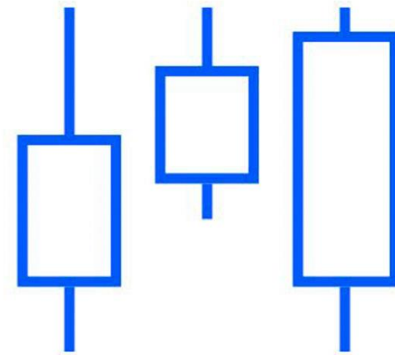
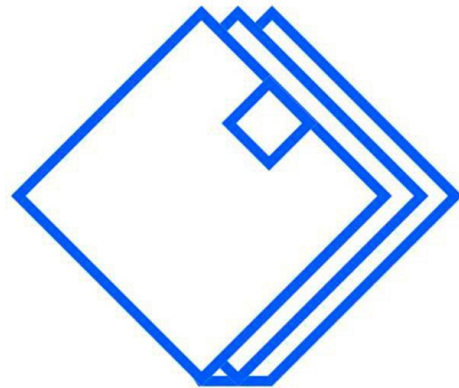
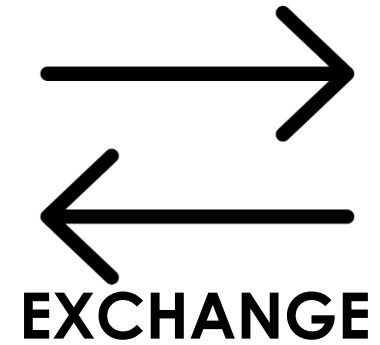
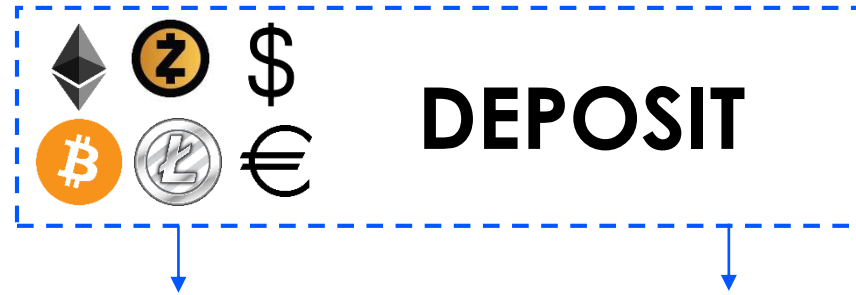


# waves



**Telegram: @krboktv**  
**E-mail: [krboktv@gmail.com](mailto:krboktv@gmail.com)**

# WHAT IS WAVES FOR USERS



# WAVES WALLET



Кошелёк



Портфель



Транзакции



Лизинг



Отправить

Ваш адрес



Waves • \$9.66

Bitcoin • \$12 435.60

Ethereum • \$1 316.89

1Д

1Н

1М

\$ 9.66

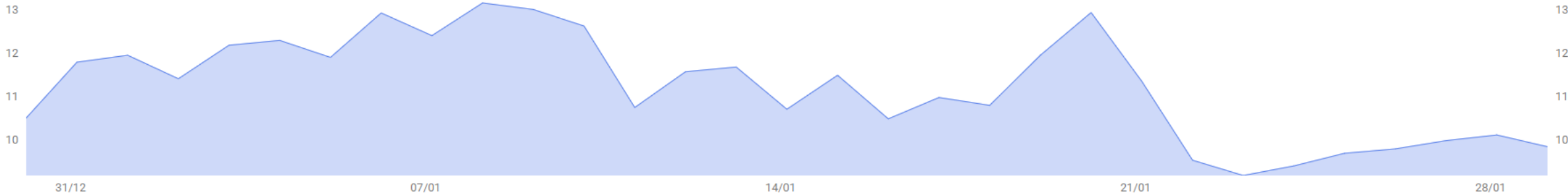
ЦЕНА WAVES

-\$ 0.66

ЗА ПОСЛЕДНИЙ МЕСЯЦ (USD)

-6.83%

ЗА ПОСЛЕДНИЙ МЕСЯЦ (%)



Waves

3.43123193



Отправить



Bitcoin

0.00019122



Отправить



Пополнить



Ethereum

0.00065865



Отправить



Пополнить



US Dollar

0.46



Отправить



Пополнить



Euro

0.60



Отправить



Пополнить



Litecoin

0.00039981



Отправить



Пополнить



Zcash

0.00001000



Отправить



Пополнить



# TOKEN CREATION

Name of your asset

Please use only Latin letters

Description

You can not change the description later

Total tokens

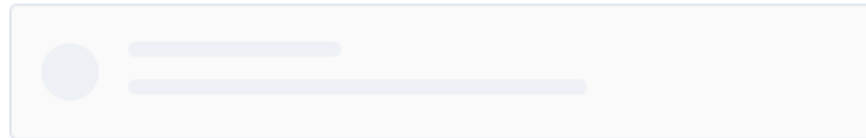
 Reissuable ▼

Decimals

This field defines the number of decimal signs for your token

From 0 to 8

Preview



Fee 1 WAVES

Generate

# WAVES PORTFOLIO



Кошелёк Портфель Транзакции Лизинг



Отправить

Ваш адрес



Имя токена

Баланс

Стоимость, USD

Цена, USD

Изменение, 24ч



Waves

3.43123193

\$ 33.16

\$ 9.66

-1.70%

Отправить



Bitcoin

0.00019122

\$ 2.37

\$ 12 435.60

0.56%

Отправить

Пополнить



EncryptoTel

0.00249688

\$ 0

\$ 0.12

0.00%

Отправить



EquaCoin

1.0000

\$ 0.43

\$ 0.43

13.37%

Отправить



Ethereum

0.00065865

\$ 0.86

\$ 1 316.89

-1.00%

Отправить

Пополнить



Euro

0.60

\$ 0.73

\$ 1.22

2.32%

Отправить

Пополнить



Liquid

0.00175385

\$ 0

\$ 3.97

-0.96%

Отправить



Litecoin

0.00039981

\$ 0.07

\$ 191.79

-1.44%

Отправить

Пополнить



US Dollar

0.46

—

—

—

Отправить

Пополнить



WavesDesk

0.00153153

\$ 0

\$ 0.05

-8.55%

Отправить



Zcash

0.00001000

\$ 0

\$ 455.26

-5.55%

Отправить

Пополнить



# WAVES DECENTRALIZED EXCHANGE



## Waves

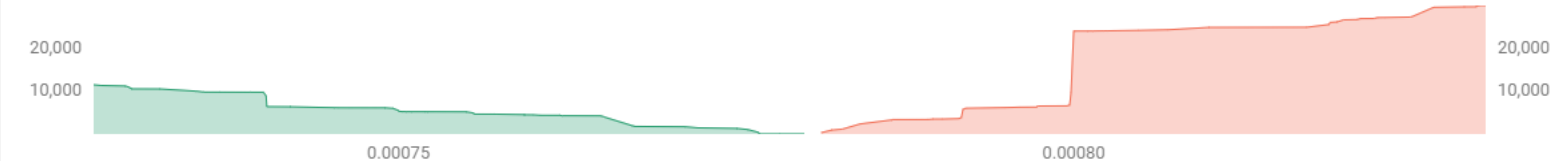
Q Add coin

Coin	Price	Change
WAVES / BTC	0.00078048	-0.88%
MER / WAVES	0.06446223	4.04%
OCL / WAVES	0.00790028	3.89%
ETH / WAVES	135.26000000	1.41%
WAVES / EUR	7.86	-3.94%
WCT / WAVES	0.27860000	-1.08%
MRT / WAVES	0.01982318	0.00%
LTC / WAVES	19.84222000	2.45%
EOT Token / ...	0.00359001	18.41%
WAVES / USD	9.74	-1.70%
DAR / WAVES	0.02652009	0.00%
EFYT / WAVES	1.68190040	-0.00%
WGR / WAVES	0.04564400	0.73%
WGO / WAVES	0.01621000	-0.03%
ZEC / WAVES	47.10000001	9.42%
STA / WAVES	0.14901997	23.64%
INCNT / WA...	0.05587198	0.00%
ZRC / WAVES	0.23384588	0.00%
BCH / WAVES	184.96200000	0.00%
B@ / WAVES	0.00975601	0.00%
WNET / WAV...	0.00690000	4.17%

## Bitcoin

Q Add coin

Coin	Price	Change
WAVES / BTC	0.00078048	0.88%
MER / BTC	0.00005031	-0.22%
OCL / BTC	0.00000616	-0.23%
ETH / BTC	0.10556772	-0.63%
BTC / EUR	10.0k	0.22%
WCT / BTC	0.00021744	0.82%
MRT / BTC	0.00001547	-429.46%
LTC / BTC	0.01548645	-0.36%
EOT Token / ...	0.00000280	-0.05%
BTC / USD	12.4k	0.52%
DAR / BTC	0.00002069	0.00%
EFYT / BTC	0.00131268	13942.11%
WGR / BTC	0.00003562	-1.21%



## My Orders

Pair	Type	Price	Amount	Status
WAVES / ETH	Sell	128.30000000	0.00077942	Filled (100%)
WAVES / ETH	Buy	131.90000000	0.00010000	Filled (100%)
BTC / WAVES	Sell	0.00080000	0.12500000	Filled (100%)
WAVES / ETH	Sell	127.90000000	0.00078186	Filled (100%)
WAVES / ETH	Buy	130.90000000	0.00100000	Filled (100%)

## Order Book

Amount WAVES	Price BTC	Sum BTC
250.00000000	0.00079168	2.99036102
101.40000000	0.00079150	2.79244102
0.79801580	0.00079030	2.71218292
100.00000000	0.00078960	2.71155225
10.00000000	0.00078923	2.63259225
100.00000000	0.00078665	2.62469995
909.00000000	0.00078650	2.54603495
1 200.00000000	0.00078419	1.83110645
218.44213243	0.00078287	0.89007845
574.84771692	0.00078209	0.71906666
344.90863015	0.00078132	0.26948401
0.00078132	0.00000128	0.00078004
23.36160950	0.00078004	0.01822298
0.03753505	0.00077825	0.01825219
1.55329256	0.00077675	0.01945870
384.99043839	0.00077664	0.31845767
641.65073065	0.00077586	0.81628880
243.82727764	0.00077508	1.00527444
150.00000000	0.00077215	1.12109694
250.00000000	0.00077119	1.31389444
75.00000000	0.00076750	1.37145694
150.00000000	0.00076731	1.48655344
73.77423264	0.00076725	1.54315671

## Trade history

Amount WAVES	Price BTC	Time
0.00600000	0.00078004	01-29 15:19:38
0.01000000	0.00078004	01-29 15:19:32
2.04021039	0.00078139	01-29 15:17:59
300.00000000	0.00078139	01-29 15:17:58
178.18062860	0.00077954	01-29 15:17:33
71.81937140	0.00077950	01-29 15:17:33
1.55003963	0.00077825	01-29 15:17:23
13.54174400	0.00077825	01-29 15:16:56
2.04515715	0.00077950	01-29 15:16:49
2.04515715	0.00077950	01-29 15:16:15
2.04515715	0.00077950	01-29 15:15:40
2.04515715	0.00077950	01-29 15:15:05
1.55332761	0.00077673	01-29 15:12:04

## 0. Waves Blockchain

---

## 1. LPoS Protocol

---

## 2. NG Protocol

---

## 3. What is DEX?

---

## 4. Waves API

---

## Block N

Current Block hash

Previous Block hash  
Timestamp

Transaction 1

Transaction 2

...

Transaction 100

New Block: 1 min

**Total emission: 100kk WAVES**

1. If you want to be a miner you must have 10k WAVES on your balance
2. [All Block's data](#)
3. [All information about validation](#)



## Block N

Current Block hash

Previous Block hash  
Timestamp

Transaction 1  
Transaction 2

...

Transaction 100

New Block: 1 min

Total emission: 100kk WAVES

## Consensus protocol Proof-of-Stake

### Block validation

$$\text{Blake2b256}(\text{PrevHash} + \text{Address} + \text{Timestamp}) \leq 2^{256} * \text{Balance} / \text{Difficult}$$

PrevHash – hash of previous block;

Address – miner's address;

Timestamp – current time (UTC);

Balance – balance of miner's address;

Difficult – constant, which is set by the system;

### Rewards:

1. 50 MRT every month ( -5 MRT every 50k blocks)
2. Transactions fee

1. If you want to be a miner you must have 10k WAVES on your balance
2. [All Block's data](#)
3. [All information about validation](#)

# LPoS PROTOCOL



Miners run nodes to secure the Waves network and are rewarded with fees.



...and sharing in the rewards, without giving up control of their WAVES.



Regular users can lease their WAVES to miners from the lite client, thereby increasing the WAVES they can use...

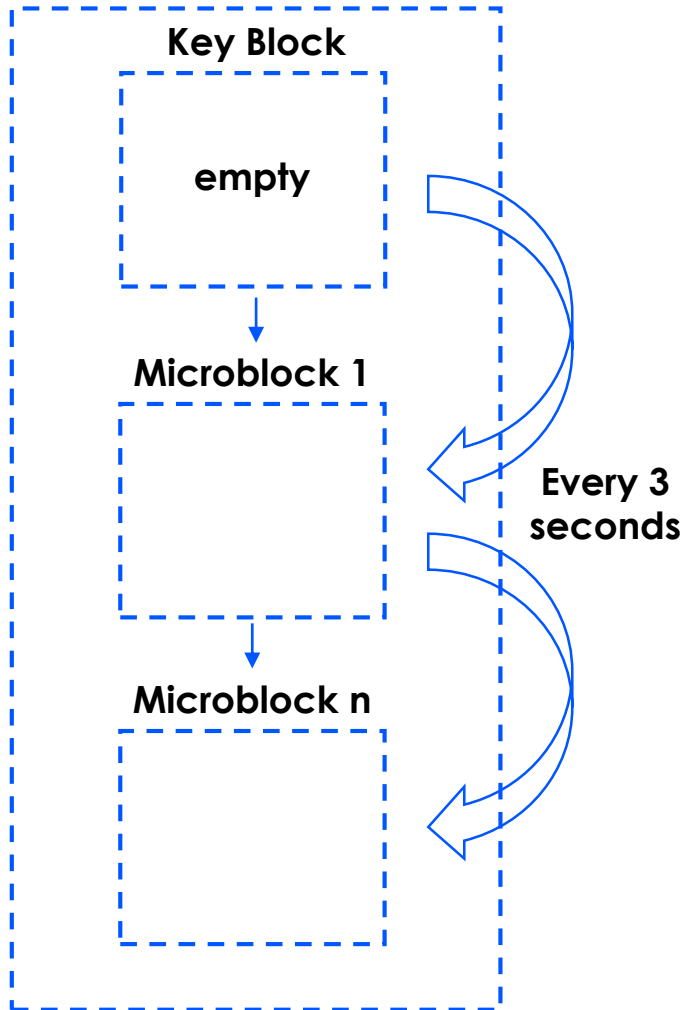
# LPOS

SYSTEM

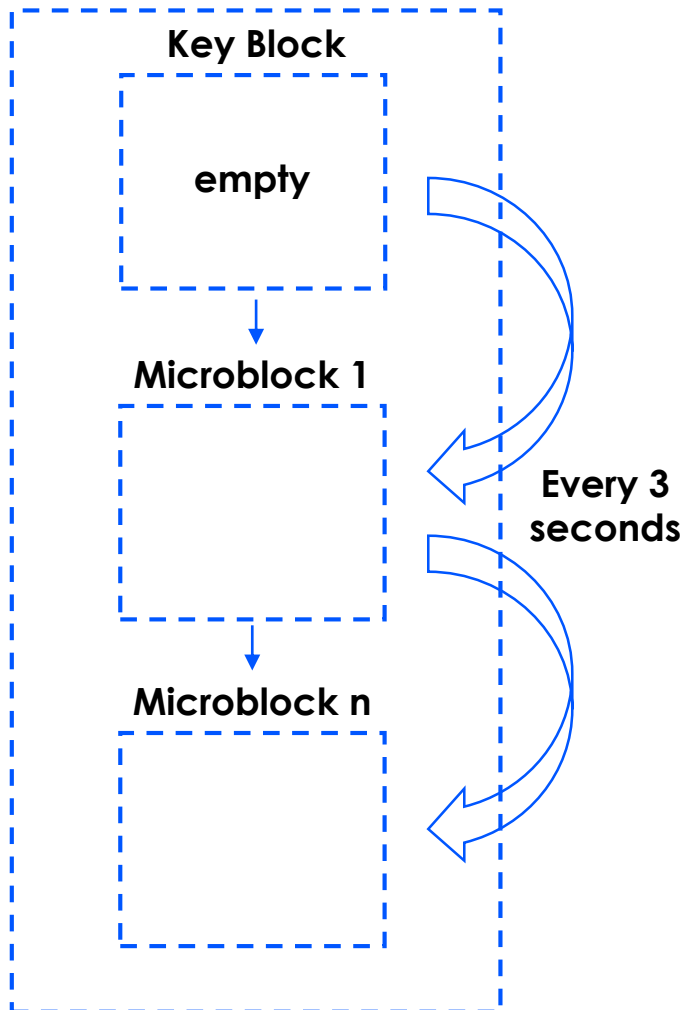


Their rewards depend on the amount of WAVES they use to mine. The more WAVES, the greater the rewards.

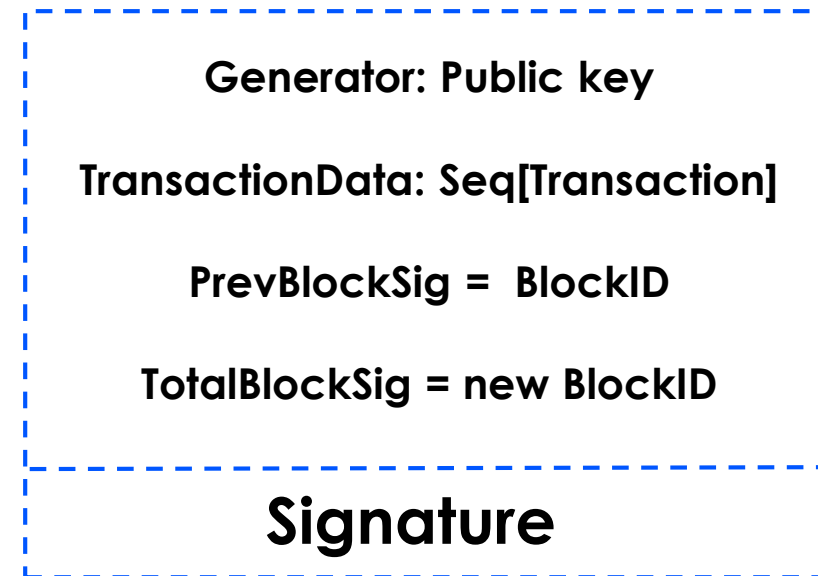
## Liquid block



## Liquid block



## Microblock N



# NG PROTOCOL (example)



get permission to

## Key Block

Create new  
empty block  
and get 60% of  
fees from last  
block

# NG PROTOCOL (example)



get permission to

## Key Block

Create new  
empty block  
and get 60% of  
fees from last  
block



txData = [tx1, tx2]  
+ public key  
= totalBlockSig

Microblock 1

# NG PROTOCOL (example)



get permission to

## Key Block

Create new  
empty block  
and get 60% of  
fees from last  
block

txData = [tx3, tx4]  
+ prevBlockSig  
+ public key  
= totalBlockSig

Microblock 2

txData = [tx1, tx2]  
+ public key  
= totalBlockSig

Microblock 1

# NG PROTOCOL (example)



get permission to

## Key Block

Create new empty block and get 60% of fees from last block

## Key Block

Create new empty block and get 60% of fees from last block

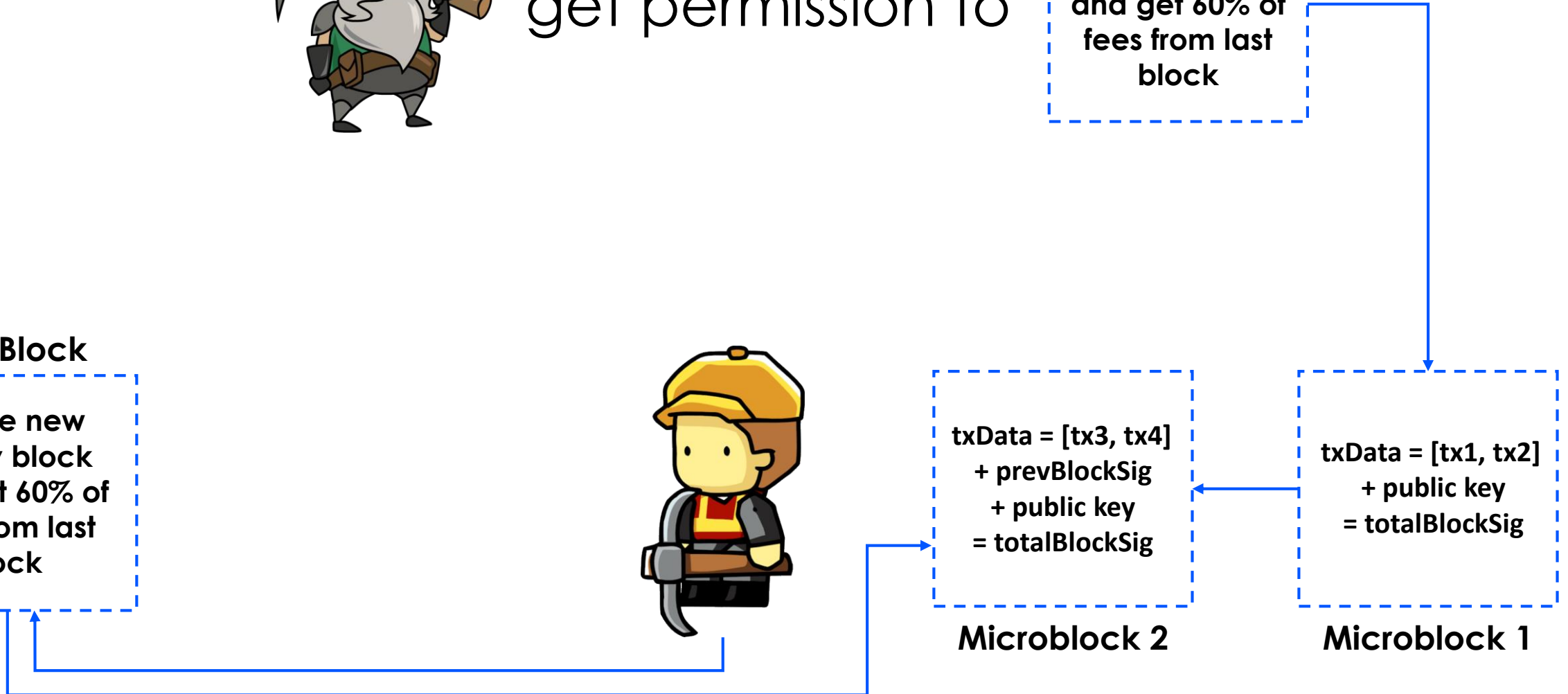


txData = [tx3, tx4]  
+ prevBlockSig  
+ public key  
= totalBlockSig

Microblock 2

txData = [tx1, tx2]  
+ public key  
= totalBlockSig

Microblock 1





# NG PROTOCOL (example)



get permission to

## Key Block

Create new empty block and get 60% of fees from last block

## New Liquid block

### Key Block

Create new empty block and get 60% of fees from last block

### Key Block (empty)

Microblock 1 (tx1, tx2)  
Microblock 2 (tx3, tx4)

Get 40% of fees from this block



txData = [tx3, tx4]  
+ prevBlockSig  
+ public key  
= totalBlockSig

Microblock 2

txData = [tx1, tx2]  
+ public key  
= totalBlockSig

Microblock 1

# DEX, aka MATCHER



**Trade quickly and  
securely**



**Don't waste money  
on high fees**



**Trade without limits**



**Protection from front-  
running and other fraud**

# DEX, aka MATCHER

**SELL ORDER**

**BUY ORDER**



**Trade quickly and  
securely**



**Don't waste money  
on high fees**



**Trade without limits**



**Protection from front-  
running and other fraud**

# DEX, aka MATCHER



**Trade quickly and  
securely**



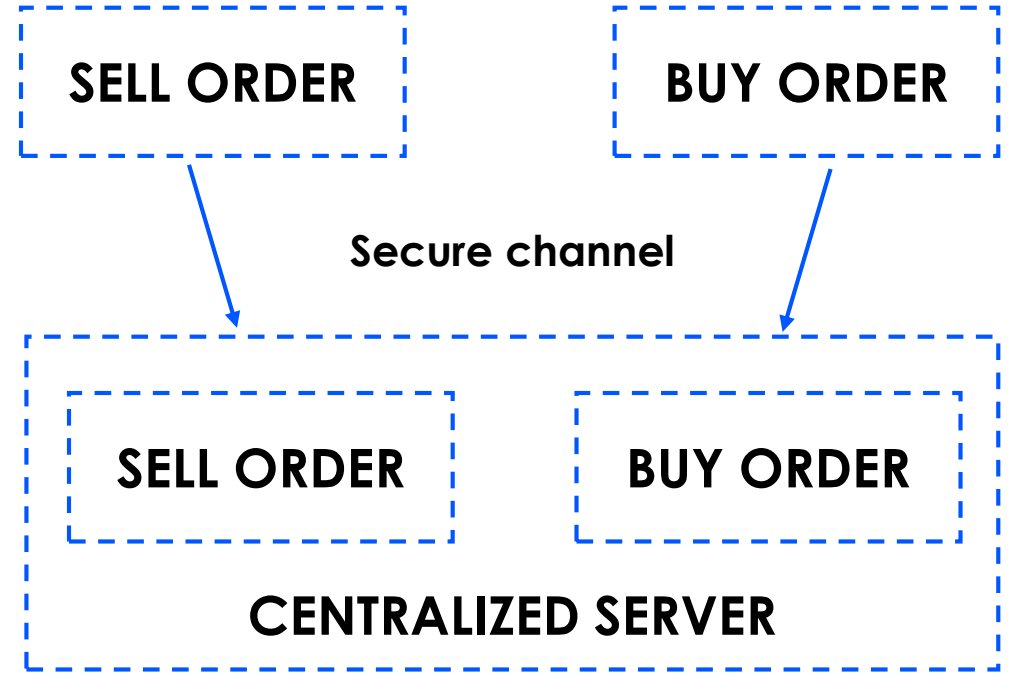
**Don't waste money  
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**Trade without limits**



**Protection from front-  
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# DEX, aka MATCHER



**Trade quickly and securely**



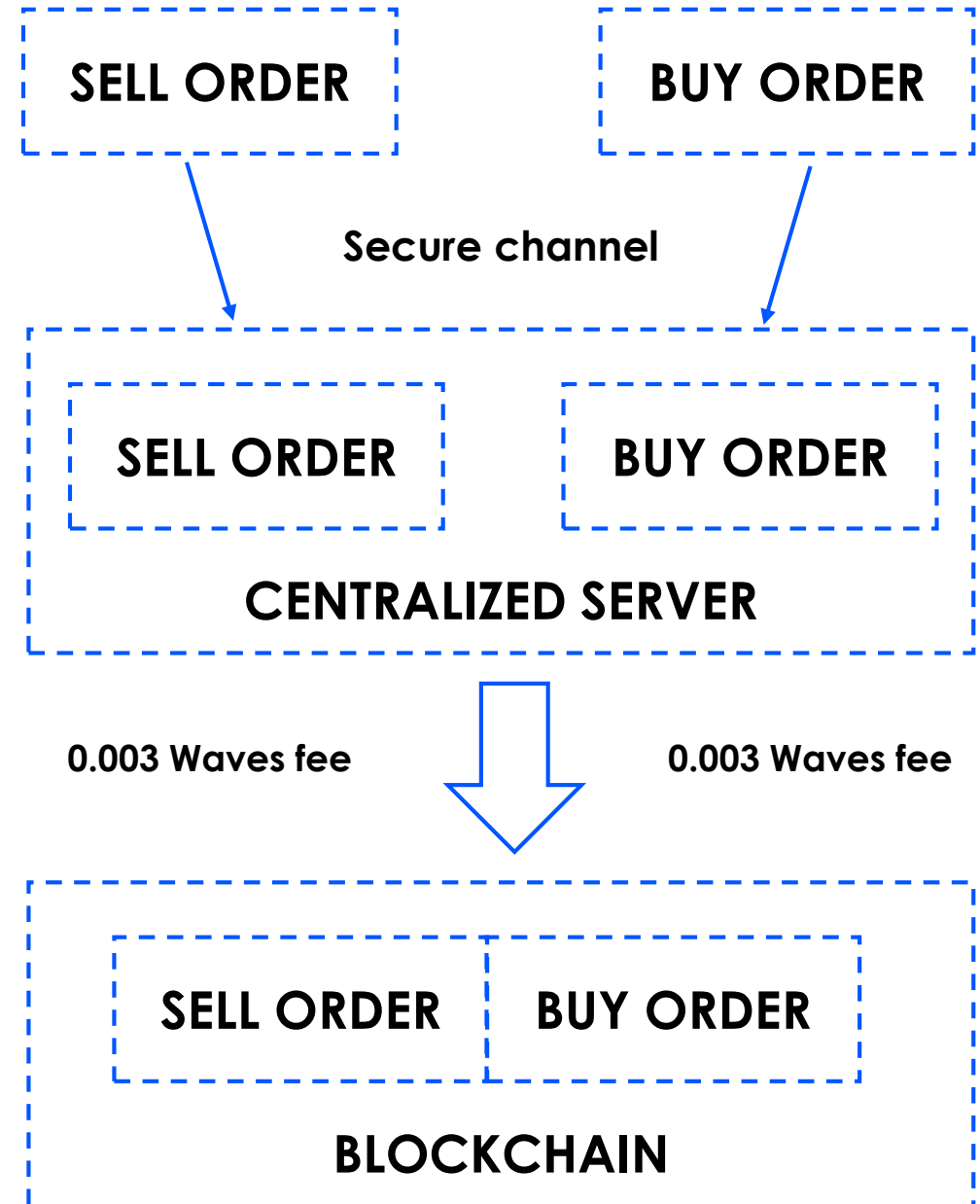
**Don't waste money on high fees**



**Trade without limits**




**Protection from front-running and other fraud**



## IT IS VERY EASY WAY TO COMMUNICATE WITH BLOCKCHAIN

### JUST ↑ POST & ↓ GET REQUESTS

### For example, let's get balance from address


← → ↻  Защищено | <https://nodes.wavesnodes.com/addresses/balance/3PBnAFVV8AWyXMw4pSq4EQHibnVZMFHtcGw>

```
{  
  "address" : "3PBnAFVV8AWyXMw4pSq4EQHibnVZMFHtcGw",  
  "confirmations" : 0,  
  "balance" : 363823193  
}
```

## IT IS VERY EASY WAY TO COMMUNICATE WITH BLOCKCHAIN

### JUST ↑ POST & ↓ GET REQUESTS

### For example, let's get balance from address

← → ↻  Защищено | <https://nodes.wavesnodes.com/addresses/balance/3PBnAFVV8AWyXMw4pSq4EQHibnVZMFHtcGw>

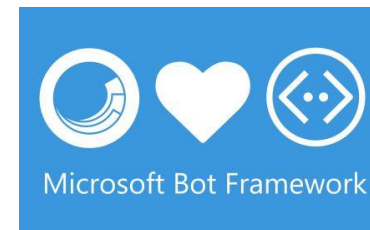
```
{  
  "address" : "3PBnAFVV8AWyXMw4pSq4EQHibnVZMFHtcGw",  
  "confirmations" : 0,  
  "balance" : 363823193  
}
```

### Next try to write a small application

waves 



node  JS <sup>TM</sup>



 Microsoft  
Azure

**<https://t.me/hseblockchain>**

- 1. Bot**
- 2. Группа, где будут  
храниться ВНОВЬ  
созданные вами аккаунты  
Waves**
- 3. Code GitHub**