything in-between scales linearly

Dissolve State

- A Neuron can either be **dissolving**, or **non-dissolving**
- If dissolving, the delay until liquidity is decreased each second
- If a non-dissolving Neuron has no delay remaining, it is dissolved
- Only non-dissolving Neurons accumulate age toward the age bonus

Non-Dissolving Age

- A Neuron that is not dissolving accumulates “age”
- The first four years of age are applied as a voting power bonus


8 years
Voting
Non-Dissolving
Earns reward
Delay bonus
Age bonus
Illiquid
Dissolving
Earns reward
Delay bonus
No age bonus
Becoming liquid
6 months
Non-Voting
Non-Dissolving
No rewards
No delay bonus
No age bonus
Illiquid
Dissolving
No rewards
No delay bonus
No age bonus
Becoming liquid
0 days
Dissolved
No rewards
No delay bonus
Age bonus
Liquid

Voting Power + Bonuses

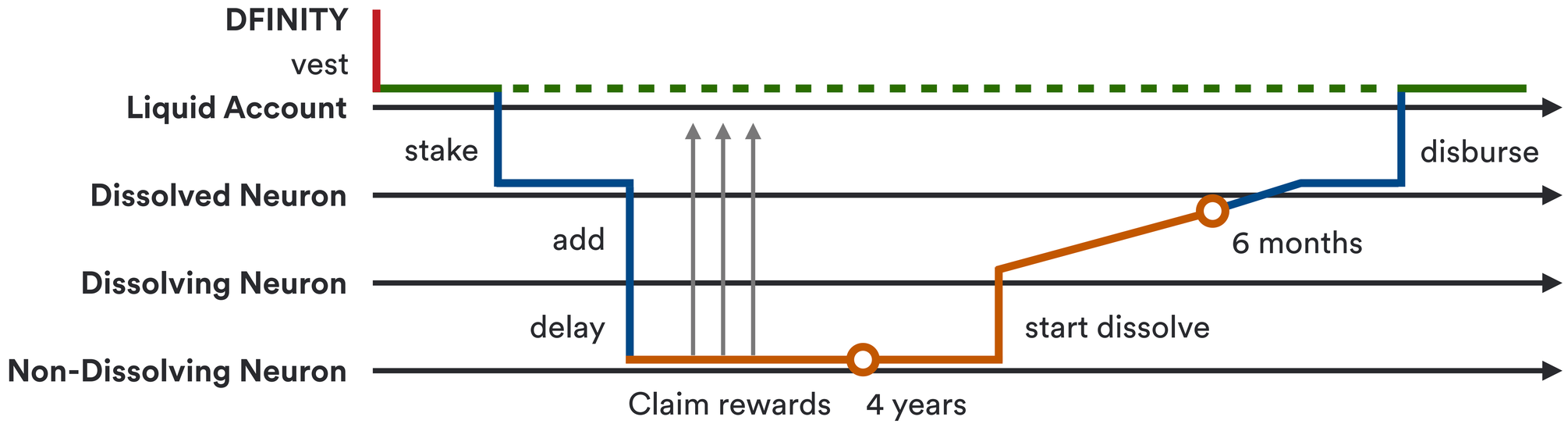
- **Base Voting Power** = ICP staked

- **Delay bonus**
  - scales linearly from ~1x–2x
  - based on a delay from 6M–8Y

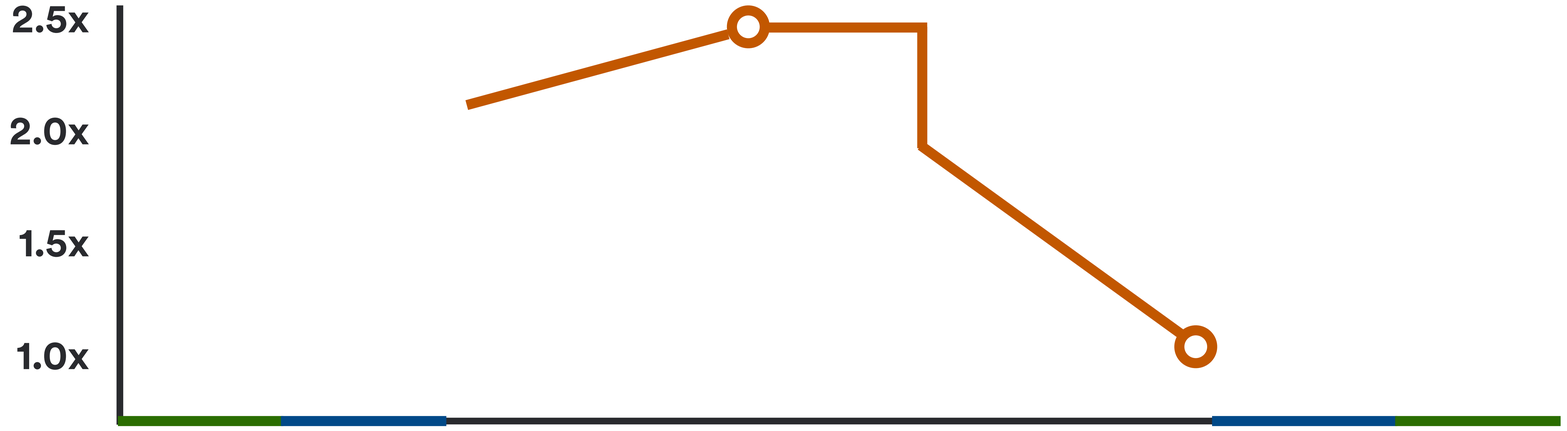
- **Age bonus (“time since last entering a non-dissolve state >=6M”)**
  - scales linearly from 1x-1.25x
  - based on non-dissolving age of 0D-4Y

- Bonuses are *multiplicative*, for a possible range of 1x–2.5x

8-Year Neuron



At 2.0x, current rewards are ~0.53% per week

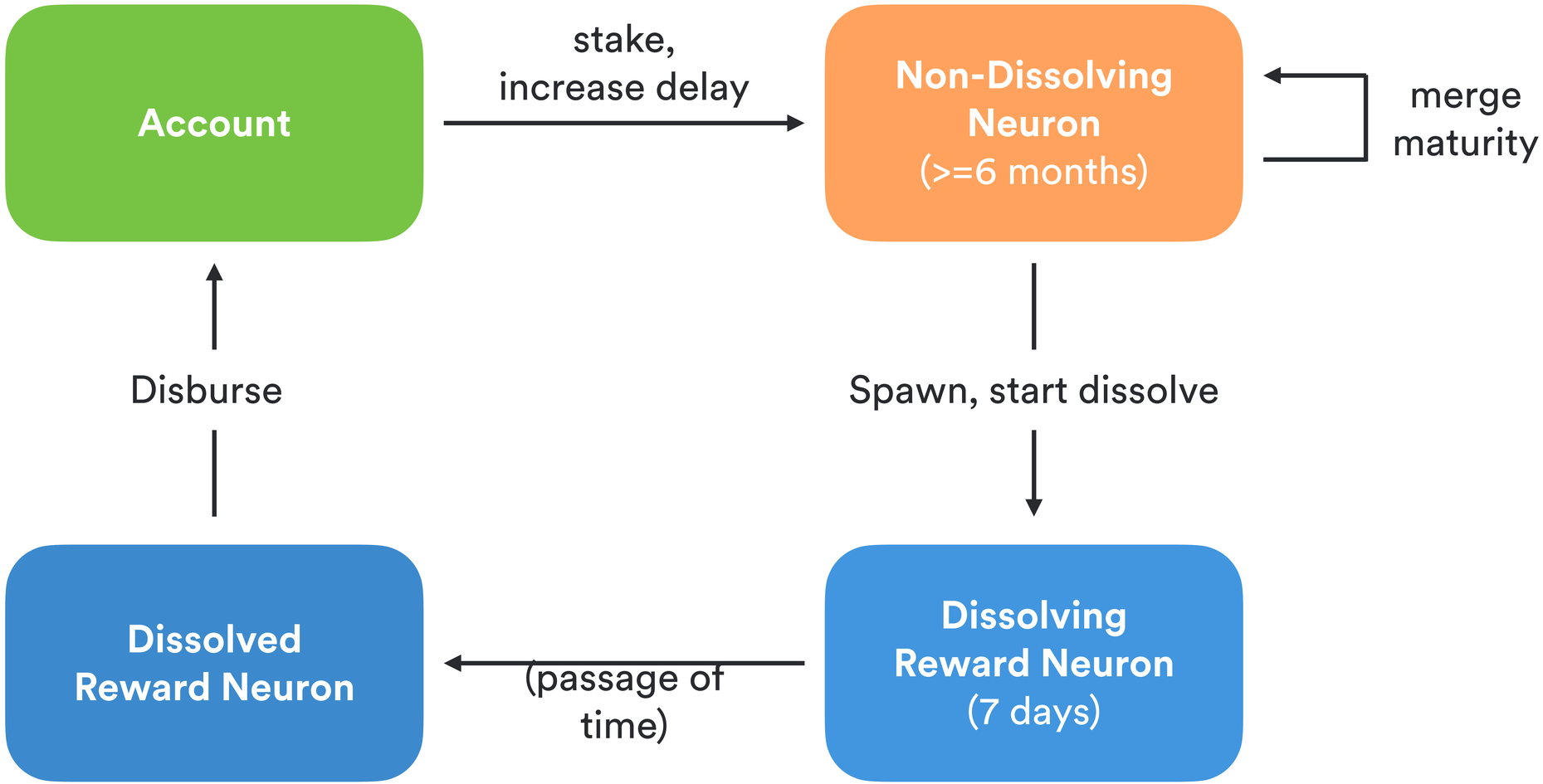


NOTE: Reward amounts decay from 10% of supply at genesis, to 5% of supply after eight years and thereafter.

Maturity

- Maturity is roughly the amount of unclaimed reward in your Neuron
- It is unrelated to the concept of “age” as described previously
- Each day that you participate in voting
  - … and your neuron’s dissolve delay >= 6 months
  - … whether dissolving or non-dissolving
  - then you will accumulate maturity
- Maturity is claimed by “spawning” it from the parent Neuron

ICP Neuron Lifecycle



Followees and Topics

- You can set your Neuron to follow other Neurons
- Otherwise, voting must happen manually for each proposal
- Two major candidates for following:
    1. DFINITY Foundation
    2. Internet Computer Association

Set Followees

- Voting rewards depends on the percentage of possible votes you make each day

- You want to follow such that you vote on as many proposals as possible in order to maximize potential rewards

Add Hot Key

- A hot key lets you view your Neuron and control its topics and followees from the NNS App

Neuron Operations

- Stake
- Refresh (or “top up”)
- Split
- Spawn (i.e., claim rewards)
- Disburse
- Start/Stop Dissolving
- Increase Dissolve Delay
- Add/Remove Hot Key
- (Merge Maturity)
- (Merge Neurons)

Open Source!

If you wonder how voting power is calculated, for example:
https://github.com/dfinity/ic/blob/master/rs/nns/governance/src/governance.rs#L395

Q&A

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Q&A

bench-mouse · 3d · *edited 2d*

I've been hoping to see an option to combine neurons. I created quite a few before there was a hotkey to add to the staked neurons, and consolidating them would be very helpful.

It would also be nice if we could have an option to automatically reinvest our spawned ICP back into the parent neurons or other neurons without having to manually do it. Maybe that would negate a need for 7 day dissolve before reinvesting the ICP. Doing this manually for multiple neurons can require a lot of checking in on things.

Thanks all! Keep up the awesome work!

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Q&A

BuffDarkKnight · 3d · *edited 2d*

If I stake for 6months dissolve delay and unlock it right away. I won't get any rewards.

So why not just make it so that 1 year staking is the minimum? New holder may stake 6 months and unlock right away only to find out they don't earn anything. What's the rationale behind this?

And for holder that staked 8years are questioning why the last 6months doesn't have any rewards? Why don't the team just remove the " last 6months not getting any rewards" concept and just split the same staking rewards evenly through 8 years. Although rewards are the same but no people will question it.

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Opening up Q&A to live participants

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